Biology Keyword / Question Dictionary - Living Environment

abiotic

S4K1

ANSWER 2

1. Abiotic factors that characterize a forest ecosystem include

(1) light and biodiversity

(2) temperature and amount of available water

(3) types of producers and decomposers

(4) pH and number of heterotrophs

Regents Date
Aug2008

2

Data Base File Number
132

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abiotic

S4K1

ANSWER 4

2. The ability to grow in size is a characteristic of living organisms. Although an icicle may grow in size over time, it is considered nonliving because there is

(1) an increase in matter, but no increase in the number of icicles

(2) an interaction between the icicle and the environment

(3) no way for the icicle to move away from heat

(4) no metabolic activity present

Regents Date
Aug2011

1

Data Base File Number
359

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abiotic

S4K6

ANSWER 1

3. In an ocean, the growth and survival of seaweed, small fish, and sharks depends on abiotic factors such as

(1) sunlight, temperature, and minerals

(2) sunlight, pH, and type of seaweed

(3) number of decomposers, carbon dioxide, and nitrogen

(4) number of herbivores, carbon, and food

Regents Date
Jan2007

23

Data Base File Number
64

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abiotic

S4K1

ANSWER 3

4. Abiotic factors that could affect the stability of an ecosystem could include

(1) hurricanes, packs of wolves, and temperature

(2) blizzards, heat waves, and swarms of grasshoppers

(3) droughts, floods, and heat waves

(4) species of fish, number of decomposers, and supply of algae

Regents Date
Jan2009

4

Data Base File Number
155

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abiotic

S4K6

ANSWER 3

Regents Date
Jan2010

21

Data Base File Number
243

5. Abiotic factors that affect the growth of grass in a lawn include

(1) bacteria and soil

(2) earthworms and nutrients

(3) moisture and minerals

(4) fertilizer and decomposers

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abiotic

S4K2

ANSWER 2

Regents Date
Jan2012

12

Data Base File Number
400

6. Plants are green because they contain the protein chlorophyll. A bucket was left on the lawn for one week. When the bucket was removed, the grass under the bucket had turned from green to a yellowish white color. This change is due to the interaction between the grass and

(1) decomposer organisms in the soil, an abiotic factor

(2) the amount of sunlight, an abiotic factor

(3) increased moisture under the bucket, a biotic factor

(4) the metal composition of the bucket, a biotic factor

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abiotic

S4K5

ANSWER 2

Regents Date
June2011

19

Data Base File Number
342

7. Which process initially provides the link between an abiotic factor and the energy needs of an entire ecosystem?

(1) respiration

(2) photosynthesis

(3) decomposition

(4) predation

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absorption

S4K6

ANSWER 3

Regents Date
June2011

28

Data Base File Number
351

8. In the human body, oxygen is absorbed by the lungs and nutrients are absorbed by the small intestine. In a single-celled organism, this absorption directly involves the

(1) nucleus

(2) chloroplasts

(3) cell membrane

(4) chromosomes

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acid rain

S4K7

ANSWER 3

Regents Date
Jan2003

Data Base File Number
747

9. Changes in the chemical composition of the atmosphere that may produce acid rain are most closely associated with

(1) insects that excrete acids
(2) runoff from acidic soils
(3) industrial smoke stack emissions
(4) flocks of migrating birds

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acid rain

S4K7

ANSWER 3

Regents Date
Jan2004

Data Base File Number
665

10. Methods used to reduce sulfur dioxide emissions from smokestacks are an attempt by humans to

(1) lessen the amount of insecticides in the environment
(2) eliminate diversity in wildlife
(3) lessen the environmental impact of acid rain
(4) use nonchemical controls on pest species

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acid rain

S4K7

ANSWER 2

Regents Date
Jan2007

Data Base File Number
67

11. Which situation is a result of human activities?

(1) decay of leaves in a forest adds to soil fertility
(2) acid rain in an area kills fish in a lake
(3) ecological succession following volcanic activity reestablishes an ecosystem
(4) natural selection on an island changes gene frequencies

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acid rain

S4K6

ANSWER 3

Regents Date
Jan2009

Data Base File Number
165

12. In lakes in New York State that are exposed to acid rain, fish populations are declining. This is primarily due to changes in which lake condition?

(1) size
(2) temperature
(3) pH
(4) location

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acquired characteristic

Regents Date
Aug2003

13. People with cystic fibrosis inherit defective genetic information and cannot produce normal CFTR proteins. Scientists have used gene therapy to insert normal DNA segments that code for the missing CFTR protein into the lung cells of people with cystic fibrosis. Which statement does not describe a result of this therapy?

(1) Altered lung cells can produce the normal CFTR protein.

(2) Altered lung cells can divide to produce other lung cells with the normal CFTR gene.

(3) The normal CFTR gene may be expressed in altered lung cells.

(4) Offspring of someone with altered lung cells will inherit the normal CFTR gene.

S4K2

ANSWER 4

12

Data Base File Number

789

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acquired characteristic

Regents Date
Jan2007

14. A basketball player develops speed and power as a result of practice. This athletic ability will NOT be passed on to her offspring because

(1) muscle cells do not carry genetic information

(2) mutations that occur in body cells are not inherited

(3) gametes do not carry complete sets of genetic information

(4) base sequences in DNA are not affected by this activity

S4K2

ANSWER 4

24

Data Base File Number

65

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active transport

Regents Date
Jan2012

15. The calcium concentration in the root cells of certain plants is higher than in the surrounding soil. Calcium may continue to enter the root cells of the plant by the process of

(1) diffusion

(2) respiration

(3) active transport

(4) protein synthesis

S4K1

ANSWER 3

2

Data Base File Number

390

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active transport

16. The concentration of potassium is higher in red blood cells than in the surrounding blood plasma. This higher concentration is maintained by the process of

(1) circulation

(2) diffusion

(3) excretion

(4) active transport

S4K1

ANSWER 4

Regents Date
Jan2014

1

Data Base File Number
998

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adaptation

17. According to the theory of natural selection, why are some individuals more likely than others to survive and reproduce?

(1) Some individuals pass on to their offspring new characteristics they have acquired during their lifetimes.

(2) Some individuals are better adapted to exist in their environment than others are.

(3) Some individuals do not pass on to their offspring new characteristics they have acquired during their lifetimes.

(4) Some individuals tend to produce fewer offspring than others in the same environment.

S4K3

ANSWER 2

Regents Date
Aug2001

14

Data Base File Number
924

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adaptation

18. When a particular white moth lands on a white birch tree, its color has a high adaptive value. If the birch trees become covered with black soot, the white color of this particular moth in this environment would most likely

(1) retain its adaptive value

(2) increase in adaptive value

(3) change to a more adaptive black color

(4) decrease in adaptive value

S4K3

ANSWER 4

Regents Date
Aug2004

24

Data Base File Number
714

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adaptation

19. The theory of biological evolution includes the concept that

(1) species of organisms found on Earth today have adaptations not always found in earlier species

(2) fossils are the remains of present-day species and were all formed at the same time

(3) individuals may acquire physical characteristics after birth and pass these acquired characteristics on to their offspring

(4) the smallest organisms are always eliminated by the larger organisms within the ecosystem

Regents Date
Aug2004

15

S4K3

Data Base File Number

ANSWER 1

706

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adaptation

20. The crucian carp, a Scandinavian fish, thrives in shallow ponds that freeze over during winter. While other creatures in the pond die from lack of oxygen, these carp are able to obtain energy through a biochemical pathway that does not require oxygen. This characteristic is an example of a

(1) feedback mechanism common to carnivores that inhabit shallow pond ecosystems

(2) favorable adaptive trait that has led to increased survival

(3) stage of succession that leads to a new community

(4) gene mutation that occurred because carp need to survive to maintain ecological stability

Regents Date
Aug2012

13

S4K3

Data Base File Number

ANSWER 2

454

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adaptation

21. In a certain species of insect, some individuals have flattened white disks on their bodies that protrude and interlock, resembling an orchid flower. This adaptation provides the insect with a better opportunity to capture its prey. If environmental conditions remain unchanged, it is most likely that, in future generations, the proportion of the population with this adaptation will

(1) increase, only

(2) decrease, only

(3) increase, then decrease

(4) decrease, then increase

Regents Date
Aug2013

11

S4K3

Data Base File Number

ANSWER 1

978

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adaptation

S4K3

ANSWER 1

22. Which statement best illustrates a rapid biological adaptation that has actually occurred?

(1) Pesticide-resistant insects have developed in certain environments.

(2) Scientific evidence indicates that dinosaurs once lived on land.

(3) Paving large areas of land has decreased habitats for certain organisms.

(4) The characteristics of sharks have remained unchanged over a long period of time.

Regents Date Jan2003

14

Data Base File Number 734

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adaptation

S4K3

ANSWER 4

23. When the adaptive characteristics of a species are insufficient to allow its survival, that species is likely to

(1) mate with other species

(2) produce a beneficial mutation

(3) form a fossil

(4) become extinct

Regents Date Jan2010

15

Data Base File Number 238

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adaptation

S4K3

ANSWER 1

24. One explanation for the variety of organisms present on Earth today is that over time

(1) new species have adapted to fill available niches in the environment

(2) evolution has caused the appearance of organisms that are similar to each other

(3) each niche has changed to support a certain variety of organism

(4) the environment has remained unchanged, causing rapid evolution

Regents Date June2001

17

Data Base File Number 899

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adaptation

S4K3

25. When is extinction of a species most likely to occur?

(1) when environmental conditions remain the same and the proportion of individuals within the species that lack adaptive traits increases

(2) when environmental conditions remain the same and the proportion of individuals within the species that possess adaptive traits increases

(3) when environmental conditions change and the adaptive traits of the species favor the survival and reproduction of some of its members

(4) when environmental conditions change and the members of the species lack adaptive traits to survive and reproduce

ANSWER 4

Regents Date June2008 14

Data Base File Number 113

AIDS

S4K5

26. Which disease damages the human immune system, leaving the body open to certain infectious agents?

(1) flu

(2) AIDS

(3) chicken pox

(4) pneumonia

ANSWER 2

Regents Date Aug2001 20

Data Base File Number 929

AIDS

S4K5

27. Which condition would most likely result in a human body being unable to defend itself against pathogens and cancerous cells?

(1) a genetic tendency toward a disorder such as diabetes

(2) a parasitic infestation of ringworm on the body

(3) the production of antibodies in response to an infection in the body

(4) the presence in the body of the virus that causes AIDS

ANSWER 4

Regents Date Aug2002 25

Data Base File Number 824

AIDS

28. People with AIDS are unable to fight multiple infections because the virus that causes AIDS

(1) weakens their immune systems

(2) produces antibodies in their blood

(3) attacks muscle tissue

(4) kills pathogens

S4K5

ANSWER 1

Regents Date
Jan2002

20

Data Base File Number
868

AIDS

29. Blood can be tested to determine the presence of the virus associated with the development of AIDS. This blood test is used directly for

(1) cure

(2) treatment

(3) diagnosis

(4) prevention

S4K5

ANSWER 3

Regents Date
Jan2003

19

Data Base File Number
737

AIDS

30. The virus that causes AIDS is damaging to the body because it

(1) targets cells that fight invading microbes

(2) attacks specific red blood cells

(3) causes an abnormally high insulin level

(4) prevents the normal transmission of nerve impulses

S4K5

ANSWER 1

Regents Date
June2009

20

Data Base File Number
190

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allergy

31. In some individuals, the immune system attacks substances such as grass pollen that are usually harmless, resulting in

(1) an allergic reaction

(2) a form of cancer

(3) an insulin imbalance

(4) a mutation

S4K5

ANSWER 1

Regents Date
Aug2001

25

Data Base File Number
933

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allergy

S4K5

ANSWER 4

32. Scientific studies have indicated that there is a higher percentage of allergies in babies fed formula containing cow's milk than in breast-fed babies. Which statement represents a valid inference made from these studies?

(1) Milk from cows causes allergic reactions in all infants.

(2) Breast feeding prevents all allergies from occurring.

(3) There is no relationship between drinking cow's milk and having allergies.

(4) Breast milk most likely contains fewer substances that trigger allergies.

Regents Date
Aug2002

26

Data Base File Number

825

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allergy

S4K5

ANSWER 4

33. Responses of the immune system to usually harmless environmental substances are known as

(1) antigen production

(2) chromosomal mutations

(3) pathogens

(4) allergies

Regents Date
Jan2013

22

Data Base File Number

634

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allergy

S4K5

ANSWER 3

34. Which disorder could develop in the human body when the immune system attacks a usually harmless environmental substance?

(1) cancer

(2) AIDS

(3) an allergy

(4) an infection

Regents Date
Jan2014

14

Data Base File Number

1008

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allergy

S4K5

ANSWER 3

35. Allergic reactions are most closely associated with

(1) the action of circulating hormones

(2) a low blood sugar level

(3) immune responses to usually harmless substances

(4) the shape of red blood cells

Regents Date
June2002

21

Data Base File Number

847

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alternate energy

36. Some people see the benefit of wind energy as a clean alternative to fossil fuels for energy production. Others believe it is dangerous for migratory birds. These opinions best illustrate that decisions about alternate energy sources

(1) will usually favor older methods of energy production over newer methods

(2) must be made by weighing the risks and costs against the benefits

(3) must be made by taking into account the present needs of the citizens without looking toward the future

(4) should be the responsibility of each individual

S4K7

ANSWER 2

Regents Date
Jan2012

25

Data Base File Number

409

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alternative fuel

37. The increasing demands for fossil fuels has led government and businesses to consider several possibilities to solve the energy crisis. Which solution will reduce the impact of this crisis on the environment and future generations?

(1) increase the number of drilling sites for crude oil in North America

(2) build more power plants away from population centers

(3) limit the number of people in each vehicle

(4) develop alternative fuel sources that can be produced from renewable resources

S4K7

ANSWER 4

Regents Date
Jan2010

30

Data Base File Number

250

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amino acid chains

38. Many biological catalysts, hormones, and receptor molecules are similar in that, in order to function properly, they must

(1) interact with each other at a high pH

(2) interact with molecules that can alter their specific bonding patterns

(3) contain amino acid chains that fold into a specific shape

(4) contain identical DNA base sequences

S4K5

ANSWER 3

Regents Date
June2011

25

Data Base File Number

348

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amino acid sequences

39. The sequence of subunits in a protein is most directly dependent on the

(1) region in the cell where enzymes are produced

(2) DNA in the chromosomes in a cell

(3) type of cell in which starch is found

(4) kinds of materials in the cell membrane

S4K1

ANSWER 2

Regents Date
Jan2004

7

Data Base File Number
649

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antibiotic

40. If the same antibiotic is used too many times, it can become less effective against a certain type of bacteria. This observation is best explained by the

(1) presence of pathogens in antibiotics

(2) production of antibiotics by white blood cells

(3) replication of viruses that attack bacteria

(4) survival and reproduction of unaffected bacteria

S4K3

ANSWER 4

Regents Date
Aug2011

11

Data Base File Number
364

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antibiotic resistance

41. When antibiotics were first developed, most infectious diseases could be controlled by them. Today, certain bacteria are resistant to many antibiotics. One possible explanation for this change is that

(1) the antibiotics killed most of the bacteria that did not have a genetic variation for resistance

(2) the bacteria needed to change in order to produce more antibiotics

(3) some of the bacteria learned how to resist the antibiotics

(4) antibiotics have become weaker over the years

S4K3

ANSWER 1

Regents Date
Aug2009

13

Data Base File Number
208

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antibiotic resistance

42. Certain antibacterial soaps kill 99% of the bacteria present on hands. Constant use of these soaps could be harmful over time because

(1) more pathogens may be resistant to the soap

(2) microbes prevent viral diseases

(3) large populations of pathogens are beneficial to the hands

(4) the soap stimulates skin cell division

S4K3

ANSWER 1

Regents Date
Aug2013

7

Data Base File Number
975

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antibodies

S4K5

ANSWER 2

Regents Date
Jan2004

43. A part of the Hepatitis B virus is synthesized in the laboratory. This viral particle can be identfied by the immune system as a foreign material but the viral particle is not capable of causing disease. Immediately after this viral particle is injected into a human it

(1) stimulates the production of enzymes that are able to digest the Hepatitis B virus

(2) triggers the formation of antibodies that protect against the Hepatitis B virus

(3) synthesizes specific hormones that provide immunity against the Hepatitis B virus

(4) breaks down key receptor molecules so that the Hepatitis B virus can enter body cells

28

Data Base File Number

662

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antibodies

S4K5

ANSWER 2

Regents Date
Jan2011

44. It is recommended that people at risk for serious flu complications be vaccinated so that their bodies will produce

(1) antigens to fight the flu virus

(2) antibodies against the flu virus

(3) toxins to fight the infection caused by the flu virus

(4) antibiotics to reduce symptoms caused by the flu virus

29

Data Base File Number

326

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antibodies

S4K5

ANSWER 3

Regents Date
Jan2014

45. The human immune system fights infection by releasing

(1) ATPs

(2) antibiotics

(3) antibodies

(4) antigens

7

Data Base File Number

1003

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antibodies

S4K5

ANSWER 3

Regents Date
June2001

46. Which statement does NOT identify a characteristic of antibodies?

(1) They are produced by the body in response to the presence of foreign substances.

(2) They may be produced in response to an antigen.

(3) They are nonspecific, acting against any foreign substance in the body.

(4) They may be produced by white blood cells.

26

Data Base File Number

905

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antigen / antibody

47. A researcher needs information on antigen-antibody reactions. Searching for which phrase would best lead the researcher to information about these reactions?

(1) protein synthesis

(2) energy sources in nature

(3) white blood cell activity

(4) DNA replication

S1K2

ANSWER 3

Regents Date
Aug2002

36

Data Base File Number
832

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antigens

48. To replace burned skin, doctors can successfully transplant replacement skin taken from another part of the body of the burn victim. Which statement best explains why the transplanted skin is NOT rejected?

(1) The transplanted skin is damaged, making the immune system nonfunctional.

(2) The antigens of the replacement skin are the same as those of the damaged skin.

(3) Burn victims lose so much blood that white blood cells cannot cause an immune response.

(4) There is no blood supply to the skin, so mixing of antigens does not occur.

S4K5

ANSWER 2

Regents Date
Aug2009

18

Data Base File Number
213

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antigens

49. Drugs to reduce the risk of rejection are given to organ transplant patients because the donated organ contains

(1) foreign antigens

(2) foreign antibodies

(3) DNA molecules

(4) pathogenic microbes

S4K5

ANSWER 1

Regents Date
Aug2010

19

Data Base File Number
293

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antigens

Regents Date
June2003

50. In an experiment, DNA from dead pathogenic bacteria was transferred into living bacteria that do not cause disease. These altered bacteria were then injected into healthy mice. These mice died of the same disease caused by the original pathogens. Based on this information, which statement would be a valid conclusion?

(1) DNA is present only in living organisms.

(2) DNA functions only in the original organism of which it was a part.

(3) DNA changes the organism receiving the injection into the original organism.

(4) DNA from a dead organism can become active in another organism.

39

Data Base File Number

778

S1K1

ANSWER 4

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antigens

Regents Date
June2003

51. Certain microbes, foreign tissues, and some cancerous cells can cause immune responses in the human body because all three contain

(1) antigens

(2) enzymes

(3) fats

(4) cytoplasm

31

Data Base File Number

773

S4K5

ANSWER 1

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antigens

Regents Date
June2013

52. A 6-year-old child ate a peanut butter sandwich at snack time in school. Five minutes later, her throat became swollen and she collapsed. This allergic reaction occurred because her body

(1) recognized an antigen in peanut butter and produced antibiotics against it

(2) digested the white blood cells that can recognize an antigen in peanut butter

(3) did not recognize an antigen in peanut butter and could not produce antibodies against it

(4) recognized an antigen in peanut butter and produced an immune response

24

Data Base File Number

962

S4K5

ANSWER 4

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asexual

S4K2

ANSWER 1

53. Asexual reproduction produces offspring that each contain

(1) genetic information from one parent

(2) genetic information from two parents

(3) less genetic information than either parent

(4) a unique combination of genetic information

Regents Date
Aug2011
14

Data Base File Number
367

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asexual reproduction

S4K2

ANSWER 2

54. Which phrases best identify characteristics of asexual reproduction?

(1) one parent, union of gametes, offspring similar to but not genetically identical to the parent

(2) one parent, no union of gametes, offspring genetically identical to parents

(3) two parents, union of gametes, offspring similar to but not genetically identical to parents

(4) two parents, no union of gametes, offspring genetically identical to parents

Regents Date
Aug2001
11

Data Base File Number
921

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asexual reproduction

S4K4

ANSWER 3

55. A variation causes the production of an improved variety of apple. What is the best method to use to obtain additional apple trees of this variety in the shortest period of time?

(1) selective breeding

(2) natural selection

(3) asexual reproduction

(4) hormone therapy

Regents Date
Aug2004
25

Data Base File Number
715

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asexual reproduction

S4K4

ANSWER 4

56. A certain bacterial colony originated from the division of a single bacterial cell. Each cell in this colony will most likely

(1) express adaptations unlike those of the other cells

(2) replicate different numbers of genes

(3) have a resistance to different antibiotics

(4) synthesize the same proteins and enzymes

Regents Date
Aug2006
15

Data Base File Number
532

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asexual reproduction

Regents Date
Aug2009

57. Thousands of genetically identical trees have been discovered growing in a remote, undisturbed mountain area in Colorado. These trees are most likely the result of

(1) genetic engineering
(2) asexual reproduction
(3) meiotic cell division
(4) biotechnology

14

Data Base File Number
209

S4K2

ANSWER 2

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asexual reproduction

Regents Date
Jan2003

58. Certain bacteria produce a chemical that makes them resistant to penicillin. Since these bacteria reproduce asexually, they usually produce offspring that

(1) can be destroyed by penicillin
(2) mutate into another species
(3) are genetically different from their parents
(4) survive exposure to penicillin

5

Data Base File Number
730

S4K2

ANSWER 4

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asexual reproduction

Regents Date
Jan2005

59. Strawberries can reproduce by means of runners, which are stems that grow horizontally along the ground. At the region of the runner that touches the ground, a new plant develops. The new plant is genetically identical to the parent because

(1) it was produced sexually
(2) nuclei traveled to the new plant through the runner to fertilize it
(3) it was produced asexually
(4) there were no other strawberry plants in the area to provide fertilization

9

Data Base File Number
548

S4K2

ANSWER 3

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asexual reproduction

Regents Date
Jan2006

60. When a planarian (a type of worm) is cut in half, each half usually grows back into a complete worm over time. This situation most closely resembles

(1) asexual reproduction in which a mutation has occurred
(2) sexual reproduction in which each half represents one parent
(3) asexual reproduction of a single-celled organism
(4) sexual reproduction of a single-celled organism

16

Data Base File Number
484

S4K2

ANSWER 3

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asexual reproduction

61. The LEAST genetic variation will probably be found in the offspring of organisms that reproduce using

(1) mitosis to produce a larger population

(2) meiosis to produce gametes

(3) fusion of eggs and sperm to produce zygotes

(4) internal fertilization to produce an embryo

S4K4

ANSWER 1

Regents Date Jan2007

13

Data Base File Number 56

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asexual reproduction

62. An organism that reproduces asexually will have offspring that have

(1) the same genetic information as both of its parents

(2) different genetic information from either of its parents

(3) the same genes as its parent

(4) different genes from its parent

S4K4

ANSWER 3

Regents Date Jan2013

19

Data Base File Number 631

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asexual reproduction

63. Which statement describes asexual reproduction?

(1) Adaptive traits are usually passed from parent to offspring without genetic modification.

(2) Mutations are not passed from generation to generation.

(3) It always enables organisms to survive in changing environmental conditions.

(4) It is responsible for many new variations in offspring.

S4K2

ANSWER 1

Regents Date June2005

16

Data Base File Number 582

ATP

64. The energy an organism requires to transport materials and eliminate wastes is obtained directly from

(1) DNA

(2) starch

(3) hormones

(4) ATP

S4K5

ANSWER 4

Regents Date Aug2001

15

Data Base File Number 925

ATP

S4K5

ANSWER 1

65. To remain healthy, organisms must be able to obtain materials, change the materials, move the materials around, and get rid of waste. These activities directly require

(1) energy from ATP

(2) the replication of DNA

(3) nutrients from inorganic sources

(4) manipulation of altered genes

Regents Date
Aug2002

22

Data Base File Number
821

ATP

S4K5

ANSWER 1

66. Living organisms must be able to obtain materials, change the materials into new forms, remove poisons, and move needed material from one place to another. Many of these activities directly require

(1) energy released from ATP

(2) carbohydrates formed from receptor molecules

(3) the synthesis of DNA

(4) the breakdown of energy-rich inorganic molecules

Regents Date
Aug2003

24

Data Base File Number
796

ATP

S4K5

ANSWER 1

67. The rate at which all organisms obtain, transform, and transport materials depends on an immediate supply of

(1) ATP and enzymes

(2) solar energy and carbon dioxide

(3) carbon dioxide and enzymes

(4) ATP and solar energy

Regents Date
Aug2007

16

Data Base File Number
13

ATP

S4K1

ANSWER 1

68. The direct source of ATP for the development of a fetus is

(1) a series of chemical activities that take place in the mitochondria of fetal cells

(2) a series of chemical activities that take place in the mitochondria of the uterine cells

(3) the transport of nutrients by the cytoplasm of the stomach cells of the mother

(4) the transport of nutrients by the cytoplasm of the stomach cells of the fetus

Regents Date
Jan2009

39

Data Base File Number
177

ATP

S4K5

ANSWER 2

69. The energy released when sugar molecules are broken down is stored in

(1) minerals

(2) ATP

(3) DNA

(4) wastes

Regents Date
Jan2013

21

Data Base File Number
633

ATP

S4K5

ANSWER 1

70. In the human body, carbon monoxide reduces the amount of oxygen that can be transported to cells. Breathing in too much carbon monoxide will most likely result in the production of

(1) less ATP

(2) less glucose

(3) more DNA

(4) more protein

Regents Date
Jan2014

15

Data Base File Number
1009

ATP

S4K5

ANSWER 2

71. ATP is a compound that is synthesized when

(1) chemical bonds between carbon atoms are formed during photosynthesis

(2) energy stored in chemical bonds is released during cellular respiration

(3) energy stored in nitrogen is released, forming amino acids

(4) digestive enzymes break amino acids into smaller parts

Regents Date
June2002

20

Data Base File Number
846

ATP

S4K5

ANSWER 2

72. The production of energy-rich ATP molecules is the direct result of

(1) recycling light energy to be used in the process of photosynthesis

(2) releasing the stored energy of organic compounds by the process of respiration

(3) breaking down starch by the process of digestion

(4) copying coded information during the process of protein synthesis

Regents Date
June2005

23

Data Base File Number
586

ATP

S4K5

ANSWER 1

73. Energy from organic molecules can be stored in ATP molecules as a direct result of the process of

(1) cellular respiration
(2) cellular reproduction
(3) diffusion
(4) digestion

Regents Date June2007

20

Data Base File Number 39

ATP

S4K5

ANSWER 1

74. Which substance is the most direct source of the energy that an animal cell uses for the synthesis of materials?

(1) ATP
(2) glucose
(3) DNA
(4) starch

Regents Date June2008

19

Data Base File Number 117

ATP

S4K5

ANSWER 2

75. The temporary storage of energy in ATP molecules is part of which process?

(1) cell division
(2) cellular respiration
(3) protein synthesis
(4) DNA replication

Regents Date June2011

22

Data Base File Number 344

ATP

S4K5

ANSWER 1

76. The energy used to obtain, transfer, and transport materials within an organism comes directly from

(1) ATP
(2) DNA
(3) sunlight
(4) starch

Regents Date June2013

18

Data Base File Number 957

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autotroph

S4K6

ANSWER 2

77. What is the major environmental factor limiting the numbers of autotrophs at great depths in the ocean?

(1) type of seafloor
(2) amount of light
(3) availability of minerals
(4) absence of biotic factors

Regents Date Aug2001

28

Data Base File Number 935

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autotroph

S4K1

ANSWER 4

78. Organisms that are able to manufacture organic nutrients from substances in the abiotic environment are classified as

(1) heterotrophs
(2) fungi
(3) predators
(4) autotrophs

Regents Date
Aug2009

1

Data Base File Number
198

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autotroph

S4K5

ANSWER 4

79. Organisms that have the ability to use an atmospheric gas to produce an organic nutrient are known as

(1) herbivores
(2) decomposers
(3) carnivores
(4) autotrophs

Regents Date
Jan2004

19

Data Base File Number
657

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autotroph

S4K1

ANSWER 1

80. The dissolved carbon dioxide in a lake is used directly by

(1) autotrophs
(2) parasites
(3) fungi
(4) decomposers

Regents Date
Jan2006

20

Data Base File Number
487

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autotroph

S4K1

ANSWER 4

81. Maple trees and tulips are classified as autotrophs because they both

(1) produce gametes by the process of mitosis
(2) produce carbon dioxide and water as metabolic wastes
(3) are able to obtain complex organic materials from the environment
(4) are able to synthesize organic molecules from inorganic raw materials

Regents Date
Jan2010

33

Data Base File Number
252

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autotroph

S4K6

ANSWER 4

82. Which process usually uses carbon dioxide molecules?

(1) cellular respiration

(2) asexual reproduction

(3) active transport

(4) autotrophic nutrition

Regents Date
June2004
24

Data Base File Number
687

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autotroph

S4K6

ANSWER 3

83. Which phrase is an example of autotrophic nutrition?

(1) a cow eating grass in a field

(2) a mushroom digesting a dead log

(3) an apple tree making its own food

(4) a tapeworm feeding in the body of a dog

Regents Date
June2011
1

Data Base File Number
330

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autotroph / heterotroph

S4K1

ANSWER 4

84. Euglena are single-celled organisms that live in ponds. All euglena have chloroplasts and can make their own food. They can also take in food from the environment. Euglena can be classified as both

(1) an autotroph and a parasite

(2) a decomposer and a heterotroph

(3) a producer and a parasite

(4) an autotroph and a heterotroph

Regents Date
Jan2012
33

Data Base File Number
415

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autotroph / heterotroph

S4K5

ANSWER 1

85. Some sea slugs store chloroplasts obtained from algae they have ingested. The chloroplasts continue to carry out photosynthesis within the slugs. What advantage would this activity be to these sea slugs?

(1) The slugs with chloroplasts can synthesize some of their own food.

(2) The slugs with chloroplasts no longer need to carry out respiration.

(3) The chloroplasts provide the slugs with camouflage that protects them from UV radiation.

(4) The chloroplasts contain enzymes that allow the slugs to digest starch.

Regents Date
Jan2013
20

Data Base File Number
632

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bacteria / killing

86. A piece of refrigerated, cooked meat will remain safe to eat for a longer period of time than a refrigerated piece of raw meat of similar size. Which statement is a valid inference based on this information?

(1) Cooking meat kills many bacteria and fungi.

(2) Cool temperatures stimulate the growth of microbes on raw meat.

(3) Raw meat cannot be preserved.

(4) Cooked meat contains antibodies that destroy decomposers.

S4K1

ANSWER 1

Regents Date Jan2010

5

Data Base File Number 230

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bacterial evolution

87. Species of bacteria can evolve more quickly than species of mammals because bacteria have

(1) less competition

(2) more chromosomes

(3) lower mutation rates

(4) higher rates of reproduction

S4K3

ANSWER 4

Regents Date June2008

8

Data Base File Number 110

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biochemical processes

88. Scientists have found that although plants require light to carry on photosynthesis, very high levels of sunlight can kill some plants. This illustrates that many biochemical processes may occur

(1) more rapidly when temperatures are very high

(2) within a specific range of conditions

(3) best in the absence of abiotic factors

(4) even if homeostasis is disrupted

S4K1

ANSWER 2

Regents Date Jan2012

18

Data Base File Number 406

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biodiversity

89. Which factor has the greatest influence on the variety of species that survive in different regions of a marine habitat?

(1) depth of light penetration

(2) daily fluctuations in temperature

(3) size of predators

(4) average annual rainfall

S4K6

ANSWER 1

Regents Date Aug2003

31

Data Base File Number 801

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biodiversity

90. A greater stability of the biosphere would most likely result from

(1) decreased finite resources

(2) increased deforestation

(3) increased biodiversity

(4) decreased consumer populations

S4K6

ANSWER 3

Regents Date
Aug2004

22

Data Base File Number
712

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biodiversity

91. Cutting down a rain forest and planting agricultural crops, such as coffee plants, would most likely result in

(1) a decrease in biodiversity

(2) an increase in the amount of energy recycled

(3) a decrease in erosion

(4) an increase in the amount of photosynthesis

S4K7

ANSWER 1

Regents Date
Aug2005

26

Data Base File Number
612

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biodiversity

92. Deforestation of areas considered to be rich sources of genetic material could limit future agricultural and medical advances due to

(1) the improved quality of the atmosphere

(2) the maintenance of dynamic equilibrium

(3) an increase in the rate of evolutionary change

(4) the loss of biodiversity

S4K6

ANSWER 4

Regents Date
Aug2008

30

Data Base File Number
151

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biodiversity

93. A particular species of shark normally reproduces sexually. In captivity, it was found that a female could also reproduce asexually. One NEGATIVE result from asexual reproduction is

(1) increased gene recombinations

(2) increased number of males produced

(3) decreased number of eggs used

(4) decreased biodiversity within the species

S4K2

ANSWER 4

Regents Date
Aug2010

17

Data Base File Number
291

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biodiversity

94. Which consequence could most likely be assocated with a decrease in biodiversity in an area?

(1) More species would be better able to survive a major environmental change.

(2) The ecosystems in the area would become more stable.

(3) The amount of genetic information in the species of the area would increase.

(4) Some sources of future foods or medications would be lost.

S4K6

ANSWER 4

Regents Date Aug2011 24

Data Base File Number 374

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biodiversity

95. Ethanol-fueled vehicles have increased in popularity as people try to be more environmentally responsible. Ethanol can be made from corn. Some farmers are clearing forests and planting large expanses of corn to meet the rising demand. Which statement describes a likely result of this increased corn production?

(1) There will be a reduction in the biodiversity of areas that are converted to grow corn.

(2) The corn will produce more carbon dioxide than it uses, contributing to global warming.

(3) Insect biodiversity in the area will increase.

(4) Growing more corn will increase the nutrient content of the soil.

S4K7

ANSWER 1

Regents Date Aug2013 29

Data Base File Number 994

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biodiversity

96. An ecosystem will most likely remain stable if

(1) it has more predators than prey

(2) it has a high level of biodiversity

(3) biotic factors decrease

(4) finite resources decrease

S4K6

ANSWER 2

Regents Date Jan2002 24

Data Base File Number 871

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biodiversity

97. Increased efforts to conserve areas such as rain forests are necessary in order to

(1) protect biodiversity

(2) promote extinction of species

(3) exploit finite resources

(4) increase industrialization

S4K6

ANSWER 1

Regents Date Jan2003 32

Data Base File Number 745

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biodiversity

98. Some organizations are buying up sections of forest land. Once purchased, these sections of forest will never be cut down. The main reason for protecting these sections of forest is to

(1) cause the extinction of undesirable animal species

(2) prevent these trees from reproducing too fast

(3) maintain the diversity of the living environment

(4) provide more land for agricultural purposes

S4K7

ANSWER 3

Regents Date Jan2005

24

Data Base File Number 560

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biodiversity

99. A forest is cut down and is replaced by a cornfield. A NEGATIVE consequence of this practice is

(1) an increase in the carbon dioxide released into the atmosphere

(2) an increase in the size of predators

(3) a decrease in biodiversity

(4) a decrease in the amount of soil that is washed away during rainstorms

S4K7

ANSWER 3

Regents Date Jan2006

30

Data Base File Number 496

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biodiversity

100. One advantage of biodiversity in an ecosystem is that it

(1) guarantees that the largest organisms will dominate the area

(2) ensures a large amount of identical genetic material

(3) develops relationships between organisms that are always positive over long periods of time

(4) increases the chance that some organisms will survive a major change in the environment

S4K3

ANSWER 4

Regents Date Jan2010

24

Data Base File Number 246

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biodiversity

101. Researchers have reported that the number of different species of fish found in certain areas of the ocean has been greatly reduced over the past 50 years. This situation is an example of

(1) a loss of biodiversity

(2) an increase in ecological succession

(3) a lack of differentiation

(4) an increased carrying capacity

S4K7

ANSWER 1

Regents Date Jan2011

10

Data Base File Number 312

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biodiversity

102. Environmentalists are hoping to protect endangered organisms by calling for a reduction in the use of pesticides, because loss of these organisms would

(1) increase the mutation rate in plants

(2) cause pesticides to become more toxic to insects

(3) reduce biodiversity in various ecosystems

(4) decrease the space and resources available to other organisms

S4K7

ANSWER 3

Regents Date Jan2012

27

Data Base File Number 411

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biodiversity

103. People living in and around the Amazon rain forest have used parts of the gaviola tree to prepare medicines. Research is being conducted to determine if this tree can provide cures for many types of cancer. Continued destruction of rain forests might

(1) reduce biodiversity and remove organisms with the potential to help humans

(2) increase biodiversity and remove damaged and diseased trees

(3) reduce biodiversity and increase the reproductive rates of all organisms

(4) increase biodiversity and ecosystem stability where humans plant crops

S4K6

ANSWER 1

Regents Date Jan2014

19

Data Base File Number 1013

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biodiversity

104. Compared to a natural forest, the wheat field of a farmer LACKS

(1) heterotrophs

(2) significant biodiversity

(3) autotrophs

(4) stored energy

S4K6

ANSWER 2

Regents Date June2001

30

Data Base File Number 908

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biodiversity

105. The widest variety of genetic material that can be used by humans for future agricultural or medical research would most likely be found in

(1) a large field of a genetically engineered crop

(2) an ecosystem having significant biodiversity

(3) a forest that is planted and maintained by a forest service

(4) areas that contain only one or two species

S4K6

ANSWER 2

Regents Date June2002

28

Data Base File Number 852

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biodiversity

106. Water from nearby rivers or lakes is usually used to cool down the reactors in nuclear power plants. The release of this heated water back into the river or lake would most likely result in

(1) an increase in the sewage content in the water

(2) a change in the biodiversity in the water

(3) a change in the number of mutations in plants growing near the water

(4) a decrease in the amount of sunlight necessary for photosynthesis in the water

S4K7

ANSWER 2

Regents Date
June2005

24

Data Base File Number
587

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biodiversity

107. Farming reduces the natural biodiversity of an area, yet farms are necessary to feed the world's human population. This situation is an example of

(1) poor land use

(2) a trade-off

(3) conservation

(4) a technological fix

S4K7

ANSWER 2

Regents Date
June2008

26

Data Base File Number
121

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biodiversity

108. A serious threat to biodiversity is

(1) habitat destruction

(2) maintenance of food chains

(3) competition within a species

(4) a stable population size

S4K6

ANSWER 1

Regents Date
June2010

25

Data Base File Number
273

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biodiversity

109. Which activity would reduce biodiversity in a forest ecosystem?

(1) adding plants that are naturally resistant to insects

(2) protecting wildflowers from logging activities

(3) replacing harvested trees with young trees that are naturally found in the forest

(4) clearing a large area and planting one species of hardwood tree that can be used for lumber

S4K7

ANSWER 4

Regents Date
June2012

28

Data Base File Number
436

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biological control

110. Which method of controlling populations of mosquitoes most likely involves the least risk of causing damage to the environment?

(1) draining swamps where mosquitoes deposit eggs

(2) spraying adult mosquitoes with pesticides from airplanes

(3) releasing more predators of mosquitoes native to mosquito habitats

(4) spraying oil on wet areas where mosquitoes breed

S4K7

ANSWER 3

Regents Date Aug2002

35

Data Base File Number

831

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biological control

111. A new bird species is introduced to control an insect pest. A NEGATIVE consequence of this action is that the new bird species may

(1) limit the population of the pest insect

(2) consume beneficial insects

(3) disrupt mineral availability in the ecosystem

(4) cause an increase of pesticide-resistant insects

S4K7

ANSWER 2

Regents Date Aug2011

29

Data Base File Number

379

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biological control

112. Communities have attempted to control the size of mosquito populations to prevent the spread of certain diseases such as malaria and encephalitis. Which control method is most likely to cause the LEAST ecological damage?

(1) draining the swamps where mosquitoes breed

(2) spraying swamps with chemical pesticides to kill mosquitoes

(3) spraying oil over swamps to suffocate mosquito larvae

(4) increasing populations of native fish that feed on mosquito larvae in the swamps

S4K7

ANSWER 4

Regents Date June2003

34

Data Base File Number

776

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biological organization

113. Which sequence represents the levels of biological organization from smallest to largest?

(1) organism -> cell -> tissue->organelle -> organ system -> organ

(2) organ system -> organ -> organism -> cell -> tissue -> organelle

(3) organelle -> organ system -> cell -> organism -> tissue -> organ

(4) organelle -> cell -> tissue -> organ -> organ system -> organism

S4K1

ANSWER 4

Regents Date
June2011
10
Data Base File Number
337

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biotic factor

114. One biotic factor that limits the carrying capacity of any habitat is the

(1) availability of water

(2) level of atmospheric oxygen

(3) activity of decomposers

(4) amount of soil erosion

S4K6

ANSWER 3

Regents Date
Aug2004
21
Data Base File Number
711

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biotic factor

115. One biotic factor that affects consumers in an ocean ecosystem is

(1) number of autotrophs

(2) temperature variation

(3) salt content

(4) pH of water

S4K6

ANSWER 1

Regents Date
Jan2008
23
Data Base File Number
89

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biotic factor

116. Which statement illustrates a biotic resource interacting with an abiotic resource?

(1) A rock moves during an earthquake.

(2) A sea turtle transports a pilot fish to food.

(3) A plant absorbs sunlight, which is used for photosynthesis.

(4) A wind causes waves to form on a lake.

S4K6

ANSWER 3

Regents Date
June2002
25
Data Base File Number
850

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biotic factor

117. Competition for biotic resources can be illustrated by organisms fighting for a limited amount of

(1) air to breathe

(2) water to drink

(3) mates for breeding

(4) space for nesting

S4K6

ANSWER 3

Regents Date
June2011

24

Data Base File Number
346

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cancer

118. Base your answer to this question on the information given and on your knowedge of biology. --- In the early twentieth century, many people believed that a deep tan was a sign of good health. However, in the 1940s, the rate of skin cancer began to increase and reached significant proportions by the 1970s. At this time, scientists began to realize how damaging those deep tans could really be. Currently, it is estimated that ultraviolet radiation from the sun is responsible for more than 90% of skin cancers. Many of the deaths due to this type of cancer can be prevented. The cure rate for skin cancer is almost 100% when treated early. Reducing exposure to harmful ultraviolet radiation helps to prevent it." --- Which statement concerning ultraviolet radiation is NOT correct?

(1) It may damage the skin.

(2) It is absorbed by the skin.

(3) It stimulates the skin to produce antibodies

(4) Ultraviolet radiation may cause skin cancer.

S1K1

ANSWER 3

Regents Date
June2001

48

Data Base File Number
913

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carbon dioxide / oxygen cycle

119. In nature, during a 24-hour period, green plants CONTINUOUSLY use

(1) carbon dioxide, only

(2) both carbon dioxide and oxygen

(3) oxygen, only

(4) neither carbon dioxide nor oxygen

S4K5

ANSWER 3

Regents Date
Aug2002

21

Data Base File Number
820

---

carbon dioxide / oxygen cycle

120. Which human activity would have the most direct impact on the oxygen-carbon dioxide cycle?

(1) reducing the rate of ecological succession

(2) decreasing the use of water

(3) destroying large forest areas

(4) enforcing laws that prevent the use of leaded gasoline

S4K7

ANSWER 3

Regents Date June2002

31

Data Base File Number 853

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carbon dioxide levels

121. A human activity that could significantly DECREASE the amount of carbon dioxide in the air is

(1) increasing the use of fossil fuel

(2) controlling insect pests that eat stored grain

(3) burning garbage and trash to generate electricity

(4) preserving and expanding forest habitats that shelter wildlife

S4K7

ANSWER 4

Regents Date Aug2013

28

Data Base File Number 993

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carbon dioxide levels

122. Deforestation will most directly result in an immediate increase in

(1) atmospheric carbon dioxide

(2) atmospheric ozone

(3) wildlife populations

(4) renewable resources

S4K7

ANSWER 1

Regents Date Jan2004

33

Data Base File Number 666

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carrying capacity

123. The size of a mouse population in a natural ecosystem tends to remain relatively constant due to

(1) the carrying capacity of the environment

(2) the lack of natural predators

(3) cycling of energy

(4) increased numbers of decomposers

S4K1

ANSWER 1

Regents Date Aug2004

3

Data Base File Number 696

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carrying capacity

124. In reference to an ecosystem, the phrase "carrying capacity" refers to

(1) storing extra food for the winter

(2) the number of organisms a habitat can support

(3) transporting food to organisms in an area

(4) the maximum possible weight of an individual organism

S4K6

ANSWER 2

Regents Date
Jan2002

42

Data Base File Number

882

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carrying capacity

125. The carrying capacity of a given environment is LEAST dependent upon

(1) recycling of materials

(2) the available energy

(3) the availability of food and water

(4) daily temperature fluctuations

S4K6

ANSWER 4

Regents Date
Jan2003

31

Data Base File Number

744

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carrying capacity

126. Ten breeding pairs of rabbits are introduced onto an island with no natural predators and a good supply of water and food. What will most likely happen to the rabbit population?

(1) It will remain relatively constant due to equal birth and death rates

(2) It will die out due to an increase in the mutation rate.

(3) It will increase until it exceeds carrying capacity.

(4) It will decrease and then increase indefnitely.

S4K6

ANSWER 3

Regents Date
Jan2006

22

Data Base File Number

489

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carrying capacity

127. A scientist was studying a population of fish in a pond over a period of 10 years. He observed that the population increased each year for 3 years, and then remained nearly constant for the rest of the study. The best explanation for this observation is that the population had

(1) stopped reproducing

(2) reached carrying capacity

(3) mutated into a different species

(4) run out of food and migrated to a different pond

S4K6

ANSWER 2

Regents Date
Jan2013

24

Data Base File Number

636

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carrying capacity

128. An environment can support only as many organisms as the available energy, minerals, and oxygen will allow. Which term is best described by this statement?

(1) biological feedback
(2) carrying capacity
(3) homeostatic control
(4) biological diversity

S4K6

ANSWER 2

Regents Date
June2003

33

Data Base File Number
775

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catalyst / enzymes

129. In the body of a human, the types of chemical activities occurring within cells are most dependent on the

(1) biological catalysts present
(2) size of the cell
(3) number of chromosomes in the cell
(4) kind of sugar found on each chromosome

S4K2

ANSWER 1

Regents Date
Aug2005

7

Data Base File Number
597

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catalyst / enzymes

130. Plants such as the Venus flytrap produce chemical compounds that break down insects into substances that are usable by the plant. The chemical compounds that break down the insects are most likely

(1) fats
(2) minerals
(3) biological catalysts
(4) complex carbohydrates

S4K5

ANSWER 3

Regents Date
Aug2008

27

Data Base File Number
148

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catalyst / enzymes

131. All chemical breakdown processes in cells directly involve

(1) reactions that are controlled by catalysts
(2) enzymes that are stored in mitochondria
(3) the production of catalysts in vacuoles
(4) enzymes that have the same genetic base sequence

S4K5

ANSWER 1

Regents Date
June2006

13

Data Base File Number
509

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cell complexity

132. Which structures are listed in order from the least complex to the most complex?

(1) plant cell, leaf, chloroplast, rose bush

(2) chloroplast, plant cell, leaf, rose bush

(3) chloroplast, leaf, plant cell, rose bush

(4) rose bush, leaf, plant cell, chloroplast

S4K1

ANSWER 2

Regents Date
Jan2010

2

Data Base File Number
228

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cell function

133. The function of a cell depends primarily on its

(1) lifespan

(2) color

(3) structure

(4) movement

S4K1

ANSWER 3

Regents Date
Aug2009

5

Data Base File Number
202

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cell genetics

134. Which statements best describe the relationship between the terms CHROMOSOMES, GENES, and NUCLEI?

(1) Chromosomes are found on genes. Genes are found in nuclei.

(2) Chromosomes are found in nuclei. Nuclei are found in genes.

(3) Genes are found on chromosomes. Chromosomes are found in nuclei.

(4) Genes are found in nuclei. Nuclei are found in chromosomes.

S4K2

ANSWER 3

Regents Date
June2004

4

Data Base File Number
677

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cell membrane

135. Which set of functions is directly controlled by the cell membrane?

(1) protein synthesis, respiration, digestion of food molecules

(2) active transport, recognition of chemical messages, protection

(3) enzyme production, elimination of large molecules, duplication of DNA codes

(4) release of ATP molecules, regulation of cell reproduction, food production

S4K1

ANSWER 2

Regents Date
Aug2010

4

Data Base File Number
282

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cell membrane

136. Cell membranes are said to be selectively permeable. Which statement best explains what selectively permeable means?

(1) The cell membrane prevents any harmful substance from entering the cell.

(2) The cell membrane lets certain substances enter the cell and keeps certain substances out of the cell.

(3) The cell membrane allows only large molecules to diffuse into the cell.

(4) The cell membrane has pores that let only water and glucose into the cell and carbon dioxide out.

LAB5

ANSWER 2

Regents Date Jan2014

75

Data Base File Number

1032

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cell membrane

137. Which statement regarding the functioning of the cell membrane of all organisms is NOT correct?

(1) The cell membrane forms a boundary that separates the cellular contents from the outside environment.

(2) The cell membrane is capable of receiving and recognizing chemical signals.

(3) The cell membrane forms a barrier that keeps all substances that might harm the cell from entering the cell.

(4) The cell membrane controls the movement of molecules into and out of the cell.

S4K1

ANSWER 3

Regents Date June2001

6

Data Base File Number

890

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cell structure

138. Which cell structures are correctly paired with their functions?

(1) The mitochondria produce enzymes, and ribosomes transport them

(2) The ribosomes make proteins, and the nucleus stores genetic information.

(3) The cell membrane makes enzymes, and cytoplasm transports them.

(4) The vacuole stores genetic information, and chloroplasts make proteins.

S4K1

ANSWER 2

Regents Date Aug2013

4

Data Base File Number

973

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cell structure

139. Arrange the following structures from largest to smallest.
a chromosome
a nucleus
a gene

(1) gene, chromosome, nucleus
(2) chromosome, nucleus, gene
(3) nucleus, chromosome, gene
(4) gene, nucleus, chromosome

S4K2

ANSWER 3

Regents Date
Jan2004

53

Data Base File Number
673

---

cell structure

140. Which sequence of terms represents a DECREASE from the greatest number of structures to the least number of structures present in a cell?

(1) nucleus → gene → chromosome
(2) gene → nucleus → chromosome
(3) gene → chromosome → nucleus
(4) chromosome → gene → nucleus

S4K2

ANSWER 3

Regents Date
Jan2005

4

Data Base File Number
544

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cells / specialized

141. Specialized cells and organs are necessary in multicellular organisms because in these organisms

(1) fewer cells are in direct contact with the external environment
(2) all cells are in direct contact with the external environment
(3) a body type evolved that relied on fewer body cells
(4) a body type evolved that required larger sized cells

S4K1

ANSWER 1

Regents Date
Aug2011

33

Data Base File Number
382

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cells / specialized

142. Which statement accurately compares cells in the human circulatory system to cells in the human nervous system?

(1) Cells in the circulatory system carry out the same life function for the organism as cells in the nervous system.

(2) Cells in the circulatory system are identical in structure to cells in the nervous system.

(3) Cells in the nervous system are different in structure from cells in the circulatory system, and they carry out different specialized functions.

(4) Cells in the nervous system act independently, but cells in the circulatory system function together.

S4K1

ANSWER 3

Regents Date Jan2002

1

Data Base File Number

856

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cellular communication

143. Communication between cells is affected if there is decreased ability to produce

(1) digestive enzymes and gametes

(2) antibodies and chloroplasts

(3) hormones and nerve impulses

(4) antibiotics and guard cells

S4K1

ANSWER 3

Regents Date Jan2002

4

Data Base File Number

859

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cellular communication

144. Nerve cells are essential to an animal because they directly provide

(1) communication between cells

(2) transport of nutrients to various organs

(3) regulation of reproductive rates within other cells

(4) an exchange of gases within the body

S4K1

ANSWER 1

Regents Date Jan2003

4

Data Base File Number

729

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cellular communication

145. Two primary agents of cellular communication are

(1) chemicals made by blood cells and simple sugars

(2) hormones and carbohydrates

(3) enzymes and starches

(4) hormones and chemicals made by nerve cells

S4K1

ANSWER 4

Regents Date Jan2008

3

Data Base File Number

76

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chemical bonds

146. More energy can be released from a fat molecule than from a glucose molecule because the fat molecule contains more

(1) genes
(2) organic compounds
(3) chemical bonds
(4) mitochondria

S4K5

ANSWER 3

Regents Date Aug2012

Data Base File Number 21 461

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chemical bonds

147. In heterotrophs, energy for the life processes comes from the chemical energy stored in the bonds of

(1) water molecules
(2) oxygen molecules
(3) organic compounds
(4) inorganic compounds

S4K5

ANSWER 3

Regents Date June2003

Data Base File Number 13 763

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chemical bonds

148. Which part of a molecule provides energy for life processes?

(1) carbon atoms
(2) oxygen atoms
(3) chemical bonds
(4) inorganic nitrogen

S4K5

ANSWER 3

Regents Date June2007

Data Base File Number 19 38

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chemical message

149. Hormones and secretions of the nervous system are chemical messengers that

(1) store genetic information
(2) carry out the circulation of materials
(3) extract energy from nutrients
(4) coordinate system interactions

S4K1

ANSWER 4

Regents Date Jan2004

Data Base File Number 4 647

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chemical structure

150. Which statement describes a similarity between all enzymes, antibodies, and hormones?

(1) Their chemical structure is critical to their ability to function.

(2) Their ability to replicate identical copies ensures continuation of the species.

(3) They work better at 100°C than 37°C.

(4) They are made by and carried by the blood.

S4K5

ANSWER 1

Regents Date
June2012

24

Data Base File Number
435

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chemistry

151. In what way are photosynthesis and cellular respiration similar?

(1) They both occur in chloroplasts.

(2) They both require sunlight.

(3) They both involve organic and inorganic molecules.

(4) They both require oxygen and produce carbon dioxide.

S4K5

ANSWER 3

Regents Date
June2008

15

Data Base File Number
114

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chloroplast

152. Scientists studying ocean organisms are discovering new and unusual species. Which observation could be used to determine that an ocean organism carries out autotrophic nutrition?

(1) Chloroplasts are visible inside the cells.

(2) Digestive organs are visible upon dissection.

(3) The organism lives close to the surface.

(4) The organism synthesizes enzymes to digest food.

S4K6

ANSWER 1

Regents Date
Aug2008

1

Data Base File Number
131

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chromatography

153. To separate leaf pigments, a biologist should use

(1) chromatography

(2) dissection

(3) an electronic balance

(4) a dichotomous key

S1K2

ANSWER 1

Regents Date
Aug2002
2

Data Base File Number
808

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chromosome

154. Which statement best describes a human chromosome?

(1) It is made of amino acid subunits that form genes.

(2) It contains genes that may code for the production of enzymes.

(3) It is normally passed to the next generation through a placenta.

(4) It varies in function from one generation to the next.

S4K2

ANSWER 2

Regents Date
Aug2011

6

Data Base File Number
362

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chromosome

155. Chromosomes can be described as

(1) large molecules that have only one function

(2) folded chains of bonded glucose molecules

(3) reproductive cells composed of molecular bases

(4) coiled strands of genetic material

S4K2

ANSWER 4

Regents Date
Jan2008
8

Data Base File Number
80

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chromosome

156. Which statement best describes a chromosome?

(1) It is a gene that has thousands of different forms.

(2) It has genetic information contained in DNA.

(3) It is a reproductive cell that influences more than one trait.

(4) It contains hundreds of genetically identical DNA molecules.

S4K2

ANSWER 2

Regents Date
June2009
28

Data Base File Number
196

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chromosome / crossing over

157. During meiosis, crossing-over (gene exchange between chromosomes) may occur. Crossing over usually results in

(1) overproduction of gametes

(2) fertilization and development

(3) the formation of identical offspring

(4) variation within the species

S4K3

ANSWER 4

Regents Date
Jan2003

15

Data Base File Number
735

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chromosome / number

158. Most cells in the body of a fruit fly contain eight chromosomes. How many of these chromosomes were contributed by each parent of the fruit fly?

(1) 8
(2) 2
(3) 16
(4) 4

S4K4

ANSWER 4

Regents Date Aug2001

19

Data Base File Number 928

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chromosome / number

159. Compared to human cells resulting from mitotic cell division, human cells resulting from meiotic cell division would have

(1) twice as many chromosomes
(2) the same number of chromosomes
(3) one-half the number of chromosomes
(4) one-quarter as many chromosomes

S4K4

ANSWER 3

Regents Date Aug2003

22

Data Base File Number 795

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chromosome / number

160. Human egg cells are most similar to human sperm cells in their

(1) degree of motility
(2) amount of stored food
(3) chromosome number
(4) shape and size

S4K4

ANSWER 3

Regents Date Jan2004

21

Data Base File Number 659

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chromosome / number

161. Compared to a normal body cell, a normal egg cell contains

(1) the same number of chromosomes
(2) half the number of chromosomes
(3) twice the number of chromosomes
(4) four times the number of chromosomes

S4K2

ANSWER 2

Regents Date Jan2014

4

Data Base File Number 1000

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chromosome / number

162. Which two structures of a frog would most likely have the same chromosome number?

(1) skin cell and fertilized egg cell

(2) zygote and sperm cell

(3) kidney cell and egg cell

(4) liver cell and sperm cell

S4K3

ANSWER 1

Regents Date
June2007

15

Data Base File Number
35

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chromosome number / diploid

163. In sexually reproducing species, the number of chromosomes in each body cell remains the same from one generation to the next as a direct result of

(1) meiosis and fertilization

(2) mitosis and mutation

(3) differentiation and aging

(4) homeostasis and dynamic equilibrium

S4K4

ANSWER 1

Regents Date
June2004

15

Data Base File Number
683

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circulatory

164. Which body system is correctly paired with its function?

(1) excretory --- produces antibodies to fight disease-causing organisms

(2) digestive --- produces hormones for storage and insulation

(3) circulatory --- transports materials for energy release in body cells

(4) respiratory --- collects waste material for digestion

S4K1

ANSWER 3

Regents Date
June2010
3

Data Base File Number
257

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clone

165. Scientists have cloned sheep but have not yet cloned a human. The best explanation for this situation is that

(1) the technology to clone humans has not been explored

(2) human reproduction is very different from that of other mammals

(3) there are many ethical problems involved in cloning humans

(4) cloning humans would take too long

S1K1

ANSWER 3

Regents Date
Aug2001

2

Data Base File Number
915

---

clone

166. One way to produce large numbers of genetically identical offspring is by

(1) cloning

(2) fertilization

(3) changing genes by agents such as radiation or chemicals

(4) inserting a DNA segment into a different DNA molecule

S4K4

ANSWER 1

Regents Date
Aug2001

18

Data Base File Number
927

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clone

167. From a single monkey, an animal breeder claims that he has successfully cloned two monkeys. He displays the two monkeys, a male and a female, to the public. The claim of the breeder should be rejected because the monkeys

(1) are twins

(2) have the same parents

(3) are of two different sexes

(4) developed from more than one sperm cell

S4K4

ANSWER 3

Regents Date
Aug2003

21

Data Base File Number
794

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clone

168. Which statement best describes a population of organisms if cloning is the only method used to reproduce this population?

(1) The population would be more likely to adapt to a changing environment.

(2) There would be little chance for variation within the population.

(3) The population would evolve rapidly.

(4) The mutation rate in the population would be rapid.

S4K4

ANSWER 2

Regents Date
Aug2008

4

Data Base File Number
134

---

clone

S4K4

ANSWER 4

169. Modern technology could be used to clone pet dogs and cats. The cloned animals would resemble the original pets because

(1) the genes of the new animals are different from those of the original pets

(2) half of the genetic information of the new animals is the same as that of the original pets

(3) the new animals have mutations not found in the original pets

(4) the new animals have the same genetic information as the original pets

Regents Date
Aug2012

16

Data Base File Number

457

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clone

S4K4

ANSWER 1

170. The nucleus is removed from a body cell of one organism and is placed in an egg cell that has had its nucleus removed. This process, which results in the production of organisms that are genetically alike, is known as

(1) cloning

(2) fertilization

(3) biological adaptation

(4) DNA production

Regents Date
Jan2002

18

Data Base File Number

866

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clone

S4K4

ANSWER 2

171. Which phrase does NOT describe cells cloned from a carrot?

(1) they are genetically identical

(2) they are produced sexually

(3) they have the same DNA codes

(4) they have identical chromosomes

Regents Date
Jan2004

20

Data Base File Number

658

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clone

S4K5

ANSWER 1

172. Which transplant method would prevent the rejection of tissue after an organ transplant?

(1) using organs cloned from the cells of the patient

(2) using organs produced by genetic engineering to get rid of all proteins in the donated organs

(3) using organs only from pigs or monkeys

(4) using an organ donated by a close relative because the proteins will always be identical to those of the recipient

Regents Date
Jan2006

21

Data Base File Number

488

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clone

S4K4

ANSWER 3

173. Which situation is LEAST likely to result in new inherited characteristics?

(1) altering genetic information

(2) changes in the structure of genes

(3) producing new individuals by means of cloning

(4) changes in the structure of individual chromosomes

Regents Date
Jan2011

17

Data Base File Number
316

---

clone

S4K4

ANSWER 4

174. Scientists have successfully cloned animals, including large mammals such as sheep. Which statement provides the most likely reason that a human has NOT yet been cloned?

(1) Humans have DNA that is structurally very different from other mammals.

(2) Cloning can only be performed on animals that normally reproduce asexually.

(3) Human genes are made of too many different types of simple sugars.

(4) Some people consider human genetic experiments unethical.

Regents Date
Jan2014

36

Data Base File Number
1025

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clone

S4K4

ANSWER 2

175. "Dolly" is a sheep developed from an egg cell of her mother that had its nucleus replaced by a nucleus from a body cell of her mother. As a result of this technique, Dolly is

(1) no longer able to reproduce

(2) genetically identical to her mother

(3) able to have a longer lifespan

(4) unable to mate

Regents Date
June2002

18

Data Base File Number
845

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clone

S4K4

ANSWER 1

176. Individual cells can be isolated from a mature plant and grown with special mixtures of growth hormones to produce a number of genetically identical plants. This process is known as

(1) cloning

(2) meiotic division

(3) recombinant DNA technology

(4) selective breeding

Regents Date
June2003

24

Data Base File Number
768

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clone

177. Cloning an individual usually produces organisms that

(1) contain dangerous mutations

(2) contain identical genes

(3) are identical in appearance and behavior

(4) produce enzymes different from the parent

S4K4

ANSWER 2

Regents Date
June2004
1
Data Base File Number
674

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clone

178. Which statement best explains the observation that clones produced from the same organism may NOT be identical?

(1) Events in meiosis result in variation.

(2) Gene expression can be influenced by the environment.

(3) Differentiated cells have different genes.

(4) Half the genetic information in offspring comes from each parent.

S4K2

ANSWER 2

Regents Date
June2007
6
Data Base File Number
28

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clone

179. A scientist claimed that he had cloned a guinea pig to produce two offspring, a male and a female. The claim is not valid because

(1) guinea pigs can reproduce both sexually and asexually

(2) the two offspring are not identical copies of the original guinea pig

(3) each of the offspring had half the genetic information of the original guinea pig

(4) none of the genetic information came from the original guinea pig

S4K4

ANSWER 2

Regents Date
June2012
18
Data Base File Number
429

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common ancestor

180. Certain chemicals, such as cytochrome C, are found within cells of all living organisms. The biochemical structure of cytochrome C in ground finches and in tree finches is very similar. This suggests that tree finches and ground finches have

(1) identical DNA

(2) a common ancestor

(3) evolved at the same time

(4) the same nesting site

LAB3

ANSWER 2

Regents Date
June2012
73
Data Base File Number
442

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competition

181. Cattail plants in freshwater swamps in New York State are being replaced by purple loosestrife plants. The two species have very similar environmental requirements. This observation best illustrates

(1) variations within a species

(2) dynamic equilibrium

(3) random recombination

(4) competition between species

S4K6

ANSWER 4

Regents Date
Aug2004

20

Data Base File Number

710

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competition

182. What will most likely occur if two different plant species compete for the same requirements in an ecosystem?

(1) They will usually develop different requirements.

(2) One species may adapt to a different environment.

(3) One species may be eliminated from that ecosystem.

(4) They will alter the environment so that they can both survive in that ecosystem.

S4K6

ANSWER 3

Regents Date
Aug2009

21

Data Base File Number

216

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competition

183. The wetland plant purple loosestrife was imported to North America from Europe. Since its introduction, the loosestrife has spread, which has resulted in a dramatic decline in the biological diversity of native wetland plants. A likely reason for the spread of the purple loosestrife is that it can

(1) successfully compete with native herbivores for food

(2) serve as an excellent food source for native herbivores

(3) successfully compete with native plants for space

(4) prevent the migration of native plants

S4K6

ANSWER 3

Regents Date
Aug2013

3

Data Base File Number

989

---

competition

184. In a stable, long-existing community, the establishment of a single species per niche is most directly the result of

(1) parasitism

(2) interbreeding

(3) competition

(4) overproduction

S4K6

ANSWER 3

Regents Date
Jan2003

21

Data Base File Number
738

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competition

185. Growing exotic (nonnative) plant species in parks and gardens could lead directly to an increase in the

(1) biodiversity of the autotrophs that feed on them

(2) populations of native carnivores

(3) competition between them and native producers

(4) breeding between them and native herbivores

S4K7

ANSWER 3

Regents Date
Jan2013

27

Data Base File Number
638

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competition

186. Competition between two species occurs when

(1) mold grows on a tree that has fallen in the forest

(2) chipmunks and squirrels eat sunflower seeds in a garden

(3) a crow feeds on the remains of a rabbit killed on the road

(4) a lion stalks, kills, and eats an antelope

S4K6

ANSWER 2

Regents Date
June2009

24

Data Base File Number
193

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complex molecules

187. Which statement describes starches, fats, proteins, and DNA?

(1) They are used to store genetic information

(2) They are complex molecules made from smaller molecules

(3) They are used to assemble larger inorganic materials.

(4) They are simple molecules used as energy sources.

S4K5

ANSWER 2

Regents Date
Jan2009

21

Data Base File Number
166

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complexity

188. Which sequence shows a decreasing level of complexity?

(1) organs → organism → cells → tissues

(2) organism → cells → organs → tissues

(3) cells → tissues → organs → organism

(4) organism → organs → tissues → cells

S4K1

ANSWER 4

Regents Date
Aug2008
8

Data Base File Number
138

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conservation

189. In some areas, foresters plant one tree for every tree they cut. This activity is an example of

(1) lack of management of nonrenewable natural resources

(2) a good conservation practice for renewable natural resources

(3) a good conservation practice for nonrenewable natural resources

(4) lack of concern for renewable natural resources

S4K7

ANSWER 2

Regents Date
Aug2001
31

Data Base File Number
937

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conservation

190. Large rebates and low-cost loans have been made available to homeowners to install solar panels to heat their homes. The use of these incentives benefits ecosystems because it

(1) encourages conservation of resources

(2) reduces the need for recycling

(3) promotes the use of nonrenewable resources

(4) discourages the use of alternative energy

S4K7

ANSWER 1

Regents Date
Jan2011
11

Data Base File Number
313

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consumer

191. Base your answer to this question on the information given and on your knowedge of biology. Thirty grams of hay (dried grasses) were boiled in 500 milliliters of water,placed in a culture dish, and allowed to stand. The next day, a small sample of pond water was added to the mixture of boiled hay and water. The dish was then covered and its contents observed regularly. Bacteria fed on the nutrients from the boiled hay. As the populations of bacteria increased rapidly, the clear mixture soon became cloudy. One week later, microscopic examination of samples from the culture showed various types of protozoa (single-celled organisms) eating the bacteria. The protozoa that fed on the bacteria can best be described as

(1) producers
(2) herbivores
(3) parasites
(4) consumers

S4K6

ANSWER 4

Regents Date
Aug2004

49

Data Base File Number
723

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consumer / producer

192. A relationship between a consumer and producer is best illustrated by a

(1) snake eating a bird
(2) tree absorbing minerals
(3) fungus breaking down wastes
(4) deer eating grass

S4K1

ANSWER 4

Regents Date
Jan2012

19

Data Base File Number
407

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consumer / producer

193. Bighorn sheep,"Ovis canadensis", are a majestic symbol of the mountainous West. They browse at high altitudes and in steep, rocky areas from Texas to British Columbia. The feeding activity of the bighorn sheep is best described as

(1) consumers feeding on autotrophs
(2) decomposers feeding on consumers
(3) autotrophs feeding on decomposers
(4) autotrophs feeding on heterotrophs

S4K1

ANSWER 1

Regents Date
Jan2014

49

Data Base File Number
1027

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control

194. Which statement describes the best procedure to determine if a vaccine for a disease in a certain bird species is effective?

(1) Vaccinate 100 birds and expose all 100 to the disease.

(2) Vaccinate 100 birds and expose only 50 of them to the disease.

(3) Vaccinate 50 birds, do not vaccinate 50 other birds, and expose all 100 to the disease.

(4) Vaccinate 50 birds, do not vaccinate 50 other birds, and expose only the vaccinated birds to the disease.

Regents Date
Aug2001

1

Data Base File Number

914

S1K2

ANSWER 3

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control

195. To test the effect of hormones on plant growth, six potted plant seedlings of the same species were measured and then sprayed with auxin (a growth hormone). After four weeks of growth under ideal conditions, the plants were measured again. To set up a proper control for this experiment, the investigator should

(1) spray the same plants with different amounts of auxin

(2) spray auxin on six plant seedlings of the same species and grow them in the dark for four weeks

(3) wash the auxin off three of the plants after two weeks

(4) grow another six plant seedlings of the same species under the same conditions, spraying them with distilled water only

Regents Date
Jan2002

62

Data Base File Number

884

LABA

ANSWER 4

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control

196. A company that manufactures a popular multivitamin wanted to determine whether their multivitamin had any side effects. For its initial study, the company chose 2000 individuals to take one of their multivitamin tablets per day for one year. Scientists from the company surveyed the participants to determine whether they had experienced any side effects. The greatest problem with this procedure is that

(1) only one brand of vitamin was tested

(2) the study lasted only one year

(3) the sample size was not large enough

(4) no control group was used

Regents Date
Jan2011

32

Data Base File Number

327

S4K2

ANSWER 4

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controlled experiment

197. A student conducted an experiment to determine if listening to different types of music would affect pulse rate. She thought that pulse rate would change with different types of music. Each person participating in her experiment listened to seven different selections of music for 30 seconds each. The pulse rates were taken after each 30-second interval of music. Based on her experiment, the student concluded that a person's pulse rate changed when listening to different types of music. The component missing from this experiment is a

(1) prediction

(2) hypothesis

(3) control group

(4) research plan

Regents Date
Aug2010

68

Data Base File Number
305

LABS

ANSWER 3

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controlled experiment

198. Which procedure would most likely provide valid results in a test to determine if drug A would be effective in treating cancer in white mice?

(1) injecting 1 mL of drug A into 100 white mice with cancer

(2) injecting 1 mL of drug A into 100 white mice with cancer and 0.5 mL of drug X into 100 white mice without cancer

(3) injecting 1 mL of drug A into 100 white mice with cancer and 0.5 mL of drug X into 100 white mice with cancer

(4) injecting 1mL of drug A into 100 white mice with cancer and 1 mL of distilled water into another group of 100 white mice with cancer

Regents Date
Jan2008

5

Data Base File Number
78

S1K2

ANSWER 4

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controlled experiment

199. The first trial of a controlled experiment allows a scientist to isolate and test

(1) a logical conclusion

(2) a variety of information

(3) a single variable

(4) several variables

Regents Date
Jan2008

32

Data Base File Number
96

S1K2

ANSWER 3

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current events

200. Scientists have genetically altered a common virus so that it can destroy the most lethal type of brain tumor without harming the healthy tissue nearby. This technology is used for all of the following except

(1) treating the disease

(2) curing the disease

(3) controlling the disease

(4) diagnosing the disease

S4K5

ANSWER 4

Regents Date
Jan2007

21

Data Base File Number
62

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cytoplasm

201. The cytoplasm in a cell carries out a function similar to a function of which human system?

(1) respiratory system

(2) reproductive system

(3) circulatory system

(4) nervous system

S4K1

ANSWER 3

Regents Date
Aug2011

5

Data Base File Number
361

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decomposer

202. In an ecosystem, nutrients would be recycled if they were transferred directly from herbivores to carnivores to

(1) hosts

(2) prey

(3) decomposers

(4) autotrophs

S4K6

ANSWER 3

Regents Date
Aug2003

28

Data Base File Number
800

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decomposer

203. Some homeowners mow their lawns during the summer, collect the grass clippings and dispose of them in a landfill. Instead of taking the clippings to a landfill, a more ecologically sound procedure would be to

(1) leave the clippings to decompose in the lawn to form materials that enrich the soil

(2) spray the clippings in the lawn with imported microbes that use them for food

(3) burn the clippings and add the ashes to the soil

(4) throw the clippings into a stream or river to provide extra food for organisms living there

S4K7

ANSWER 1

Regents Date
Aug2004

18

Data Base File Number
708

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decomposer

204. What would most likely happen if most of the bacteria and fungi were removed from an ecosystem?

(1) Nutrients resulting from decomposition would be reduced.

(2) Energy provided for autotrophic nutrition would be reduced.

(3) The rate of mutations in plants would increase.

(4) Soil fertility would increase.

S4K6

ANSWER 1

Regents Date
Aug2006

14

Data Base File Number
531

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decomposer

205. In a balanced ecosystem, what microscopic organisms are essential to recycle organic chemicals back to the soil?

(1) heterotrophs

(2) autotrophs

(3) producers

(4) decomposers

S4K6

ANSWER 4

Regents Date
Jan2003

52

Data Base File Number
752

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decomposer

206. What is the role of bacteria and fungi in an ecosystem?

(1) they make ATP

(2) they are decomposers

(3) they are autotrophs

(4) they carry out photosynthesis

S4K6

ANSWER 2

Regents Date
Jan2004

52

Data Base File Number
672

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decomposer

207. Which type of organism can obtain energy directly from any of the other organisms in an ecosystem?

(1) herbivore

(2) decomposer

(3) producer

(4) carnivore

S4K1

ANSWER 2

Regents Date
Jan2010

1

Data Base File Number
227

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decomposer

208. Which statement describes an activity of a decomposer?

(1) A mushroom digests and absorbs nutrients from organic matter.

(2) A sunflower uses nutrients from the soil to make proteins.

(3) A snail scrapes algae off rocks in an

(4) A hawk eats and digests a mouse.

S4K1

ANSWER 1

Regents Date
Jan2012
1

Data Base File Number
389

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decomposer

209. Many families now use compost to make the soil in their gardens more fertile. They collect vegetable scraps and yard trimmings, place them in a compost pile or special container, and let them decompose. The organisms primarily responsible for decomposing the vegetable scraps and yard trimmings are

(1) plant parasites

(2) autotrophs

(3) bacteria and fungi

(4) scavengers and viruses

S4K6

ANSWER 3

Regents Date
Jan2014

21

Data Base File Number
1015

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decomposer

210. Decomposers are important in the environment because they

(1) convert large molecules into simpler molecules that can then be recycled

(2) release heat from large molecules so that the heat can be recycled through the ecosystem

(3) can take in carbon dioxide and convert it into oxygen

(4) convert molecules of dead organisms into permanent biotic parts of an ecosystem

S4K6

ANSWER 1

Regents Date
June2003

32

Data Base File Number
774

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decomposer

211. Decomposers are necessary in an ecosystem because they

(1) produce food for plants by the process of photosynthesis

(2) provide energy for plants by the process of decay

(3) can rapidly reproduce and evolve

(4) make inorganic materials available to plants

S4K1

ANSWER 4

Regents Date
June2010

23

Data Base File Number
271

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dependent variable

212. An experiment was carried out to determine whether drinking caffeinated soda increases pulse rate. The pulse rates of two groups of people at rest were measured. Group A was then given caffeinated soda and Group B was given caffeine-free soda. One hour after drinking the soda, the pulse rates were measured. The participants in the experiment were all the same age, and they were all given the same amount of soda. The dependent variable in this experiment is the

(1) type of soda given to each group

(2) amount of soda given to each group

(3) pulse rate of each group

(4) age of participants in each group

Regents Date
Aug2010

69

LABS

Data Base File Number

306

ANSWER 3

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dependent variable

213. In an experiment to test the effect of exercise on the number of times a clothespin can be squeezed in 1 minute, the dependent variable would be the

(1) test subject

(2) amount of exercise

(3) number of squeezes

(4) clothespit

Regents Date
Aug2012

81

LAB1

Data Base File Number

474

ANSWER 3

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development

214. Although all of the cells of a human develop from one fertilized egg, the human is born with many different types of cells. Which statement best explains this observation?

(1) Developing cells may express different parts of their identical genetic instructions.

(2) Mutations occur during development as a result of environmental conditions.

(3) All cells have different genetic material.

(4) Some cells develop before other cells.

Regents Date
June2008

3

S4K2

Data Base File Number

105

ANSWER 1

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development / organism

215. Most mammals have adaptations for

(1) internal fertilization and internal development of the fetus

(2) internal fertilization and external development of the fetus

(3) external fertilization and external development of the fetus

(4) external fertilization and internal development of the fetus

S4K4

ANSWER 1

Regents Date
June2005
18

Data Base File Number
584

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diabetes

216. Complications from diabetes can include nerve cell damage and poor blood flow, especially in the feet and legs. In individuals with diabetes, wounds usually take longer than normal to heal. One reason for the change in wound healing time in a diabetic is that

(1) elevated hormone levels block the synthesis of glucose in immune cells

(2) nerve damage increases absorption of glucose by healthy cells

(3) poor circulation reduces the supply of nutrents and oxygen to the cells

(4) decreased enzyme production slows protein synthesis in pancreatic cells

S4K1

ANSWER 3

Regents Date
June2012
32

Data Base File Number
440

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differentiation

217. Although all the body cells in an animal contain the same hereditary information, they do not all look and function the same way. The cause of this difference is that during differentiation

(1) embryonic cells use different portions of their genetic information

(2) the number of genes increases as embryonic cells move to new locations

(3) embryonic cells delete portions of chromosomes

(4) genes in embryonic body cells mutate rapidly

S4K2

ANSWER 1

Regents Date
Aug2001
13

Data Base File Number
923

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differentiation

218. After a series of cell divisions, an embryo develops different types of body cells such as muscle cells, nerve cells, and blood cells. This development occurs because

(1) the genetic code changes as the cells divide

(2) different segments of the genetic instructions are used to produce different types of cells

(3) different genetic instructions are synthesized to meet the needs of new types of cells

(4) some parts of the genetic materials are lost as a result of fertilization

S4K2

ANSWER 2

Regents Date Aug2002

12

Data Base File Number 816

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differentiation

219. The development of specialized tissues and organs in a multicellular organism directly results from

(1) cloning

(2) differentiation

(3) meiosis

(4) evolution

S4K4

ANSWER 2

Regents Date Aug2004

11

Data Base File Number 702

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differentiation

220. The human brain, kidney, and liver all develop from the same zygote. This fact indicates that cells formed by divisions of the zygote are able to

(1) differentiate

(2) mutate

(3) undergo cloning

(4) be fertilized

S4K4

ANSWER 1

Regents Date Aug2005

15

Data Base File Number 604

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differentiation

221. Which statement indicates that different parts of the genetic information are used in different kinds of cells, even in the same organism?

(1) The cells produced by a zygote usually have different genes.

(2) As an embryo develops, various tissues and organs are produced.

(3) Replicated chromosomes separate during gamete formation.

(4) Offspring have a combination of genes from both parents.

S4K2

ANSWER 2

Regents Date Aug2006

7

Data Base File Number 525

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differentiation

Regents Date
Jan2005

222. Research has shown that certain body cells, known as stem cells, can develop into a variety of specialized cells. Various factors can cause stem cells to develop into different types of mature cells. These different types of mature cells result from

(1) different antibodies and mitotic cell division

(2) identical genetic codes and meiotic cell division

(3) different environments of the cells and the functioning of different parts of the genetic code

(4) similar steps in the development of the cells and a reduction in the number of chromosomes in each cell

11

Data Base File Number

550

S4K2

ANSWER 3

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diffusion

Regents Date
Jan2005

223. Base your answer to this question on the information given and on your knowledge of biology. In a class, each student made three models of the small intestine using three artificial membrane tubes. They filled each of the three tubes with equal amounts of water, starch, protein, and vitamin C. They added starch-digesting enzyme to tube 1. They added protein-digesting enzyme to tube 2. No enzyme was added to tube 3. The ends of the membrane tubes were sealed and the tubes were soaked for 24 hours in beakers of pure water. The beakers were numbered 1, 2, and 3, corresponding to the number of the tube they contained. At the end of the experiment, the students removed the tubes and tested the water in the beakers for the presence of nutrients. Sugar would most likely be present in the water in

(1) beaker 1, only

(2) beaker 2, only

(3) beakers 1 and 3, only

(4) beakers 1, 2, and 3

31

Data Base File Number

564

S4K5

ANSWER 1

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diffusion

224. A substance is most likely to diffuse into a cell when

(1) it is a large organic food molecule such as protein or starch

(2) it is enclosed in an organelle such as a vacuole

(3) the concentration of the substance is greater outside the cell than inside

(4) the pH of the substance is greater than the pH of the cell

LAB5

ANSWER 3

Regents Date
Jan2012
75

Data Base File Number
419

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diffusion / membrane

225. Which molecule can diffuse from the digestive tract into the human bloodstream without first being digested?

(1) protein

(2) starch

(3) fat

(4) glucose

S4K1

ANSWER 4

Regents Date
Jan2013
3

Data Base File Number
620

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digestion

226. The main function of the human digestive system is to

(1) rid the body of cellular waste materials

(2) process organic molecules so they can enter cells

(3) break down glucose in order to release energy

(4) change amino acids into proteins and carbohydrates

S4K1

ANSWER 2

Regents Date
Aug2001
4

Data Base File Number
917

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digestion

227. An owl cannot entirely digest the animals upon which it preys. Therefore, each day it expels from its mouth a pellet composed of materials such as fur, bones, and cartilage. By examining owl pellets, ecologists are able to determine the

(1) autotrophs that owls prefer

(2) organisms that feed on owls

(3) pathogens that affect owls

(4) consumers that owls prefer

S4K6

ANSWER 4

Regents Date
Aug2001
30

Data Base File Number
936

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digestion

228. Organ systems of the human body interact to maintain a balanced internal environment. As blood flows through certain organs of the body, the composition of the blood changes because of interactions with those organs. Which change in the composition of the blood occurs as it flows through the digestive system?

(1) oxygen levels increase

(2) blood absorbs nutrients

(3) carbon dioxide increases

(4) hemoglobin increases

Regents Date
Jan2005

55

Data Base File Number
566

S4K1

ANSWER 2

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direct harvesting

229. Base your answers to this question on the passage given and on your knowledge of biology. - Plants of the snow lotus species, "Saussurea laniceps", are used in Tibet and China to produce traditional medicines. These plants bloom just once, at the end of a seven-year life span. Collectors remove the taller blooming plants, which they consider to have the best medicinal value. Some scientists are concerned that the continual selection and removal of the tall plants from natural ecosystems may result in a change in the average height of the snow lotus in future populations. The removal of the taller plants is an example of

(1) genetic engineering

(2) direct harvesting

(3) selective breeding

(4) asexual reproduction

Regents Date
June2011

50

Data Base File Number
357

S4K3

ANSWER 2

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disease

230. In 1995, during an Ebola virus outbreak, approxmately 80% of the infected individuals died. Which statement is an inference that could be made based on this information?

(1) The individuals who survived were able to produce antibodies against the Ebola virus

(2) The individuals who survived were not exposed to the Ebola antigens.

(3) Eighty percent of the population had a natural immunity to the Ebola virus.

(4) Eighty percent of the population was infected with a viral antigen.

Regents Date
Jan2009

22

Data Base File Number
167

S4K5

ANSWER 1

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disease

231. Some diseases and their causes are listed below. Which disease would individuals have the greatest difficulty preventing in themselves?

(1) A. Flu -- influenza virus

(2) B. Lung cancer -- smoking

(3) C. Cystic fibrosis -- genes

(4) D. Dysentery -- parasitic ameba

S4K5

ANSWER 3

Regents Date June2011

5

Data Base File Number 334

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diversity

232. Areas with many different niches will most likely have

(1) large numbers of organisms that will become extinct

(2) no organisms that will become extinct

(3) little diversity among the organisms

(4) great diversity among the organisms

S4K3

ANSWER 4

Regents Date Aug2003

20

Data Base File Number 793

DNA

233. When a person's teeth are being x rayed, other body parts of this person are covered with a protective lead blanket to prevent

(1) loss of hair

(2) increase in cell size

(3) changes in DNA molecules

(4) changes in glucose structure

S4K3

ANSWER 3

Regents Date Aug2001

7

Data Base File Number 919

DNA

234. To determine the identity of their biological parents, adopted children sometimes request DNA tests. These tests involve comparing DNA samples from the child to DNA samples taken from the likely parents. Possible relationships may be determined from these tests because the

(1) base sequence of the father determines the base sequence of the offspring

(2) DNA of parents and their offspring is more similar than the DNA of nonfamily members

(3) position of the genes on each chromosome is unique to each family

(4) mutation rate is the same in closely related individuals

S4K2

ANSWER 2

Regents Date Aug2001

12

Data Base File Number 922

DNA

235. For which organic compounds must information be encoded in DNA for green plants to synthesize the other three compounds?

(1) sugars
(2) starches
(3) fats
(4) proteins

S4K2

ANSWER 4

Regents Date
Aug2002

5

Data Base File Number
811

DNA

236. If a set of instructions that determines all of the characteristics of an organism is compared to a book, and a chromosome is compared to a chapter in the book, then what might be compared to a paragraph in the book?

(1) a starch molecule
(2) an egg
(3) an amino acid
(4) a DNA molecule

S4K2

ANSWER 4

Regents Date
Aug2003

10

Data Base File Number
787

DNA

237. All cells in an embryo have the same DNA. However, the embryonic cells form organs, such as the brain and the kidneys, which have very different structures and functions. These differences are the results of

(1) having two types of cells, one type from each parent
(2) rapid mitosis causing mutations in embryo cells
(3) new combinations of cells resulting from meiosis
(4) certain genes being expressed in some cells and not in others

S4K2

ANSWER 4

Regents Date
Aug2007

11

Data Base File Number
8

DNA

238. A certain protein is found in mitochondria,chloroplasts, and bacteria. This provides evidence that plants and bacteria

(1) have some similar DNA base sequences
(2) can use carbon dioxide to make proteins
(3) digest proteins into simple sugars
(4) contain certain pathogenic microbes

S4K3

ANSWER 1

Regents Date
Aug2007

14

Data Base File Number
11

DNA

239. The DNA of a human cell can be cut and rearranged by using

(1) a scalpel

(2) electrophoresis

(3) hormones

(4) enzymes

S4K2

ANSWER 4

Regents Date
Aug2008

13

Data Base File Number
141

DNA

240. The DNA of a fly and the DNA of a gorilla are made up of subunits that are

(1) arranged in the same order in both species

(2) arranged in chains of the same length in both species

(3) different bases in each of the two species

(4) in different sequences in each of the two species

S4K2

ANSWER 4

Regents Date
Aug2012

7

Data Base File Number
449

DNA

241. Which sequence correctly represents the arrangement of structures containing genetic material, from the largest to the smallest size?

(1) chromosome → gene → nucleus

(2) nucleus → chromosome → gene

(3) gene → chromosome → nucleus

(4) gene → nucleus → chromosome

S4K2

ANSWER 2

Regents Date
Aug2012

6

Data Base File Number
448

DNA

242. Which factor would cause two specialized tissues that contain identical chromosomes to function differently?

(1) Specific sections of DNA molecules in the chromosomes are activated.

(2) All of the sections of DNA molecules in the chromosomes are activated.

(3) Specific sections of the amino acid molecules in the cytoplasm are activated.

(4) All of the amino acid molecules in the cytoplasm are activated.

S4K2

ANSWER 1

Regents Date
Aug2013

8

Data Base File Number
976

DNA

243. A sudden change in the DNA of a chromosome can usually be passed on to future generations if the change occurs in a

(1) skin cell
(2) liver cell
(3) sex cell
(4) brain cell

S4K2

ANSWER 3

Regents Date
Jan2003

6

Data Base File Number
731

DNA

244. Base your answer to this question on the passage included and your knowledge of biology. -- They Sure Do Look Like Dinosaurs --
When making movies about dinosaurs, film producers often use ordinary lizards and enlarge their images thousands of times. We all know, however, that while they look like dinosaurs and are related to dinosaurs, lizards are not actually dinosaurs. Recently, some scientists have developed a hypothesis that challenges this view. These scientists believe that some dinosaurs were actually the same species as some modern lizards that had grown to unbelievable sizes. They think that such growth might be due to a special type of DNA called repetitive DNA, often referred to as "junk" DNA because scientists do not understand its functions. These scientists studied pumpkins that can reach sizes of nearly 1,000 pounds and found them to contain large amounts of repetitive DNA. Other pumpkins that grow to only a few ounces in weight have very little of this kind of DNA . In addition, cells that reproduce uncontrollably have almost always been found to contain large amounts of this type of DNA. -- Which kind of cells would most likely contain large amounts of repetitive DNA?

(1) red blood cells
(2) cancer cells
(3) nerve cells
(4) cells that are unable to reproduce

S1K3

ANSWER 2

Regents Date
Jan2003

60

Data Base File Number
753

DNA

245. The genetic code of a DNA molecule is determined by a specific sequence of

(1) ATP molecules
(2) sugar molecules
(3) chemical bonds
(4) molecular bases

S4K2

ANSWER 4

Regents Date
Jan2004

9

Data Base File Number
651

DNA

246. Which statement best describes the relationship between cells, DNA, and proteins?

(1) Cells contain DNA that controls the production of proteins.

(2) DNA is composed of proteins that carry coded information for how cells function.

(3) Proteins are used to produce cells that link amino acids together into DNA.

(4) Cells are linked together by proteins to make different kinds of DNA molecules.

S4K2

ANSWER 1

Regents Date
Jan2005

2

Data Base File Number

543

DNA

247. A characteristic of a DNA molecule that is not characteristic of a protein molecule is that the DNA molecule

(1) can replicate itself

(2) can be very large

(3) is found in nuclei

(4) is composed of subunits

S4K2

ANSWER 1

Regents Date
Jan2006

4

Data Base File Number

477

DNA

248. Cells that develop from a single zygote all contain identical DNA molecules. However, some of these cells will develop differently because

(1) different groups of cells containing the DNA may be exposed to different environmental conditions

(2) only the DNA in certain cells will replicate

(3) sopme of the DNA in some of the cells will be removed by chemical reactions

(4) DNA is functional in only 10% of the cells in the body

S4K2

ANSWER 1

Regents Date
Jan2008

13

Data Base File Number

83

DNA

249. In a DNA sample, 15% of the bases are thymine (T). What percentage of the bases in this sample are adenine (A)?

(1) 15%

(2) 30%

(3) 35%

(4) 85%

S4K2

ANSWER 1

Regents Date
Jan2012

38

Data Base File Number

417

DNA

250. A medical test indicates that a patient has a defective protein. This condition is most likely due to a change in the directions coded in the

(1) number of hydrogen atoms in starch molecules

(2) sequence of inorganic molecules

(3) number of carbon atoms in sugar molecules

(4) sequence of subunits in DNA

S4K2

ANSWER 4

Regents Date
June2001

4

Data Base File Number
888

DNA

251. A small amount of DNA was taken from a fossil of a mammoth found frozen in glacial ice. Genetic technology can be used to produce a large quantity of identical DNA from this mammoth's DNA. In this technology, the original DNA sample is used to

(1) stimulate differentiation in other mammoth cells

(2) provide fragments to replace certain human body chemicals

(3) act as a template for repeated replication

(4) trigger mitosis to obtain new base sequences

S4K2

ANSWER 3

Regents Date
June2001

12

Data Base File Number
894

DNA

252. When DNA separates into two strands, the DNA would most likely be directly involved in

(1) replication

(2) fertilization

(3) differentiation

(4) evolution

S4K2

ANSWER 1

Regents Date
June2003

10

Data Base File Number
760

DNA

253. In the human pancreas, acinar cells produce digestive enzymes and beta cells produce insulin. The best explanation for this is that

(1) a mutation occurs in the beta cells to produce insulin when the sugar level increases in the blood

(2) different parts of an individual's DNA are used to direct the synthesis of different proteins in different types of cells

(3) lowered sugar levels cause the production of insulin in acinar cells to help maintain homeostasis

(4) the genes in acinar cells came from one parent while the genes in beta cells came from the other parent

S4K2

ANSWER 2

Regents Date
June2004

10

Data Base File Number

679

DNA

254. The largest amount of DNA in a plant cell is contained in

(1) a nucleus

(2) a chromosome

(3) a protein molecule

(4) an enzyme molecule

S4K2

ANSWER 1

Regents Date
June2005

7

Data Base File Number

579

DNA

255. Hereditary traits are transmitted from generation to generation by means of

(1) specific sequences of bases in DNA in reproductive cells

(2) proteins in body cells

(3) carbohydrates in body cells

(4) specific starches making up DNA in reproductive cells

S4K2

ANSWER 1

Regents Date
June2006

7

Data Base File Number

505

DNA

256. A change in the base subunit sequence during DNA replication can result in

(1) variation within an organism

(2) rapid evolution of an organism

(3) synthesis of antigens to protect the cell

(4) recombination of genes within the cell

S4K2

ANSWER 1

Regents Date
June2007

7

Data Base File Number

29

DNA

257. Asexually reproducing organisms pass on hereditary information as

(1) sequences of A, T, C, and G

(2) chains of complex amino acids

(3) folded protein molecules

(4) simple inorganic sugars

S4K2

ANSWER 1

Regents Date
June2008

7

Data Base File Number
109

DNA

258. If 15% of a DNA sample is made up of thymine, T, what percentage of the sample is made up of cytosine, C?

(1) 15%

(2) 35%

(3) 70%

(4) 85%

S4K2

ANSWER 2

Regents Date
June2010

7

Data Base File Number
260

DNA / base pairing

259. What determines the kind of genes an organism possesses?

(1) type of amino acids in the cells of the organism

(2) sequence of the subunits A, T, C, and G in the DNA of the organism

(3) size of simple sugar molecules in the organs of the organism

(4) shape of the protein molecules in the organelles of the organism

S4K2

ANSWER 2

Regents Date
Aug2003

9

Data Base File Number
786

DNA base sequences

260. A change in the order of DNA bases that code for a respiratory protein will most likely cause

(1) the production of a starch that has a similar function

(2) the digestion of the altered gene by enzymes

(3) a change in the sequence of amino acids determined by the gene

(4) the release of antibodies by certain cells to correct the error

S4K2

ANSWER 3

Regents Date
Jan2003

7

Data Base File Number
732

DNA base sequences

261. Genes involved in the production of abnormal red blood cells have an abnormal sequence of

(1) ATP molecules

(2) amino acids

(3) sugars

(4) bases

S4K2

ANSWER 4

Regents Date
Jan2005

10

Data Base File Number
549

DNA base sequences

262. Relationships between plant species may most accurately be determined by comparing the

(1) habitats in which they live

(2) structure of guard cells

(3) base sequences of DNA

(4) shape of their leaves

LABS

ANSWER 3

Regents Date
Jan2008

67

Data Base File Number
100

DNA base sequences

263. Which situation would most directly affect future generations naturally produced by a maple tree?

(1) Ultraviolet radiation changes the DNA sequence within some leaves of the tree.

(2) Ultraviolet radiation changes the DNA sequence within the gametes of some flowers of the tree.

(3) An increase in temperature reduces the number of cell divisions in the roots.

(4) Rapidly growing cells just under the bark are exposed to radiation, causing changes in genetic material.

S4K3

ANSWER 2

Regents Date
June2001

14

Data Base File Number
896

DNA base sequences

264. The instructions for the traits of an organism are coded in the arrangement of

(1) glucose units in carbohydrate molecules

(2) bases in DNA in the nucleus

(3) fat molecules in the cell membrane

(4) energy-rich bonds in starch molecules

S4K2

ANSWER 2

Regents Date
June2003

11

Data Base File Number
761

DNA base sequences

265. Synthesis of a defective protein may result from an alteration in

(1) vacuole shape

(2) the number of mitochondria

(3) a base sequence code

(4) cellular fat concentration

S4K2

ANSWER 3

Regents Date
June2005
5
Data Base File Number
577

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dynamic equilibrium

266. The action of insulin on sugar levels in the blood helps to

(1) interfere with homeostasis

(2) maintain dynamic equilibrium

(3) coordinate enzyme production

(4) regulate digestion of protein

S4K5

ANSWER 2

Regents Date
Aug2013
22
Data Base File Number
987

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dynamic equilibrium

267. Which situation is not an example of the maintenance of a dynamic equilibrium in an organism?

(1) Guard cells contribute to the regulation of water content in a geranium plant.

(2) Water passes into an animal cell causing it to swell

(3) The release of insulin lowers the blood sugar level in a human after eating a big meal.

(4) A runner perspires while running a race on a hot summer day.

S4K5

ANSWER 2

Regents Date
Jan2004
30
Data Base File Number
663

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dynamic equilibrium

268. When a certain plant is without water for an extended period of time, guard cells close openings in the leaves of the plant. This activity conserves water and illustrates

(1) cellular communication involving the action of nerve cells and receptor sites

(2) an increase in rate of growth due to a low concentration of water

(3) maintenance of a dynamic equilibrium through detection and response to stimuli

(4) a response to one biotic factor in the environment

S4K5

ANSWER 3

Regents Date
June2004
23
Data Base File Number
686

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dynamic equilibrium

269. Carbon dioxide makes up less than 1 percent of Earth's atmosphere, and oxygen makes up about 20 percent. These percentages are maintained most directly by

(1) respiration and photosynthesis
(2) the ozone shield
(3) synthesis and digestion
(4) energy recycling in ecosystems

S4K5

ANSWER 1

Regents Date June2009

13

Data Base File Number 185

---

dynamic equilibrium

270. Some people with spinal cord injuries do not sweat below the area of the injury. Without the ability to sweat, the human body temperature begins to rise. Which statement would best describe this situation?

(1) Feedback mechanisms regulate blood sugar levels.
(2) Gene mutations are increased.
(3) Energy from ATP is not available
(4) Dynamic equilibrium is disrupted

S4K5

ANSWER 4

Regents Date June2010

22

Data Base File Number 270

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dynamic equilibrium

271. The failure of the human body to effectively maintain dynamic equilibrium can result in

(1) reproductive success
(2) gene manipulation
(3) differentiation
(4) disease

S4K5

ANSWER 4

Regents Date June2013

19

Data Base File Number 958

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ecological niche

272. Two species of animals with a similar appearance live in the same habitat but do not compete for food. This is because they most likely

(1) reproduce at different times of the year
(2) are the same size
(3) occupy different ecological niches
(4) are active at night

S4K6

ANSWER 3

Regents Date Jan2011

27

Data Base File Number 324

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ecological succession

273. Abandoned railroad tracks are overgrown with weeds. Ten years later there are small aspen trees growing in the middle of the tracks. This change is an example of

(1) ecological succession
(2) biological evolution
(3) genetic variation
(4) heterotrophic nutrition

S4K6

ANSWER 1

Regents Date Aug2010

29

Data Base File Number 301

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ecological succession

274. Shawangunk Grasslands National Wildlife Refuge has been developed from an abandoned airport to restore habitat for six species of birds that require an area rich in tall grasses. Workers must continually remove trees that are beginning to invade the area as a result of

(1) direct harvesting
(2) genetic engineering
(3) evolutionary change
(4) ecological succession

S4K6

ANSWER 4

Regents Date Aug2012

25

Data Base File Number 465

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ecological succession

275. Lichens are composed of two organisms, a fungus that cannot make its own food and algae that contain chlorophyll. Lichens may live on the bark of trees or even on bare rock. They secrete acids that tend to break up the rock they live on, helping to produce soil. As soil accumulates from the broken rock and dead lichens, other organisms, such as plants, may begin to grow. The ability of lichens to alter their environment, enabling other organisms to grow and take their places in that environment, is one step in the process of

(1) biological evolution
(2) ecological succession
(3) maintenance of cellular communication
(4) differentiationin complex organisms

S4K6

ANSWER 2

Regents Date Jan2006

36

Data Base File Number 497

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ecological succession

276. A new island formed by volcanic action may eventually become populated with biotic communities as a result of

(1) a decrease in the amount of organic material present

(2) decreased levels of carbon dioxide in the area

(3) the lack of abiotic factors in the area

(4) the process of ecological succession

S4K6

ANSWER 4

Regents Date June2003

30

Data Base File Number 772

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ecological succession

277. Many years ago, a volcanic eruption killed many plants and animals on an island. Today the island looks much as it did before the eruption. Which statement is the best possible explanation for this?

(1) Altered ecosystems regain stability through the evolution of new plant species.

(2) Destroyed environments can recover as a result of the process of ecological succession.

(3) Geographic barriers prevent the migration of animals to island habitats.

(4) Destroyed ecosystems always return to their original state.

S4K6

ANSWER 2

Regents Date June2006

24

Data Base File Number 514

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ecological succession

278. In New York State, small farms that were abandoned many years ago have become hardwood forests. This is an example of

(1) local deforestation

(2) biotechnology

(3) ecological succession

(4) habitat loss

S4K6

ANSWER 3

Regents Date June2013

2

Data Base File Number 944

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ecology

279. Base your answer to this question on the following passage and on your knowledge of biology. Mayflies belong to a group of insects known as Ephemeroptera, which means "shortlived wings". They have been given this name because the adult, the only stage that has wings, lives for only a few days. The aquatic juvenile form of most mayfly species lives for several years under rocks in streams that have high levels of dissolved oxygen. The juveniles feed on microscopic photosynthetic organisms. Juveniles supply food for trout and other stream fish. Millions of adult mayflies emerge from stream water in early summer. The adults have wings for flight, but lack functional mouth parts. Their energy supply comes from food stored in their bodies. Birds and bats eat adult mayflies. Adult mayflies mate, lay eggs, and die within a few days. Adult mayflies are unable to

(1) take in food
(2) move from place to place
(3) form ATP
(4) form gametes

Regents Date
Aug2011

50

S4K5

Data Base File Number

388

ANSWER 1

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ecology

280. Humans are responsible for some of the NEGATIVE changes that occur in nature because they

(1) have encouraged the development of wildlife refuges and parks
(2) have passed laws to preserve the environment
(3) are able to preserve scarce resources
(4) are able to modify habitats more than any other species

Regents Date
Jan2005

30

S4K7

Data Base File Number

563

ANSWER 4

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ecology / producers

281. A manatee is a water-dwelling herbivore on the list of endangered species. If manatees were to become extinct, what would be the most likely result in the areas where they had lived?

(1) The biodiversity of these areas would not be affected.
(2) Certain producer organisms would become more abundant in these areas.
(3) Other manatees would move into these areas and restore the population.
(4) Predators in these areas would occupy higher levels on the energy pyramid

Regents Date
June2010

24

S4K6

Data Base File Number

272

ANSWER 2

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ecology interaction

282. Many species of plants interact with harmless underground fungi. The fungi enable the plants to absorb certain essential minerals and the plants provide the fungi with carbohydrates and other nutrients. This describes an interaction between a

(1) parasite and its host

(2) predator and its prey

(3) scavenger and a decomposer

(4) producer and a consumer

S4K6

ANSWER 4

Regents Date
Jan2007

22

Data Base File Number
63

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ecology interaction

283. A fundamental concept of ecology is that living organisms

(1) are independent and do not interact with each other or with the physical environment

(2) do not interact with other living organisms, but do interact with the physical environment

(3) interact with each other, but do not interact with the physical environment

(4) interact with other living organisms and interact with the physical environment

S4K6

ANSWER 4

Regents Date
Jan2014
20

Data Base File Number
1014

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ecosystem

284. Which set of statements best illustrates a material cycle in a self-sustaining ecosystem?

(1) In summer, growing plants remove magnesium ions from the soil to make chlorophyll. In autumn, these plants release magnesium when they die and decompose. In spring, new plants will grow in this same area.

(2) Trees do not live in a desert ecosystem where there is not enough water present in the sandy soil to support their growth. Trees can live in a desert oasis.

(3) DDT is sprayed on a forest ecosystem to control the mosquito population. After a year, the level of DDT is found to be much higher in the tissues taken from a hawk than in the tissues taken from a mouse in this ecosystem.

(4) Plants trap the Sun's energy in the chemical bonds of organic molecules. This energy is then used for plant metabolic activities.

S4K7

ANSWER 1

Regents Date
Aug2003

33

Data Base File Number
802

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ecosystem

285. Ecosystems will have a greater chance of maintaining equilibrium over a long period of time if they have

(1) organisms imported by humans from other environments

(2) a sudden change in climate

(3) a diversity of organisms

(4) predators eliminated from the food chain

S4K6

ANSWER 3

Regents Date
Aug2007

30

Data Base File Number

21

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ecosystem

286. Which statement describes a situation that leads to stability within an ecosystem?

(1) Carbon dioxide and water are released only by abiotic sources in the ecosystem.

(2) Interactions between biotic and abiotic components regulate carbon dioxide and water levels.

(3) Animals provide the oxygen used by plants, and plants provide the nitrogen needed by animals.

(4) Organisms provide all the necessary energy for the maintenance of this ecosystem.

S4K6

ANSWER 2

Regents Date
Aug2007

25

Data Base File Number

17

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ecosystem

287. Which condition would most likely upset the stability of an ecosystem?

(1) a cycling of elements between organisms and the environment

(2) energy constantly entering the environment

(3) green plants incorporating sunlight into organic compounds

(4) a greater mass of animals than plants

S4K1

ANSWER 4

Regents Date
Aug2007

1

Data Base File Number

1

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ecosystem

288. In December 2004, a tsunami (giant wave) destroyed many of the marine organisms along the coast of the Indian Ocean. What can be expected to happen to the ecosystem that was most severely hit by the tsunami?

(1) The ecosystem will change until a new stable community is established.

(2) Succession will continue in the ecosystem until one species of marine organism is established.

(3) Ecological succession will no longer occur in this marine ecosystem.

(4) The organisms in the ecosystem will become extinct.

S4K6

ANSWER 1

Regents Date Aug2008

28

Data Base File Number

149

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ecosystem

289. Which factor would have the greatest effect on the flow of energy into an ecosystem?

(1) a large decrease in the amount of sunlight available

(2) a large increase in the number of carnivores

(3) a small increase in the number of decomposers

(4) a small decrease in the amount of minerals available

S4K1

ANSWER 1

Regents Date Aug2009

2

Data Base File Number

199

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ecosystem

290. In order for an ecosystem to remain stable there must be

(1) drastic modifications to the environment

(2) interrelationships and interdependencies among organisms

(3) limited biodiversity

(4) gradual changes in the climate

S4K1

ANSWER 2

Regents Date Aug2012

26

Data Base File Number

466

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ecosystem

291. The organisms in a pond and the physical factors influencing them best describe

(1) a population

(2) an ecosystem

(3) a biosphere

(4) a food chain

S4K1

ANSWER 2

Regents Date Aug2013

1

Data Base File Number

972

---

ecosystem

S4K6

ANSWER 1

292. Years ago, an article was written titled "Medicine Chest in the Jungle". This article most likely described the

(1) potential for ecosystems to be a source for new drugs

(2) dangers of poisonous jungle plants and animals

(3) deforestation of jungles for the development of large pharmacies

(4) use of antibiotics to treat certain disorders in trees

Regents Date
Aug2013
26
Data Base File Number
991

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ecosystem

S4K1

ANSWER 1

293. Which condition would cause an ecosystem to become UNSTABLE?

(1) only heterotrophic organisms remain after a change in the environment

(2) a slight increase in the number of heterotrophic and autotrophic organisms occurs

(3) a variety of nonliving factors are used by the living factors

(4) biotic and abiotic resources interact

Regents Date
Jan2003
3
Data Base File Number
728

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ecosystem

S4K6

ANSWER 2

294. In an ecosystem, which component is NOT recycled?

(1) water

(2) energy

(3) oxygen

(4) carbon

Regents Date
Jan2003
28
Data Base File Number
741

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ecosystem

S4K7

ANSWER 3

295. Read the following statement in quotes. --- "Natural ecosystems provide an array of basic processes that affect humans." -- Which statement does NOT support this quotation?

(1) Bacteria of decay help recycle materials.

(2) Trees add to the amount of atmospheric oxygen.

(3) Treated sewage is less damaging to the environment than untreated sewage.

(4) Lichens and mosses living on rocks help to break the rocks down, forming soil.

Regents Date
Jan2003
30
Data Base File Number
743

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ecosystem

296. An established ecosystem may remain stable over hundreds of years because

(1) species interdependence is absent

(2) there is a lack of variety in the species

(3) no competition exists between the species

(4) there are natural checks on species

S4K1

ANSWER 4

Regents Date Jan2005

5

Data Base File Number 545

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ecosystem

297. Carbon dioxide containing carbon-14 is introduced into a balanced acquarium ecosystem. After several weeks, carbon-14 will most likely be present in

(1) the plants, only

(2) the animals, only

(3) both the plants and animals

(4) neither the plants nor animals

S4K6

ANSWER 3

Regents Date Jan2007

25

Data Base File Number 66

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ecosystem

298. When brown tree snakes were accidentally introduced onto the island of Guam, they had no natural predators. These snakes sought out and ate many of the eggs of insect-eating birds. What probably occurred following the introduction of the brown tree snakes?

(1) The bird population increased.

(2) The insect population increased.

(3) The bird population began to seek a new food source.

(4) The insect population began to seek a new food source.

S4K6

ANSWER 2

Regents Date Jan2007

1

Data Base File Number 46

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ecosystem

299. Which component of a stable ecosystem can NOT be recycled?

(1) oxygen

(2) water

(3) energy

(4) nitrogen

S4K6

ANSWER 3

Regents Date Jan2008

23

Data Base File Number 90

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ecosystem

300. Which sequence of natural events is likely to lead to ecosystem stability?

(1) sexual reproduction -> genetic variation -> biodiversity -> ecosystem stability

(2) asexual reproduction -> genetic variation -> cloning -> ecosystem stability

(3) genetic variation -> asexual reproduction -> biodiversity -> ecosystem stability

(4) genetic variation -> sexual reproduction -> cloning -> ecosystem stability

S4K6

ANSWER 1

Regents Date
Jan2009

27

Data Base File Number

171

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ecosystem

301. Which statement represents a characteristic of an ecosystem that is NOT likely to sustain itself?

(1) The Sun provides the needed energy.

(2) Energy is transferred from plants to animals

(3) There are more consumers than producers.

(4) There are interactions between biotic and abiotic factors.

S4K6

ANSWER 3

Regents Date
Jan2012

23

Data Base File Number

408

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ecosystem

302. Sugar maples and white pines are two different tree species that often grow side by side in the Adirondack Mountains. Which statement concerning these trees is correct?

(1) Since they are both trees, they can interbreed.

(2) Since they are not closely related, they do not compete with one another.

(3) Even though they are both trees, each plays a different role in the ecosystem.

(4) They utilize totally different abiotic resources.

S4K6

ANSWER 3

Regents Date
Jan2014

18

Data Base File Number

1012

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ecosystem

303. Which statement best describes a characteristic of an ecosystem?

(1) It must have producers and consumers but not decomposers.

(2) It is stable because it has consumers to recycle energy.

(3) It always has two or more different autotrophs filling the same niche.

(4) It must have organisms that carry out autotrophic nutrition.

S4K6

ANSWER 4

Regents Date
June2002

5

Data Base File Number

837

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ecosystem

304. If humans remove carnivorous predators such as wolves and coyotes from an ecosystem, what will probably be the first observable result?

(1) The natural prey will die off.

(2) Certain plant populations will increase.

(3) Certain herbivores will exceed carrying capacity.

(4) The decomposers will fill the predator niche.

S4K7

ANSWER 3

Regents Date
June2004

28

Data Base File Number

690

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ecosystem

305. What impact do the amounts of available energy, water, and oxygen have on an ecosystem?

(1) They act as limiting factors.

(2) They are used as nutrients.

(3) They recycle the residue of dead organisms.

(4) They control environmental temperature.

S4K6

ANSWER 1

Regents Date
June2006

23

Data Base File Number

513

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ecosystem

306. The removal of nearly all the predators from an ecosystem would most likely result in

(1) an increase in the number of carnivore species

(2) a decrease in new predators migrating into the ecosystem

(3) a decrease in the size of decomposers

(4) an increase in the number of herbivores

S4K7

ANSWER 4

Regents Date
June2006

30

Data Base File Number

517

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ecosystem

307. In 1859, a small colony of 24 rabbits was brought to Australia. By 1928 it was estimated that there were 500 million rabbits in a 1-million square mile section of Australia. Which statement describes a condition that probably contributed to the increase in the rabbit population?

(1) The rabbits were affected by many limiting factors.

(2) The rabbits reproduced by asexual reproduction.

(3) The rabbits were unable to adapt to the environment.

(4) The rabbits had no natural predators in Australia.

S4K6

ANSWER 4

Regents Date
June2007

30

Data Base File Number

44

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ecosystem

308. Which statement describes a role of fungi in an ecosystem?

(1) They transfer energy to decaying matter.

(2) They release oxygen into the ecosystem.

(3) They recycle chemicals from dead organisms.

(4) They synthesize organic nutrients from inorganic substances.

S4K1

ANSWER 3

Regents Date
June2007

1

Data Base File Number

24

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ecosystem

309. Rabbits are herbivores that are not native to Australia. Their numbers have increased steadily since being introduced into Australia by European settlers. One likely reason the rabbit population was able to grow so large is that the rabbits

(1) were able to prey on native herbivores

(2) reproduced more slowly than the native animals

(3) successfully competed with native herbivores for food

(4) could interbreed with the native animals

S4K7

ANSWER 3

Regents Date
June2008

30

Data Base File Number

124

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ecosystem

S4K1

ANSWER 4

310. A stable pond ecosystem would not contain

(1) materials being cycled

(2) oxygen

(3) decomposers

(4) more consumers than producers

Regents Date
June2008
2

Data Base File Number
104

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ecosystem

S4K1

ANSWER 2

311. Which factor has the greatest influence on the type of ecosystem that will form in a particular geographic area?

(1) genetic variations in the animals

(2) climate conditions

(3) number of carnivores

(4) percentage of nitrogen gas in the atmosphere

Regents Date
June2008
25

Data Base File Number
120

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ecosystem

S4K6

ANSWER 1

312. In an ecosystem, the growth and survival of organisms are dependent on the availability of the energy from the Sun. This energy is available to organisms in the ecosystem because

(1) producers have the ability to store energy from light in organic molecules

(2) consumers have the ability to transfer chemical energy stored in bonds to plants

(3) all organisms in a food web have the ability to use light energy

(4) all organisms in a food web feed on autotrophs

Regents Date
June2008
24

Data Base File Number
119

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ecosystem

S4K6

ANSWER 3

313. If several species of carnivores are removed from an ecosystem, the most likely effect on the ecosystem will be

(1) an increase in the kinds of autotrophs

(2) a decrease in the number of abiotic factors

(3) a decrease in stability among populations

(4) an increase in the rate of succession

Regents Date
June2009
26

Data Base File Number
194

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ecosystem

314. Owls periodically expel a mass of undigested material known as a pellet. A student obtained several owl pellets from the same location and examined the animal remains in the pellets. He then recorded the number of different prey animal remains in the pellets. The student was most likely studying the

(1) evolution of the owl
(2) social structure of the local owl population
(3) role of the owl in the local ecosystem
(4) life cycle of the owl

S4K6

ANSWER 3

Regents Date June2009

7

Data Base File Number 182

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ecosystem

315. A sequence of events associated with ecosystem stability is represented as: sexual reproduction -> genetic variation -> biodiversity -> ecosystem stability The ARROWS in this sequence should be read as

(1) leads to
(2) reduces
(3) prevents
(4) simplifies

S4K6

ANSWER 1

Regents Date June2009

9

Data Base File Number 183

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ecosystem

316. Which characteristic of a geographic region would have the greatest influence on the type of ecosystem that forms in that region?

(1) ratio of autotrophs to heterotrophs
(2) concentration of atmospheric oxygen
(3) number of food chains
(4) climatic conditions

S4K6

ANSWER 4

Regents Date June2012

17

Data Base File Number 428

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ecosystem

317. Which statement best describes bat populations in a stable ecosystem?

(1) They are held in check by environmental factors.
(2) They are producers that rely indirectly on other producers.
(3) They are not limited by natural predators.
(4) They are not dependent on other species.

S4K1

ANSWER 1

Regents Date June2012

16

Data Base File Number 427

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ecosystem / altered

318. Imported animal species often disrupt an ecosystem because in their new environment, they will most likely

(1) eliminate the genetic variation of the autotrophs

(2) increase the number of mutations in the herbivores

(3) have no natural enemies

(4) be unable to produce offspring

S4K7

ANSWER 3

Regents Date
Aug2003

34

Data Base File Number
803

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ecosystem / altered

319. In 1960, an invasive species of fish was introduced into the stable ecosystem of a river. Since then, the population of a native fish species has declined. This situation is an example of an

(1) ecosystem that has recovered

(2) ecosystem altered through the activities of an organism

(3) environmental impact caused by physica factors

(4) ecological niche without competition

S4K6

ANSWER 2

Regents Date
Jan2010

25

Data Base File Number
247

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ecosystem / altered

320. In an ecosystem, the presence of many different species is critical for the survival of some forms of life when

(1) ecosystems remain stable over long periods of time

(2) significant changes occur in the ecosystem

(3) natural selection does not occur

(4) the finite resources of Earth increase

S4K6

ANSWER 2

Regents Date
June2003

27

Data Base File Number
770

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ecosystem / carrying capacity

321. The size of a frog population in a pond remains fairly constant over a period of several years because of

(1) decreasing competition

(2) environmental carrying capacity

(3) excessive dissolved oxygen

(4) the depth of water

S4K6

ANSWER 2

Regents Date
Aug2008

26

Data Base File Number
147

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ecosystem / equilibrium

322. An ecosystem that has almost the same number and type of organisms for many years is exhibiting

(1) feedback

(2) global instability

(3) environmental change

(4) equilibrium

S4K6

ANSWER 4

Regents Date
Aug2010

1

Data Base File Number
280

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ecosystem / equilibrium

323. The presence of wastes, such as plastic bags and motor oil, in lakes and streams miles away from developed areas suggests that

(1) ecosystems are interconnected and human action can alter ecosystem equilibrium

(2) recycling programs have failed to conserve biotic resources

(3) natural processes can alter ecosystem stability

(4) direct harvesting practices have led to irreversible destruction of ecosystems

S4K7

ANSWER 1

Regents Date
Aug2011

28

Data Base File Number
378

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ecosystem / equilibrium

324. Which statement best describes an ecosystem maintaining a state of approximate equilibrium?

(1) Nutrients from decayed organisms are recycled in a forest ecosystem.

(2) All the frog species in a South American rain forest become extinct.

(3) A mutation spreads through a species of bacterium, making them unable to decompose wastes.

(4) Mice are released into a field ecosystem as food for a declining predator population.

S4K1

ANSWER 1

Regents Date
June2013

26

Data Base File Number
964

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ecosystem / stable

325. In a certain ecosystem, rattlesnakes are predators of prairie dogs. If the prairie dog population started to increase, how would the ecosystem most likely regain stability?

(1) The rattlesnake population would start to decrease.

(2) The rattlesnake population would start to increase.

(3) The prairie dog population would increase rapidly.

(4) The prairie dog population would begin to prey on the rattlesnakes.

S4K1

ANSWER 2

Regents Date
Aug2003

7

Data Base File Number

784

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ecosystem / stable

326. Which statement describes all stable ecosystems?

(1) Herbivores provide energy for the autotrophs.

(2) The populations of predators are dependent on the populations of their prey.

(3) The number of autotrophs equals the number of heterotrophs.

(4) Consumers synthesize ATP from light energy.

S4K6

ANSWER 2

Regents Date
Aug2005
28

Data Base File Number

614

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ecosystem / stable

327. A stable ecosystem is characterized by having

(1) predators that outnumber their prey

(2) a continual input of energy

(3) limited autotrophic nutrition

(4) no competition between species

S4K6

ANSWER 2

Regents Date
Aug2010
22

Data Base File Number

295

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ecosystem / stable

328. For a natural ecosystem to be self-sustaining, many essential chemical elements must be

(1) converted to energy

(2) changed into fossil fuels such as oil and coal

(3) permanently removed from the environment

(4) cycled between organisms and the environment

S4K6

ANSWER 4

Regents Date
Jan2002

35

Data Base File Number

881

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ecosystem / stable

329. Which statement concerning ecosystems is correct?

(1) Stable ecosystems that are changed by natural disaster will slowly recover and may again become stable if left alone for a long period of time.

(2) Competition does not influence the number of organisms that live in ecosystems.

(3) Climatic change is the principal cause of habitat destruction in ecosystems in the last fifty years.

(4) Stable ecosystems, once changed by natural disaster, will never recover and become stable again, even if left alone for a long period of time.

S4K7

ANSWER 1

Regents Date
Jan2004
34

Data Base File Number
667

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ecosystem / stable

330. Which statement best describes what happens to energy and molecules in a stable ecosystem?

(1) Both energy and molecules are recycled in an ecosystem.

(2) Neither energy nor molecules are recycled in an ecosystem.

(3) Energy is recycled and molecules are continuously added to the ecosystem.

(4) Energy is continuously added to the ecosystem and molecules are recycled

S4K6

ANSWER 4

Regents Date
Jan2004
31

Data Base File Number
664

---

ecosystem / stable

331. A stable ecosystem would not contain

(1) materials being cycled

(2) consumers without producers

(3) decomposers

(4) a constant source of energy

S4K3

ANSWER 2

Regents Date
Jan2009
2

Data Base File Number
153

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electrophoresis

332. Electrophoresis is a method of

(1) separating DNA fragments

(2) changing the genetic code of an organism

(3) indicating the presence of starch

(4) separating colored compounds on a strip of paper

LABS

ANSWER 1

Regents Date
Jan2008
75

Data Base File Number
103

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electrophoresis

333. In preparation for an electrophoresis procedure, enzymes are added to DNA in order to

(1) convert the DNA into gel

(2) cut the DNA into fragments

(3) change the color of the DNA

(4) produce longer sections of DNA

LABS

ANSWER 2

Regents Date June2008

68

Data Base File Number 128

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electrophoresis

334. DNA samples can be separated according to size using the technique of

(1) chromatography

(2) electrophoresis

(3) replication

(4) dissection

LAB1

ANSWER 2

Regents Date June2012

82

Data Base File Number 444

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electrophoresis

335. Which technique could be used to determine the relative number of bases in fragments taken from a sample of DNA?

(1) electrophoresis

(2) cloning

(3) paper chromatography

(4) light microscopy

LAB1

ANSWER 1

Regents Date June2013

76

Data Base File Number 971

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embryo

336. Abnormalities present in the cells that line the uterus may prevent the production of offspring by directly interfering with the

(1) development of the embryo

(2) differentiation of gametes into zygotes

(3) secretion of estrogen by the ovary

(4) production and release of egg cells

S4K4

ANSWER 1

Regents Date Aug2011

37

Data Base File Number 386

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embryonic development

337. Which sequence represents the correct order of processes that result in the formation and development of an embryo?

(1) meiosis -> fertilization -> mitosis

(2) mitosis -> fertilization -> meiosis

(3) fertilization -> meiosis -> mitosis

(4) fertilization -> mitosis -> meiosis

S4K4

ANSWER 1

Regents Date
Jan2008

14

Data Base File Number
84

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embryonic development

338. During the last months of pregnancy, the brain of a human embryo undergoes an essential "growth spurt." Which action by the mother would most likely pose the greatest threat to the normal development of the nervous system of the embryo at this time?

(1) spraying pesticides in the garden

(2) taking prescribed vitamins on a daily basis

(3) maintaining a diet high in fiber and low in fat

(4) not exercising

S4K4

ANSWER 1

Regents Date
June2001

21

Data Base File Number
902

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embryonic development

339. In animals, the normal development of an embryo is dependent on

(1) fertilization of a mature egg by many sperm cells

(2) production of new cells having twice the number of chromosomes as the zygote

(3) production of body cells having half the number of chromosomes as the zygote

(4) mitosis and the differentiation of cells after fertilization has occurred

S4K4

ANSWER 4

Regents Date
June2003

21

Data Base File Number
766

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embryonic development

340. Which statement about embryonic organ development in humans is accurate?

(1) It is affected primarily by the eating habits and general health of the father.

(2) It may be affected by the diet and general health of the mother.

(3) It will not be affected by any medication taken by the mother in the second month of pregnancy.

(4) It is not affected by conditions outside the embryo.

S4K4

ANSWER 2

Regents Date June2007

18

Data Base File Number

60

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embryonic development

341. Which sequence represents the order of some events in human development?

(1) zygote -> sperm -> tissues -> egg

(2) fetus -> tissues -> zygote -> egg

(3) zygote -> tissues -> organs -> fetus

(4) sperm -> zygote -> organs -> tissues

S4K4

ANSWER 3

Regents Date June2009

14

Data Base File Number

186

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energy / home

342. Because of an attractive tax rebate, a homeowner decides to replace an oil furnace heating system with expensive solar panels. The trade-offs involved in making this decision include

(1) high cost of solar panels, reduced fuel costs, and lower taxes

(2) low cost of solar panels, increased fuel costs, and higher taxes

(3) increased use of fuel, more stable ecosystems, and less availability of solar radiation

(4) more air pollution, increased use of solar energy, and greater production of oil

S4K7

ANSWER 1

Regents Date June2010

30

Data Base File Number

277

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energy consumption

343. Which human activity is correctly paired with its likely future consequence?

(1) overfishing in the Atlantic - increase in supply of flounder and salmon as food for people

(2) development of electric cars or hybrid vehicles - increased rate of global warming

(3) use of fossil fuels - depletion of underground coal, oil, and natural gas supplies

(4) genetically engineering animals - less food available to feed the world's population

S4K7

ANSWER 3

Regents Date
Jan2009
30

Data Base File Number
174

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energy transfer

344. Which energy transfer is LEAST likely to be found in nature?

(1) consumer to consumer

(2) producer to consumer

(3) host to parasite

(4) predator to prey

S4K6

ANSWER 4

Regents Date
Aug2002
4.6

Data Base File Number
826

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energy transfer

345. In the transfer of energy from the Sun to ecosystems, which molecule is one of the first to store this energy?

(1) protein

(2) fat

(3) DNA

(4) glucose

S4K6

ANSWER 4

Regents Date
June2007
25

Data Base File Number
42

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environment stability

346. Which factor is LEAST likely to contribute to an increase in the rate of evolution?

(1) presence of genetic variations in a population

(2) environmental selection of organisms best adapted to survive

(3) chromosomal recombinations

(4) a long period of environmental stability

S4K3

ANSWER 4

Regents Date
Aug2005
12

Data Base File Number
602

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environmental influence

347. A boy inherits genes for tallness, but his growth is limited as a result of poor nutrition. This is an example of

(1) an inherited disorder

(2) environmental influence on gene expression

(3) expression of a hidden trait

(4) a characteristic controlled by more than one pair of genes

S4K2

ANSWER 2

Regents Date
Aug2009

7

Data Base File Number
204

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environmental influence

348. Scientists have discovered that the Oklahoma salamander, "Eurycea tynerensis", develops into its adult form in streams where the streambeds are made of fine, tightly packed gravel. Salamanders living in streams with streambeds made of large, loosely packed gravel remain immature. This situation is an example of

(1) the production of gametes

(2) faulty genes found in aquatic organisms

(3) development influenced by the environment

(4) the production of new organisms by environmental engineering

S4K4

ANSWER 3

Regents Date
Aug2010

13

Data Base File Number
287

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environmental influence

Regents Date
June2013

349. Base your answer to this question on the information given and on your knowledge of biology.
The Galapagos pink land iguana, Conolophus marthae (C. marthae), is native to only one of the Galapagos Islands. Its entire range is currently limited to Wolf Volcano on Isabella Island. The iguana was first discovered on this island in 1986. Genetic studies of the animal began sometime later, and it was identified as a species separate from other iguana populations on the Galapagos in 2009. Its population might have been as high as 100 in 1986, but now there might be as few as 10 of the animals left alive. Other evidence indicates that this species could have diverged from another line of iguanas about 5.7 million years ago. After that, the other line of iguanas diverged into two other species, C. pallidus and C. subcristatus. One likely reason for the existence of these pink land iguanas today is that their ancestors

S4K3

(1) had the same variations as other iguanas but, after a long period of changing environmental conditions, mutated to the pink form when the environment eventually stabilized — **40**

(2) had variations not present in other iguanas that allowed them to live in a particular environment more successfully than the other iguanas

Data Base File Number

(3) lived on several other islands long ago, but migrated to Isabella Island around 1980 to have the environment to themselves, without predators to harm them

ANSWER 2

(4) found that they were less visible to predators if they made themselves pink to blend in with the plants growing around them — **969**

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environmental protection

Regents Date
Jan2012

350. Which action by humans could improve the quality of the air?

S4K7

(1) building homes that use only oil furnaces for heat — **30**

(2) buying cars that get more miles per gallon of gasoline

Data Base File Number

(3) increasing the number of coal-burning power plants that generate electricity

ANSWER 2

(4) cutting down forests to clear land for factories — **414**

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environmental quality

351. In an attempt to improve environmental quality, local officials in a county in New York State want to build a garbage-to-steam plant. At the plant,garbage would be burned to produce energy, but air pollution would also be produced. In order to decide whether or not to build this plant, the community must consider

(1) the trade-offs involved

(2) new genetic technology

(3) the natural process of succession

(4) energy flow between organisms

S4K7

ANSWER 1

Regents Date
Aug2009

28

Data Base File Number
223

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enzyme

352. The pancreas is an organ connected to the digestive tract of humans by a duct (tube) through which digestive enzymes flow. These enzymes are important to the digestive system because they

(1) form proteins needed in the stomach

(2) form the acids that break down food

(3) change food substances into molecules that can pass into the bloodstream and cells

(4) change food materials into wastes that can be passed out of the body

S4K1

ANSWER 3

Regents Date
Aug2002

7

Data Base File Number
812

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enzyme

353. Which statement describes all enzymes?

(1) They control the transport of materials.

(2) They provide energy for chemical reactions.

(3) They affect the rate of chemical reactions.

(4) They absorb oxygen from the environment.

S4K5

ANSWER 3

Regents Date
Aug2002

23

Data Base File Number
822

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enzyme

354. Meat tenderizer contains an enzyme that interacts with meat. If meat is coated with tenderizer and then placed in a refrigerator for a short time, how would the enzyme be affected?

(1) It would be broken down.

(2) Its activity would slow down

(3) Its shape would change.

(4) It would no longer act as an enzyme.

S4K5

ANSWER 2

Regents Date
Aug2006

3

Data Base File Number
523

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enzyme

355. Enzyme molecules normally interact with substrate molecules. Some medicines work by blocking enzyme activity in pathogens. These medicines are effective because they

(1) are the same size as the enzyme

(2) are the same size as the substrate molecules

(3) have a shape that fits into the enzyme

(4) have a shape that fits into all cell receptors

S4K5

ANSWER 3

Regents Date Aug2007

4

Data Base File Number 4

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enzyme

356. The enzyme amylase will affect the breakdown of carbohydrates, but it will not affect the breakdown of proteins. The ability of an enzyme molecule to interact with specific molecules is most directly determined by the

(1) shapes of the molecules involved

(2) number of molecules involved

(3) sequence of bases present in ATP

(4) amount of glucose present in the cell

S4K5

ANSWER 1

Regents Date Aug2011

19

Data Base File Number 370

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enzyme

357. Which statement best describes enzymes?

(1) Every enzyme controls many different reactions.

(2) The rate of activity of an enzyme might change as pH changes.

(3) Temperature changes do not affect enzymes.

(4) Enzymes are produced from the building blocks of carbohydrates.

S4K5

ANSWER 2

Regents Date Aug2012

20

Data Base File Number 460

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enzyme

358. Chemicals that help chemical reactions occur at faster rates in living organisms are known as

(1) biotic resources

(2) simple sugars

(3) oxygen molecules

(4) organic catalysts

S4K5

ANSWER 4

Regents Date Aug2013

21

Data Base File Number 986

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enzyme

359. Luciferin is a molecule that, when broken down in fireflies, produces heat and light. The rate at which luciferin is broken down in cells is controlled by

(1) a carbohydrate
(2) a simple sugar
(3) an enzyme
(4) a complex fat

S4K5

ANSWER 3

Regents Date Jan2002

3

Data Base File Number 858

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enzyme

360. All cells of an organism are engaged in many different chemical reactions. This fact is best supported by the presence in each cell of thousands of different kinds of

(1) enzymes
(2) nuclei
(3) chloroplasts
(4) organelles

S4K5

ANSWER 1

Regents Date Jan2006

24

Data Base File Number 491

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enzyme

361. Experiments revealed the following information about a certain molecule: (a) It can be broken down into amino acids. (b) It can break down proteins into amino acids. (c) It is found in high concentrations in the small intestine of humans. Based on this information, this molecule is most likely

(1) an enzyme
(2) an inorganic compound
(3) a hormone
(4) an antigen

S4K5

ANSWER 1

Regents Date Jan2007

19

Data Base File Number 61

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enzyme

Regents Date
Jan2008

362. The sweet taste of freshly picked corn is due to the high sugar content in the kernels. Enzyme action converts about 50% of the sugar to starch within one day after picking. To preserve its sweetness, the freshly picked corn is immersed in boiling water for a few minutes, and then cooled. Which statement most likely explains why the boiled corn kernels remain sweet?

(1) Boiling destroys sugar molecules so they cannot be converted to starch.

(2) Boiling kills a fungus on the corn that is needed to convert sugar to starch.

(3) Boiling activates the enzyme that converts amino acids to sugar.

(4) Boiling deactivates the enzyme responsible for converting sugar to starch.

22

Data Base File Number

88

S4K5

ANSWER 4

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enzyme

Regents Date
Jan2008

363. Cytochrome c is an enzyme located in the mitochondria of many types of cells in many different animals.. Cytochrome c is most likely a

(1) protein molecule

(2) material containing genes

(3) carbohydrate that is absorbed by cells

(4) component of the membrane around the cell.

70

Data Base File Number

102

S4K1

ANSWER 1

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enzyme

Regents Date
Jan2010

364. Base your answer to this question on the information given and on your knowledge of biology. -- Organisms living in a bog environment must be able to tolerate nitrogen-poor, acidic conditions. Bog plants such as the Venus flytrap and sundew are able to obtain their nitrogen by attracting and consuming insects. These plants produce chemicals that break down the insects into usable compounds. The chemicals present in the plants that break down the insects are most likely

(1) fats

(2) hormones

(3) enzymes

(4) carbohydrates

37

Data Base File Number

253

S4K5

ANSWER 3

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enzyme

365. The function of a specific enzyme is most directly influenced by its

(1) molecular size

(2) physical shape

(3) carrying capacity

(4) stored energy

S4K5

ANSWER 2

Regents Date
Jan2014

8

Data Base File Number
1004

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enzyme

366. A liver cell can make enzymes that a heart cell can NOT make because liver cells

(1) digest large, complex molecules

(2) contain more DNA than heart cells

(3) use different genes than the heart cells use

(4) remove carbon dioxide from blood

S4K2

ANSWER 3

Regents Date
June2011

7

Data Base File Number
335

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enzyme structure

367. A characteristic shared by all enzymes, hormones, and antibodies is that their function is determined by the

(1) shape of their molecules

(2) DNA they contain

(3) inorganic molecules they contain

(4) organelles present in their structure

S4K5

ANSWER 1

Regents Date
Aug2001

26

Data Base File Number
934

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enzyme structure

368. Which condition is necessary for enzymes and hormones to function properly in the human body?

(1) These chemicals must have a specific shape.

(2) These chemicals must be able to replicate.

(3) Body temperature must be above 40°C.

(4) Body pH must be above 10.

S4K5

ANSWER 1

Regents Date
Aug2006

28

Data Base File Number
539

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enzyme structure

Regents Date
Jan2006

369. Base your answer to this question on the information given and on your knowledge of biology. -- Where is the Beef? Out Being Irradiated -- E. coli bacteria in food cause an estimated 73,000 cases of infection leading to some deaths in the United States each year. Until recently, the only way to guarantee meat free of E. coli was to heat it to 160°F, which kills E. coli. The rare hamburgers preferred by many people are not heated to this temperature, and just a few E. coli may cause severe illness. Recently, ground beef has been decontaminated by irradiation using electron beam technology. The packaged ground beef is scanned by an electron beam that disrupts the genetic structure of the pathogens. This kills them or leaves them unable to reproduce. This process is considered safe and has been endorsed by various governmental groups in this country as well as the World Health Organization. Irradiation is effective in preserving only certain foods, such as herbs, wheat flour, fresh fruits, vegetables, and some meats.
Although some methods of irradiation can change the taste of some foods, this is not an effect of electron beam technology on ground beef. Opponents of irradiating food are concerned that the process may result in the formation of chemicals that may be harmful or result in a loss of vitamins. Supporters claim that irradiation is safe and should be considered as just another technique for preservation of food. Which specific group of molecules in bacteria would be interfered with by heating them to 160°F?

(1) carbohydrates and fats
(2) enzymes and proteins
(3) ATP and DNA
(4) glucose and fructose

56

S1K1

Data Base File Number

500

ANSWER 2

ethics

370. In the United States, there has been relatively little experimentation involving the insertion of genes from other species into human DNA. One reason for the lack of these experiments is that

(1) the subunits of human DNA are different from the DNA subunits of other species

(2) there are many ethical questions to be answered before inserting foreign genes into human DNA

(3)) inserting foreign DNA into human DNA would require using techniques completely different from those used to insert foreign DNA into the DNA of other mammals

(4)) inserting foreign DNA into human DNA would require using techniques completely different from those used to insert foreign DNA into the DNA of other mammals

S1K1

ANSWER 2

Regents Date
June2008

32

Data Base File Number

125

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evolution

371. Scientists compared fossil remains of a species that lived 5,000 years ago with members of the same species living today. Scientists concluded that this species had changed very little over the entire time period. Which statement best accounts for this lack of change?

(1) The environment changed significantly and those offspring without favorable characteristics died.

(2) The environment changed significantly, but the species had no natural enemies for a long period of time.

(3) The environment did not change significantly and those offspring expressing new characteristics survived their natural enemies.

(4) The environment did not change significantly and those offspring expressing new characteristics did not survive.

S4K3

ANSWER 4

Regents Date
Jan2005

13

Data Base File Number

552

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evolution

372. Which statement is most closely related to the modern theory of evolution?

(1) Characteristics that are acquired during life are passed to offspring by sexual

(2) Evolution is the result of mutations and recombination, only.

(3) Organisms best adapted to a changed environment are more likely to reproduce and pass their genes to offspring.

(4) Asexual reproduction increases the survival of species.

S4K3

ANSWER 3

Regents Date Jan2007

11

Data Base File Number

54

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evolution

373. Cytochrome c is an enzyme located in the mitochondria of many types of cells. The mitochondria of tuna fish, molds, moths, dogs, horses,chichens and humans all contain cytochrome c. The fact that all of these organisms contain Cytochrome c could lead to the inference that
that

(1) Cytochrome c is essential for the reproduction of all organisms

(2) these organisms have all evolved from an ancestor that produced Cytochrome c

(3) mutations in genes that code for Cytochrome c always occur during DNA replication.

(4) only heterotrophs make Cytochrome c

S4K4

ANSWER 2

Regents Date Jan2008

69

Data Base File Number

101

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evolution

374. Scientists in the United States, Europe, and Africa have now suggested that the hippopotamus is a relative of the whale. Earlier studies placed the hippo as a close relative of wild pigs, but recent studies have discovered stronger evidence for the connection to whales. This information suggests that

(1) genetic engineering was involved in the earlier theories

(2) structural evidence is the best evolutionary factor to consider

(3) natural selection does not occur in hippopotamuses

(4) scientific explanations are tentative and subject to change

S4K3

ANSWER 4

Regents Date Jan2009

1

Data Base File Number

152

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evolution

375. Evidence that best supports the theory of biological evolution was obtained from the

(1) investigation of environmental niches

(2) study of fossil records

(3) comparison of the number of cells in organisms

(4) analysis of food chains and food webs

S4K3

ANSWER 2

Regents Date
Jan2014

6

Data Base File Number
1002

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evolution

376. If mitotic cell division is the only way a particular species of single-celled organism can reproduce, it is most likely that

(1) mutations can not occur in this species

(2) the rate of evolution in this species is slower than in one that reproduces sexually

(3) the number of organisms of this species in an area will remain constant

(4) this species belongs to the animal kingdom

S4K3

ANSWER 2

Regents Date
June2004

11

Data Base File Number
680

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evolution

377. What will most likely occur as a result of changes in the frequency of a gene in a particular population?

(1) ecological succession

(2) biological evolution

(3) global warming

(4) resource depletion

S4K3

ANSWER 2

Regents Date
June2009

11

Data Base File Number
184

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evolution

378. Which statement provides evidence that evolution is still occurring at the present time?

(1) The extinction rate of species has decreased in the last 50 years.

(2) Many bird species and some butterfly species make annual migrations.

(3) New varieties of plant species appear more frequently in regions undergoing climatic change.

(4) Through cloning, the genetic makeup of organisms can be predicted.

S4K4

ANSWER 3

Regents Date
June2010

28

Data Base File Number
276

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evolution

379. Many scientists suggest that billions of years ago, life on Earth began with

(1) simple, single-celled organisms

(2) simple, multicellular organisms

(3) complex, single-celled organisms

(4) complex, multicellular organisms

S4K3

ANSWER 1

Regents Date
June2012

30

Data Base File Number
438

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evolution / genetic

380. Throughout the history of life on Earth, many processes have resulted in new traits in organisms. Which list shows some of these processes in order from the oldest to the most recently used?

(1) gene manipulation, natural selection, selective breeding

(2) natural selection, selective breeding, gene manipulation

(3) natural selection, gene manipulation, selective breeding

(4) selective breeding, gene manipulation, natural selection

S4K2

ANSWER 2

Regents Date
Aug2011

35

Data Base File Number
384

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evolution inheritance

381. The females of certain species of turtles will sneak into a nest of alligator eggs to lay their own eggs and then leave, never to return. When the baby turtles hatch, they automatically hide from the mother alligator guarding the nest and go to the nearest body of water when it is safe to do so. Which statement best explains the behavior of these baby turtles?

(1) More of the turtles' ancestors who acted in this way survived to reproduce, passing this behavioral trait to their offspring.

(2) The baby turtles are genetically identical, so they behave the same way

(3) Turtles are not capable of evolving, so they repeat the same behaviors generation after generation.

(4) The baby turtles' ancestors who learned to behave this way taught the behaviors to their offspring

S4K3

ANSWER 1

Regents Date
Aug2008

17

Data Base File Number
145

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evolution mechanism

382. In a population of birds, the percentage of individuals having a certain gene changes from 20% to 60% over the span of several hundred years. This situation will most likely affect the rate of

(1) biological evolution

(2) asexual reproduction

(3) gene mutation

(4) ecological succession

S4K3

ANSWER 1

Regents Date
Aug2013

14

Data Base File Number
980

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evolution mechanism

383. Which species is most likely to survive changing environmental conditions?

(1) a species that has few variations

(2) a species that reproduces sexually

(3) a species that competes with similar species

(4) a species that has a limited life span

S4K3

ANSWER 2

Regents Date
Jan2004

18

Data Base File Number
656

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evolution mechanism

384. One possible explanation for the fact that some simple, one-celled organisms did not evolve into complex, multicellular organisms is that

(1) energy flow in an ecosystem requires simple autotrophic organisms

(2) the reproductive rate of single-celled organisms is too fast for change to occur

(3) these organisms possessed traits that enabled them to survive in a changing environment

(4) stability within an ecosystem requires the presence of a variety of different species

S4K3

ANSWER 3

Regents Date
Jan2014

27

Data Base File Number
1019

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evolution pathway

385. Scientists hypothesize that cabbage, broccoli, cauliflower, and radishes developed along a common evolutionary pathway. Which observation would best support this hypothesis?

(1) Fossils of these plants were found in the same rock layer.

(2) Chloroplasts of these plants produce a gas.

(3) These plants live in the same environment.

(4) These plants have similar proteins.

LAB1

ANSWER 4

Regents Date
Jan2006

65

Data Base File Number
501

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evolution pathway

386. In2007, scientists broke open a fossil of a dinosaur bone and found some preserved tissues. Analysis showed that some proteins in these tissues are very similar to proteins found in modern chickens. The conclusion that these dinosaurs are related to modern chickens is based on

(1) molecular similarities
(2) natural selection
(3) similarities in behavior
(4) the occurrence of mutations

S4K3

ANSWER 1

Regents Date Jan2013

13

Data Base File Number 626

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evolution pathway

387. The first life-forms to appear on Earth were most likely

(1) complex single-celled organisms
(2) complex multicellular organisms
(3) simple single-celled organisms
(4) simple multicellular organisms

S4K3

ANSWER 3

Regents Date June2001

16

Data Base File Number 898

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evolution theory

388. Which statement is best supported by the theory of evolution?

(1) Genetic alterations occur every time cell reproduction occurs.
(2) The fossil record provides samples of every organism that ever lived
(3) Populations that have advantageous characteristics will increase in number.
(4) Few organisms survive when the environment remains the same.

S4K3

ANSWER 3

Regents Date Aug2010

14

Data Base File Number 288

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evolution theory

389. Which statement represents the major concept of the biological theory of evolution?

(1) A new species moves into a habitat when another species becomes extinct.
(2) Every period of time in Earth's history has its own group of organisms.
(3) Present-day organisms on Earth developed from earlier, distinctly different organisms.
(4) Every location on Earth's surface has its own unique group of organisms.

S4K3

ANSWER 3

Regents Date June2002

14

Data Base File Number 842

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evolutionary change

390. Which characteristics of a population would most likely indicate the lowest potential for evolutionary change in that population?

(1) sexual reproduction and few mutations

(2) sexual reproduction and many mutations

(3) asexual reproduction and few mutations

(4) asexual reproduction and many mutations

S4K3

ANSWER 3

Regents Date Aug2004

Data Base File Number 14 705

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evolutionary change

391. When changes occur in the genes of sex cells, these changes

(1) lead to mutations in the parent organism

(2) are always harmful to the offspring

(3) can be the basis for evolutionary change

(4) only affect asexually reproducing organisms

S4K3

ANSWER 3

Regents Date Aug2011

Data Base File Number 13 366

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evolutionary change

392. Limited resources contribute to evolutionary change in animals by increasing

(1) genetic variation within the population

(2) competition between members of the species

(3) the carrying capacity for the species

(4) the rate of photosynthesis in the population

S4K3

ANSWER 2

Regents Date Jan2009

Data Base File Number 15 163

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evolutionary change

393. Which reproductive pattern would be associated with a species that is most likely to undergo rapid evolutionary change?

(1) asexual reproduction with a short reproductive cycle

(2) sexual reproduction with a short reproductive cycle

(3) asexual reproduction with a long reproductive cycle

(4) sexual reproduction with a long reproductive cycle

S4K3

ANSWER 2

Regents Date Jan2010

Data Base File Number 11 234

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evolutionary change

Regents Date
June2007

394. Evolutionary changes have been observed in beak size in a population of medium ground finches in the Galapagos Islands. Given a choice of small and large seeds, the medium ground finch eats mostly small seeds which are easier to crush. However, during dry years, all seeds are in short supply. Small seeds are quickly consumed, so the birds are left with a diet of large seeds. Studies have shown that this change in diet may be related to an increase in the average size of the beak of the medium ground finch. Base your answer to this question on the information given and on your knowledge of biology. The most likely explanation for the increase in average beak size of the medium ground finch is that the

(1) trait is inherited and birds with larger beaks have greater reproductive success

(2) birds acquired larger beaks due to the added exercise of feeding on large seeds

(3) birds interbred with larger-beaked species and passed on the trait

(4) lack of small seeds caused a mutation which resulted in a larger beak

69

S4K3

Data Base File Number

ANSWER 1

45

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evolutionary change

Regents Date
June2013

395. The fossil record of ancient life forms provides scientific evidence of

(1) direct harvesting

(2) selective breeding

(3) gene manipulation

(4) evolutionary changes

6

S4K3

Data Base File Number

ANSWER 4

946

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evolutionary relationship

Regents Date
Aug2005

396. The presence of some similar structures in all vertebrates suggests that these vertebrates

(1) all develop at the same rate

(2) evolved from different animals that appeared on Earth at the same time

(3) all develop internally and rely on nutrients supplied by the mother

(4) may have an evolutionary relationship

9

S4K3

Data Base File Number

ANSWER 4

599

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evolutionary relationship

397. To determine evolutionary relationships between organisms, a comparison would most likely be made between all of the characteristics below except

(1) methods of reproduction

(2) number of their ATP molecules

(3) sequences in their DNA molecules

(4) structure of protein molecules present

S4K3

ANSWER 2

Regents Date
Aug2008

15

Data Base File Number
144

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evolutionary relationship

398. Which observation could best be used to indicate an evolutionary relationship between two species?

(1) They have similar base sequences.

(2) They have similar fur color.

(3) They inhabit the same geographic regions.

(4) They occupy the same niche.

S4K3

ANSWER 1

Regents Date
Jan2009

11

Data Base File Number
159

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excretory system

399. Which system is correctly paired with its function?

(1) immune system --- intake and distribution of oxygen to cells of the body

(2) excretory system --- remove potentially dangerous materials from the body

(3) digestive system --- transport energy-rich molecules to cells

(4) circulatory system --- produce building blocks of complex compounds

S4K1

ANSWER 2

Regents Date
Aug2010

2

Data Base File Number
281

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excretory system

400. What will most likely happen to wastes containing nitrogen produced as a result of the breakdown of amino acids within liver cells of a mammal?

(1) They will be digested by enzymes in the stomach.

(2) They will be removed by the excretory system.

(3) They will be destroyed by specialized blood cells.

(4) They will be absorbed by mitochondria in nearby cells.

S4K1

ANSWER 2

Regents Date
Jan2007

2

Data Base File Number
47

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experimental testing

401. Base your answers to this question on the information given and on your knowledge of biology.
Female mosquitoes spread diseases when they bite humans to obtain blood. It is only the females that do the biting. Research is being conducted to alter the DNA of male
mosquitoes. These altered males could then mate with normal female mosquitoes. All of the resulting female offspring would have wing defects that prevent them from flying. One assumption from this research is that the

(1) altered males would begin to bite humans and spread the diseases

(2) female offspring would be unable to bite humans, since they cannot fly

(3) altered males would not be able to reproduce

(4) female offspring would become larger in size

S4K2

ANSWER 2

Regents Date Jan2014

34

Data Base File Number 1024

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experimental testing

402. An experimental design included references from prior experiments, materials and equipment, and step-by-step procedures. What else should be included before the experiment can be started?

(1) a set of data

(2) a conclusion based on data

(3) safety precautions to be used

(4) an inference based on results

S1K2

ANSWER 3

Regents Date June2002

2

Data Base File Number 834

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experimental testing

403. The development of an experimental research plan should not include a

(1) list of safety precautions for the experiment

(2) list of equipment needed for conducting the experiment

(3) procedure for the use of technologies needed for the experiment

(4) conclusion based on data expected to be collected in the experiment

S1K1

ANSWER 4

Regents Date June2008

33

Data Base File Number 126

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extinction

S4K3

ANSWER 3

404. Extinction of a species could result from

(1) evolution of a type of behavior that produces greater reproductive success

(2) synthesis of a hormone that controls cellular communication

(3) limited genetic variability in the species

(4) fewer unfavorable mutations in the species

Regents Date Aug2007 **15**

Data Base File Number **12**

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extinction

S4K7

ANSWER 1

405. One irreversible effect of both deforestation and water pollution on the environmrnt is the

(1) extinction of species

(2) thinning of the ozone shield

(3) depletion of atmospheric carbon dioxide levels

(4) increase in renewable resources

Regents Date Aug2007 **23**

Data Base File Number **16**

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extinction

S4K3

ANSWER 2

406. A species that lacks the variation necessary to adapt to a changing environment is more likely to

(1) develop many mutated cells

(2) become extinct over time

(3) begin to reproduce sexually

(4) develop resistance to diseases

Regents Date Aug2010 **16**

Data Base File Number **290**

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extinction

S4K3

ANSWER 2

407. Examination of ancient rock layers at a certain location reveals many different fossils. Which conclusion can be drawn concerning the species that formed these fossils?

(1) Only the predators are still present.

(2) Many of them are now extinct.

(3) They produced offspring that were all genetically identical.

(4) They had no variations due to mutations.

Regents Date Aug2012 **14**

Data Base File Number **455**

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extinction

Regents Date
Jan2005

408. Which statement describing a cause of extinction includes the other three?

(1) Members of the extinct species were unable to compete for food.

(2) Members of the extinct species were unable to conceal their presence by camouflage.

(3) Members of the extinct species lacked adaptations essential for survival.

(4) Members of the extinct species were too slow to escape from predators.

S4K3

ANSWER 3

12

Data Base File Number
551

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extinction

Regents Date
Jan2006

409. A certain plant species, found only in one particular stream valley in the world, has a very shallow root system. An earthquake causes the stream to change its course so that the valley in which the plant species lives becomes very dry. As a result, the species dies out completely. The effect of this change on this plant species is known as

(1) evolution

(2) extinction

(3) mutation

(4) succession

S4K3

ANSWER 2

15

Data Base File Number
483

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extinction

Regents Date
Jan2007

410. Wooly mammoths became extinct thousands of years ago, while other species of mammals that existed at that time still exist today. These other species of mammals most likely exist today because, unlike the mammoths the

(1) produced offspring that all had identical inheritable characteristics

(2) did not face a struggle for survival

(3) learned to migrate to new environments

(4) had certain inheritable traits that enabled them to survive

S4K3

ANSWER 4

14

Data Base File Number
57

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extinction

411. According to the fossil record, which statement is accurate?

(1) Most of the species that have lived on Earth no longer exist.

(2) Most of the species that have lived on Earth still exist today.

(3) Fossils of species that never existed can be found.

(4) Fossils of species that never existed, but will exist in the future, can be found.

S4K3

ANSWER 1

Regents Date
Jan2013

18

Data Base File Number

630

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extinction

412. Which statement is best supported by fossil records?

(1) Many organisms that lived in the past are now extinct.

(2) Species occupying the same habitat have identical environmental needs.

(3) The struggle for existence between organisms results in changes in populations.

(4) Structures such as leg bones and wing bones can originate from the same type of tissue found in embryos.

S4K3

ANSWER 1

Regents Date
June2001

15

Data Base File Number

897

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extinction

413. Which population of organisms would be in greatest danger of becoming extinct?

(1) A population of organisms having few variations living in a stable environment.

(2) A population of organisms having few variations living in an unstable environment.

(3) A population of organisms having many variations living in a stable environment

(4) A population of organisms having many variations living in an unstable environment.

S4K3

ANSWER 2

Regents Date
June2003

20

Data Base File Number

765

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extinction

414. Which factor contributed most to the extinction of many species?

(1) changes in the environment

(2) lethal mutations

(3) inability to evolve into simple organisms

(4) changes in migration patterns

S4K3

ANSWER 1

Regents Date
June2005

11

Data Base File Number

570

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extinction

415. A certain species has little genetic variation. The rapid extinction of this species would most likely result from the effect of

(1) successful cloning

(2) gene manipulation

(3) environmental change

(4) genetic recombination

S4K3

ANSWER 3

Regents Date
June2007

14

Data Base File Number
34

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feedback

416. Which statement does NOT describe an example of a feedback mechanism that maintains homeostasis?

(1) The guard cells close the openings in leaves, preventing excess water loss from a plant.

(2) White blood cells increase the production of antigens during an allergic reaction.

(3) Increased physical activity increases heart rate in humans.

(4) The pancreas releases insulin, helping humans to keep blood sugar levels stable.

S4K5

ANSWER 2

Regents Date
Aug2004

19

Data Base File Number
709

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feedback

417. Feedback interactions in the human body are important because they

(1) determine the diversity necessary for evolution to occur

(2) direct the synthesis of altered genes that are passed on to every cell in the body

(3) regulate the shape of molecules involved in cellular communication

(4) keep the internal body environment within its normal range

S4K5

ANSWER 4

Regents Date
Aug2005

22

Data Base File Number
610

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feedback

418. Sweating is a process that helps cool the body during strenuous exercise. This is an example of

(1) recycling of gases

(2) cellular respiration

(3) gene malfunction

(4) a feedback mechanism

S4K5

ANSWER 4

Regents Date
Aug2011

22

Data Base File Number
372

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feedback

419. Feedback mechanisms are best described as processes that help

(1) reduce hormone levels to below normal in the blood

(2) destroy hormones in the blood

(3) directly control muscle contraction in the leg

(4) keep body conditions near a normal, steady state

S4K5

ANSWER 4

Regents Date
Jan2002

21

Data Base File Number
869

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feedback

420. Which process illustrates a feedback mechanism in plants?

(1) Chloroplasts take in more nitrogen, which increases the rate of photosynthesis.

(2) Chloroplasts release more oxygen in response to a decreased rate of photosynthesis.

(3) Guard cells change the size of leaf openings, regulating the exchange of gases.

(4) Guard cells release oxygen from the leaf at night.

S4K5

ANSWER 3

Regents Date
June2006

21

Data Base File Number
511

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feedback

421. Riding a bicycle requires balance and constant adjustment and monitoring by the rider in order to continue cycling. Successfully riding a bicycle most directly results from the ability to

(1) sexually reproduce

(2) grow and develop

(3) detect and respond to change

(4) metabolize food for energy

S4K5

ANSWER 3

Regents Date
June2013

21

Data Base File Number
960

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fermentation

422. A student prepared a test tube containing yeast, glucose, and water. After 24 hours, the test tube was analyzed for the presence of several substances. What substance would the student expect to find if respiration occurred in the test tube?

(1) a hormone

(2) starch

(3) nitrogen

(4) carbon dioxide

S4K5

ANSWER 4

Regents Date
Jan2011

37

Data Base File Number
328

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fertilization

423. What normally happens immediately after fertilzation in sexual reproduction?

(1) specialization of cells to form a fetus from an egg

(2) production of daughter cells having twice the number of chromosomes as the parent cell

(3) production of daughter cells having half the number of chromosomes as the parent cell

(4) division of cells resulting in the development of an embryo from a zygote

S4K4

ANSWER 4

Regents Date
June2010

17

Data Base File Number

266

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fetal development

424. The characteristics of a developing fetus are most Influenced by

(1) gene combinations and their expression in the embryo

(2) hormone production by the father

(3) circulating levels of white blood cells in the placenta

(4) milk production in the mother

S4K4

ANSWER 1

Regents Date
Aug2004

28

Data Base File Number

718

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fetal development

425. Which situation involves a risk to a fetus due to the mother smoking during pregnancy?

(1) decreased digestive activity in the stomach of the fetus

(2) a decrease in the amount of oxygen in the ovary of the mother

(3) inhalation of secondhand smoke by the fetus

(4) toxins in the bloodstream of the mother

S4K4

ANSWER 4

Regents Date
Aug2010

18

Data Base File Number

292

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fetal development

426. The drinking of alcoholic beverages by a pregnant woman is harmful to the development of her fetus. This is most damaging early in a pregnancy because during this time

(1) the lungs of the fetus become functional

(2) alcohol can easily enter the mouth of the fetus

(3) many of the essential organs of the fetus are forming

(4) the fetus cannot excrete wastes

S4K4

ANSWER 3

Regents Date
Aug2011

17

Data Base File Number

368

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fetal development

427. Exposure to toxins during early stages of pregnancy is more likely to cause birth defects than exposure in late pregnancy because

(1) essential organs form during early development

(2) the uterus provides more protection in late pregnancy

(3) the placenta forms during late pregnancy

(4) meiosis occurs rapidly during early development

S4K4

ANSWER 1

Regents Date Jan2012

14

Data Base File Number

402

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fetus blood

428. Which statement best describes the relationship between the blood of a human fetus and the blood of the mother?

(1) Their blood systems are separate only at certain times in development and connected at other times.

(2) The blood flows directly from the mother into the fetus.

(3) Their blood systems are separate and no materials are exchanged.

(4) Their blood systems are separate, but certain materials pass from one to the other.

S4K4

ANSWER 4

Regents Date Aug2009

17

Data Base File Number

212

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finite resources

429. New fuels are being produced by converting corn and grasses into compounds containing alcohols that can be broken down for energy in various engines. The purpose of this research is to

(1) reduce the use of finite resources

(2) increase the rate of air pollution

(3) reduce the rate of homeostasis in organisms

(4) cause a loss of biodiversity in the rain forests

S4K6

ANSWER 1

Regents Date Aug2011

27

Data Base File Number

377

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finite resources

430. The finite resources of Earth are often affected by increasing human consumption. These finite resources are

(1) not renewable over a short period of time

(2) the products of rapid human population growth

(3) the result of deforestation

(4) needed to degrade ecosystems

S4K7

ANSWER 1

Regents Date Aug2013

15

Data Base File Number

981

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finite resources

431. The reason that organisms can NOT produce populations of unlimited size is that

(1) the resources of Earth are finite

(2) there is no carrying capacity on Earth

(3) species rarely compete with one another

(4) interactions between organisms are unchanging

S4K6

ANSWER 1

Regents Date
Jan2005

19

Data Base File Number
557

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food chain

432. One arctic food chain consists of polar bears, fish, seaweed, and seals. Which sequence demonstrates the correct flow of energy between these organisms?

(1) seals → seaweed → fish → polar bears

(2) fish → seaweed → polar bears → seals

(3) seaweed → fish → seals → polar bears

(4) polar bears → fish → seals → seaweed

S4K6

ANSWER 3

Regents Date
Jan2004

22

Data Base File Number
660

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food chain

433. Which statement best describes the flow of energy and the movement of chemical compounds in an ecosystem?

(1) Energy flows into living organisms and remains there, while chemical compounds are transferred from organism to organism.

(2) Chemical compounds flow in one direction in a food chain and energy is produced.

(3) Energy is transferred from organism to organism in a food chain and chemical compounds are recycled.

(4) Energy flows out of living organisms and is lost, while chemical compounds remain permanently inside organisms.

S4K6

ANSWER 3

Regents Date
Jan2010

22

Data Base File Number
244

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food chain

434. Which group would most likely be represented in a food chain?

(1) biotic factors

(2) abiotic factors

(3) inorganic compounds

(4) finite resources

S4K6

ANSWER 1

Regents Date
June2012

23

Data Base File Number
434

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food web

435. El Niño is a short-term climatic change that causes ocean waters to remain warm when they should normally be cool. The warmer temperatures disrupt food webs and alter weather patterns. Which occurrence would most likely result from these changes?

(1) Some species would become extinct, and other species would evolve to take their place.

(2) Some populations in affected areas would be reduced, while other populations would increase temporarily.

(3) The flow of energy through the ecosystem would remain unchanged.

(4) The genes of individual organisms would mutate to adapt to the new environmental conditions.

S4K6

ANSWER 2

Regents Date
Aug2001

34

Data Base File Number

940

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food web

436. A food web is more stable than a food chain because a food web

(1) transfers all of the producer energy to herbivores

(2) reduces the number of niches in the ecosystem

(3) includes alternative pathways for energy flow

(4) includes more consumers than producers

S4K6

ANSWER 3

Regents Date
Aug2002

3

Data Base File Number

809

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food web

437. One season, there was a shortage of producers in a food web. As a result, the number of deer and wolves decreased. The reason that both the deer and wolf populations declined is that

(1) producers are not as important as consumers in a food web

(2) more consumers than producers are needed to support the food web

(3) organisms in this food web are interdependent

(4) populations tend to stay constant in a food web

S4K1

ANSWER 3

Regents Date
Aug2008

3

Data Base File Number

133

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food web

438. Some of the energy taken in by an organism is not available to other organisms in a food web. Energy that is not available to other organisms in a food web is energy that is

(1) stored in the remains of a dead animal

(2) lost to the environment as heat

(3) stored in eggs produced during sexual reproduction

(4) produced in muscle tissue during the growth of an organism

Regents Date
Aug2009

22

Data Base File Number
217

S4K6

ANSWER 2

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food web

439. Which type of model provides the most complete representation of the feeding relationships within a community?

(1) a material cycle

(2) a predator-prey association

(3) a food chain

(4) a food web

Regents Date
Jan2002

23

Data Base File Number
870

S4K6

ANSWER 4

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food web

440. In a typical forest food web in New York State, what is the original source of energy?

(1) chemical bonds in sugar molecules

(2) enzymatic reactions

(3) the Sun

(4) chemical reactions of bacteria

Regents Date
Jan2003

51

Data Base File Number
751

S4K6

ANSWER 3

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food web

441. A student could best demonstrate knowledge of how energy flows throughout an ecosystem by

(1) drawing a food web using specific organisms living in a pond

(2) conducting an experiment that demonstrates the process of photosynthesis

(3) labeling a diagram that illustrates ecological succession

(4) making a chart to show the role of bacteria in the evironment

Regents Date
Jan2004

2

Data Base File Number
645

S1K3

ANSWER 1

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food web

442. The greatest number of relationships between the organisms in an ecosystem is best shown in

(1) a food chain

(2) an energy pyramid

(3) a food web

(4) an ecological succession diagram

S4K1

ANSWER 3

Regents Date
Jan2011
1
Data Base File Number
307

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functions / specialized

443. The human heart and lungs contain cells that

(1) produce a hormone involved in respiration

(2) have the same genetic information but perform different specialized functions

(3) use one part of the genetic code to synthesize all enzymes needed by the cell

(4) contain different numbers of DNA molecules

S4K2

ANSWER 2

Regents Date
Aug2010
6
Data Base File Number
284

Galapagos Finches

444. Beak structures differ between individuals of one species of bird. These differences most likely indicate

(1) the presence of a variety of food sources

(2) a reduced rate of reproduction

(3) a large supply of one kind of food

(4) an abundance of predators

LAB3

ANSWER 1

Regents Date
Jan2005
71
Data Base File Number
569

Galapagos Finches

445. In members of a bird species living on a remote island, the greatest number of beak variations in the population would most likely be found when

(1) there is a high level of competition for limited resources

(2) homeostasis is limited by a severe climate

(3) they have a large and varied food supply

(4) they are prey for a large number of predators

LAB3

ANSWER 3

Regents Date
June2005
74
Data Base File Number
592

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gametes

446. A dogfish shark contains 24 chromosomes in each of its muscle cells. How many chromosomes are normally found in each of its gametes?

(1) 6
(2) 12
(3) 24
(4) 48

S4K4

ANSWER 2

Regents Date
Jan2010

18

Data Base File Number

240

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gametes

447. Which statement describes a function of the human male reproductive system?

(1) It produces gametes in testes.
(2) It supplies a fluid that protects the fetus.
(3) It provides support for the development of the embryo.
(4) It provides nutrient materials through a placenta.

S4K4

ANSWER 1

Regents Date
Jan2012

13

Data Base File Number

401

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gel electrophoresis

448. Gel electrophoresis is used to separate DNA fragments on the basis of their

(1) size
(2) color
(3) functions
(4) chromosomes

LAB1

ANSWER 1

Regents Date
June2004

63

Data Base File Number

694

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gene

449. Viruses frequently infect bacteria and insert new genes into the genetic material of the bacteria. When these infected bacteria reproduce asexually, which genes would most likely be passed on?

(1) only the new genes
(2) only the original genes
(3) both the original and the new genes
(4) neither the original nor the new genes

S4K2

ANSWER 3

Regents Date
Aug2007

12

Data Base File Number

9

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gene

450. In all organisms, the coded instructions for specifying the characteristics of the organism are directly determined by the arrangement of the

(1) twenty kinds of amino acids in each protein

(2) twenty-three pairs of genes on each chromosome

(3) strands of simple sugars in certain carbohydrate molecules

(4) four types of molecular bases in the genes

S4K2

ANSWER 4

Regents Date
Aug2008

7

Data Base File Number

137

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gene

451. Which statement indicates one difference between the gene that codes for insulin and the gene that codes for testosterone in humans?

(1) The gene for insulin is replicated in vacuoles, while the gene for testosterone is replicated in mitochondria.

(2) The gene for insulin has a different sequence of molecular bases than the gene for testosterone.

(3) The gene for insulin is turned on in liver cells, but the gene for testosterone is not.

(4) The gene for insulin is a sequence of five different molecular bases while the gene for testosterone is a sequence of only four different molular bases.

S4K2

ANSWER 2

Regents Date
Jan2008

12

Data Base File Number

82

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gene

452. A human liver cell and a human skin cell in the same person have the same genetic sequences. However, these cells are different because the liver cell

(1) has more dominant traits than the skin cell

(2) can reproduce but the skin cell cannot

(3) carries out respiration but the skin cell does not

(4) uses different genes than the skin cell

S4K2

ANSWER 4

Regents Date
Jan2009

3

Data Base File Number

154

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gene alteration

453. Some bacteria are unable to survive unless a certain nutrient is present in their food supply. After exposure to ultraviolet radiation, some of these bacteria are able to synthesize this nutrient. This change is most likely due to

(1) increased respiration

(2) exposure to an antigen

(3) an alteration in a gene

(4) gamete formation

S4K3

ANSWER 3

Regents Date
Jan2012

29

Data Base File Number
413

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gene alteration

454. Which process can produce new inheritable characteristics within a multicellular species?

(1) cloning of the zygote

(2) mitosis in muscle cells

(3) gene alterations in gametes

(4) differentiation in nerve cells

S4K3

ANSWER 3

Regents Date
June2006

8

Data Base File Number
506

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gene combinations

455. A single pair of goldfish in an aquarium produced a large number of offspring. These offspring showed variations in body shape and coloration. The most likely explanation for these variations is that the

(1) offspring were adapting to different environments

(2) offspring were produced from different combinations of genes

(3) parent fish had not been exposed to mutagenic agents

(4) parent fish had not reproduced sexually

S4K3

ANSWER 2

Regents Date
June2007

13

Data Base File Number
33

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gene expression

Regents Date
Aug2001

456. During the warm temperatures of summer, the arctic fox produces enzymes that cause its fur to become reddish brown. During the cold temperatures of winter, these enzymes do not function. As a result, the fox has a white coat that blends into the snowy background. This change in fur color shows that

(1) the genes of a fox are made of unstable DNA

(2) mutations can be caused by temperature extremes

(3) random alteration of DNA can occur on certain chromosomes

(4) the expression of certain genes is affected by temperature

S4K2

ANSWER 4

10

Data Base File Number

920

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gene expression

Regents Date
Aug2002

457. In Siamese cats, the fur on the ears, paws, tail, and face is usually black or brown, while the rest of the body fur is almost white. If a Siamese cat is kept indoors where it is warm, it may grow fur that is almost white on the ears, paws, tail, and face, while a Siamese cat that stays outside where it is cold, will grow fur that is quite dark on these areas. The best explanation for these changes in fur color is that

(1) an environmental factor influences the expression of this inherited trait

(2) the location of pigment-producing cells determines the DNA code of the genes

(3) skin cells that produce pigments have a higher mutation rate than other cells

(4) the gene for fur color is modified by interactions with the environment

S4K2

ANSWER 1

11

Data Base File Number

815

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gene expression

Regents Date
Aug2003

458. In a particular variety of corn, the kernels turn red when exposed to sunlight. In the absence of sunlight, the kernels remain yellow. Based on this information, it can be concluded that the color of these corn kernels is due to

(1) a different type of DNA that is produced when sunlight is present

(2) a different species of corn that is produced in sunlight

(3) the effect of sunlight on the number of chromosomes inherited

(4) the effect of environment on gene expression

S4K2

ANSWER 4

8

Data Base File Number

785

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gene expression

459. Some mammals have genes for fur color that produce pigment only when the outside temperature is above a certain level. This pigment production is an example of how the environment of an organism can

(1) destroy certain genes

(2) cause new mutations to occur

(3) stop the process of evolution

(4) influence the expression of certain genes

S4K2

ANSWER 4

Regents Date
Aug2004

7

Data Base File Number
699

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gene expression

460. The enzyme pepsin is produced in the cells of the stomach but NOT in the cells of the small intestine. The small intestine produces a different enzyme, trypsin. The reason that the stomach and small intestine produce different enzymes is that the gene that codes for pepsin is

(1) in the cells of the stomach, but not in the cells of the small intestine

(2) expressed in the stomach but not expressed in the small intestine

(3) mutated in the small intestine

(4) digested by the trypsin in the small intestine

S4K2

ANSWER 2

Regents Date
Aug2005

8

Data Base File Number
598

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gene expression

461. In one variety of corn, the kernels turn red when exposed to sunlight. In the absence of sunlight, the kernels remain yellow. Based on this information, it can be concluded that the color of these corn kernels is due to

(1) process of selective breeding

(2) rate of photosynthesis

(3) effect of environment on gene expression

(4) composition of the soil

S4K2

ANSWER 3

Regents Date
Aug2005

4

Data Base File Number
596

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gene expression

462. Genes are inherited, but their expressions can be modified by the environment. This statement explains why

(1) some animals have dark fur only when the temperature is within a certain range

(2) offspring produced by means of sexual reproduction look exactly like their parents

(3) identical twins who grow up in different homes have the same characteristics

(4) animals can be cloned, but plants cannot

S4K2

ANSWER 1

Regents Date
Aug2006

2

Data Base File Number
522

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gene expression

463. The brown summer feathers of ptarmigans, small Arctic birds, are replaced by white feathers after winter arrives. Which statement best explains this observation?

(1) The expression of genes can be modified by the environment.

(2) Holes in the ozone layer vary in size depending on the season.

(3) Acids in rain bleach the brown feathers of the bird.

(4) Mutations occur only during certain seasons.

S4K1

ANSWER 1

Regents Date Aug2007

8

Data Base File Number

6

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gene expression

464. A student notices that fruit flies with the curly wing trait develop straight wings if kept at a temperature of 16°C, but develop curly wings if kept at 25°C. The best explanation for this observation is that

(1) wing shape is controlled by behavior

(2) wing shape is influenced by light intensity

(3) gene expression can be modified by interactions with the environment

(4) gene mutations for wing shape can occur at high temperatures

S4K2

ANSWER 3

Regents Date Aug2008

6

Data Base File Number

136

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gene expression

465. The colors and scents of plants attract helpful insects and repel insects that feed on them. The production of the proteins that provide these colors and scents is the direct result of the

(1) behavior learned from parent plants

(2) presence of specific genes

(3) the genetic makeup of the surrounding vegetation

(4) inability of plants to move as animals do

S4K2

ANSWER 2

Regents Date Aug2012

17

Data Base File Number

458

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gene expression

466. A towel placed on a lawn for a length of time can cause the grass beneath it to lose its green color. The most probable explanation for this is that darkness

(1) affects the expression of certain genes in the grass

(2) causes a mutation in the plants

(3) affects the structure of cell membranes in the grass

(4) causes plants to switch to heterotrophic nutrition

S4K2

ANSWER 1

Regents Date
Aug2012

5

Data Base File Number

447

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gene expression

467. Fruit flies with the curly-wing trait will develop straight wings if kept at a temperature of 16°C during development and curly wings if kept at 25°C. The best explanation for this change in the shape of wings is that the

(1) genes for curly wings and genes for straight wings are found on different chromosomes

(2) type of genes present in the fruit fly is dependent on environmental temperature

(3) environment affects the expression of the genes for this trait

(4) higher temperature produces a gene mutation

S4K2

ANSWER 3

Regents Date
Jan2004

8

Data Base File Number

650

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gene expression

468. The cells that make up the skin of an individual have some functions different from the cells that make up the liver because

(1) all cells have a common ancestor

(2) different cells have different genetic material

(3) environment and past history have no influence on cell function

(4) different parts of genetic instructions are used in different types of cells

S4K2

ANSWER 4

Regents Date
Jan2004

11

Data Base File Number

653

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gene expression

469. Which statement best explains the fact that some identical twins appear different from one another?

(1) Their DNA is essentially the same and the environment plays little or no role in the expression of their genes.

(2) Their DNA is very different and the environment plays a significant role in the expression of their genes.

(3) Their DNA is very different and the environment plays little or no role in the expression of their genes.

(4) Their DNA is essentially the same and the environment plays a significant role in the expression of their genes.

S4K2

ANSWER 4

Regents Date
Jan2006

6

Data Base File Number

478

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gene expression

470. When "S. marcescens", a bacterium, is grown in a refrigerator, it produces red-colored colonies.However, if the bacterium is grown at room temperature, the colonies are white. The best explanation for this situation is that

(1) refrigeration changes the structure of genes

(2) room temperature stimulates the synthesis of a red pigment

(3) temperature has an effect on the expression of genes

(4) only temperature is responsible for the expression of a trait

S4K2

ANSWER 3

Regents Date
Jan2011

7

Data Base File Number

310

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gene expression

471. Although a liver cell and a muscle cell in a human developed from the same single cell, their appearance and functions are different. This is because the liver cell

(1) contains different genes than the muscle cell

(2) expresses different genes than the muscle cell

(3) destroys the muscle cell genes it contains

(4) lacks the genes found in muscle cells

S4K2

ANSWER 2

Regents Date
Jan2012

15

Data Base File Number

403

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gene expression

Regents Date
Jan2013

472. In the summer, the arctic fox appears brown because its cells produce a dark pigment. However, in the winter, the arctic fox appears white because the dark pigment is not produced. The color change is most likely due to the effect of

(1) different genes produced in the different seasons

(2) increased pollution on genetic mutations

(3) environmental conditions on gene expression

(4) poor nutrition on cell growth and development

S4K2

6

Data Base File Number
622

ANSWER 3

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gene expression

Regents Date
Jan2014

473. Researchers recently discovered that when hammerhead sharks were moved to shallower water, resulting in exposure to increased light intensity, their backs turned a deep brownish black. Which statement best supports this observation?

(1) Genes are inherited, but their expression can be modified by interactions with the environment.

(2) The cells of hammerhead sharks contain many thousands of different genes in their nuclei.

(3) An inherited trait of an individual can be determined by one or by many genes.

(4) Asexually produced offspring are normally genetically identical to the parent.

S4K2

30

Data Base File Number
1022

ANSWER 1

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gene expression

Regents Date
June2002

474. The blood of newborn babies is tested to determine the presence of a certain substance. This substance indicates the genetic disorder PKU, which may result in mental retardation. Babies born with this disorder are put on a special diet so that mental retardation will not develop. In this situation, modification of the baby's diet is an example of how biological research can be used to

(1) change faulty genes

(2) cure a disorder

(3) stimulate immunity

(4) control a disorder

S4K5

24

Data Base File Number
849

ANSWER 4

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gene expression

Regents Date
June2003

475. Scientific studies show that identical twins who were separated at birth and raised in different homes may vary in height, weight, and intelligence. The most probable explanation for these differences is that

(1) original genes of each twin increased in number as they developed

(2) one twin received genes only from the mother while the other twin received genes only from the father

(3) environments in which they were raised were different enough to affect the expression of their genes

(4) environments in which they were raised were different enough to change the genetic makeup of both individuals

S4K2

9

Data Base File Number

ANSWER 3

759

gene expression

Regents Date
June2004

476. Base your answer to this question on the passage given and on your knowledge of biology.

. . . Some of the most common and deadly bacteria do their mischief by forming a sticky scum called biofilm. Individually, the microbes are easy to control, but when they organize themselves into biofilms they can become deadly, said Dr. Barbara Iglewski of the University of Rochester.

Biofilms are actually intricately organized colonies of billions of microbes, all working in a coordinated way to defend against attack and to pump out a toxin that can be deadly.

Once they are organized, the bacteria are highly resistant to antibiotics and even strong detergents often cannot wash them away or kill them.

Iglewski and colleagues from Montana State University and the University of Iowa report in "Science" that they discovered how the microbes in the colonies communicate and found that once this conversation is interrupted, the deadly bugs can be easily washed away.

Using "Pseudomonas aeruginosa", a common bacteria that is a major infection hazard in hospitals and among cystic fibrosis patients, the researchers isolated a gene that the bacteria uses to make a communications molecule. The molecule helps the microbes organize themselves into a biofilm -- a complex structure that includes tubes to carry in nutrients and carry out wastes, including deadly toxins.

In their study, the researchers showed that if the gene that makes the communications molecule was blocked, the "Pseudomonas aeruginosa" could form only wimpy [weak], unorganized colonies that could be washed away with just a soap that has no effect on a healthy colony ….

Adapted from: Paul Recer, "Researchers find new means to disrupt attack by microbes," The Daily Gazette, April 26, 1998. --- Bacteria that form biofilms may be controlled most effectively by

(1) antibiotics

(2) detergents

(3) cutting the tubes through which the bacteria communicate

(4) blocking the expression of a gene that helps the colonies to organize

34

S1K1

Data Base File Number

ANSWER 4

692

gene expression

477. Plants inherit genes that enable them to produce chlorophyll, but this pigment is not produced unless the plants are exposed to light. This is an example of how the environment can

(1) cause mutations to occur

(2) influence the expression of a genetic trait

(3) result in the appearance of a new species

(4) affect one plant species, but not another

S4K2

ANSWER 2

Regents Date
June2005

4

Data Base File Number
576

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gene expression

478. A human liver cell is very different in structure and function from a nerve cell in the same person. This is best explained by the fact that

(1) different genes function in each type of cell

(2) liver cells can reproduce while the nerve cells cannot

(3) liver cells contain fewer chromosomes than nerve cells

(4) different DNA is present in each type of cell

S4K2

ANSWER 1

Regents Date
June2006

5

Data Base File Number
503

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gene expression

479. Even though each body cell in an individual contains the same DNA, the functions of muscle cells and liver cells are NOT the same because

(1) mutations usually occur in genes when muscle cells divide

(2) liver tissue develops before muscle tissue

(3) liver cells produce more oxygen than muscle cells

(4) liver cells use different genes than muscle cells

S4K2

ANSWER 4

Regents Date
June2007

10

Data Base File Number
31

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gene expression

480. At warm temperatures, a certain bread mold can often be seen growing on bread as a dark-colored mass. The same bread mold growing on bread in a cooler environment is red in color. Which statement most accurately describes why this change in the color of the bread mold occurs?

(1) Gene expression can be modified by interactions with the environment.

(2) Every organism has a different set of coded instructions.

(3) The DNA was altered in response to an environmental condition.

(4) There is no replication of genetic material in the cooler environment.

S4K1

ANSWER 1

Regents Date
June2008

6

Data Base File Number

108

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gene expression

481. Although identical twins inherit exact copies of the same genes, the twins may look and act differently from each other because

(1) a mutation took place in the gametes that produced the twins

(2) the expression of genes may be modified by environmental factors

(3) the expression of genes may be different in males and females

(4) a mutation took place in the zygote that produced the twins

S4K2

ANSWER 2

Regents Date
June2009

5

Data Base File Number

180

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gene expression

482. Even though identical twins have the same genetic material, they may develop slightly different characteristics because

(1) each twin receives different chromosomes from the egg

(2) one twin may only have genes from the father

(3) gene expression may be influenced by factors that switch genes on and off

(4) a gene mutation may have occurred before the zygote divided

S4K2

ANSWER 3

Regents Date
June2010

16

Data Base File Number

265

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gene expression

Regents Date
June2011

483. As male children get older, some begin to closely resemble their fathers and have no resemblance to their mothers. Which statement best explains this observation?

(1) Several sperm fertilized the egg, so the fertilized egg contained more genes from their father.

(2) More genes are inherited from the sperm cell of their father than from the egg cell of their mother, so most traits will be like those of their father.

(3) More genes from their father are expressed in traits that can be seen, and more genes from their mother are expressed in traits that cannot be seen, such as blood type or enzyme function.

(4) Genes from their father are stronger than genes from their mother, so the genes from their mother are not expressed.

S4K4

8

Data Base File Number

ANSWER 3

336

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gene expression

Regents Date
June2013

484. In an organism, a muscle cell has the same DNA as a nerve cell, yet the cells perform different functions. This is possible because

(1) different mutations occur in each cell type, changing the genetic instructions

(2) temperature variations within the body alter DNA

(3) proteins in each cell type change the structure of DNA

(4) different parts of the genetic instructions are used in each type of cell

S4K2

15

Data Base File Number

ANSWER 4

954

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gene expression

Regents Date
June2013

485. Chlorophyll gives plants their green color. Chlorophyll is produced only when plants are exposed to light, so plants kept in darkness have no chlorophyll and appear white. The best explanation for this is that

(1) chlorophyll is not needed by green plants at night

(2) darkness mutates the chlorophyll genes, causing them to produce a white color

(3) light is required for chlorophyll genes to be expressed

(4) genetic information in cells is not influenced by the outside environment

S4K2

12

Data Base File Number

ANSWER 3

951

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gene mutation

486. A single gene mutation results from

(1) a change in a base sequence in DNA

(2) recombination of traits

(3) the failure of chromosomes to separate

(4) blocked nerve messages

S4K2

ANSWER 1

Regents Date
Aug2004

4

Data Base File Number
697

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gene mutation

487. As a result of sexual reproduction, an organism can pass a gene mutation to its offspring if the mutation occurs in

(1) a body cell

(2) a gamete

(3) liver tissue

(4) white blood cells

S4K3

ANSWER 2

Regents Date
Jan2002

10

Data Base File Number
862

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gene mutation

488. People have been warned about the dangers of excessive exposure to radiation during certain medical procedures. The most likely reason for this warning is that radiation exposure might

(1) result in gene mutations and uncontrolled cell growth

(2) cause the rejection of transplanted organs

(3) increase body temperature by two to five degrees

(4) prevent the transport of materials into cells

S4K5

ANSWER 1

Regents Date
Jan2013

23

Data Base File Number
635

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gene recombination

489. Variation in the offspring of sexually reproducing organisms is the direct result of

(1) sorting and recombining of genes

(2) replication and cloning

(3) the need to adapt and maintain homeostasis

(4) overproduction of offspring and competition

S4K3

ANSWER 1

Regents Date
Jan2007

5

Data Base File Number
52

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gene splicing

490. If a gene is inserted into the DNA of a bacterial cell, every cell produced by that cell will have

(1) DNA that is different from that of the other cells produced

(2) a 50% chance of having a copy of the inserted gene

(3) a copy of the inserted gene

(4) a new type of DNA base

S4K2

ANSWER 3

Regents Date Jan2010

12

Data Base File Number 235

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genetic code

491. Changes in the genetic code of a human can be transmitted to offspring if they occur in

(1) cancer cells

(2) gametes

(3) cell membranes

(4) antibodies

S4K3

ANSWER 2

Regents Date Aug2004

10

Data Base File Number 701

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genetic code

492. Mustard gas removes guanine (G) from DNA.For developing embryos, exposure to mustard gas can cause serious deformities because guanine

(1) stores the building blocks of proteins

(2) supports the structure of ribosomes

(3) produces energy for genetic transfer

(4) is part of the genetic code

S4K2

ANSWER 4

Regents Date Jan2009

8

Data Base File Number 158

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genetic code

493. A characteristic that an organism exhibits during its lifetime will only affect the evolution of its species if the characteristic

(1) results from isolation of the organism from the rest of the population

(2) is due to a genetic code that is present in the gametes of the organism

(3) decreases the number of genes in the body cells of the organism

(4) causes a change in the environment surrounding the organism

S4K3

ANSWER 2

Regents Date June2010

10

Data Base File Number 262

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genetic continuity

494. A variety of plant produces small white fruit. A stem was removed from this organism and planted in a garden. If this stem grows into a new plant, it would most likely produce

(1) large red fruit, only

(2) large pink fruit, only

(3) small white fruit, only

(4) small red and small white fruit on the same plant

S4K2

ANSWER 3

Regents Date
June2009

15

Data Base File Number
187

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genetic diversity

495. Base your answer to this question on the information given and on your knowledge of biology. ...Unless actions are taken to slow the decline of domesticated honeybees and augment [increase] their populations with wild bees, many fruits and vegetables may disappear from the food supply, said Claire Kremen, a conservation biologist at Princeton University in New Jersey... The honeybee decline, which is affecting domesticated and wild bee populations around the world, is mostly the result of diseases spread as a result of mites and other parasites as well as the spraying of crops with pesticides, scientists say....
Source: "Bee Declines May Spell End of Some Fruits, Vegetables," National Geographic News, October 5, 2005. Some honeybees have been able to survive the changes in their environment and reproduce. This is most
likely due to

(1) the aggressive behavior of wild bees

(2) an abundance of food sources for the bees

(3) genetic diversity in the bees

(4) lack of mutations in the bees

S4K3

ANSWER 3

Regents Date
Aug2013

43

Data Base File Number
996

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genetic engineering

Regents Date
Aug2004

496. A biotechnology firm has produced tobacco plants that synthesize human antibodies that prevent bacterial diseases. One of the first steps in the production of these plants required

(1) using natural selection to increase the survival of antibody-producing tobacco plants

(2) inserting human DNA segments into the cells of tobacco plants

(3) using selective breeding to increase the number of antibody genes in tobacco plants

(4) growing tobacco plants in soil containing a specific fertilizer

S4K2

13

Data Base File Number

704

ANSWER 2

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genetic engineering

Regents Date
Aug2004

497. A gene that codes for resistance to glyphosate, a biodegradable weedkiller, has been inserted into certain plants. As a result, these plants will be more likely to

(1) produce chemicals that kill weeds growing near them

(2) die when exposed to glyphosate

(3) convert glyphosate into fertilizer

(4) survive when glyphosate is applied to them

S4K2

12

Data Base File Number

703

ANSWER 4

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genetic engineering

Regents Date
Aug2005

498. Researchers Cohn and Boyer transferred a gene from an African clawed frog into a bacterium. To accomplish this, these scientists had to use

(1) enzymes to cut out and insert the gene

(2) hereditary information located in amino acids

(3) radiation to increase the gene mutation rate of the bacterial cells

(4) cancer cells to promote rapid cell division

S4K2

13

Data Base File Number

603

ANSWER 1

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genetic engineering

499. Plants in species A cannot fight most fungal infections. Plants in species B make a protein that kills many fungi. One possible way for humans to produce species A plants with the ability to synthesize this protein would be to

(1) mutate fungal DNA and introduce the mutated DNA into species B using a virus

(2) add DNA from species B into the soil around species A

(3) insert the gene for the protein from species B into a chromosome in species A

(4) cross species A and a fungus to stimulate the synthesis of this protein

S4K2

ANSWER 3

Regents Date
Aug2010

9

Data Base File Number

286

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genetic engineering

500. In 1996, scientists cloned the first mammal, a sheep. This technique involved the removal of the nucleus from an egg cell. The nucleus from a cell of another adult sheep was then inserted into this egg cell. Once this cell began to develop into an embryo, it was implanted into a third female sheep that later gave birth to a healthy lamb, Dolly. Which statement concerning Dolly is correct?

(1) Her offspring would be genetically identical.

(2) Dolly and her DNA donor are genetically identical.

(3) Two different gametes were manipulated to produce Dolly.

(4) Dolly was produced by the recombination of genetic material.

S4K4

ANSWER 2

Regents Date
Aug2013

18

Data Base File Number

983

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genetic engineering

501. Which statement best describes the result of some of the processes involved in genetic engineering?

(1) They alter the arrangement of hereditary material.

(2) They provide energy for mitosis and meiosis

(3) They are necessary for normal gamete formation.

(4) They reduce variation in organisms that reproduce asexually.

S4K2

ANSWER 1

Regents Date
Jan2002

15

Data Base File Number

863

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genetic engineering

502. The gene for the production of human insulin is inserted into certain bacterial cells. The offspring of these bacterial cells will most likely be able to

(1) destroy pathogens

(2) reproduce sexually

(3) synthesize this hormone

(4) form human tissue

S4K2

ANSWER 3

Regents Date
Jan2002
27
Data Base File Number
874

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genetic engineering

503. The production of certain human hormones by genetically engineered bacteria results from

(1) inserting a specific group of amino acids into the bacteria

(2) combining a portion of human DNA with bacterial DNA and inserting this into bacteria

(3) crossing two different species of bacteria

(4) deleting a specific amino acid from human DNA and inserting it into bacterial DNA

S4K2

ANSWER 2

Regents Date
Jan2004
12
Data Base File Number
654

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genetic engineering

504. The headline "Improved Soybeans Produce Healthier Vegetable Oils" accompanies an article describing how a biotechnology company controls the types of lipids (fats) present in soybeans. The improved soybeans are most likely being developed by the process of

(1) natural selection

(2) asexual reproduction

(3) genetic engineering

(4) habitat modification

S4K2

ANSWER 3

Regents Date
Jan2008
11
Data Base File Number
81

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genetic engineering

505. Coded instructions that are passed from one generation to the next can be most directly changed by the processes of

(1) passive transport, natural selection, and synthesis

(2) selective breeding, replication, and absorption

(3) recombination, mutation, and genetic engineering

(4) evolution, reproduction, and digestion

S4K2

ANSWER 3

Regents Date
Jan2011
5
Data Base File Number
309

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genetic engineering

506. Researchers use a variety of techniques to learn more about the function of a specific gene in an organism. In one type of experiment, called a loss-of-function experiment, the gene being investigated is eliminated. In a gain-of-function experiment, extra copies of the gene being investigated are inserted. The cell process most directly affected in both experiments is

(1) protein synthesis

(2) waste disposal

(3) transport of materials

(4) breakdown of nutrients

Regents Date
Jan2012

11

Data Base File Number
399

S4K2

ANSWER 1

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genetic engineering

507. Some goats have been genetically modified with a human gene that codes for a blood anticlotting factor. The anticlotting factor can then be extracted from the goat milk and used during surgery. To produce these genetically modified goats, scientists most likely

(1) injected the anticlotting factor into the milk-producing glands of the animals

(2) added modified DNA into the milk of the animals

(3) inserted the human gene into the egg cells of goats

(4) altered the nutritional requirements of newborn goats

Regents Date
Jan2012

9

Data Base File Number
397

S4K2

ANSWER 3

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genetic engineering

508. For those individuals who have an allergic reaction to cats, a company in Los Angeles promises relief. They offer a new line of cats genetically modified to eliminate or reduce their allergy-causing properties. The development of this new line of cats most likely involved

(1) using natural selection to produce a new variety of cat

(2) altering the reproductive rate of cats

(3) changing the behavior of cats

(4) manipulating the DNA of cats

Regents Date
Jan2013

15

Data Base File Number
627

S4K4

ANSWER 4

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genetic engineering

509. Base your answer to this question on the information given and on your knowledge of biology. Scientists have found a gene in the DNA of a certain plant that could be the key to increasing the amount of lycopene, a cancer fighting substance, in tomatoes. The process of inserting this gene into the DNA of a tomato plant is known as

(1) selective breeding

(2) genetic engineering

(3) cloning

(4) replication

S4K2

ANSWER 2

Regents Date
Jan2013

32

Data Base File Number
640

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genetic engineering

510. Base your answer to this question on the information given and on your knowledge of biology.
For many years, scientists hypothesized the existence of a single tomato gene that increases the sweetness and production of tomatoes. After years of research, a team of scientists identified the gene and observed greater sweetness and tomato production in plants that contain this gene.Which process could be used to insert this gene into other plant species to increase fruit production

(1) electrolysis

(2) genetic engineering

(3) paper chromatography

(4) gel electrophoresis

S4K2

ANSWER 2

Regents Date
Jan2014

52

Data Base File Number
1028

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genetic engineering

511. Many diabetics are now using insulin that was made by certain bacteria. The ability of these bacteria to produce insulin was most likely the result of

(1) deleting many DNA segments from bacterial DNA

(2) genetic mapping of bacterial DNA to activate the gene for insulin production

(3) inserting a portion of human DNA into the ring-shaped DNA of bacteria

(4) using radiation to trigger mutations

S4K2

ANSWER 3

Regents Date
June2001

13

Data Base File Number
895

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genetic engineering

512. Which statement best describes human insulin that is produced by genetically engineered bacteria?

(1) This insulin will not function normally in humans because it is produced by bacteria.

(2) This insulin is produced as a result of human insulin being inserted into bacteria cells.

(3) This insulin is produced as a result of exposing bacteria cells to radiation, which produces a mutation.

(4) This insulin may have fewer side effects than the insulin previously extracted from the pancreas of other animals.

S4K2

ANSWER 4

Regents Date
June2003

19

Data Base File Number

764

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genetic engineering

513. Enzymes are used in moving sections of DNA that code for insulin from the pancreas cells of humans into a certain type of bacterial cell. This bacterial cell will reproduce, giving rise to offspring that are able to form

(1) human insulin

(2) antibodies against insulin

(3) enzymes that digest insulin

(4) a new type of insulin

S4K2

ANSWER 1

Regents Date
June2004

39

Data Base File Number

693

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genetic engineering

514. Some farmers currently grow genetically engneered crops. An argument against the use of this technology is that

(1) it increases crop production

(2) it produces insect-resistant plants

(3) its long-term effects on humans are still being investigated

(4) it always results in crops that do not taste good

S4K7

ANSWER 3

Regents Date
June2006

29

Data Base File Number

516

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genetic engineering

515. The flounder is a species of fish that can live in very cold water. The fish produces an "antifreeze" protein that prevents ice crystals from forming in its blood. The DNA for this protein has been identified, An enzyme is used to cut and remove this section of flounder DNA that is then spliced into the DNA of a strawberry plant. As a result, the plant can now produce a protein that makes it more resistant to the damaging effects of frost. This process is known as

(1) sorting of genes

(2) genetic engineering

(3) recombination of chromosomes

(4) mutation by deletion of genetic material

S4K2

ANSWER 2

Regents Date
June2007

11

Data Base File Number
32

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genetic engineering

516. Cotton plants produce seeds that contain high-quality protein. This protein could be used as a food source except that the seeds are poisonous to humans. Recently, scientists have inserted a section of DNA into the cotton plants that makes the cotton seeds nonpoisonous. The technique for this procedure is known as

(1) gene manipulation

(2) cloning

(3) reproduction

(4) direct harvesting

S4K2

ANSWER 1

Regents Date
June2011

17

Data Base File Number
340

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genetic engineering

517. Which situation results in a characteristic that is inheritable?

(1) A limb is lost when two marine organisms fight.

(2) A puppy learns to beg for food by watching an older dog perform tricks.

(3) A gene is inserted into a bacterium, allowing the organism to produce insulin.

(4) A random mutation causes the immediate death of a microbe.

S4K3

ANSWER 3

Regents Date
June2012

15

Data Base File Number
426

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genetic engineering

518. Goats have been genetically modified to produce an anticlotting protein in their milk. The protein is extracted from the milk and given to people who have inherited a disorder that causes their bodies to produce blood clots, which can be fatal. A benefit of the technology used to produce this protein is that it

(1) can be used to overcome the effects of a harmful mutation

(2) can provide people with a new kind of nutrient-rich milk

(3) will result in healthier goats with more nutritious milk for their offspring

(4) will reduce blood clots in other farm animals that are modified in this way

S4K2

ANSWER 1

Regents Date
June2013

3

Data Base File Number

945

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genetic inheritance

519. Most of the hereditary information that determines the traits of an organism is located in

(1) only those cells of an individual produced by meiosis

(2) the nuclei of body cells of an individual

(3) certain genes in the vacuoles of body cells

(4) the numerous ribosomes in certain cells

S4K2

ANSWER 2

Regents Date
Aug2004

8

Data Base File Number

700

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genetic inheritance

520. Young birds that have been raised in isolation from members of their species build nests characteristic of their species. This suggests that the nest-building behavior is

(1) genetically inherited from parents

(2) learned by watching members of their species

(3) a disadvantage to the survival of the species

(4) a direct result of the type of food the bird eats

S4K3

ANSWER 1

Regents Date
June2010

21

Data Base File Number

269

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genetic resistance

521. "Bacillus thuringiensis", a bacterium commonly known as Bt, produces a protein that can kill certain insects that feed on corn crops. Scientists have been successful in transferring the gene that codes for this protein from the bacterium to the corn, so the corn can now make the Bt protein. Corn borers, insects that eat corn, die when they feed on corn containing the Bt protein. A potential problem associated with increased production of Bt corn is

(1) corn borers may stop feeding on corn plants

(2) corn borers may develop resistance to the Bt protein

(3) farmers may need to use less pesticide to control corn borers

(4) corn borers may compete with other insects that feed on corn plants

Regents Date
Aug2011

34

Data Base File Number

383

S4K2

ANSWER 2

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genetic variation

522. Which ecosystem has a better chance of surviving when environmental conditions change over a long period of time?

(1) one with a great deal of genetic diversity

(2) one with plants and animals but no bacteria

(3) one with animals and bacteria but no plants

(4) one with little or no genetic diversity

Regents Date
Aug2002

29

Data Base File Number

827

S4K6

ANSWER 1

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genetic variation

523. Meiosis and fertilization are important processes because they may most immediately result in

(1) many body cells

(2) immune responses

(3) genetic variation

(4) natural selection

Regents Date
Aug2002

9

Data Base File Number

814

S4K3

ANSWER 3

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genetic variation

524. In an environment that undergoes frequent change, species that reproduce sexually may have an advantage over species that reproduce asexually because the sexually reproducing species produce

(1) more offspring in each generation

(2) identical offspring

(3) offspring with more variety

(4) new species of offspring in each generation

S4K3

ANSWER 3

Regents Date
Aug2006

11

Data Base File Number

528

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genetic variation

525. A new chemical was discovered and introduced into a culture containing one species of bacteria. Within a day, most of the bacteria were dead, but a few remained alive. Which statement best explains why some of the bacteria survived?

(1) They had a genetic variation that gave them resistance to the chemical.

(2) They were exposed to the chemical long enough to develop a resistance to it.

(3) They mutated and became a different species after exposure to the chemical.

(4) They absorbed the chemical and broke it down in their digestive systems.

S4K3

ANSWER 1

Regents Date
Jan2006

12

Data Base File Number

481

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genetic variation

526. In 1993 there were only 30 panthers in Florida. They were all closely related and many had reproductive problems. To avoid extinction and restore health to the population, biologists introduced 8 female panthers from Texas. Today, there are more than 80 panthers in Florida and most individuals have healthy reproductive systems. The success of this program was most likely due to the fact that the introduced females

(1) produced more reproductive cells than the male panthers in Texas

(2) solved the reproductive problems of the species by asexual methods

(3) increased the genetic variability of the panther population in Florida

(4) mated only with panthers from Texas

S4K3

ANSWER 3

Regents Date
Jan2007

12

Data Base File Number

55

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genetic variation

527. In 1970, a deadly disease spread through corn crops in the United States. Scientists discovered that 80 percent of the corn contained the gene that made the plants more likely to be infected with the disease. This problem might have been avoided if the cornfields across the country had had more

(1) large predators to control parasite populations
(2) selective mutations
(3) genetic diversity
(4) breeding of infected plants

Regents Date
Jan2013

17

Data Base File Number
629

S4K3

ANSWER 3

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genetic variation

528. In order for new species to develop, there MUST be a change in the

(1) temperature of the environment
(2) migration patterns within a population
(3) genetic makeup of a population
(4) rate of succession in the environment

Regents Date
June2004

12

Data Base File Number
681

S4K3

ANSWER 3

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genetic variation

529. Meiosis and fertilization are important for the survival of many species because these two processes result in

(1) large numbers of gametes
(2) increasingly complex multicellular organisms
(3) cloning of superior offspring
(4) genetic variability of offspring

Regents Date
June2005

12

Data Base File Number
571

S4K3

ANSWER 4

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genetic variation

530. Which factor could be the cause of the other three in an animal species?

(1) the inability of the species to adapt to changes
(2) a lack of genetic variability in the species
(3) extinction of the species
(4) a decrease in the survival rate of the species

Regents Date
June2005

9

Data Base File Number
580

S4K3

ANSWER 2

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genetic variation

Regents Date
June2005

531. Sexually produced offspring often resemble, but are not identical to, either of their parents. Why do the offspring resemble their parents but are not identical to either parent?

(1) The offspring are a result of mitosis.

(2) The offspring receive only half of their genetic information from each parent.

(3) The offspring receive one-fourth of their genetic information from each parent.

(4) Environmental factors always change the appearance of offspring.

39

S4K2

Data Base File Number

591

ANSWER 2

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genetic variation

Regents Date
June2009

532. If an ecosystem is changed through a natural disaster, organisms will have the best chance of survival if

(1) their environment has few abiotic factors

(2) the organisms are large

(3) the population size is small

(4) their species exhibits genetic variation

S4K6

Data Base File Number

219

ANSWER 4

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genetic variation

Regents Date
June2011

533. If only one type of tree is planted in an abandoned field, the ecosystem will

(1) evolve quickly and become extinct

(2) be unable to reach dynamic equilibrium

(3) contain little genetic variability

(4) be unable to cycle materials

26

S4K7

Data Base File Number

349

ANSWER 3

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genetic variation

Regents Date
June2011

534. Buffalo grass is a species of plant found on the grazing prairies of Wyoming. It is a tough grass that has silicates (compounds containing oxygen and silicon) that reinforce its leaves. For hundreds of years, this grass has survived in an adverse environment. Which statement best explains the presence of this grass today?

(1) There are no variations in this grass species that help it to survive in an adverse environment.

(2) Silicates are necessary for photosynthesis.

(3) The current species has no mutations.

(4) The silicates in the grass have given the species an advantage in its environment.

20

S4K3

Data Base File Number

343

ANSWER 4

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genetic variation

535. When a species includes organisms with a wide variety of traits, it is most likely that this species will have

(1) a high proportion of individuals immune to genetic diseases

(2) a greater chance to survive if environmental conditions suddenly change

(3) less success competing for resources

(4) limitless supplies of important resources, such as food and water

S4K3

ANSWER 2

Regents Date
June2011

4

Data Base File Number

333

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genetics

536. A child has brown hair and brown eyes. His father has brown hair and blue eyes. His mother has red hsir and brown eyes. The best explanation for the child having brown hair and brown eyes is that

(1) a gene mutation occurred that resulted in brown hair and brown eyes.

(2) gene expressions must change in each generation so evolution can occur

(3) the child received genetic information from each parent

(4) cells from his mother's eyes were present in the fertilized egg

S4K1

ANSWER 3

Regents Date
Aug2007

9

Data Base File Number

7

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geographic isolation

537. A population of animals is permanently split by a natural barrier into two separate populations in different environments. What will likely result after a long period of time?

(1) The evolution of the two populations will be identical.

(2) The production of variations will stop in the two populations.

(3) The two populations will evolve into separate species.

(4) Autotrophic nutrition will replace heterotrophic nutrition in the two populations.

S4K3

ANSWER 3

Regents Date
Aug2011

23

Data Base File Number

373

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global warming

538. Base your answer to this question on the information given and on your knowledge of biology. The ice fields off Canada's Hudson Bay are melting an average of three weeks earlier than 25 years ago. The polar bears are therefore unable to feed on the seals on these ice fields during the last three weeks in spring. Polar bears have lost an average of 10% of their weight and have 10% fewer cubs when compared to a similar population studied just 20 years ago. Scientists have associated the early melting of the ice fields with the fact that the average world temperature is about 0.6°C higher than it was a century ago and this trend is expected to continue. What ecological problem most likely caused the earlier melting of the ice fields in the Hudson Bay area of Canada?

(1) warming of the Arctic waters due to pollution

(2) changes in water currents due to wind variations

(3) global warming

(4) polar bear migration

S4K7

ANSWER 3

Regents Date
Aug2005

53

Data Base File Number

617

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global warming

539. One possible reason for the rise in the average air temperature at Earth's surface is that

(1) decomposers are being destroyed

(2) deforestation has increased the levels of oxygen in the atmosphere

(3) industrialization has increased the amount of carbon dioxide in the air

(4) growing crops is depleting the ozone shield

S4K7

ANSWER 3

Regents Date
Aug2008

25

Data Base File Number

146

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global warming

540. Most scientists recommend reducing carbon dioxide emissions. Less carbon dioxide in the atmosphere would be expected to

(1) reduce the rate of global warming

(2) increase damage caused by acid rain

(3) decrease the number of biotic factors in ecosystems

(4) reduce destruction of the ozone layer

S4K7

ANSWER 1

Regents Date
Aug2011

30

Data Base File Number

380

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global warming

541. Some data suggest that the average global temperature will increase by 1°C-2°C by the year 2050. If this occurs, a major concern for humans would most likely be that

(1) sea levels might rise enough to flood some coastal areas

(2) long-term stability of the climate will benefit ecosystems

(3) the availability of salt water for agricultural use will increase

(4) the threat of extinction of land organisms will decrease

S4K7

ANSWER 1

Regents Date Aug2012

27

Data Base File Number 467

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global warming

542. Car exhaust has been blamed for increasing the amount of carbon dioxide in the air. Some scientists believe this additional carbon dioxide in the air may cause

(1) global warming

(2) increased biodiversity

(3) habitat preservation

(4) ozone destruction

S4K7

ANSWER 1

Regents Date Jan2002

32

Data Base File Number 878

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global warming

543. Which process helps reduce global warming?

(1) decay

(2) industrialization

(3) photosynthesis

(4) burning

S4K7

ANSWER 3

Regents Date Jan2007

28

Data Base File Number 69

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global warming

544. In New York State, cars are inspected to be sure they are not releasing excessive amounts of several gases into the atmosphere. This is done in an effort to

(1) recycle more nutrients

(2) reduce biodiversity

(3) reduce global warming

(4) increase the growth rates of forests

S4K7

ANSWER 3

Regents Date Jan2014

28

Data Base File Number 1020

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global warming

545. Base your answer to this question on the information given and on your knowledge of biology. -- Amphibians have long been considered an indicator of the health of life on Earth. Scientists are concerned because amphibian populations have been declining worldwide since the 1980s. In fact, in the past decade, twenty species of amphibians have become extinct and many others are endangered. Scientists have linked this decline in amphibians to global climatic changes. Warmer weather during the last three decades has resulted in the destruction of many of the eggs produced by the Western toad. Warmer weather has also led to a decrease in rain and snow in the Cascade Mountain Range in Oregon, reducing the water level in lakes and ponds that serve as the reproductive sites for the Western toad. As a result, the eggs are exposed to more ultraviolet light. This makes the eggs more susceptible to water mold that kills the embryos by the hundreds of thousands. -- The term used to identify the worldwide climatic changes referred to in the passage is

(1) global warming
(2) deforestation
(3) mineral depletion
(4) iindustrialization

Regents Date
June2003

50

S4K7

Data Base File Number

782

ANSWER 1

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global warming

546. Which factor is a major cause of global warming?

(1) increased burning of fuels
(2) increased number of green plants
(3) decreased mineral availability
(4) decreased carbon dioxide in the atmosphere

Regents Date
June2004

27

S4K7

Data Base File Number

689

ANSWER 1

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global warming

547. Global warming has been linked to a DECREASE in the

(1) size of the polar ice caps
(2) temperature of Earth
(3) rate of species extinction
(4) rate of carbon dioxide production

Regents Date
June2010

8

S4K1

Data Base File Number

261

ANSWER 1

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global warming

548. In some parts of the world, forests are being cut down and burned to clear land for new homes and new farmland. A NEGATIVE effect of these activities might be

(1) an increase in global warming

(2) destruction of the ozone shield

(3) a decrease in the average temperature of the atmosphere

(4) an increase in biodiversity of the deforested areas

S4K7

ANSWER 1

Regents Date
June2013

27

Data Base File Number
965

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habitat destruction

549. The Audubon Society recently released a study that showed that the populations of some bird species have decreased in number by as much as 50% since 1966. The study eliminated food and water shortages and natural cycles as causes for the decrease. Which factor might have contributed to this decline?

(1) overproduction of bird offspring

(2) destruction of natural habitats

(3) fewer predators

(4) an energy-rich diet

S4K7

ANSWER 2

Regents Date
Jan2010

29

Data Base File Number
249

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habitat destruction

550. In 2003, the city of Rochester, New York, began killing weeds with steam. A machine heats water to 280°F then sprays it on the weeds with great pressure. The extreme heat destroys the cellular structure of the plants. What is a possible DISADVANTAGE of this method of weed control?

(1) It can be used safely in areas where children play.

(2) It reduces the number of mutations in the ecosystem.

(3) It destroys weeds without chemicals.

(4) It alters the habitats of some beneficial insects

S4K7

ANSWER 4

Regents Date
Jan2014

22

Data Base File Number
1016

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habitat stability

551. Which action will result in the greatest DECREASE in rain forest stability?

(1) removing one species of plant for medicine

(2) harvesting nuts from some trees

(3) cutting down all the trees for lumber

(4) powering all homes with wind energy

S4K7

ANSWER 3

Regents Date June2010

26

Data Base File Number 274

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heart rate

552. An increase in heart rate will most likely result in

(1) a decrease in metabolic rate

(2) an increase in pulse rate

(3) an increase in cell division

(4) a decrease in body temperature

LAB2

ANSWER 2

Regents Date Jan2005

69

Data Base File Number 568

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herbivores

553. In most habitats, the removal of predators will have the most immediate impact on a population of

(1) producers

(2) decomposers

(3) herbivores

(4) microbes

S4K1

ANSWER 3

Regents Date Jan2004

3

Data Base File Number 646

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herbivores

554. The carrying capacity for herbivores in a habitat is most directly affected by the availability of

(1) heat energy released by carnivores

(2) carbon dioxide in the atmosphere

(3) photosynthetic organisms

(4) decomposers in the soil

S4K5

ANSWER 3

Regents Date Jan2010

23

Data Base File Number 245

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herbivores

555. Tissues of oleander plants contain chemicals that are poisonous to many mammals. The production of these poisonous chemicals most likely benefits oleanders by preventing leaf loss caused by

(1) lack of rain
(2) scavengers
(3) mineral absorption
(4) herbivores

Regents Date
Jan2014

17

Data Base File Number
1011

S4K6

ANSWER 4

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heredity

556. The transfer of genes from parents to their offspring is known as

(1) differentiation
(2) heredity
(3) immunity
(4) evolution

Regents Date
Jan2008

1

Data Base File Number
74

S4K1

ANSWER 2

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heredity

557. Many years ago, a scientist grew pea plants that produced wrinkled peas. The peas from these plants produced new plants that also produced wrinkled peas. The scientist concluded that something in the parent plants was being transmitted to the next generation. This discovery is now known as

(1) genetic engineering
(2) biological evolution
(3) heredity
(4) natural selection

Regents Date
Jan2013

7

Data Base File Number
623

S4K2

ANSWER 3

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heredity

558. The human liver contains many specialized cells that secrete bile. Only these cells produce bile because

(1) different cells use different parts of the genetic information they contain
(2) cells can eliminate the genetic codes that they do not need
(3) all other cells in the body lack the genes needed for the production of bile
(4) these cells mutated during embryonic development

Regents Date
June2009

4

Data Base File Number
179

S4K2

ANSWER 1

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heterotroph

559. Which change in a sample of pond water could indicate that heterotrophic microbes were active?

(1) increase in ozone level

(2) increase in glucose level

(3) decrease in oxygen level

(4) decrease in carbon dioxide level

S4K5

ANSWER 3

Regents Date
Aug2006

20

Data Base File Number
537

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heterotroph

560. Some bloodsucking insects insert their mouth parts directly into a blood vessel and withdraw blood. Other bloodsucking insects have mouth parts that cut through the skin and blood vessels and produce a small pool of blood from which they feed. Both mouthpart types are specialized for

(1) autotrophic nutrition

(2) heterotrophic nutrition

(3) regulation

(4) excretion

S4K1

ANSWER 2

Regents Date
Jan2010

2

Data Base File Number
231

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heterotroph

561. Why is a mushroom considered a heterotroph?

(1) It manufactures its own food.

(2) It divides by mitosis.

(3) It transforms light energy into chemical energy.

(4) It obtains nutrients from its environment.

S4K1

ANSWER 4

Regents Date
June2010
1

Data Base File Number
255

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homeostasis

562. What usually results when an organism fails to maintain homeostasis?

(1) Growth rates within organs become equal.

(2) The organism becomes ill or may die.

(3) A constant sugar supply for the cells is produced.

(4) The water balance in the tissues of the organism stabilizes.

S4K5

ANSWER 2

Regents Date
Aug2001

23

Data Base File Number
931

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homeostasis

563. The normal sodium level in human blood is 135 mEq/L. If a blood test taken immediately after a meal reveals a sodium level of 150 mEq/L, what will most likely result?

(1) Antibody production will increase.

(2) The person will move to an ecosystem with a lower sodium level.

(3) The nutritional relationships between humans and other organisms will change.

(4) An adjustment within the human body will be made to restore homeostasis.

S4K1

ANSWER 4

Regents Date
Aug2001

5

Data Base File Number
918

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homeostasis

564. Organisms undergo constant chemical changes as they maintain an internal balance known as

(1) interdependence

(2) homeostasis

(3) synthesis

(4) recombination

S4K1

ANSWER 2

Regents Date
Aug2002

23

Data Base File Number
823

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homeostasis

565. The pancreas produces one hormone that lowers blood sugar level and another that increases blood sugar level. The interaction of these two hormones most directly helps humans to

(1) maintain a balanced internal environment

(2) digest needed substances for other body organs

(3) dispose of wastes formed in other body organs

(4) increase the rate of cellular communication

S4K1

ANSWER 1

Regents Date
Aug2003

1

Data Base File Number
783

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homeostasis

566. The ability of the human body to keep bloodsugar levels within a fairly narrow range, despite the intake of meals high in carbohydrates, is an example of

(1) active transport

(2) genetic recombination

(3) homeostasis

(4) digestion

S4K5

ANSWER 3

Regents Date
Aug2009

15

Data Base File Number
210

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homeostasis

567. Which situation indicates a serious organ system malfunction?

(1) The ovary releases estrogen, which quickly binds to cell receptors.

(2) Blood flow throughout the entire body is suddenly reduced.

(3) White blood cells release enzymes in response to the proteins on inhaled pollen.

(4) Mitochondria stop functioning in a unicellular organism exposed to pollutants.

S4K5

ANSWER 2

Regents Date Aug2010

25

Data Base File Number

297

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homeostasis

568. The disease known as malaria may result in a fever, a decrease in red blood cells, and an enlarged liver and spleen. These symptoms are evidence of

(1) a disruption of homeostasis

(2) a decrease in allergic reactions

(3) an increased number of cell organelles

(4) hormone destruction

S4K5

ANSWER 1

Regents Date Aug2011

20

Data Base File Number

371

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homeostasis

569. Breathing rate is constantly being monitored and adjusted in the human body, which results in

(1) the differentiation of mature body cells

(2) feedback mechanisms removing damaged cells

(3) modification of gene activity in cells

(4) the internal environment being kept within certain limits

S4K5

ANSWER 4

Regents Date Aug2012

15

Data Base File Number

456

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homeostasis

570. Both a deer and a tree react to changes in their external surroundings, helping them to maintain a constant internal environment. This statement describes

(1) predation

(2) homeostasis

(3) antibiotic resistance

(4) autotrophic nutrition

S4K1

ANSWER 2

Regents Date Jan2002

29

Data Base File Number

876

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homeostasis

571. Homeostasis in unicellular organisms depends on the proper functioning of

(1) organelles

(2) insulin

(3) guard cells

(4) antibodies

S4K1

ANSWER 1

Regents Date
Jan2007

5

Data Base File Number
50

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homeostasis

572. When humans perspire, water, urea, and salts containing sodium are removed from the blood. Drinking water during extended periods of physical exercise replenishes the water but not the sodium. This increase in water dilutes the blood and may result in the concentration of sodium dropping low enough to cause a condition knownas hyponatremia.
Symptoms of hyponatremia include headache, nausea, and lack of coordination. Left untreated, it can lead to coma and even death. The body has a variety of feedback mechanisms that assist in regulating water and sodium concentrations in the blood. The kidneys play a major role in these mechanisms, as they filter the blood and produce urine. The best way to reduce the symptoms of hyponatremia would be to

(1) drink more water

(2) eat chocolate

(3) eat salty foods

(4) drink cranberry juice

S4K5

ANSWER 3

Regents Date
Jan2008

46

Data Base File Number
99

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homeostasis

573. The maintenance of homeostasis in the body is most directly related to

(1) cellular communication

(2) cycling of energy

(3) aging of the organism

(4) recombination of chromosomes

S4K5

ANSWER 1

Regents Date
Jan2010

20

Data Base File Number
242

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homeostasis

574. Homeostasis is maintained in a single-celled organism by the interaction of

(1) organs
(2) systems
(3) tissues
(4) organelles

S4K1

ANSWER 4

Regents Date
Jan2012

3

Data Base File Number
391

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homeostasis

575. If a human system fails to function properly, what is the most likely result?

(1) a stable rate of metabolism
(2) a disturbance in homeostasis
(3) a change in the method of cellular respiration
(4) a change in the function of DNA

S4K1

ANSWER 2

Regents Date
June2001

5

Data Base File Number
889

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homeostasis

576. When a person does strenuous exercise, small blood vessels (capillaries) near the surface of the skin increase in diameter. This change allows the body to be cooled. These statements best illustrate

(1) synthesis
(2) homeostasis
(3) excretion
(4) locomotion

S4K1

ANSWER 2

Regents Date
June2003

6

Data Base File Number
757

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homeostasis

577. Which situation indicates that a disruption of homeostasis has taken place?

(1) the presence of hormones that keep the blood sugar level steady
(2) the maintenance of a constant body temperature
(3) cell division that is involved in normal growth
(4) a rapid rise in the number of red blood cells

S4K1

ANSWER 4

Regents Date
June2007

3

Data Base File Number
25

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homeostasis

578. Contractile vacuoles maintain water balance by pumping excess water out of some single-celled pond organisms. In humans, the kidney is chiefly involved in maintaining water balance. These facts best illustrate that

(1) tissues, organs, and organ-systems work together to maintain homeostasis in all living things

(2) interference with nerve signals disrupts cellular communication and homeostasis within organisms

(3) a disruption in a body system may disrupt the homeostasis of a single-celled organism

(4) structures found in single-celled organisms can act in a manner similar to tissues and organs in multicellular organisms

S4K1

ANSWER 4

Regents Date
June2007

5

Data Base File Number

27

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homeostasis

579. On hot, dry days, guard cells often close microscopic openings in plant leaves, conserving water. This is an example of

(1) environmental factors causing gene mutation in plants

(2) finite resources acting as selecting agents for evolution

(3) a feedback mechanism for maintaining homeostasis

(4) differentiation in plants as a result of stimuli

S4K5

ANSWER 3

Regents Date
June2011

15

Data Base File Number

339

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homeostasis

580. One characteristic of all living things is that they

(1) develop organ systems

(2) produce identical offspring

(3) maintain internal stability

(4) synthesize only inorganic matter

S4K1

ANSWER 3

Regents Date
June2012
1

Data Base File Number

420

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homeostasis

Regents Date
June2013

581. Hospital patients are often given intravenous fluids (IVs) to maintain proper levels of water and salts in the body. Great care is used in preparing these solutions. If a manufacturer accidentally prepared a batch of IV fluid that contained much more than the usual amount of salt, harm to the patient could result. The most likely effect on a patient if this incorrectly prepared IV fluid was used is that

(1) water would move into body cells and cause them to burst

(2) water would move out of body cells and cause them to dehydrate

(3) salt and water would both move out of body cells and disrupt homeostasis

(4) salt and water would both move into body cells and preserve homeostasis

LAB5

Data Base File Number

ANSWER 2

75

970

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homeostasis

Regents Date
June2013

582. Which statement explains the importance of maintaining a constant internal environment to ensure proper enzyme functioning?

(1) Changes in pH and temperature will cause the enzyme reaction rate to be too fast.

(2) Temperature and pH determine amino acid sequences in enzymes.

(3) Changes in pH will change the genetic instructions of enzymes.

(4) Increasing the temperature and pH can alter the specific shape of enzymes.

S4K5

Data Base File Number

ANSWER 4

37

968

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homeostasis

Regents Date
June2013

583. In order for the human body to maintain homeostasis, the breakdown of glucose to release energy must be followed by the

(1) production of oxygen

(2) division of the cell

(3) removal of wastes

(4) production of receptor molecules

S4K1

Data Base File Number

ANSWER 3

13

952

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homeostasis / feedback

584. Which process is most directly responsible for maintaining internal stability in an organism when its environment is constantly changing?

(1) digestion
(2) feedback
(3) reproduction
(4) evolution

S4K1

ANSWER 2

Regents Date
Aug2009

4

Data Base File Number
201

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hormone

585. The reproductive cycle of a human is usually regulated by

(1) gametes
(2) hormones
(3) natural selection
(4) immune responses

S4K4

ANSWER 2

Regents Date
Aug2005

16

Data Base File Number
605

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hormone

586. Which substances play an important role in communication between cells in a multicellular organism by acting as chemical messengers?

(1) fats
(2) antibiotics
(3) minerals
(4) hormones

S4K1

ANSWER 4

Regents Date
Jan2010

8

Data Base File Number
233

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hormone

587. Which hormone does not directly regulate human reproductive cycles?

(1) testosterone
(2) estrogen
(3) insulin
(4) progesterone

S4K4

ANSWER 3

Regents Date
June2009

6

Data Base File Number
181

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hormone

588. Which statement best explains why some cells in the reproductive system only respond to certain hormones?

(1) These cells have different DNA than the cells in other body systems.

(2) These cells have specific types of receptors on their membranes.

(3) Reproductive system cells could be harmed if they made contact with hormones from other body systems.

(4) Cells associated with the female reproductive system only respond to the hormone testosterone.

S4K1

ANSWER 2

Regents Date
June2010

4

Data Base File Number

258

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hormones / human

589. The human reproductive system is regulated by

(1) restriction enzymes

(2) antigens

(3) complex carbohydrates

(4) hormones

S4K4

ANSWER 4

Regents Date
June2005

14

Data Base File Number

573

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hormones pregnancy

590. Which hormones most directly influence the uterus during pregnancy?

(1) testosterone and insulin

(2) progesterone and testosterone

(3) estrogen and insulin

(4) progesterone and insulin

S4K4

ANSWER 4

Regents Date
Jan2008

19

Data Base File Number

86

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human activities

591. By causing atmospheric changes through activities such as polluting and careless harvesting, humans have

(1) caused the destruction of habitats

(2) affected global stability in a positive way

(3) established equilibrium in ecosystems

(4) replaced nonrenewable resources

S4K7

ANSWER 1

Regents Date
Aug2002

32

Data Base File Number

829

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human activities

592. Which human activity would have the LEAST negative impact on the quality of the environment?

(1) adding animal wastes to rivers

(2) cutting down tropical rain forests for plywood

(3) using species-specific sex attractants to trap and kill insect pests

(4) releasing chemicals into the groundwater

S4K7

ANSWER 3

Regents Date
Aug2006

30

Data Base File Number

540

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human activities

593. Which human activity creates the least threat to global stability?

(1) overuse of resources

(2) pollution of water with heavy metals

(3) pollution of air with sulfur gases

(4) reuse of plastic bags

S4K7

ANSWER 4

Regents Date
Aug2009

26

Data Base File Number

221

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human activities

594. In state forests and parks containing varieties of flowering trees and shrubs, there are signs that say "Take nothing but pictures, leave nothing but footprints." These signs are necessary because

(1) humans can destroy habitats by removing flowering trees and shrubs

(2) all animals feed directly on flowering shrubs that may be removed by people

(3) removal of flowering trees and shrubs will increase biodiversity

(4) flowering shrubs grow best in state forests and parks

S4K7

ANSWER 1

Regents Date
Aug2009

25

Data Base File Number

220

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human activities

595. Which human activity would preserve finite resources?

(1) deforestation

(2) removing carnivores from a forest

(3) recycling aluminum

(4) heating homes with fossil fuels

S4K7

ANSWER 3

Regents Date
Aug2010

28

Data Base File Number

300

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human activities

596. Which statement illustrates how human activities can most directly change the dynamic equilibrium of an ecosystem?

(1) A hurricane causes a stream to overflow its banks.

(2) Increased wind increases water evaporation from a plant.

(3) Water pollution causes a decrease in fish populations in a river.

(4) The ozone shield helps prevent harmful radiation from reaching the surface of Earth.

S4K7

ANSWER 3

Regents Date
Jan2002

33

Data Base File Number

879

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human activities

597. Which human activity would be LEAST likely to disrupt the stability of an ecosystem?

(1) disposing of wastes in the ocean

(2) using fossil fuels

(3) increasing the human population

(4) recycling bottles and cans

S4K7

ANSWER 4

Regents Date
Jan2004

35

Data Base File Number

668

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human activities

Regents Date
Jan2005

598. Base your answer to this question on the information given and on your knowledge of biology. The dodo bird inhabited the island of Mauritius in the Indian Ocean, where it lived undisturbed for years. It lost its ability to fly and it lived and nested on the ground where it ate fruits that had fallen from trees. There were no mammals living on the island. In 1505, the first humans set foot on Mauritius. The island quickly became a stopover for ships engaged in the spice trade. The dodo was a welcome source of fresh meat for the sailors and large numbers of dodos were killed for food. In time, pigs, monkeys, and rats brought to the island ate the dodo eggs in the ground nests. Which statement describes what most likely happened to the dodo bird within 100 years of the arrival of humans on Mauritius?

(1) Dodo birds developed the ability to fly in order to escape predation and their population increased.

(2) The dodo bird population increased after the birds learned to build their nests in trees.

(3) Human exploitation and introduced species significantly reduced dodo bird populations.

(4) The dodo bird population became smaller because they preyed upon the introduced species.

S4K7

ANSWER 3

33

Data Base File Number

565

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human activities

Regents Date
Jan2009

599. The ivory-billed woodpecker, long thought to be extinct, was recently reported to be living in a southern swamp area. The most ecologically appropriate way to ensure the natural survival of this population of birds is to

(1) feed them daily with corn and other types of grain

(2) destroy their natural enemies and predators

(3) move the population of birds to a zoo

(4) limit human activities in the habitat of the bird

S4K6

ANSWER 4

24

Data Base File Number

169

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human activities

Regents Date
Jan2010

600. Which human activity would most likely deplete finite resources?

(1) use of natural enemies to eliminate insect pests

(2) development of wildlife refuges

(3) governmental restriction of industrial pollution

(4) uncontrolled population growth

S4K7

ANSWER 4

28

Data Base File Number

248

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human activities

601. Which human activity would interfere most directly with the production of oxygen in the environment?

(1) using fertilizer for agriculture
(2) using nuclear fuels
(3) accelerating deforestation
(4) preserving wetlands

S4K6

ANSWER 3

Regents Date Jan2014

16

Data Base File Number 1010

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human activities

602. Which factor is NOT considered by ecologists when they evaluate the impact of human activities on an ecosystem?

(1) amount of energy released from the Sun
(2) quality of the atmosphere
(3) degree of biodiversity
(4) location of power plants

S4K7

ANSWER 1

Regents Date June2001

32

Data Base File Number 910

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human activities

603. Which human activity would have the most postive effect on the environment of an area?

(1) using fire to eliminate most plants in the area
(2) clearing the area to eliminate weed species
(3) protecting native flowers and grasses in the area
(4) introducing a foreign plant species to the area

S4K7

ANSWER 3

Regents Date June2006

22

Data Base File Number 512

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human activities

604. By studying the chemicals in rare plants that grow only in rain forests, scientists hope to discover new life-saving medicines. Chances of finding such new medicines are reduced by

(1) predation by carnivores
(2) homeostasis in organisms
(3) recycling of materials in food webs
(4) loss of species due to human activities

S4K6

ANSWER 4

Regents Date June2011

3

Data Base File Number 332

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human activity

605. The importation of organisms such as the Japanese beetle and gypsy moth to areas where they have no natural enemies best illustrates

(1) the use of abiotic factors to reduce pest species

(2) the selection of species to mate with each other to produce a new variety

(3) attempts by humans to protect extinct species

(4) a human activity that disrupts existing ecosystems

S4K7

ANSWER 4

Regents Date
Aug2004

29

Data Base File Number

719

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human activity

606. Base your answer to this question on the information given and on your knowledge of biology.
New York State relies on natural gas for 24% of its energy supply. It is estimated that large deposits of natural gas are located in New York State. It is possible to extract the gas via high-volume hydraulic fracturing (hydrofracking). Hydrofracking involves freeing the natural gas by using a large amount of water treated with chemicals, which produces large quantities of waste products. Some people are in favor of hydrofracking, while others are against it. One side is concerned about the negative effect it will have on the environment. The other side points out the potential benefits it might provide. What is a "trade-off" that must be considered in the decision whether to move forward with hydrofraking?

(1) Fracking is 100% safe and will not hurt the environment.

(2) Fracking will rrovide more natural gas but might damage the environment.

(3) Fracking improves the quality of the water in surrounding water wells.

(4) Fracking is 100% harmful to the environment.

S4K7

ANSWER 2

Regents Date
Jan2014

71

Data Base File Number

1031

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human growth

607. Which factor is primarily responsible for the destruction of the greatest number of habitats?

(1) human population growth

(2) decreased use of renewable resources

(3) spread of predatory insects

(4) epidemic diseases

S4K7

ANSWER 1

Regents Date
Aug2004

23

Data Base File Number

713

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human growth

608. Increased human population growth usually results in

(1) a decrease in the need for farming

(2) a need for stronger environmental protection laws

(3) lower levels of air and water pollution

(4) an increase in natural wildlife habitats

S4K7

ANSWER 2

Regents Date
Jan2013
25

Data Base File Number
637

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human growth

609. Depletion of nonrenewable resources is often a result of

(1) environmental laws

(2) human population growth

(3) reforestation

(4) recycling

S4K7

ANSWER 2

Regents Date
June2011
30

Data Base File Number
353

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human impact

610. Soil in a certain area was contaminated with gasoline, diesel fuel, home heating oil, and grease from the operation of the previous facility. A technique known as BIOREMEDIATION has been used to destroy such organic pollutants using special bacteria. Although this method is effective for cleaning up some forms of pollution, BIOREMEDIATION is NOT effective for inorganic materials. BIOREMEDIATION is not an effective method for breaking down which of the following

(1) grease

(2) gasoline

(3) fuel for diesel engines and furnaces

(4) heavy metals such as lead

S4K6

ANSWER 4

Regents Date
Aug2001

47

Data Base File Number
942

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human impact

611. Toxic chemicals called PCBs, produced as a result of manufacturing processes, were dumped into the Hudson River. What was most likely a result of this action on fish in the Hudson River?

(1) Some fish became unfit to eat.

(2) The fish populations increased.

(3) Thermal pollution of the river increased, decreasing the fish population.

(4) The carrying capacity for fish increased in the river.

S4K7

ANSWER 1

Regents Date
Aug2001

35

Data Base File Number
941

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human impact

612. Deforestation would most immediately result in

(1) the disappearance of native species

(2) industrialization of an area

(3) the depletion of the ozone shield

(4) global warming

S4K7

ANSWER 1

Regents Date
Aug2001
33

Data Base File Number
939

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human impact

613. To minimize negative environmental impact, a community should

(1) approve the weekly spraying of pesticides on the plants in a local park

(2) grant a permit to a chemical manufacturing company to build a factory by one of its lakes, with no restrictions on waste disposal

(3) make a decision about building a new road in a hiking area based only on the economic advantages

(4) set policy after considering both the risks and benefits involved in building a toxic waste site within its boundaries

S4K7

ANSWER 4

Regents Date
Aug2001
32

Data Base File Number
938

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human impact

614. Which factor is often responsible for the other three?

(1) increase in levels of toxins in both water and air

(2) increase in human population

(3) increased poverty and malnutrition

(4) increased depletion of finite resources

S4K7

ANSWER 2

Regents Date
Aug2002
31

Data Base File Number
828

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human impact

615. Dumping raw sewage into a river will lead to a reduction in dissolved oxygen in the water. This reduction will most likely cause

(1) an increase in all fish populations

(2) a decrease in most aquatic animal populations

(3) an increase in depth of the water

(4) a decrease in water temperature

S4K7

ANSWER 2

Regents Date
Aug2002
34

Data Base File Number
830

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human impact

616. A major reason that humans have negatively affected the environment in the past is that humans have

(1) frequently lacked an understanding of how their activities affect the environment

(2) passed laws to protect certain wetlands

(3) attempted to control their population growth

(4) discontinued the use of certain chemicals used to control insects

S4K7

ANSWER 1

Regents Date
Aug2003

35

Data Base File Number
804

Regents Date
Aug2004

617. Base your answer to this question on the passage given and on your knowedge of biology. --- Fighting Pollution with Bacteria. You may think that all bacteria are harmful. Think again! Some bacteria are working to clean up the damage humans have caused to the environment. In 1989, the oil tanker Exxon Valdez hit ground and a hole was ripped in its hull. Millions of gallons of crude oil spread along the coast of Alaska. In some places, the oil soaked 2 feet deep into the beaches. There seemed to be no way to clean up the spill. Then scientists decided to enlist the help of bacteria that are found naturally on Alaskan beaches. Some of these bacteria break down hydrocarbons (molecules found in oil) into simpler, less harmful substances such as carbon dioxide and water. The problem was that there were not enough of these bacteria to handle the huge amount of oil. To make the bacteria multiply faster, the scientists sprayed a chemical that acted as a fertilizer along 70 miles of coastline. Within 15 days, the number of bacteria had tripled. The beaches that had been treated with the chemical were much cleaner than those that had not. Without this bacterial activity, Alaska's beaches might still be covered with oil. This process of using organisms to eliminate toxic materials is called bioremediation. Bioremediation is being used to clean up gasoline that leaks into the soil under gas stations. At factories that process wood pulp, scientists are using microorganisms to break down phenols (a poisonous by-product of the process) into harmless salts. Bacteria also can break down acid drainage that seeps out of abandoned coal mines, and explosives, such as TNT. Bacteria are used in sewage treatment plants to clean water. Bacteria also reduce acid rain by removing sulfur from coal before it is burned. Because Americans produce more than 600 million tons of toxic waste a year, bioremediation may soon become a big business. If scientists can identify microorganisms that attack all the kinds of waste we produce, expensive treatment plants and dangerous toxic dumps might be put out of business. The chemical was sprayed along the Alaskan coastline in order to

(1) introduce new bacteria to the beaches

(2) dissolve oil that was spilled on the shore

(3) increase the population of bacteria

(4) wash away oil that had been spilled

44

S1K3

Data Base File Number

721

ANSWER 3

human impact

618. In most states, automobiles must be inspected every year to make sure that the exhaust fumes they emit do not contain high levels of pollutants such as carbon monoxide. This process is a way humans attempt to

(1) control the water cycle

(2) recycle nutrients from one ecosystem to another

(3) control energy flow in natural ecosystems

(4) maintain the quality of the atmosphere

Regents Date
Aug2004

27

Data Base File Number
717

S4K7

ANSWER 4

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human impact

619. The process of using organisms to eliminate toxic materials is called bioremediation. Which statement does NOT represent an example of bioremediation?

(1) Duckweed removes heavy metals from ponds and lakes.

(2) Ladybugs eliminate insect pests from plants.

(3) Bacteria break down hydrocarbons in oil.

(4) Ragweed plants remove lead from the ground around factory sites.

Regents Date
Aug2004

45

Data Base File Number
722

S4K7

ANSWER 2

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human impact

620. A new automobile manufacturing plant is opening in a certain town. It will have some negative environmental impacts. This is a trade-off that the town officials had to consider carefully before giving final approval. They most likely gave their approval because the negative impacts would be offset by the

(1) release of pollutants into the environment

(2) creation of new employment opportunities

(3) decrease of property values in the area around the plant

(4) increase of automobile traffic in the area around the plant

Regents Date
Aug2004

26

Data Base File Number
716

S4K7

ANSWER 2

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human impact

621. Humans have altered ecosystems in many ways. The most positive impact on an ecosystem would result from

(1) planting a single economically valuable crop in a 25-acre area

(2) seeding an area with valuable plants that are from another ecosystem

(3) planting many different plants that are native to the area in a vacant lot

(4) filling in a swamp and planting grass and trees for a community park

S4K7

ANSWER 3

Regents Date
Aug2005

30

Data Base File Number
615

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human impact

622. DDT and other pesticides used over 50 years ago are still affecting the environment today. Scientists have found these substances in recent glacier runoff. Glacier runoff occurs during the summer, when precipitation that has fallen on glaciers during the winter is released. Ice layers from existing glaciers have been analyzed. The results of this analysis show that the concentrations of DDT and other pesticides were highest about 10 years after the use of these substances was banned. This information shows that

(1) DDT and other pesticides cause glacier runoff during the summer

(2) it takes humans over 50 years to analyze a glacier

(3) precipitation helps to break down pesticides

(4) the decision of one human generation may have an impact on future generations

S4K7

ANSWER 4

Regents Date
Aug2011

36

Data Base File Number
385

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human impact

623. Which occurrence most likely led to the other three?

(1) Human population growth reached 6.8 billion in 2010 and it continues to increase.

(2) The number of African elephants has declined from 1.2 million in 1979 to about 20,000 today.

(3) Approximately 6,500 gallons of oil were spilled into a river in Illinois after a pipeline broke.

(4) At one time, rain forests covered 14 percent of Earth and today they cover only 6 percent.

S4K7

ANSWER 1

Regents Date
Aug2012

29

Data Base File Number
469

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human impact

Regents Date
Aug2012

624. A community is trying to decide on the location for a new shopping center. Two possible locations have been proposed, with each location having some benefits and some problems. The proper approach to deciding the best location would be to

(1) select the site that could hold the most stores

(2) select the site that would be the least expensive to develop

(3) compare the problems, but not the benefits

(4) compare the trade-offs of building at either location

30

S4K7

Data Base File Number

ANSWER 4

470

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human impact

Regents Date
Aug2012

625. Base your answer to this question on the information given and on your knowledge of biology. Keystone Species. A keystone species is one whose presence contributes to the diversity of life and whose extinction would lead to the extinction of other forms of life. A keystone species helps to support the ecosystem of which it is a part. An example of what can happen when a keystone species is removed occurred when fur hunters eliminated sea otters from some Pacific Ocean kelp beds. Otters eat sea urchins, which eat kelp. With its major predator gone, sea urchin populations exploded and consumed most of the kelp. Fish, snails, and other animals associated with the kelp beds disappeared. One action humans can take that might ensure that these sea otters will continue their function as a keystone species in their environment is to

(1) establish a sea otter wildlife refuge in the Atlantic Ocean

(2) pass laws to regulate the hunting of sea otters

(3) plant kelp in the Pacific Ocean

(4) destroy sea urchins found living in the kelp beds

47

S4K7

Data Base File Number

ANSWER 2

472

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human impact

626. A wetland provides a variety of services for an ecosystem, such as filtering pollutants from the water, allowing animals to lay eggs and reproduce, and producing fertile soils for plants. When humans build houses on wetland areas, they always

(1) change this area so these processes can still take place

(2) create new habitats for the wetland species

(3) transport the wetland species to a new area

(4) make changes that might not be reversible

Regents Date
Aug2012

28

Data Base File Number
468

S4K7

ANSWER 4

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human impact

627. Base your answer to this question on the information given and on your knowledge of biology. Invasion of the Giant Rodents Large, 20-pound rodents [nutria] that were originally from South America are spreading northward from the southern United States. The nutria were brought in and raised in the southern United States for their fur. Nutria escaped and started a wild population. They have since moved up the east coast, damaging plant life in Delaware and Maryland. Currently, they have reached New Jersey. These rodents are damaging New Jersey's marshland ecosystems. A nutria can eat up to 5 pounds of marshland plants a day. This loss of plant life is harming the marshland ecosystems. A wildlife manager in New Jersey wants to use poisons to destroy the nutria. What is a harmful end result that might result from this action.

(1) Other animals might be poisoned.

(2) Beneficial organisms might be destroyed.

(3) The poison might be harmful to people.

(4) All of the above could be correct.

Regents Date
Aug2012

61

Data Base File Number
473

S4K7

ANSWER 4

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human impact

628. Some factories have a negative impact on Earth's ecosystems because they

(1) have high energy demands that require the use of fossil fuels and nuclear fuels

(2) utilize agricultural technology that decreases soil erosion

(3) decrease the need for finite resources

(4) limit the amount of emissions produced each year

Regents Date
Jan2002

34

Data Base File Number
880

S4K7

ANSWER 1

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human impact

629. One way to help provide suitable environments for future generations is to urge individuals to

(1) apply ecological principles when making decisions that will have an environmental impact

(2) control all aspects of natural environments

(3) agree that population controls have no impact on environmental matters

(4) work toward increasing global warming

S4K7

ANSWER 1

Regents Date
Jan2003
35
Data Base File Number
748

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human impact

630. The rapid destruction of tropical rain forests may be harmful because

(1) removing trees will prevent scientists from studying ecological succession

(2) genetic material that may be useful for future medical discoveries will be lost

(3) energy cycling in the environment will stop

(4) the removal of trees will limit the construction of factories that will pollute the environment

S4K6

ANSWER 3

Regents Date
Jan2005
25
Data Base File Number
561

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human impact

631. Many farmers plant corn, and then harvest the entire plant at the end of the growing season. One negative effect of this action is that

(1) soil minerals used by corn plants are not recycled

(2) corn plants remove acidic compounds from the air all season long

(3) corn plants may replace renewable sources of energy

(4) large quantities of water are produced by corn plants

S4K7

ANSWER 1

Regents Date
Jan2009
29
Data Base File Number
173

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human impact

632. The Susquehanna River, which runs through the states of New York, Pennsylvania, and Maryland, received the designation "America's Most Endangered River" in 2005. One of the river's problems results from the large number of sewage overflow sites that are found along the course of the river. These sewage overflow sites are a direct result of an increase in

(1) global warming

(2) human population

(3) recycling programs

(4) atmospheric changes

Regents Date
Jan2009

28

S4K7

Data Base File Number
172

ANSWER 2

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human impact

633. Which method of protecting members of an endangered species is most ecologically sound?

(1) protecting the habitats where these animals live from human development

(2) capturing these animals and putting them in wildlife parks

(3) feeding and constructing shelters for these organisms

(4) passing laws that encourage hunting of the predators of these species

Regents Date
Jan2011

24

S4K7

Data Base File Number
321

ANSWER 1

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human impact

634. Scientists have been concerned about the reduction of shark populations due to overfishing off the east coast of the United States. Sharks feed on rays, which feed on scallops. Scallops feed on microscopic algae, which they filter from seawater. Without sharks, the rays consume and eliminate scallop beds, harming the scallop fishing industry. This situation demonstrates that

(1) sharks are not important for the stability of this ecosystem

(2) reducing the shark population increases the quantity of scallops that can be harvested

(3) humans can upset ecosystem stability by removing species

(4) humans improve ecosystem diversity by removing predators

Regents Date
Jan2013

28

S4K7

Data Base File Number
639

ANSWER 3

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human impact

635. The graduating class of a high school would like to give the school a gift that would have a positive impact on the environment. Which plan would be the best choice?

(1) making wooden benches by harvesting trees from school property

(2) planting native trees along the border of the school property

(3) introducing a new population of foxes, the school mascot, to school grounds

(4) clearing an area to make room for additional student parking

S4K7

ANSWER 2

Regents Date
Jan2014

24

Data Base File Number

1017

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human impact

636. Human impact on the environment is often more dramatic than the impact of most other living things because humans have a greater

(1) need for water

(2) need for food

(3) ability to adapt to change

(4) ability to alter the environment

S4K7

ANSWER 4

Regents Date
June2001

31

Data Base File Number

909

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human impact

637. Fertilizers used to improve lawns and gardens may interfere with the equilibrium of an ecosystem because they

(1) cause mutations in all plants

(2) cannot be absorbed by roots

(3) can be carried into local water supplies

(4) cause atmospheric pollution

S4K7

ANSWER 3

Regents Date
June2002

34

Data Base File Number

854

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human impact

638. Which animal has modified ecosystems more than any other animal and has had the greatest negative impact on world ecosystems?

(1) gypsy moth

(2) zebra mussel

(3) human

(4) shark

S4K7

ANSWER 3

Regents Date
June2003

35

Data Base File Number

777

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human impact

639. A major reason that humans can have such a significant impact on an ecological community is that humans

(1) can modify their environment through technology

(2) reproduce faster than most other species

(3) are able to increase the amount of finite resources available

(4) remove large amounts of carbon dioxide from the air

S4K7

ANSWER 1

Regents Date
June2008

29

Data Base File Number

123

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human impact

640. One reason why people should be aware of the impact of their actions on the environment is that

(1) ecosystems are never able to recover once they have been adversely affected

(2) the depletion of finite resources cannot be reversed

(3) there is a decreased need for new technology

(4) there is a decreased need for substances produced by natural processes

S4K7

ANSWER 2

Regents Date
June2009

30

Data Base File Number

197

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human impact

641. Base your answers to this question on the information given and on your knowledge of biology.
After the Aswan High Dam was built on the Nile River, the rate of parasitic blood-fluke infection doubled in the human population near the dam. As a result of building the dam, the flow of the Nile changed. This changed the habitat, which resulted in an increase in its population of a certain aquatic snail. The snails, which were infected, released larvae of the fluke. These larvae then infected humans. This situation best illustrates that

(1) the influence of humans on a natural system is always negative in the long term

(2) the influence of humans on a natural system can have unpredictable negative impacts

(3) human alteration of an ecosystem does not need to be studied to avoid ecological disaster

(4) human alteration of an ecosystem will cause pollution and loss of finite resources

S4K4

ANSWER 2

Regents Date
June2010

42

Data Base File Number

279

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human impact

642. Due to overfishing, the number of fish in the ocean could drastically decrease. This will cause

(1) an increase in the stability of the oceans

(2) an increase in the salt content of the oceans

(3) a decrease in the stability of the oceans

(4) a decrease in the oxygen available in the oceans

S4K1

ANSWER 3

Regents Date June2012

3

Data Base File Number 421

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human population / reducing

643. Which action would be LEAST likely to harm endangered species?

(1) releasing more carbon dioxide into the atmosphere

(2) reducing the human population

(3) decreasing the amount of dissolved oxygen in the oceans

(4) reducing the thickness of the ozone layer

S4K7

ANSWER 2

Regents Date Aug2010

30

Data Base File Number 302

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human reproduction

644. Heavy cigarette smoking and the use of alcohol throughout pregnancy usually increase the likelihood of

(1) the birth of twins

(2) the birth of a male baby

(3) a baby being born with a viral infection

(4) a baby being born with medical problems

S4K4

ANSWER 4

Regents Date Jan2002

25

Data Base File Number 872

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human reproduction

645. Reproduction in humans usually requires

(1) the process of cloning

(2) mitotic cell division of gametes

(3) gametes with chromosomes that are not paired

(4) the external fertilization of sex cells

S4K4

ANSWER 3

Regents Date June2005

13

Data Base File Number 572

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hypothesis

646. A student formulated a hypothesis that cotton will grow larger bolls (pods) if magnesium is added to the soil. The student has two experimental fields of cotton, one with magnesium and one without. Which data should be collected to support this hypothesis?

(1) height of the cotton plants in both fields

(2) diameter of the cotton bolls in both fields

(3) length of the growing season in both fields

(4) color of the cotton bolls in both fields

S1K2

ANSWER 2

Regents Date
Aug2002

1

Data Base File Number
807

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hypothesis

647. Which statement best describes a hypothesis?

(1) A hypothesis is the process of making careful observations.

(2) The conclusion drawn from the results of an experiment is part of a hypothesis.

(3) A hypothesis serves as a basis for determining what data to collect when designing an experiment.

(4) The facts collected from an experiment are written in the form of a hypothesis.

S1K2

ANSWER 3

Regents Date
Aug2009
32

Data Base File Number
225

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hypothesis

648. Reasons for conducting peer review include all of the following EXCEPT

(1) analyzing the experimental design

(2) pointing out possible bias

(3) identifying an illogical conclusion

(4) changing data to support the hypothesis

S1K3

ANSWER 4

Regents Date
Aug2011

41

Data Base File Number
387

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hypothesis

649. A student hypothesized that watching sports on television would cause viewers' pulse rates to increase. She designed an experiment to determine the effect of watching sports on pulse rate. A group of 200 volunteers took their pulse rates and then watched their favorite sports on television. After the games, they immediately took their pulse rates again. The data collected showed that the pulse rates of some people increased, but the pulse rates of an equal number of people did not change. Although the hypothesis was not supported by the data, the hypothesis is still valuable because it

(1) may lead to further investigation

(2) can be changed to fit the data

(3) is the opinion of the experimenter

(4) is based on beliefs of the volunteers

Regents Date
Aug2013

76

LAB2

Data Base File Number

ANSWER 1

997

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hypothesis

650. Tomato plants in a garden are not growing well. The gardener hypothesizes that the soil is too acidic. To test this hypothesis accurately, the gardener could

(1) plant seeds of a different kind of plant

(2) move the tomato plants to an area with less sunlight

(3) change the pH of the soil

(4) reduce the amount of water available to the plant

Regents Date
Jan2002

5

S1K2

Data Base File Number

ANSWER 3

860

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hypothesis

651. Base your answers to this question on the information given and on your knowledge of biology.
An experiment was carried out to answer the question "Does the pH of water affect the growth of radish plants?" Two groups of ten radish plants were set up. One group was watered with water having a pH of 3.0, and the other group was watered with water having a pH of 7.0. Both groups of plants received the same amount and intensity of light, the same amount of water, and they were grown in the same type of soil. The heights of the radish plants were measured every 2 days for a period of 2 weeks.
Which sentence is a possible hypothesis that was tested in this experiment?

(1) Does the pH of water affect the growth of radish plants?

(2) Will the amount of water alter the heights of the radish plants?

(3) The temperature of the water will affect the heights of the radish plants.

(4) The pH of the water will affect the heights of the radish plants.

S1K2

ANSWER 4

Regents Date
Jan2014

31

Data Base File Number

1023

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hypothesis

652. A scientist tested a hypothesis that white-tailed deer would prefer apples over corn as a primary food source. The findings of the test, in which the scientist claimed that the deer preferred apples, were published. Which research technique, if used by the scientist, might result in this claim being questioned?

(1) The scientist observed four deer in different locations at various times of the day.

(2) The scientist observed a total of 500 deer in 20 different locations at various times of the day.

(3) The scientist observed 200 deer in various natural settings, but none in captivity.

(4) The scientist observed 300 deer in various locations in captivity, but none in natural settings.

S1K3

ANSWER 1

Regents Date
June2001

2

Data Base File Number

886

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hypothesis

653. Why do scientists consider any hypothesis valuable?

(1) A hypothesis requires no further investigation.

(2) A hypothesis may lead to further investigation even if it is disproved by the experiment.

(3) A hypothesis requires no further investigation if it is proved by the experiment.

(4) A hypothesis can be used to explain a conclusion even if it is disproved by the experiment.

S1K3

ANSWER 2

Regents Date
June2003
2

Data Base File Number
755

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hypothesis

654. A biologist formulates a hypothesis, performs experiments to test his hypothesis, makes careful observations, and keeps accurate records of his findings. In order to complete this process, the biologist should

(1) adjust the data to support the hypothesis

(2) eliminate data that do not support the hypothesis

(3) write a research paper explaining his theories before performing his experiments, in order to gain funding sources

(4) evaluate the findings and, if necessary, alter the hypothesis based on his findings, and test the new hypothesis

S1K3

ANSWER 4

Regents Date
June2011
33

Data Base File Number
354

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hypothesis

655. An experiment was designed to test whether students could squeeze a clothespin more times in 1 minute after resting or after exercising. What would be a hypothesis for the experiment?

(1) Do students squeeze clothespins more often in 1 minute after exercising?

(2) Can most students squeeze a clothespin more times after they rest?

(3) Ten students who exercise before squeezing a clothespin squeezed it more times in 1 minute than ten students who rested first.

(4) Students who rest before squeezing a clothespin will squeeze it fewer times in 1 minute than students who exercise beforehand.

LAB2

ANSWER 4

Regents Date
June2012
81

Data Base File Number
443

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immune system

656. The purpose of introducing weakened microbes into the body of an organism is to stimulate the

(1) production of living microbes that will protect the organism from future attacks

(2) production of antigens that will prevent infections from occurring

(3) immune system to react and prepare the organism to fight future invasions by these microbes

(4) replication of genes that direct the synthesis of hormones that regulate the number of microbes

S4K5

ANSWER 3

Regents Date Aug2005

24

Data Base File Number

611

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immune system

657. People who have AIDS are more likely than others to become ill with multiple infections because the pathogen that causes AIDS

(1) targets many body systems

(2) mutates, releasing toxins directly into the bloodstream

(3) increases the rate of enzyme activity in different types of body cells

(4) damages the immune system

S4K5

ANSWER 4

Regents Date Aug2012

22

Data Base File Number

462

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immune system

658. An individual recovers from the common cold, which is caused by rhinovirus A. The person then becomes infected with the avian influenza virus, which causes the bird flu. Which statement best describes what will most likely happen to this person?

(1) He will have the symptoms of the bird flu because he is not immune to the avian influenza virus.

(2) He will have the symptoms of the common cold because he is not immune to the avian influenza virus.

(3) He will not have the symptoms of the bird flu because he is immune to rhinovirus A.

(4) He will not have the symptoms of the common cold because the avian influenza virus causes it.

S4K5

ANSWER 1

Regents Date Aug2013

23

Data Base File Number

988

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immune system

659. The immune system of humans may respond to chemicals on the surface of an invading organism by

(1) releasing hormones that break down these chemicals

(2) synthesizing antibodies that mark these organisms to be destroyed

(3) secreting antibiotics that attach to these organisms

(4) altering a DNA sequence in these organisms

S4K5

ANSWER 2

Regents Date
Jan2006

18

Data Base File Number

486

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immune system

660. In some people, substances such as peanuts, eggs, and milk cause an immune response. This response to usually harmless substances is most similar to the

(1) action of the heart as the intensity of exercise increases

(2) mechanism that regulates the activity of guard cells

(3) action of white blood cells when certain bacteria enter the body

(4) mechanism that maintains the proper level of antibiotics in the blood

S4K5

ANSWER 3

Regents Date
Jan2009

23

Data Base File Number

168

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immune system

661. Base your answer to this question on the passage given and on your knowledge of biology. ---- In Search of a Low-Allergy Peanut ---- Many people are allergic to substances in the environment. Of the many foods that contain allergens (allergy-inducing substances), peanuts cause some of the most severe reactions. Mildly allergic people may only get hives. Highly allergic people can go into a form of shock. Some people die each year from reactions to peanuts. A group of scientists is attempting to produce peanuts that lack the allergy-inducing proteins by using traditional selective breeding methods. They are searching for varieties of peanuts that are free of the allergens. By crossing those varieties with popular commercial types, they hope to produce peanuts that will be less likely to cause allergic reactions and still taste good. So far, they have found one variety that has 80 percent less of one of three complex proteins linked to allergic reactions. Removing all three of these allergens may be impossible, but even removing one could help. Other researchers are attempting to alter the genes that code for the three major allergens in peanuts. All of this research is seen as a possible long-term solution to peanut allergies. Allergic reactions usually occur when the immune system produces

(1) antibiotics against usually harmless antigens

(2) antigens against usually harmless antibodies

(3) antibodies against usually harmless antigens

(4) enzymes against usually harmless antibodies

S4K5

ANSWER 3

Regents Date
June2006

49

Data Base File Number
519

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independent variable

662. Which statement about the use of independent variables in controlled experiments is correct?

(1) A different independent variable must be used each time an experiment is repeated.

(2) The independent variables must involve time.

(3) Only one independent variable is used for each experiment.

(4) The independent variables state the problem being tested

S1K2

ANSWER 3

Regents Date
Jan2009

36

Data Base File Number
175

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industrialization

663. Which change is a cause of the other three?

(1) increased fossil fuel consumption

(2) destruction of the ozone shield

(3) increased industrialization

(4) destruction of natural habitats

S4K7

ANSWER 3

Regents Date
Aug2009
26

Data Base File Number
222

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industrialization

664. Increased industrialization will most likely

(1) decrease available habitats

(2) increase environmental carrying capacity for native species

(3) increase the stability of ecosystems

(4) decrease global warming

S4K7

ANSWER 1

Regents Date
Jan2008
27

Data Base File Number
92

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inference

665. Male stickleback fish with red undersides attack other male sticklebacks with red undersides and also attack models of fish with red undersides. Sticklebacks and fish models without red undersides are not attacked. Which is the best inference that can be drawn regarding this behavior?

(1) A male stickleback will defend its territory against all other fish.

(2) The stimulus for an attack is a model with red fins or a male stickleback.

(3) The stimulus for an attack is a red underside.

(4) Male sticklebacks turn red to attract females.

S1K3

ANSWER 3

Regents Date
Aug2011

Data Base File Number
32
381

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inheritance

666. In several species of birds, the males show off their bright colors and long feathers. The dull colored females usually pick the brightest colored males for mates. Male offspring inherit their father's bright colors and long feathers. Compared to earlier generations, future generations of these birds will be expected to have a greater proportion of

(1) bright-colored females

(2) dull-colored females

(3) dull-colored males

(4) bright-colored males

S4K3

ANSWER 4

Regents Date
Aug2008

Data Base File Number
15
143

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inorganic

667. Which substance is an inorganic molecule?

(1) starch

(2) DNA

(3) water

(4) fat

S4K5

ANSWER 3

Regents Date
Aug2011
18

Data Base File Number
369

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insulin

668. An increase in the level of insulin in the blood would most directly result in

(1) a decrease in the amount of glucose in the blood

(2) a decrease in the amount of protein in the blood

(3) an increase in the amount of fat in cells

(4) an increase in the amount of carbon dioxide in cells

S4K5

ANSWER 1

Regents Date
June2001
29

Data Base File Number
907

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insulin

669. The most immediate response to a high level of blood sugar in a human is an increase in the

(1) muscle activity in the arms

(2) blood flow to the digestive tract

(3) activity of all cell organelles

(4) release of insulin

S4K6

ANSWER 4

Regents Date
June2003
29

Data Base File Number
771

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insulin

670. The first successful transplant of insulin-producing cells from a living donor pancreas was completed in April 2000 in Japan. This enabled the body of the recipient to

(1) regulate fat concentration by a feedback mechanism

(2) provide protection against an infectious disease

(3) slow down the heart rate after a period of activity ends

(4) maintain blood sugar levels throughout the day

S4K5

ANSWER 4

Regents Date
June2013
22

Data Base File Number
961

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interrelationships

671. Worms that had been invaded by bacteria were eaten by a species of bird. Many of these birds died as a result. The most likely explanation for this is that the

(1) bacteria interfered with normal life functions of the birds

(2) disease that killed the birds was inherited

(3) gene alterations in the bacterial cells killed the birds

(4) birds produced antigens in response to the bacteria

S4K5

ANSWER 1

Regents Date Aug2007

26

Data Base File Number

18

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interrelationships

672. Which action illustrates an increased understanding and concern by humans for ecological interrelationships

(1) importing organisms in order to stabilize existing ecosystems

(2) eliminating pollution standards for industries that promote technology

(3) removing natural resources at a rate equal to the needs of the population

(4) implementing laws to regulate the number of animals hunted and killed each year

S4K7

ANSWER 4

Regents Date Aug2007

27

Data Base File Number

19

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interrelationships

673. Even before a flower bud opens, certain plant chemicals have colored the flower in patterns particularly attractive to specific insects. At the same time, these chemicals protect the plant's reproductive structures by killing or inhibiting pathogens and insects that may feed on the plant. Which statement about the plant and the other organisms mentioned is correct?

(1) Chemicals affect plants but not animals.

(2) Organisms of every niche may be preyed on by herbivores.

(3) Any chemical produced in a plant can protect against insects.

(4) Organisms may interact with other organisms in both positive and negative ways.

S4K6

ANSWER 4

Regents Date Jan2006

26

Data Base File Number

492

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lab

674. Which piece of laboratory equipment would normally be used to accurately measure 5 milliliters of glucose solution for an experiment?

(1) a beaker
(2) a flask
(3) a graduated cylinder
(4) a test tube

Regents Date
Aug2003

43

LABA

Data Base File Number

806

ANSWER 3

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laboratory procedure

675. A laboratory procedure calls for heating 50 milliliters of a sugar solution to 60°C. Which piece of laboratory equipment will NOT be needed?

(1) protective eyewear
(2) ruler
(3) thermometer
(4) graduated cylinder

Regents Date
Aug2009

31

LABS

Data Base File Number

224

ANSWER 2

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limiting factors

676. Which information concerning a desert is provided by the following quotation? "The desert is arid, with less than 25 cm of rain per year. The plants are spaced far apart, or are grouped around water sources. Most of the animals are active at night."

(1) daily temperature range and types of autotrophs
(2) time of rainy season and type of food used by heterotrophs
(3) identity of a limiting factor and behavior of heterotrophs
(4) type of nutrition in animals and distribution of autotrophs

Regents Date
June2005

34

S4K7

Data Base File Number

590

ANSWER 3

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limiting factors

677. Base your answers to this question on the passage included and on your knowledge of biology. - Corals come in about 1,500 known species - from soft swaying fans to stony varieties with hard skeletons that form reef bases. They are made up of polyps, tiny animals that live in colonies and feed at night on microscopic plants and creatures. The coral's surface is the living part, with color infused by single-celled algae called zooxanthellae that live in polyp tissue. The algae act like solar panels, passing energy to the coral as they photosynthesize while feeding on the coral's waste. Extremely sensitive, corals survive in a narrow range of temperature, sunlight and salinity. An uncommonly severe El Niño in 1998 raised ocean temperatures and changed currents, causing bleaching that devastated reefs worldwide. Scientists say parts of the Indian Ocean lost up to 90 percent of corals. The bleaching struck reefs around the Persian Gulf, East Africa, Southeast Asia and the Caribbean. Some recovered. Many died. - Source: Associated Press, December 2001 -- The passage contains information concerning

(1) limiting factors
(2) reproductive methods
(3) bacteria
(4) competition

Regents Date
June2011

43

S4K6

Data Base File Number

ANSWER 1

356

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marsupials

678. Kangaroos are mammals that lack a placenta. Therefore, they must have an alternate way of supplying the developing embryo with

(1) nutrients
(2) carbon dioxide
(3) enzymes
(4) genetic information

Regents Date
June2008

18

S4K4

Data Base File Number

ANSWER 1

116

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meiosis

679. The great variety of possible gene combinations in a sexually reproducing species is due in part to the

(1) sorting of genes as a result of gene replication
(2) pairing of genes as a result of mitosis
(3) pairing of genes as a result of differentiation
(4) sorting of genes as a result of meiosis

Regents Date
Aug2003

17

S4K3

Data Base File Number

ANSWER 4

791

---

meiosis

680. Which cell process occurs only in organisms that reproduce sexually?

(1) mutation

(2) replication

(3) meiosis

(4) mitosis

S4K4

ANSWER 3

Regents Date
Aug2005

11

Data Base File Number
601

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meiosis

681. Which cell is normally produced as a direct result of meiosis?

(1) a uterine cell having half the normal species number of chromosomes

(2) an egg having the full species number of chromosomes

(3) a zygote having the full species number of chromosomes

(4) a sperm having half the normal species number of chromosomes

S4K4

ANSWER 4

Regents Date
Aug2007

19

Data Base File Number
15

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meiosis

682. Most cells in the body of a fruit fly contain eight chromosomes. In some cells, only four chromosomes are present, a condition which is a direct result of

(1) mitotic cell division

(2) meiotic cell division

(3) embryonic differentiation

(4) internal fertilization

S4K4

ANSWER 2

Regents Date
Jan2002

19

Data Base File Number
867

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meiosis

683. Down syndrome is a genetic disorder caused by the presence of an extra chromosome in the body cells of humans. This extra chromosome occurs in a gamete as a result of

(1) an error in the process of cloning

(2) an error in meiotic cell division

(3) a gene mutation

(4) replication of a single chromosome during mitosis

S4K4

ANSWER 2

Regents Date
Jan2005

16

Data Base File Number
555

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meiosis

684. Which statement best explains the significance of meiosis in the process of evolution within a species?

(1) The gametes produced by meiosis ensure the continuation of any particular species by asexual reproduction.

(2) Equal numbers of eggs and sperm are produced by meiosis.

(3) Meiosis produces eggs and sperm that are alike.

(4) Meiosis provides for variation in the gametes produced by an organism.

S4K3

ANSWER 4

Regents Date June2001

19

Data Base File Number

901

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meiosis

685. Offspring that result from meiosis and fertilization each have

(1) twice as many chromosomes as their parents

(2) one-half as many chromosomes as their parents

(3) gene combinations different from those of either parent

(4) gene combinations identical to those of each parent

S4K4

ANSWER 3

Regents Date June2006

16

Data Base File Number

510

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metabolism

686. Every single-celled organism is able to survive because it carries out

(1) metabolic activities

(2) autotrophic nutrition

(3) heterotrophic nutrition

(4) sexual reproduction

S4K1

ANSWER 1

Regents Date June2001

1

Data Base File Number

892

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microscope

687. A slide of human blood cells was observed in focus under the low-power objective of a compound light microscope that had clean lenses. When the microscope was switched to high power, the image was dark and fuzzy. Which parts of the microscope should be used to correct this situation?

(1) nosepiece and coarse adjustment

(2) diaphragm and ocular

(3) objective and fine adjustment

(4) diaphragm and fine adjustment

S1K2

ANSWER 4

Regents Date Aug2003

39

Data Base File Number

805

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microscope

688. A student prepared a slide of pollen grains from a flower. First the pollen was viewed through the low-power objective lens and then, without moving the slide, viewed through the high-power objective lens of a compound light microscope. Which statement best describes the relative number and appearance of the pollen grains observed using these two objectives?

(1) low power: 25 small pollen grains, high power: 100 large pollen grains

(2) low power: 100 small pollen grains, high power: 25 large pollen grains

(3) low power: 25 large pollen grains, high power: 100 small pollen grains

(4) low power: 100 large pollen grains, high power: 25 small pollen grains

LABS

ANSWER 2

Regents Date
Aug2007

36

Data Base File Number

22

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microscope

689. After switching from the high-power to the low-power objective lens of a compound light microscope, the area of the low-power field will appear

(1) larger and brighter

(2) smaller and brighter

(3) larger and darker

(4) smaller and darker

LABA

ANSWER 1

Regents Date
Jan2004

36

Data Base File Number

669

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microscope

690. While viewing a specimen under high power of a compound light microscope, a student noticed that the specimen was out of focus. Which part of the microscope should the student turn to obtain a clearer image under high power?

(1) eyepiece

(2) coarse adjustment

(3) fine adjustment

(4) nosepiece

LABS

ANSWER 3

Regents Date
Jan2007

31

Data Base File Number

72

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microscope technique

691. Which structure is best observed using a compound light microscope?

(1) a cell

(2) a virus

(3) a DNA sequence

(4) the inner surface of a mitochondrion

LABA

ANSWER 1

Regents Date
Jan2003

37

Data Base File Number
749

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microscope technique

692. A coverslip should be slowly lowered from a 45° angle onto a slide in order to

(1) prevent the slide from being scratched

(2) stop the loss of water from under the coverslip

(3) ensure that the specimen being viewed will stay alive

(4) reduce the formation of air bubbles

LAB5

ANSWER 4

Regents Date
Jan2012

74

Data Base File Number
418

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mitochondria

693. While viewing a slide of rapidly moving sperm cells, a student concludes that these cells require a large amount of energy to maintain their activity. The organelles that most directly provide this energy are known as

(1) vacuoles

(2) ribosomes

(3) chloroplasts

(4) mitochondria

S4K1

ANSWER 4

Regents Date
Aug2002

8

Data Base File Number
813

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mitochondria

694. Muscle cells in athletes often have more mitochondria than muscle cells in nonathletes. Based on this observation, it can be inferred that the muscle cells in athletes

(1) have a smaller demand for cell proteins than the muscle cells of nonathletes

(2) reproduce less frequently than the muscle cells of nonathletes

(3) have nuclei containing more DNA than nuclei in the muscle cells of nonathletes

(4) have a greater demand for energy than the muscle cells of nonathletes

S4K1

ANSWER 4

Regents Date
Aug2004

6

Data Base File Number
698

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mitochondria

695. An organelle that releases energy for metabolic activity in a nerve cell is the

(1) chloroplast
(2) ribosome
(3) mitochondrion
(4) vacuole

S4K1

ANSWER 3

Regents Date Aug2008

5

Data Base File Number 135

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mitochondria

696. The swordfish contains a heat generating organ that warms its brain and eyes up to 14°C above the surrounding ocean water temperature. Which structures are most likely to be found at relatively high concentrations within the cells of this heat generating organ?

(1) nuclei
(2) chloroplasts
(3) chromosomes
(4) mitochondria

S4K1

ANSWER 4

Regents Date Jan2011

26

Data Base File Number 323

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mitochondria

697. Studies of fat cells and thyroid cells show that fat cells have fewer mitochondria than thyroid cells. A biologist would most likely infer that fat tissue

(1) does not require energy
(2) has energy requirements equal to those of thyroid tissue
(3) requires less energy than thyroid tissue
(4) requires more energy than thyroid tissue

S4K5

ANSWER 3

Regents Date June2003

42

Data Base File Number 781

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mitochondria

698. Certain poisons are toxic to organisms because they interfere with the function of enzymes in mitochondria. This results directly in the inabiliity of the cell to

(1) store information
(2) build proteins
(3) release energy from nutrients
(4) dispose of metabolic wastes

S4K1

ANSWER 3

Regents Date June2008

5

Data Base File Number 107

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mitosis

699. Recently, scientists noted that stained chromosomes from rapidly dividing cells, such as human cancer cells, contain numerous dark, dotlike structures. Chromosomes from older human cells that have stopped dividing have very few, if any, dotlike structures. The best generalization regarding these dotlike structures is that they

(1) will always be present in cells that are dividing

(2) may increase the rate of mitosis in human cells

(3) definitely affect the rate of division in all cells

(4) can cure all genetic disorders

Regents Date
Jan2004

39

S1K3

Data Base File Number

ANSWER 2

671

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mitosis

700. A cell resulting from the fertilization of an egg begins to divide. Two cells are formed that normally remain attached and could develop into a new individual. If the two cells become separated, which statement describes what would most likely occur?

(1) The cells would each have all of the needed genetic information, and both could survive

(2) The cells would each have only one-half of the needed genetic information, so both would die.

(3) One cell would have all of the needed genetic information and would survive, but the other would have none of the needed genetic information and would die.

(4) Each cell would have some of the needed genetic information, but would be unable to share it, so both would die.

Regents Date
Jan2005

15

S4K4

Data Base File Number

ANSWER 1

554

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mitosis

701. Marine sponges contain a biological catalyst that blocks a certain step in the separation of chromosomes. Which cellular process would be directly affected by this catalyst?

(1) mitosis

(2) diffusion

(3) respiration

(4) photosynthesis

Regents Date
Jan2007

15

S4K5

Data Base File Number

ANSWER 1

58

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mitosis

Regents Date
Jan2008

702. The sequence of events occurring in the life cycle of a bacterium is listed: [A] The bacterium copies its single chromosome. [B]) The copies of the chromosome attach to the cell membrane of the bacterium. [C] As the cell grows, the two copies of the chromosome separate. [D] The cell is separated by a wall into equal halves. [E] Each new cell has one copy of the chromosome. This sequence as described above most closely resembles the process of

(1) recombination
(2) zygote formation
(3) mitotic cell division
(4) meiotic cell division

16

S4K4

Data Base File Number
85

ANSWER 3

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mitosis

Regents Date
Jan2010

703. If a chemical that interrupts cell division is added to a culture of human liver tissue, which process would stop?

(1) meiosis
(2) mitosis
(3) breakdown of glucose
(4) diffusion of nutrients

16

S4K4

Data Base File Number
239

ANSWER 2

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mitosis

Regents Date
Jan2013

704. Base your answer to this question on the information given and on your knowledge of biology. Scientists have found a gene in the DNA of a certain plant that could be the key to increasing the amount of lycopene, a cancer fighting substance, in tomatoes. The ability to produce increased amounts of lycopene will be passed on to new tomato cells as a direct result of

(1) recycling
(2) mitosis
(3) enzyme action
(4) gene expression

33

S4K2

Data Base File Number
641

ANSWER 2

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mitosis

Regents Date
Jan2013

705. Which process allows a mammal to continue to grow in size?

(1) mitosis of sex cells
(2) mitosis of body cells
(3) meiosis of sex cells
(4) meiosis of body cells

16

S4K4

Data Base File Number
628

ANSWER 2

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mitosis

706. The processes of deletion, insertion, and substitution can alter genes in a skin cell. The altered genes will most likely be passed on to

(1) sperm cells
(2) egg cells
(3) every cell that develops from that skin cell
(4) only a few of the cells that develop from that skin cell

S4K2

ANSWER 3

Regents Date
June2013

8

Data Base File Number
947

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mitosis

707. Melanoma is a type of cancer in which abnormal skin cells divide uncontrollably. Some chemotherapy drugs, which stop the growth of the cancer, directly interfere with the process of

(1) meiosis
(2) coordination
(3) mitosis
(4) recombination

S4K5

ANSWER 3

Regents Date
June2013

20

Data Base File Number
959

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mitosis / differentiation

708. After the union of sperm and egg, the single celled zygote develops into a multicellular organism with specialized cells by the processes of

(1) meiosis and replication
(2) mitosis and differentiation
(3) cloning and growth
(4) fertilization and gamete production

S4K4

ANSWER 2

Regents Date
Jan2006

14

Data Base File Number
482

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muscle cramps

709. A marathon runner frequently experiences muscle cramps while running. If he stops running and rests, the cramps eventually go away. The cramping in the muscles most
likely results from

(1) lack of adequate oxygen supply to the muscle
(2) the runner running too slowly
(3) the runner warming up before running
(4) increased glucose production in the muscle

LABS

ANSWER 1

Regents Date
June2008

70

Data Base File Number
130

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muscle fatique

710. Base your answer to this question on the information given and on your knowledge of biology. An investigation is carried out to determine the effect of exercise on the rate at which a person can squeeze a clothespin. Muscle fatigue occurs during this activity when

(1) carbon dioxide is used up in the muscle cells

(2) simple sugar is converted to starch in the muscle cells

(3) proteins accumulate in mitochondria in the muscle cells

(4) certain waste products collect in the muscle cells

LABS

ANSWER 4

Regents Date
Jan2011

70

Data Base File Number

329

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mutagenic chemical

711. A chemical known as 5-bromouracil causes a mutation that results in the mismatching of molecular bases in DNA. The offspring of organisms exposed to 5-bromouracil can have mismatched DNA if the mutation occurs in

(1) the skin cells of the mother

(2) the gametes of either parent

(3) all the body cells of both parents

(4) only the nerve cells of the father

S4K3

ANSWER 2

Regents Date
Aug2010

15

Data Base File Number

289

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mutation

712. New inheritable characteristics would be LEAST likely to result from

(1) mutations which occur in muscle cells and skin cells

(2) mutations which occur in male gametes

(3) mutations which occur in female gametes

(4) the sorting and recombination of existing genes during meiosis and fertilization

S4K3

ANSWER 1

Regents Date
Aug2001

16

Data Base File Number

926

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mutation

713. The ozone layer of Earth's atmosphere helps to filter ultraviolet radiation. As the ozone layer is depleted, more ultraviolet radiation reaches Earth's surface. This increase in ultraviolet radiation may be harmful because it can directly cause

(1) photosynthesis to stop in all marine organisms
(2) abnormal migration patterns in waterfowl
(3) mutations in the DNA of organisms
(4) sterility in most species of mammals and birds

Regents Date
Aug2003

27

S4K5

Data Base File Number
799

ANSWER 3

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mutation

714. A mutation occurs in the liver cells of a certain field mouse. Which statement concerning the spread of this mutation through the mouse population is correct?

(1) It will spread because it is beneficial.
(2) It will spread because it is a dominant gene.
(3) It will not spread because it is not in a gamete.
(4) It will not spread because it is a recessive gene.

Regents Date
Aug2005

10

S4K3

Data Base File Number
600

ANSWER 3

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mutation

715. In a group of mushrooms exposed to a poisonous chemical, only a few of the mushrooms survived. The best explanation for the resistance of the surviving mushrooms is that the resistance

(1) was transmitted to the mushrooms from the poisonous chemical
(2) resulted from the presence of mutations in the mushrooms
(3) was transferred through the food web to the mushrooms
(4) developed in response to the poisonous chemical

Regents Date
Aug2006

9

S4K3

Data Base File Number
526

ANSWER 2

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mutation

716. Mutations that occur in skin or lung cells have little effect on the evolution of a species because mutations in these cells

(1) usually lead to the death of the organism
(2) cannot be passed on to offspring
(3) are usually beneficial to the organism
(4) lead to more serious mutations in offspring

Regents Date
Aug2006

12

S4K3

Data Base File Number
529

ANSWER 2

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mutation

717. A mutation changes a gene in a cell in the stomach of an organism. This mutation could cause a change in

(1) both the organism and its offspring

(2) the organism, but not its offspring

(3) its offspring, but not the organism itself

(4) neither the organism nor its offspring

S4K3

ANSWER 2

Regents Date
Aug2007

13

Data Base File Number
10

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mutation

718. One disadvantage of a genetic mutation in a human skin cell is that it

(1) may result in the production of a defective protein

(2) may alter the sequence of simple sugars in insulin molecules

(3) can lead to a lower mutation rate in the offspring of the human

(4) can alter the rate of all the metabolic processes in the human

S4K2

ANSWER 1

Regents Date
Aug2008

12

Data Base File Number
139

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mutation

719. Which situation would most likely produce a gene mutation in a squirrel?

(1) The squirrel stops using its claws for digging.

(2) The squirrel is exposed to radiation for several days.

(3) Oak trees gradually become less common.

(4) The weather becomes wetter for a short period of time.

S4K3

ANSWER 2

Regents Date
Aug2009

10

Data Base File Number
207

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mutation

720. Which activity would most likely increase the mutation rate in a culture of bacteria being grown in a laboratory experiment?

(1) adding more distilled water to the culture

(2) adding excess nutrients to the culture

(3) exposing the culture to a higher concentration of carbon dioxide

(4) exposing the culture to ultraviolet radiation

S4K3

ANSWER 4

Regents Date
Aug2013

19

Data Base File Number
984

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mutation

721. A characteristic of mutations is that they usually

(1) are caused only by the events of mitosis

(2) do not occur at random

(3) result in different genetic sequences

(4) occur to meet the needs of a species

S4K3

ANSWER 3

Regents Date
Jan2002
16

Data Base File Number
864

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mutation

722. A mutation occurs in a cell. Which sequence best represents the correct order of their events involved for this mutation to affect the traits expressed by this cell?

(1) a change in the sequence of DNA bases → joining amino acids in sequence → appearance of characteristic

(2) joining amino acids in sequence → a change in the sequence of DNA bases → appearance of characteristic

(3) appearance of characteristic → joining amino acids in sequence → a change in the sequence of DNA bases

(4) a change in the sequence of DNA bases → appearance of characteristic → joining amino acids in sequence

S4K2

ANSWER 1

Regents Date
Jan2004
38

Data Base File Number
670

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mutation

723. Base your answer to this question on the information given and on your knowledge of biology. Mutations are often referred to as the "raw materials" of evolution. Why are mutations often referred to as the "raw materials" of evolution?

(1) mutations cause variations

(2) mutations always cause damage to the organism

(3) mutations cause meiosis to occur

(4) mutations are never beneficial to the organism

S4K2

ANSWER 1

Regents Date
Jan2005
56

Data Base File Number
567

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mutation

724. Thousands of years ago, giraffes with short necks were common within giraffe populations. Nearly all giraffe populations today have long necks. This difference could be due to

(1) giraffes stretching their necks to keep their heads out of reach of predators

(2) giraffes stretching their necks so they could reach food higher in the trees

(3) a mutation in genetic material controlling neck size occurring in some skin cells of a giraffe

(4) a mutation in genetic material controlling neck size occurring in the reproductive cells of a giraffe

S4K3

ANSWER 4

Regents Date Jan2006

10

Data Base File Number 479

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mutation

725. An error in genetic information present in a body cell of a mammal would most likely produce

(1) rapid evolution of the organism in which the cell is found

(2) a mutation that will affect the synthesis of a certain protein in the cell

(3) an adaptation that will be passed on to other types of cells

(4) increased variation in the type of organelles present in the cell

S4K2

ANSWER 2

Regents Date Jan2007

9

Data Base File Number 53

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mutation

726. A species in a changing environment would have the best chance of survival as a result of a mutation that has a

(1) high adaptive value and occurs in its skin cells

(2) low adaptive value and occurs in its skin cells

(3) high adaptive value and occurs in its gametes

(4) low adaptive value and occurs in its gametes

S4K3

ANSWER 3

Regents Date Jan2009

12

Data Base File Number 160

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mutation

727. Researchers have found that formaldehyde and asbestos can alter DNA base sequences. Based on this research, the use of these chemicals has been greatly reduced because they

(1) may act as fertilizers, increasing the growth of algae in ponds

(2) have been replaced by more toxic compounds

(3) are capable of causing mutations in humans

(4) interfere with the production of antibiotics by white blood cells

S4K3

ANSWER 3

Regents Date
Jan2010

14

Data Base File Number
237

---

mutation

728. In sexually reproducing organisms, mutations can be inherited if they occur in

(1) the egg, only

(2) the sperm, only

(3) any body cell of either the mother or the father

(4) either the egg or the sperm

S4K3

ANSWER 4

Regents Date
Jan2011

8

Data Base File Number
311

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mutation

729. A deletion of a DNA segment alters a gene in a single skin cell of an individual. Which statement best describes a result of this mutation?

(1) Any cell produced from this skin cell will have the same mutation.

(2) All offspring of the individual will have a skin cell mutation.

(3) The mutation will spread into other types of cells.

(4) The gametes of this individual will have the same mutation.

S4K2

ANSWER 1

Regents Date
Jan2012

8

Data Base File Number
396

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mutation

730. Which factor has the greatest influence on the evelopment of new, inheritable characteristics?

(1) combinations of genes resulting from mitosis

(2) mutations of genes in reproductive cells

(3) sorting of genes during asexual reproduction

(4) recombining of genes during differentiation

S4K3

ANSWER 2

Regents Date
Jan2013

12

Data Base File Number
625

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mutation

731. Which statement is true regarding an alteration or change in DNA?

(1) It is always known as a mutation.
(2) It is always advantageous to an individual.
(3) It is always passed on to offspring.
(4) It is always detected by the process of chromatography

S4K2

ANSWER 1

Regents Date
June2003

12

Data Base File Number
762

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mutation

732. A mutation that can be inherited by offspring would result from

(1) random breakage of chromosomes in the nucleus of liver cells
(2) a base substitution in gametes during meiosis
(3) abnormal lung cells produced by toxins in smoke
(4) ultraviolet radiation damage to skin cells

S4K3

ANSWER 2

Regents Date
June2009

16

Data Base File Number
188

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mutation

733. Which mutation in a fruit fly could be passed on to its offspring?

(1) a mutation in a cell of an eye that changes the color of the eye
(2) a mutation in a leg cell that causes the leg to be shorter
(3) a mutation in a sperm cell that changes the shape of the wing
(4) a mutation in a cell of the digestive tract that produces a different enzyme

S4K3

ANSWER 3

Regents Date
June2011

18

Data Base File Number
341

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mutation

734. Changing one base in a gene could have the most direct effect on the

(1) function of the membrane of a cell
(2) sequence of building blocks of a protein found in a cell
(3) number of mitochondria in a cell
(4) type of carbohydrates synthesized by a cell

S4K2

ANSWER 2

Regents Date
June2012

7

Data Base File Number
424

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mutation

735. An increase in the amount of ultraviolet light entering the atmosphere through holes in the ozone layer will most likely

(1) reduce the rate of photosynthesis in fungi

(2) result in rapid recycling of finite resources

(3) prevent animal migration

(4) cause an increase in the rate of certain mutations

S4K7

ANSWER 4

Regents Date
June2012

29

Data Base File Number
437

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mutation / recombination

736. Which two processes result in variations that commonly influence the evolution of sexually reproducing species?

(1) mutation and genetic recombination

(2) mitosis and natural selection

(3) extinction and gene replacement

(4) environmental selection and selective breeding

S4K3

ANSWER 1

Regents Date
June2006

9

Data Base File Number
507

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natural predators

737. Which farming practice causes the LEAST harm to the environment?

(1) using natural predators to reduce insect numbers

(2) adding chemical fertilizers to all the crops in the area

(3) planting the same crop for 1 year on all the fields in the area

(4) planting the same crop in the same field each year for 10 years

S4K7

ANSWER 1

Regents Date
Jan2012

28

Data Base File Number
412

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natural selection

738. In an area in Africa, temporary pools form where rivers flow during the rainy months. Some fish have developed the ability to use their ventral fins as FEET to travel on land from one of these temporary pools to another. Other fish in these pools die when the pools dry up. What can be expected to happen in this area after many years?

(1) The fish using ventral fins as FEET will be present in increasing numbers.

(2) FEET in the form of ventral fins will develop on all fish.

(3) The fish using ventral fins as FEET will develop real FEET.

(4) All of the varieties of fish will survive and produce many offspring.

S4K3

ANSWER 1

Regents Date
Aug2002

15

Data Base File Number

817

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natural selection

739. The teeth of carnivores are pointed and are good for puncturing and ripping flesh. The teeth of herbivores are flat and are good for grinding and chewing. Which statement best explains these observations?

(1) Herbivores have evolved from carnivores.

(2) Carnivores have evolved from herbivores.

(3) The two types of teeth most likely evolved as a result of natural selection.

(4) The two types of teeth most likely evolved as a result of the needs of an organism.

S4K3

ANSWER 3

Regents Date
Aug2006

13

Data Base File Number

530

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natural selection

740. The diversity of organisms present on Earth is the result of

(1) ecosystem stability

(2) homeostasis

(3) natural selection

(4) direct harvesting

S4K3

ANSWER 3

Regents Date
Aug2010

7

Data Base File Number

285

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natural selection

741. A population of white moths lives in a forest near a factory. This factory burns coal and pollutes the air with black dust. Over time, this dust has settled on the trees in the area, making them darker in color. This could result in

(1) an increase in the white moth population

(2) a decrease in the white moth population

(3) an increase in the number of trees in the area

(4) a decrease in the air pollution affecting the area

Regents Date
Aug2012

12

Data Base File Number
453

S4K3

ANSWER 2

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natural selection

742. Domestic horses have a greater diversity of coat colors than that of wild horses. The process that led to a greater diversity of coat colors in domestic horses is

(1) selective breeding

(2) random mutation

(3) gene alteration

(4) natural selection

Regents Date
Aug2012

11

Data Base File Number
452

S4K3

ANSWER 4

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natural selection

743. Which statement best describes a current understanding of natural selection?

(1) Natural selection influences the frequency of an adaptation in a population.

(2) Natural selection has been discarded as an important concept in evolution.

(3) Changes in gene frequencies due to natural selection have little effect on the evolution of species.

(4) New mutations of genetic material are due to natural selection.

Regents Date
Jan2004

13

Data Base File Number
655

S4K3

ANSWER 1

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natural selection

744. In an area of Indonesia where the ocean floor is littered with empty coconut shells, a species of octopus has been filmed "walking" on two of its eight tentacles. The remaining six tentacles are wrapped around its body. Scientists suspect that, with its tentacles arranged this way, the octopus resembles a rolling coconut. Local predators, including sharks, seem not to notice the octopus
as often when it behaves in this manner. This unique method of locomotion has lasted over many generations due to

(1) competition between octopuses and their predators

(2) ecological succession in marine habitats

(3) the process of natural selection

(4) selective breeding of this octopus species

Regents Date
Jan2009

13

Data Base File Number
161

S4K3

ANSWER 3

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natural selection

745. Ancestors of the giant panda had rounded paws with five very short toes. Today, the giant panda has a sixth toe, often referred to as a thumb, even though it develops from a wrist bone. This unique thumb is an adaptation that allows the panda to easily hold and eat bamboo shoots. The presence of the giant panda's thumb is most likely the result of

(1) natural selection

(2) selective breeding

(3) asexual reproduction

(4) ecological succession

Regents Date
Jan2011

19

Data Base File Number
318

S4K3

ANSWER 1

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natural selection

746. Which characteristic is necessary for natural selection to occur in a species?

(1) stability

(2) variation

(3) complex cellular organization

(4) a very low mutation rate

Regents Date
Jan2012

10

Data Base File Number
398

S4K3

ANSWER 3

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natural selection

747. Which situation would most likely result in the highest rate of natural selection?

(1) reproduction of organisms by an asexual method in an unchanging environment

(2) reproduction of a species having a very low mutation rate in a changing environment

(3) reproduction of organisms in an unchanging environment with little competition and few predators

(4) reproduction of organisms exhibiting genetic differences due to mutations and genetic recombinations in a changing environment

S4K3

ANSWER 4

Regents Date June2002

16

Data Base File Number

843

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natural selection

748. Which statement is not part of the concept of natural selection?

(1) Individuals that possess the most favorable variations will have the best chance of reproducing.

(2) Variation occurs among individuals in a population.

(3) More individuals are produced than will survive.

(4) Genes of an individual adapt to a changing environment.

S4K3

ANSWER 4

Regents Date June2004

13

Data Base File Number

682

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natural selection

749. Natural selection and its evolutionary consequences provide a scientific explanation for each of the following EXCEPT

(1) the fossil record

(2) protein and DNA similarities between different organisms

(3) similar structures among different organisms

(4) a stable physical environment

S4K3

ANSWER 4

Regents Date June2005

10

Data Base File Number

581

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natural selection

Regents Date
June2006

750. Base your answer to this question on the passage given and on your knowedge of biology. -- When Charles Darwin traveled to the Galapagos Islands, he observed 14 distinct varieties of finches on the islands. Darwin also observed that each finch variety ate a different type of food and lived in a slightly different habitat from the other finches. Darwin concluded that the finches all shared a common ancestor but had developed different beak structures. -- The different beak structures mentioned in the last sentence were most likely influenced by

(1) selection for favorable variations

(2) environmental conditions identical to those of the common ancestor

(3) abnormal mitotic cell division

(4) characteristics that are acquired during the bird's lifetime

LAB3

ANSWER 1

71

Data Base File Number

521

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natural selection

Regents Date
June2008

751. Certain insects resemble the bark of the trees on which they live. Which statement provides a possible biological explanation for this resemblance?

(1) The insects needed camouflage so they developed protective coloration.

(2) Natural selection played a role in the development of this protective coloration.

(3) The lack of mutations resulted in the protective coloration.

(4) The trees caused mutations in the insects that resulted in protective coloration.

S4K3

ANSWER 2

13

Data Base File Number

112

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natural selection

Regents Date
June2012

752. Characteristics that are harmful to a species tend to decrease in frequency from generation to generation because these characteristics usually

(1) have a high survival value for the species

(2) have a low survival value for the species

(3) are inherited by more individuals

(4) affect only the older members of the population

S4K3

ANSWER 2

14

Data Base File Number

425

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natural selection

753. Parrots are tropical birds. However, in some areas of New York City, some parrots have been able to survive outdoors year-round. These parrots survive, while most others cannot, due to

(1) overproduction of offspring

(2) extinction of previous species

(3) asexual reproduction of parrots with a mutation

(4) a variation that allows these parrots to live in colder climates

Regents Date
June2012

6

Data Base File Number
423

S4K3

ANSWER 4

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niche

754. Which pair of organisms would most likely compete for the same ecological niche?

(1) bacteria and fungi

(2) deer and wolf

(3) tree and fungi

(4) deer and bacteria

Regents Date
Aug2010

26

Data Base File Number
298

S4K6

ANSWER 1

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niche

755. Two closely related species of birds live in the same tree. Species A feeds on ants and termites, while species B feeds on caterpillars. The two species coexist successfully because

(1) each occupies a different niche

(2) they interbreed

(3) they use different methods of reproduction

(4) birds compete for food

Regents Date
Jan2006

2

Data Base File Number
475

S4K1

ANSWER 2

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niche

756. In a forest community, a shelf fungus and a slug live on the side of a decaying tree trunk. The fungus digests and absorbs materials from the tree, while the slug eats algae growing on the outside of the trunk. These organisms do not compete with one another because they occupy

(1) the same habitat, but different niches

(2) the same niche, but different habitats

(3) the same niche and the same habitat

(4) different habitats and different niches

Regents Date
June2003

41

Data Base File Number
780

S4K1

ANSWER 1

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niche

757. When habitats are destroyed, there are usually fewer niches for animals and plants. This action would most likely not lead to a change in the amount of

(1) biodiversity
(2) competition
(3) interaction between species
(4) solar radiation reaching the area

S4K7

ANSWER 4

Regents Date June2006

26

Data Base File Number 515

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niche

758. An earthworm lives and reproduces in the soil. It aerates the soil and adds organic material to it. The earthworm is a source of food for other organisms. All of these statements together best describe

(1) a habitat
(2) autotrophic nutrition
(3) an ecological niche
(4) competition

S4K6

ANSWER 3

Regents Date June2011

29

Data Base File Number 352

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niche

759. Which term refers to the ecological niche of many bacteria and fungi in an ecosystem?

(1) decomposer
(2) herbivore
(3) producer
(4) scavenger

S4K6

ANSWER 1

Regents Date June2012

36

Data Base File Number 441

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niche

760. When two different bird species temporarily occupy the same niche, they would most likely

(1) change their nesting behaviors
(2) not affect one another
(3) interbreed to form a new species
(4) compete with one another

S4K6

ANSWER 4

Regents Date June2012

22

Data Base File Number 433

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nonrenewable resource

761. One likely reason some experimental automobiles have been developed to use electricity rather than gasoline is that

(1) gasoline is made from petroleum, a nonrenewable resource

(2) Earth has an unlimited supply of fossil fuels

(3) the use of electricity will eliminate the need for all antipollution laws

(4) the use of electricity will increase the manufacture of antipollution devices for cars

S4K7

ANSWER 1

Regents Date
Aug2007

29

Data Base File Number
20

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nonrenewable resource

762. Which practice would most likely deplete a nonrenewable natural resource?

(1) harvesting trees on a tree farm

(2) burning coal to generate electricity in a power plant

(3) restricting water usage during a period of water shortage

(4) building a dam and a power plant to use water to generate electricity

S4K7

ANSWER 2

Regents Date
Jan2003

33

Data Base File Number
746

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nonrenewable resource

763. In order to reduce consumption of nonrenewable resources, humans could

(1) burn coal to heat houses instead of using oil

(2) heat household water with solar radiation

(3) increase industrialization

(4) use a natural-gas grill to barbecue instead of using charcoal

S4K7

ANSWER 2

Regents Date
June2007

29

Data Base File Number
43

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nuclear waste

764. One environmental problem caused by the use of nuclear power as an energy source is the

(1) destruction of the ozone shield

(2) disposal of wastes

(3) production of acid rain

(4) accumulation of CO_2 in the atmosphere

S4K7

ANSWER 2

Regents Date
Jan2011

23

Data Base File Number
320

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nucleus

765. Within which structure of an animal cell does DNA replication take place?

(1) vacuole
(2) cell membrane
(3) nucleus
(4) ribosome

S4K1

ANSWER 3

Regents Date
Jan2012

4

Data Base File Number
392

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nucleus

766. The nucleus of a cell coordinates processes and activities that take place in the cell. Which two systems perform a similar function in the human body?

(1) nervous and endocrine
(2) digestive and reproductive
(3) circulatory and respiratory
(4) skeletal and muscular

S4K1

ANSWER 1

Regents Date
Jan2013

4

Data Base File Number
621

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nucleus

767. Hereditary information is stored inside the

(1) ribosomes, which have chromosomes that contain many genes
(2) ribosomes, which have genes that contain many chromosomes
(3) nucleus, which has chromosomes that contain many genes
(4) nucleus, which has genes that contain many chromosomes

S4K2

ANSWER 3

Regents Date
June2006

4

Data Base File Number
502

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nutrient recycling

768. Many homeowners who used to collect, bag, and discard grass clippings are now using mulching lawnmowers, which cut up the clippings into very fine pieces and deposit them on the soil. The use of mulching lawnmowers contributes most directly to

(1) increasing the diversity of life
(2) recycling of nutrients
(3) the control of pathogens
(4) the production of new species

S4K6

ANSWER 2

Regents Date
Aug2008

29

Data Base File Number
150

---

organ function

769. Which structure is correctly paired with its function?

(1) ovary --- provides milk for newborns

(2) testis --- development of sperm

(3) placenta --- storage of released eggs

(4) uterus --- produces estrogen

S4K4

ANSWER 2

Regents Date
Aug2013
12

Data Base File Number
979

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organ systems

770. Which statement best compares a multicellular organism to a single-celled organism?

(1) A multicellular organism has organ systems that interact to carry out life functions, while a single-celled organism carries out life functions without using organ systems.

(2) A single-celled organism carries out fewer life functions than each cell of a multicellular organism.

(3) A multicellular organism always obtains energy through a process that is different from that used by a single-celled organism.

(4) The cell of a single-celled organism is always much larger than an individual cell of a multicellular organism.

S4K1

ANSWER 1

Regents Date
Aug2006
6

Data Base File Number
524

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organ systems

771. Which two organ systems provide materials required for the human body to produce ATP?

(1) reproductive and excretory

(2) digestive and respiratory

(3) respiratory and immune

(4) digestive and reproductive

S4K1

ANSWER 2

Regents Date
Jan2005
6

Data Base File Number
546

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organ systems

772. Humans require organ systems to carry out life processes. Single-celled organisms do not have organ systems and yet they are able to carry out life processes. This is because

(1) human organ systems lack the organelles found in single-celled organisms

(2) a human cell is more efficient than the cell of a single-celled organism

(3) it is not necessary for single-celled organisms to maintain homeostasis

(4) organelles present in single-celled organisms act in a manner similar to organ systems

S4K1

ANSWER 4

Regents Date
June2008

4

Data Base File Number
106

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organ transplant

773. To increase chances for a successful organ transplant, the person receiving the organ should be given special medications. The purpose of these medications is to

(1) increase the immune response in the person receiving the transplant

(2) decrease the immune response in the person receiving the transplant

(3) decrease mutations in the person receiving the transplant

(4) increase mutations in the person receiving the transplant

S4K5

ANSWER 2

Regents Date
June2008

20

Data Base File Number
118

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organelles

774. Which structures carry out life functions within cells?

(1) tissues

(2) organ systems

(3) organelles

(4) organs

S4K1

ANSWER 3

Regents Date
Aug2009

3

Data Base File Number
200

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organelles

775. In a cell, all organelles work together to carry out

(1) diffusion

(2) active transport

(3) information storage

(4) metabolic processes

S4K1

ANSWER 4

Regents Date
June2002

6

Data Base File Number
838

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organelles

776. In a multicellular organism, organs carry out a variety of life functions. In a single-celled organism, these functions are performed by

(1) tissues

(2) organelles

(3) organ systems

(4) organs

S4K1

ANSWER 2

Regents Date
June2013

11

Data Base File Number
950

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organic chemistry

777. When organisms break the bonds of organic compounds, the organisms can

(1) use the smaller molecules to plug the gaps in the cell membrane to slow diffusion

(2) use the energy obtained to digest molecules produced by respiration that uses oxygen

(3) obtain energy or reassemble the resulting materials to form different compounds

(4) excrete smaller amounts of solid waste materials during vigorous exercise

S4K1

ANSWER 3

Regents Date
Jan2005

22

Data Base File Number
559

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organization

778. Which sequence of terms is in the correct order from simplest to most complex?

(1) cells → tissues → organs → organ systems

(2) tissues → organisms → cells → organ systems

(3) cells → tissues → organ systems → organs

(4) organs → organisms → organ systems → cells

S4K1

ANSWER 1

Regents Date
Aug2002

4

Data Base File Number
810

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organization

779. Which sequence illustrates the increasing complexity of levels of organization in multicellular organisms?

(1) organelle → cell → tissue → organ → organ system → organism

(2) cell → organelle → tissue → organ → organ system → organism

(3) organelle → tissue → cell → organ → organ system → organism

(4) cell → organism → organ system → organ → tissue → organelle

S4K1

ANSWER 1

Regents Date
Aug2005

2

Data Base File Number
594

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organization

780. Which sequence represents the correct order of organization in complex organisms?

(1) tissues -> organs ->systems -> cells

(2) organs -> tissues -> systems -> cells

(3) systems -> organs ->cells -> tissues

(4) cells -> tissues -> organs -> systems

S4K1

ANSWER 4

Regents Date Jan2007

3

Data Base File Number 48

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organization

781. Which sequence represents the correct order of levels of organization found in a complex organism?

(1) cells → organelles → organs → organ systems → tissues

(2) tissues → organs → organ systems → organelles → cells

(3) organelles → cells → tissues → organs → organ systems

(4) organs → organ systems → cells → tissues → organelles

S4K1

ANSWER 3

Regents Date June2003

8

Data Base File Number 758

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osmosis

782. If frog eggs taken from a freshwater pond are placed in a saltwater aquarium, what will most likely happen?

(1) Water will leave the eggs.

(2) Salt will leave the eggs.

(3) Water will neither enter nor leave the eggs.

(4) The eggs will burst.

LABS

ANSWER 1

Regents Date Aug2007

68

Data Base File Number 23

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osmosis

783. Which substance can enter a cell by diffusion without having to be digested?

(1) water

(2) protein

(3) starch

(4) fat

S4K1

ANSWER 1

Regents Date June2012

4

Data Base File Number 422

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ovary

784. Removal of one ovary from a human female would most likely

(1) affect the production of eggs

(2) make fertilization impossible

(3) make carrying a fetus impossible

(4) decrease her ability to provide essential nutrients to an embryo

S4K4

ANSWER 1

Regents Date
Aug2006

16

Data Base File Number
533

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overpopulation

785. Which organisms directly help to reduce overpopulation in a deer herd?

(1) parasites and predators

(2) parasites and scavengers

(3) decomposers and predators

(4) decomposers and consumers

S4K6

ANSWER 1

Regents Date
June2011

27

Data Base File Number
350

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oxygen concentration

786. Which two processes are responsible for keeping the percentage of atmospheric oxygen at relatively constant levels?

(1) circulation and coordination

(2) respiration and coordination

(3) respiration and photosynthesis

(4) photosynthesis and circulation

S4K5

ANSWER 3

Regents Date
Aug2013

20

Data Base File Number
985

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ozone

787. The release of products of combustion into the air often causes the formation of ozone near the surface of Earth. This ground-level ozone damages plants and affects their ability to absorb carbon dioxide. The doubling of ground level ozone since 1850 is most likely due to

(1) the chemical composition of the upper atmosphere

(2) emissions from vehicles and industrial processes

(3) the extinction of certain animal species

(4) a greater use of nuclear fuel

S4K7

ANSWER 2

Regents Date
Aug2011

25

Data Base File Number
375

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ozone

788. Continued depletion of the ozone layer will most likely result in

(1) an increase in skin cancer among humans

(2) a decrease in atmospheric pollutants

(3) an increase in marine ecosystem stability

(4) a decrease in climatic changes

S4K7

ANSWER 1

Regents Date Jan2006

28

Data Base File Number 494

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ozone

789. Damage to the ozone shield over the United States is likely to cause

(1) increased warming of local ecosystems

(2) increased exposure to ultraviolet light

(3) reduction in the pH of acid precipitation

(4) reduction in the frequency of floods and droughts

S4K7

ANSWER 2

Regents Date Jan2014

29

Data Base File Number 1021

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paper chromatography

790. Paper chromatography is a laboratory technique that is used to

(1) separate different molecules from one another

(2) stain cell organelles

(3) indicate the pH of a substance

(4) compare relative cell sizes

LABS

ANSWER 1

Regents Date June2008

69

Data Base File Number 129

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parasite / decomposer

791. A certain fungus can be harmful when it infects the outermost layers of the human foot, while another type of fungus can be beneficial when it recycles nutrients by breaking down dead organisms. Which terms identify these two roles of fungi?

(1) producer, prey

(2) host, autotroph

(3) parasite, decomposer

(4) herbivore, predator

S4K6

ANSWER 3

Regents Date Aug2012

24

Data Base File Number 464

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parasite / host

792. The relationship that exists when athlete's foot fungus grows on a human is an example of

(1) predator/prey

(2) producer/consumer

(3) parasite/host

(4) decomposer/autotroph

S4K5

ANSWER 3

Regents Date
Aug2009

23

Data Base File Number
218

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parasite / host

793. Deer ticks are responsible for spreading Lyme disease. This organism, which feeds on the blood of warm-blooded organisms like mice, deer, and humans, is best described as a

(1) predator

(2) scavenger

(3) parasite

(4) host

S4K5

ANSWER 3

Regents Date
Aug2013

25

Data Base File Number
990

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parasite / host

794. The presence of parasites in an animal will usually result in

(1) an increase in meiotic activity within structures of the host

(2) the inability of the host to maintain homeostasis

(3) the death of the host organism within twenty-four hours

(4) an increase in genetic mutation rate in the host organism

S4K5

ANSWER 2

Regents Date
Jan2003

25

Data Base File Number
739

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parasite / host

795. Puppies are often given medicine to eliminate roundworms from their intestines. These worms consume some of the food the puppies have digested. The worms and the puppies represent a relationship known as

(1) predator-prey

(2) consumer-producer

(3) parasite-host

(4) autotroph-heterotroph

S4K6

ANSWER 3

Regents Date
Jan2012

35

Data Base File Number
416

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parasite / host

796. Dodder is a creeping vine that is parasitic on other plants. Which characteristic does dodder share with all other heterotrophs?

(1) It produces nutrients by photosynthesis.
(2) It must grow in bright locations.
(3) It consumes preformed organic molecules.
(4) It remains in one place for its entire life.

S4K1

ANSWER 3

Regents Date June2003

40

Data Base File Number 779

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pathogens

797. Which statement best describes why pathogens are harmful?

(1) All of the cells of an organism infected by pathogens become pathogens.
(2) Pathogens cannot be controlled once they enter the cells of an organism.
(3) Pathogens produce antibodies that will kill the host organism.
(4) Pathogens can interfere with normal life functions.

S4K5

ANSWER 4

Regents Date Aug2013

17

Data Base File Number 982

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pathogens

798. Microbes that enter the body, causing disease, are known as

(1) pathogens
(2) antibodies
(3) enzymes
(4) hosts

S4K5

ANSWER 1

Regents Date June2002

23

Data Base File Number 848

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pathogens

799. "Salmonella" bacteria can cause humans to have stomach cramps, vomiting, diarrhea, and fever. The effect these bacteria have on humans indicates that Salmonella bacteria are

(1) predators
(2) pathogenic organisms
(3) parasitic fungi
(4) decomposers

S4K5

ANSWER 2

Regents Date June2009

19

Data Base File Number 189

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pH / blood

800. The failure to regulate the pH of the blood can affect the activity of

(1) enzymes that clot blood

(2) red blood cells that make antibodies

(3) chlorophyll that carries oxygen in the blood

(4) DNA that controls starch digestion in the blood

S4K5

ANSWER 1

Regents Date June2010

20

Data Base File Number 268

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photosynthesis

801. Which process is directly used by autotrophs to store energy in glucose?

(1) diffusion

(2) photosynthesis

(3) respiration

(4) active transport

S4K5

ANSWER 2

Regents Date Aug2003

26

Data Base File Number 798

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photosynthesis

802. Base your answer to this question on the information given and on your knowedge of biology. "Carbon exists in a simple organic molecule in a leaf and in an inorganic molecule in the air humans exhale." What is the simple organic molecule formed in the leaf and the process that produces it?

(1) glucose produced by photosynthesis

(2) glucose produced by respiration

(3) glucose produced by mitochondria

(4) glucose produced by digestion

S4K5

ANSWER 1

Regents Date Aug2004

57

Data Base File Number 724

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photosynthesis

803. An enzyme known as rubisco enables plants to use large amounts of carbon dioxide. This enzyme is most likely active in the

(1) nucleus

(2) vacuoles

(3) mitochondria

(4) chloroplasts

S4K5

ANSWER 4

Regents Date Aug2006

18

Data Base File Number 535

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photosynthesis

804. Much of the carbon dioxide produced by green plants is NOT excreted as a metabolic waste because it

(1) can be used for photosynthesis

(2) is too large to pass through cell membranes

(3) is needed for cellular respiration

(4) can be used for the synthesis of proteins

S4K6

ANSWER 1

Regents Date
Aug2008

14

Data Base File Number
142

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photosynthesis

805. The mass of some corn plants at the end of their growth period was 6 tons per acre. Most of this mass was produced from

(1) water and organic compounds absorbed from the soil

(2) minerals from the soil and oxygen from the air

(3) minerals and organic materials absorbed from the soil

(4) water from the soil and carbon dioxide from the air

S4K5

ANSWER 4

Regents Date
Jan2002

26

Data Base File Number
873

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photosynthesis

806. An iodine test of a tomato plant leaf revealed that starch was present at 5:00 p.m. on a sunny afternoon in July. When a similar leaf from the same tomato plant was tested with iodine at 6:00 a.m. the next morning, the test indicated that less starch was present. This reduction in starch content most likely occurred because starch was

(1) changed directly into proteins

(2) transported out of the leaves through the guard cells

(3) transported downward toward the roots through tubes

(4) changed into simple sugars

S4K1

ANSWER 4

Regents Date
Jan2002

2

Data Base File Number
857

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photosynthesis

807. Leaves of green plants contain openings known as stomates, which are opened and closed by specialized cells allowing for gas exchange between the leaf and the outside environment. Which phrase best represents the net flow of gases involved in photosynthesis into and out of the leaf through these openings on a sunny day?

(1) carbon dioxide moves in; oxygen moves out

(2) carbon dioxide and oxygen move in; ozone moves out

(3) oxygen moves in; nitrogen moves out

(4) water and ozone move in; carbon dioxide moves out

S4K5

ANSWER 1

Regents Date Jan2004

24

Data Base File Number 661

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photosynthesis

808. Plants in areas with short growing seasons often have more chloroplasts in their cells than plants in areas with longer growing seasons. Compared to plants in areas with longer growing seasons, plants in areas with shorter growing seasons most likely

(1) make and store food more quickly

(2) have a higher rate of protein metabolism

(3) grow taller

(4) have a different method of respiration

S4K5

ANSWER 1

Regents Date Jan2005

18

Data Base File Number 556

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photosynthesis

809. A five-year study was carried out on a population of algae in a lake. The study found that the algae population was steadily decreasing in size. Over the five-year period this decrease most likely led to

(1) a decrease in the amount of nitrogen released into the atmosphere

(2) an increase in the amount of oxygen present in the lake

(3) an increase in the amount of water vapor present in the atmosphere

(4) a decrease in the amount of oxygen released into the lake

S4K5

ANSWER 4

Regents Date Jan2008

28

Data Base File Number 93

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photosynthesis

810. Millions of acres of tropical rain forest are being destroyed each year. Which change would most likely occur over time if the burning and clearing of these forests were stopped?

(1) an increase in the amount of atmospheric pollution produced

(2) a decrease in the source of new medicines

(3) an increase in the amount of oxygen released into the atmosphere

(4) a decrease in the number of species

S4K5

ANSWER 3

Regents Date
Jan2009

25

Data Base File Number
170

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photosynthesis

811. Certain organisms are able to store energy from the Sun in energy-rich compounds. Which event best illustrates this activity?

(1) A fox captures and eats a young rabbit.

(2) A caterpillar is eaten by a blackbird.

(3) Lettuce produces organic substances.

(4) Bacteria change organic material into simple nutrients.

S4K5

ANSWER 3

Regents Date
Jan2011

3

Data Base File Number
308

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photosynthesis

812. Plant cells can synthesize energy-rich organic molecules, and later break them down to extract that energy for performing life processes. These activities require direct interaction between the

(1) chloroplasts and vacuoles

(2) cell walls and ribosomes

(3) chloroplasts and mitochondria

(4) ribosomes and mitochondria

S4K1

ANSWER 3

Regents Date
Jan2012

6

Data Base File Number
394

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photosynthesis

813. Which process will result in a gain of energy in an ecosystem?

(1) photosynthesis in algae cells

(2) digestion in hummingbirds

(3) ATP synthesis in fungi

(4) respiration in maple tree cells

S4K5

ANSWER 1

Regents Date
Jan2014

10

Data Base File Number
1006

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photosynthesis

814. Eating a sweet potato provides energy for human metabolic processes. The original source of this energy is the energy

(1) in protein molecules stored within the potato

(2) from starch molecules absorbed by the potato plant

(3) made available by photosynthesis

(4) in vitamins and minerals found in the soil

S4K5

ANSWER 3

Regents Date June2001

25

Data Base File Number 904

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photosynthesis

815. A student performed an experiment to demonstrate that a plant needs chlorophyll for photosynthesis. He used plants that had green leaves with white areas. After exposing the plants to sunlight, he removed a leaf from each plant and processed the leaves to remove the chlorophyll. He then tested each leaf for the presence of starch. Starch was found in the area of the leaf that was green, and no starch was found in the area of the leaf that was white. He concluded that chlorophyll is necessary for photosynthesis.
Which statement represents an assumption the student had to make in order to draw this conclusion?

(1) Starch is synthesized from the glucose produced in the green areas of the leaf.

(2) Starch is converted to chlorophyll in the green areas of the leaf.

(3) The white areas of the leaf do not have cells

(4) The green areas of the leaf are heterotrophic

S1K2

ANSWER 1

Regents Date June2008

34

Data Base File Number 127

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photosynthesis

816. In the leaf of a plant, guard cells help to

(1) destroy atmospheric pollutants when they enter the plant

(2) regulate oxygen and carbon dioxide levels

(3) transport excess glucose to the roots

(4) block harmful ultraviolet rays that can disrupt chlorophyll production

S4K5

ANSWER 2

Regents Date June2009

21

Data Base File Number 191

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photosynthesis

817. During the process of photosynthesis, energy from the Sun is converted into

(1) chemical energy in the bonds of inorganic molecules

(2) chemical energy in the bonds of organic molecules

(3) enzymes used to produce inorganic molecules

(4) enzymes used to produce organic molecules

S4K5

ANSWER 2

Regents Date June2012

20

Data Base File Number 431

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placenta

818. The structure that makes nutrients most directly available to a human embryo is the

(1) gamete

(2) ovary

(3) stomach

(4) placenta

S4K4

ANSWER 4

Regents Date Aug2003

15

Data Base File Number 790

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placenta

819. Toxins can harm a developing fetus. They usually enter the fetus by the process of

(1) blood flow from the mother to the fetus

(2) active transport from the ovary

(3) diffusion across placental membranes

(4) recombination of genes from the fetus and mother

S4K4

ANSWER 3

Regents Date Aug2005

18

Data Base File Number 607

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placenta

820. Which substance usually passes in the greatest amount through the placenta from the blood of the fetus to the blood of the mother?

(1) oxygen

(2) carbon dioxide

(3) amino acids

(4) glucose

S4K4

ANSWER 2

Regents Date Aug2006

17

Data Base File Number 534

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placenta

821. Which statement describes one function of the placenta in mammals?

(1) It allows blood of the mother to mix with the blood of the fetus.

(2) It contains fluid that protects the embryo from harm.

(3) It removes waste products that are produced in the cells of the fetus,

(4) It synthesizes food for the embryo.

S4K4

ANSWER 3

Regents Date
Aug2007
6

Data Base File Number
5

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placenta

822. German measles is a disease that can harm an embryo if the mother is infected in the early stages of pregnancy because the virus that causes German measles is able to

(1) be absorbed by the embryo from the mother's milk

(2) be transported to the embryo in red blood cells

(3) pass across the placenta

(4) infect the eggs

S4K4

ANSWER 3

Regents Date
Jan2009
17

Data Base File Number
164

---

placenta

823. Which structure is correctly paired with its function?

(1) testis -- produces nutrients for the offspring

(2) placenta -- allows nutrients to diffuse from the mother to the embryo

(3) uterus -- produces testosterone used in egg production

(4) ovary -- provides a place for the internal development of the embryoo

S4K4

ANSWER 2

Regents Date
Jan2010
19

Data Base File Number
241

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placenta

824. A pathogen passing from a mother to her fetus could cause

(1) a decrease in the chromosome number of the fetus

(2) an increase in milk production in the mother

(3) gamete production to increase

(4) an infection in the fetus

S4K4

ANSWER 4

Regents Date
Jan2011
21

Data Base File Number
319

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placenta

825. In most mammals, the placenta is essential to the embryo for the processes of

(1) meiosis and excretion

(2) nutrition and excretion

(3) milk production and digestion

(4) blood exchange and digestion

S4K4

ANSWER 2

Regents Date
Jan2011

18

Data Base File Number
317

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placenta

826. Base your answer to this question on the information given and on your knowledge of biology.
The Critical Role of the Placenta
The proper functioning of the placenta is critical to the growth and development of a healthy fetus. For example, the placenta appears to act as a nutrient sensor. It regulates the amounts and types of nutrients that are transported from the mother to the fetus. Improper functioning of the placenta can alter the structure and function of specific cells and organ systems in the developing fetus, putting it at risk for health problems as an adult. For example, in some pregnancies, the placenta develops a resistance to blood flow. This resistance appears to force the heart of the fetus to work harder. This could result in an increased chance of the individual developing heart disease as an adult. A group of hormones known as glucocorticoids affects the development of all the tissues and organ systems. One of the things this group of hormones does is to alter cell function by changing the structure of cell membrane receptors. What controls the passage of chemicals through the placenta?

(1) concentration of chemicals, only

(2) presence of ATP, only

(3) permeability of the placenta

(4) passage of red blood cells through membranes

S4K4

ANSWER 3

Regents Date
Jan2014

64

Data Base File Number
1029

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placenta

827. Which process normally occurs at the placenta?

(1) Oxygen diffuses from fetal blood to maternal blood.

(2) Materials are exchanged between fetal and maternal blood.

(3) Maternal blood is converted into fetal blood.

(4) Digestive enzymes pass from maternal blood to fetal blood.

S4K4

ANSWER 2

Regents Date
June2003

23

Data Base File Number
767

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placenta

828. One function of the placenta in a human is to

(1) surround the embryo and protect it from shock

(2) allow for mixing of maternal blood with fetal blood

(3) act as the heart of the fetus, pumping blood until the fetus is born

(4) permit passage of nutrients and oxygen from the mother to the fetus

S4K4

ANSWER 4

Regents Date
June2004
16

Data Base File Number
684

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placenta

829. The human female reproductive system is adapted for

(1) production of zygotes in ovaries

(2) external fertilization of gametes

(3) production of milk for a developing embryo

(4) transport of oxygen through a placenta to a fetus

S4K4

ANSWER 4

Regents Date
June2007
17

Data Base File Number
37

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placenta

830. Essential materials needed for development are transported to a human fetus through the

(1) reproductive hormones

(2) egg cell

(3) placenta

(4) ovaries

S4K4

ANSWER 3

Regents Date
June2010
19

Data Base File Number
267

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placenta

831. The major function of the placenta is to

(1) cushion the fetus so it won't be hurt when the mother moves

(2) exchange food, oxygen, and waste between mother and fetus

(3) store food for the fetus

(4) support the egg for the process of fertilization

S4K4

ANSWER 2

Regents Date
June2012
19

Data Base File Number
430

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plasmolysis

832. Base your answer to this question on the information given and on your knowledge of biology.
One of the effects of Hurricane Katrina, which devastated New Orleans in 2005, was the death of almost all of the plants in flooded areas. Initially, toxic chemicals and bacteria were suspected as a possible cause. Scientists later determined that the salt concentration in the floodwater caused the plants to die. The death of the plants was most likely due to

(1) water moving into plant cells from the surrounding environment

(2) water moving out of plant cells into the surrounding environment

(3) both water and salt moving from plant cells into the surrounding environment

(4) both water and salt moving into plant cells from the surrounding environment

LAB5

ANSWER 2

Regents Date
Jan2014

76

Data Base File Number

1033

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pollination

833. A farmer planted two corn varieties, one of which was very tasty but had small ears, and the other one had large ears but did not taste nearly as good. The pollen from one variety was used to fertilize the other variety of corn. State one biological advantage this method of reproduction has over cloning.

(1) This method can create identical species.

(2) This method can create mutations.

(3) This method can create new varieties.

(4) This method can help bees pollinate the corn

S4K4

ANSWER 3

Regents Date
Jan2014

67

Data Base File Number

1030

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pollution / air

834. Windmills that generate electricity are being built in coastal areas. The main benefit of these windmills is that they

(1) produce finite resources

(2) reduce dependency on fuels that cause air pollution

(3) absorb the noise of passing boats

(4) maintain the salt concentration in the ocean

S4K7

ANSWER 2

Regents Date
Aug2013

30

Data Base File Number

995

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pollution / air

835. Increased production of goods makes our lives more comfortable, but causes an increase in the demand for energy and other resources. One NEGATIVE impact of this situation on ecosystems is an increase in

(1) living space for wildlife

(2) renewable resources

(3) the diversity of plant species

(4) pollution levels in the atmosphere

S4K7

ANSWER 4

Regents Date
Jan2005

29

Data Base File Number
562

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pollution / air

836. A change in the acidity of mountain lakes would most likely be a result of

(1) ecological succession of the area at the top of the mountain

(2) the introduction of new species into the lakes

(3) air pollution from smoke stacks miles away

(4) planting grasses and shrubs around the lakes

S4K7

ANSWER 3

Regents Date
Jan2006

29

Data Base File Number
495

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pollution / air

837. A new type of fuel gives off excessive amounts of smoke. Before this type of fuel is widely used, an ecologist would most likely want to know

(1) what effect the smoke will have on the environment

(2) how much it will cost to produce the fuel

(3) how long it will take to produce the fuel

(4) if the fuel will be widely accepted by consumers

S4K7

ANSWER 1

Regents Date
June2001

35

Data Base File Number
912

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population

838. After a rabbit population reaches the carrying capacity of its habitat, the population of rabbits will most likely

(1) decrease, only

(2) increase, only

(3) alternately increase and decrease

(4) remain unchanged

S4K2

ANSWER 3

Regents Date
Jan2007

7

Data Base File Number
51

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population / environment

839. The size of plant populations can be influenced by the

(1) molecular structure of available oxygen

(2) size of the cells of decomposers

(3) number of chemical bonds in a glucose molecule

(4) type of minerals present in the soil

S4K6

ANSWER 4

Regents Date
June2009
23

Data Base File Number
192

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population growth

840. Which long-term change could directly cause the other three?

(1) pollution of air and water

(2) increasing human population

(3) scarcity of suitable animal habitats

(4) depletion of resources

S4K7

ANSWER 2

Regents Date
Aug2005
27

Data Base File Number
613

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population growth

841. Base your answer to this question on the passage given and on your knowledge of biology. -- Better Rice -- The production of new types of food crops will help raise the quantity of food grown by farmers. Research papers released by the National Academy of Sciences announced the development of two new superior varieties of rice -- one produced by selective breeding and the other by biotechnology. One variety of rice, called Nerica (New Rice for Africa), is already helping farmers in Africa. Nerica combines the hardiness and weed resistance of rare African rice varieties with the productivity and faster maturity of common Asian varieties. Another variety, called Stress-Tolerant Rice, was produced by inserting a pair of bacterial genes into rice plants for the production of trehalose (a sugar). Trehalose helps plants maintain healthy cell membranes, proteins, and enzymes during environmental stress. The resulting plants survive drought, low temperatures, salty soils, and other stresses better than standard rice varieties. Why is the production of new varieties of food crops necessary?

(1) Essential food crops are rapidly becoming extinct.

(2) Technology for producing fresh water for agriculture has improved.

(3) Burning fossil fuels has decreased agricultural areas.

(4) World population continues to increase.

S4K7

ANSWER 4

Regents Date
Aug2006

Data Base File Number
41
542

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population growth

842. Which human activity will most likely have a NEGATIVE effect on global stability?

(1) decreasing water pollution levels

(2) increasing recycling programs

(3) decreasing habitat destruction

(4) increasing world population growth

S4K7

ANSWER 4

Regents Date Jan2007

27

Data Base File Number 68

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population growth

843. Which situation has had the most NEGATIVE effect on the ecosystems of Earth?

(1) use of air pollution controls

(2) use of natural predators to control insect pests

(3) recycling glass, plastic, and metals

(4) increasing human population

S4K7

ANSWER 4

Regents Date June2004

29

Data Base File Number 691

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population growth

844. The NEGATIVE effect humans have on the stability of the environment is most directly linked to an increase in

(1) recycling activities by humans

(2) supply of finite resources

(3) predation and disease

(4) human population size

S4K7

ANSWER 4

Regents Date June2005

27

Data Base File Number 589

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population interaction

845. One way humans can promote the survival of organisms in an ecosystem is to

(1) One way humans can promote the survival of organisms in an ecosystem is to

(2) introduce new consumers to control autotrophs

(3) release extra CO_2 into the atmosphere to help autotrophs

(4) learn about the interactions of populations

S4K6

ANSWER 4

Regents Date Jan2012

26

Data Base File Number 410

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positive impact

846. One way that humans could have a positive impact on local environments is to

(1) generate waste products as a result of technological advances

(2) use resources that are renewable

(3) increase planting large areas of one crop

(4) increase the use of pesticides

S4K7

ANSWER 2

Regents Date
June2010

27

Data Base File Number
275

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predator / prey

847. During its annual migration, the red knot, a medium-size shorebird, flies the entire length of North and South America. During one critical stop to feed on the eggs of horseshoe crabs, the birds nearly double their body mass. The relationship between the red knot and the horse-
shoe crab is that of

(1) parasite - host

(2) consumer - producer

(3) scavenger - producer

(4) predator - prey

S4K6

ANSWER 4

Regents Date
Jan2011

28

Data Base File Number
325

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predators

848. Rabbits introduced into Australia over one hundred years ago have become a serious pest. Rabbit populations have increased so much that they have displaced many native species of herbivores. Which statement best explains the reason for their increased numbers?

(1) Rabbits have a high metabolic rate.

(2) There are few native predators of rabbits.

(3) Additional rabbit species have been introduced.

(4) There is an increase in rabbit competitors.

S4K7

ANSWER 2

Regents Date
Aug2010

27

Data Base File Number
299

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prions

849. Prions are proteins that act as an infectious agent. They cause a variety of diseases, including "Mad Cow" disease. Prions cannot produce more prions on their own, but cause the host organism to replicate more prions. Most scientists do not consider prions to be alive. A valid reason for accepting that prions are nonliving things is that

(1) no living thing can cause a disease

(2) proteins are inorganic molecules

(3) prions contain all of the material needed to reproduce

(4) prions cannot carry out reproduction independently

Regents Date
Jan2013

2

Data Base File Number
619

S4K1

ANSWER 4

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producer

850. Lichens are composed of two organisms, a fungus that cannot make its own food and algae that contain chlorophyll. Lichens may live on the bark of trees or even on bare rock. They secrete acids that tend to break up the rock they live on, helping to produce soil. As soil accumulates from the broken rock and dead lichens, other organisms, such as plants, may begin to grow. Lichens can alter their environment, enabling other organisms to grow and take their places in that environment. What is the role of the algae component of a lichen in an ecosystem?

(1) decomposer

(2) parasite

(3) herbivore

(4) producer

Regents Date
Jan2006

37

Data Base File Number
498

S4K6

ANSWER 4

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producer

851. The dense needles of Douglas fir trees can prevent most light from reaching the forest floor. This situation would have the most immediate effect on

(1) producers

(2) carnivores

(3) herbivores

(4) decomposers

Regents Date
June2002

4

Data Base File Number
836

S4K5

ANSWER 1

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producer

852. Which relationship best describes the interactions between lettuce and a rabbit?

(1) predator -- prey
(2) producer -- consumer
(3) parasite -- host
(4) decomposer -- scavenger

Regents Date
June2002
26
Data Base File Number
851

S4K6

ANSWER 2

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producer

853. Which type of organism helps to reduce atmospheric carbon dioxide?

(1) carnivores
(2) producers
(3) decomposers
(4) herbivores

Regents Date
June2013
25
Data Base File Number
963

S4K6

ANSWER 2

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protein

854. Which compounds are composed of amino acids?

(1) proteins
(2) sugars
(3) carbohydrates
(4) fats

Regents Date
Jan2010
38
Data Base File Number
254

S4K5

ANSWER 1

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protein

855. Which two cell structures work together in the process of protein synthesis?

(1) nucleus and chloroplast
(2) ribosome and vacuole
(3) nucleus and ribosome
(4) mitochondrion and cell membrane

Regents Date
Jan2013
1
Data Base File Number
618

S4K1

ANSWER 3

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protein

856. Brothers and sisters often have similar facial characteristics, such as nose shape or eye color, because they

(1) are raised in similar environments
(2) eat similar types of foods
(3) have similar types of proteins
(4) use similar types of facial care products

Regents Date
Jan2014
3
Data Base File Number
999

S4K2

ANSWER 3

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protein

857. Which statement concerning proteins is NOT correct?

(1) Proteins are long, usually folded, chains.

(2) The shape of a protein molecule determines its function.

(3) Proteins can be broken down and used for energy.

(4) Proteins are bonded together, resulting in simple sugars.

S4K2

ANSWER 4

Regents Date
June2006
12

Data Base File Number
508

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protein

858. Two proteins in the same cell perform different functions. This is because the two proteins are composed of

(1) chains folded the same way and the same sequence of simple sugars

(2) chains folded the same way and the same sequence of amino acids

(3) chains folded differently and a different sequence of simple sugars

(4) chains folded differently and a different sequence of amino acids

S4K2

ANSWER 4

Regents Date
June2007
9

Data Base File Number
30

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protein

859. Three days after an organism eats some meat, many of the organic molecules originally contained in the meat would be found in newly formed molecules of

(1) glucose

(2) protein

(3) starch

(4) oxygen

S4K1

ANSWER 2

Regents Date
June2010
2

Data Base File Number
256

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protein function

860. The way a protein molecule is folded determines the shape of the molecule, which determines the

(1) function of that protein

(2) structure of ATP containing that protein

(3) type of simple sugars in that protein

(4) amino acids in that protein

S4K2

ANSWER 1

Regents Date
Aug2012
9

Data Base File Number
450

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protein function

861. The function of most proteins depends primarily on the

(1) type and order of amino acids

(2) environment of the organism

(3) availability of starch molecules

(4) nutritional habits of the organism

S4K2

ANSWER 1

Regents Date
Jan2008
4

Data Base File Number
77

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protein shape

862. A photograph of a father and his teenage son show definite facial similarities.Which conclusion can be drawn regarding these similarities?

(1) The DNA present in their body cells is identical.

(2) The percentage of their proteins with the same molecular composition is high.

(3) The base sequences of their genes are identical.

(4) The mutation rate is the same in their body cells.

S4K2

ANSWER 2

Regents Date
Jan2003

39

Data Base File Number
750

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protein shape

863. The shape of a protein is most directly determined by the

(1) amount of energy available for synthesis of the protein

(2) kind and sequence of amino acids in the protein

(3) type and number of DNA molecules in a cell

(4) mistakes made when the DNA is copied

S4K2

ANSWER 2

Regents Date
Jan2010
13

Data Base File Number
236

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protein shape

864. The shape of a protein is originally determined by the

(1) size of the protein molecule

(2) location of the protein within the cell

(3) arrangement of amino acids in the protein

(4) function the protein must carry out

S4K2

ANSWER 3

Regents Date
Jan2012
5

Data Base File Number
393

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protein shape

865. The shape of a protein molecule is influenced by

(1) whether it is organic or inorganic

(2) the sequence of amino acids in it

(3) the number of genes found in the nucleus

(4) the number of chromosomes in the cell

S4K2

ANSWER 2

Regents Date
June2001
9

Data Base File Number
893

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receptor

866. Antibody molecules and receptor molecules are similar in that they both

(1) control transport through the cell membrane

(2) have a specific shape related to their specific function

(3) remove wastes from the body

(4) speed up chemical reactions in cells

S4K5

ANSWER 2

Regents Date
Aug2005
20

Data Base File Number
609

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receptor

867. A protein on the surface of HIV can attach to proteins on the surface of healthy human cells. These attachment sites on the surface of the cells are known as

(1) receptor molecules

(2) genetic codes

(3) molecular bases

(4) inorganic catalysts

S4K1

ANSWER 1

Regents Date
June2007
4

Data Base File Number
26

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receptor

868. The ability of estrogen to affect certain cells depends directly on

(1) amino acids

(2) receptor molecules

(3) gametes

(4) nerve cells

S4K1

ANSWER 2

Regents Date
June2011
2

Data Base File Number
331

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receptor / hormone

869. Base your answer to this question on the information given and on your knowledge of biology. "Cell communication involves a cell detecting and responding to signals from other cells. Receptor molecules play an important role in these reactions. Human cells have insulin receptors that are needed for the movement of glucose out of the blood". What is one way that the shape of the insulin receptor is related to its role in cell communication?

(1) The shape of the receptor molecule is not specific for a specific molecule.

(2) The shape of the receptor molecule is specific for a specific molecule.

(3) The shape of the receptor molecule is exactly the same as the target molecule.

(4) The shape of the receptor molecule is not known.

S4K5

ANSWER 2

Regents Date
Aug2004

59

Data Base File Number

726

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receptor molecules

870. Which substances are found on cell surfaces and respond to nerve and hormone signals?

(1) starches and simple sugars

(2) Which substances are found on cell surfaces and
subunits of DNA

(3) vitamins and minerals

(4) receptor molecules

S4K1

ANSWER 4

Regents Date
Aug2005

1

Data Base File Number

593

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receptor molecules

871. The virus that causes bird flu can attach to the cells of the lower part of the respiratory system in humans, but not to the cells of the upper part of the respiratory system. The most likely reason for this is that these two groups of cells have different

(1) DNA codes in their nuclei

(2) enzymes in their mitochondria

(3) amounts of water in their cytoplasm

(4) receptor molecules on their membranes

S4K5

ANSWER 4

Regents Date
Jan2010

4

Data Base File Number

229

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receptor molecules

872. In multicellular organisms, cells must be able to communicate with each other. Structures that enable most cells to communicate with each other are known as

(1) pathogenic agents
(2) chloroplasts
(3) antibiotics
(4) receptor molecules

S4K1

ANSWER 4

Regents Date June2001

7

Data Base File Number 891

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receptor molecules

873. The ability of certain hormones to attach to a cell is primarily determined by the

(1) receptor molecules in the cell membrane
(2) proteins in the cytoplasm of the cell
(3) amount of DNA in the cell
(4) concentration of salts outside the cell

S4K1

ANSWER 1

Regents Date June2002

7

Data Base File Number 839

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receptor sites

874. A characteristic of hormones and enzymes that allows them to work effectively with other organic molecules is their

(1) specific shape
(2) small size
(3) concentration of carbon and hydrogen atoms
(4) high-energy bonds

S4K5

ANSWER 1

Regents Date Jan2002

28

Data Base File Number 875

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receptor sites

875. Many viruses infect only a certain type of cell because they bind to certain

(1) other viruses on the surface of the cell
(2) mitochondria in the cell
(3) hormones in the cell
(4) receptor sites on the surface of the cell

S4K1

ANSWER 4

Regents Date Jan2009

5

Data Base File Number 156

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receptors

876. Which statement concerning cell communication is correct?

(1) DNA codes for certain molecules that become cell receptors involved in cell communication.

(2) Cells produce ATP molecules, which become cell receptors for communication.

(3) Cells build new cell parts, which function as communication genes.

(4) Certain proteins use cell communication to build new cell parts made of DNA.

S4K1

ANSWER 1

Regents Date
Aug2012

4

Data Base File Number

446

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receptors

877. After a hormone enters the bloodstream, it is transported throughout the body, but the hormone affects only certain cells. The reason only certain cells are affected is that the membranes of these cells have specific

(1) receptors

(2) tissues

(3) antibodies

(4) carbohydrates

S4K1

ANSWER 1

Regents Date
Jan2006

3

Data Base File Number

476

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receptors

878. Base your answer to this question on the information given and on your knowledge of biology. Diabetes is a condition characterized by elevated blood sugar levels. One form of diabetes occurs when insulin fails to properly regulate blood sugar levels. Complications from diabetes can include nerve cell damage and poor blood flow, especially in the feet and legs. In individuals with diabetes, wounds usually take longer than normal to heal. The failure of a cell to react in a normal manner to insulin is most likely the result of a problem with

(1) vacuoles

(2) receptors

(3) mitochondria

(4) sugars

S4K1

ANSWER 2

Regents Date
June2012

31

Data Base File Number

439

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recombination

879. The sorting and recombining of genes during meiosis and fertilization usually leads to the production of

(1) gametes with many copies of the same chromosome

(2) embryos with traits identical to those of all other members of the species

(3) zygotes with the genetic information to produce only females

(4) offspring with some traits that did not appear in their parents

S4K3

ANSWER 4

Regents Date
Aug2009

9

Data Base File Number

206

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recombination

880. Sexual reproduction in a species usually results in

(1) an increase in the chromosome number in the offspring

(2) offspring genetically identical to the parent

(3) recombination of genes

(4) a decrease in biodiversity

S4K2

ANSWER 3

Regents Date
Jan2012

16

Data Base File Number

404

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recombination

881. Which process will increase variations that could be inherited?

(1) mitotic cell division

(2) active transport

(3) recombination of genes

(4) synthesis of proteins

S4K3

ANSWER 3

Regents Date
June2008

16

Data Base File Number

115

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recombination

882. Agriculturists have developed some varieties of vegetables from common wild mustard plants, which reproduce sexually. Which statement best explains the development of these different varieties of vegetables?

(1) Different varieties can develop from a single species as a result of the recombination of genetic information.

(2) Different species can develop from a single species as a result of the effect of similar environmental conditions.

(3) Mutations will occur in the genes of a species only if the environment changes.

(4) Variations in a species will increase when the rate of mitosis is decreased.

S4K3

ANSWER 1

Regents Date
June2010

11

Data Base File Number

263

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recycling

883. In an ecosystem, what happens to the atoms of certain chemical elements such as carbon, oxygen, and nitrogen?

(1) They move into and out of living systems.

(2) They are never found in living systems.

(3) They move out of living systems and never return.

(4) They move into living systems and remain there.

Regents Date
Aug2001

3

Data Base File Number
916

S4K1

ANSWER 1

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recycling

884. The soil on a farm can very quickly become depleted of the minerals essential to plants because harvesting of crops can interfere with the

(1) reproductive cycles of animals

(2) recycling of inorganic compounds

(3) flow of energy

(4) transport of groundwater

Regents Date
Aug2009

19

Data Base File Number
214

S4K4

ANSWER 2

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recycling

885. Vultures, which are classified as scavengers, are an important part of an ecosystem because they

(1) hunt herbivores, limiting their populations in an ecosystem

(2) feed on dead animals, which aids in the recycling of environmental materials

(3) cause the decay of dead organisms, which releases usable energy to herbivores and carnivores

(4) are the first level in food webs and make energy available to all the other organisms in the web

Regents Date
Jan2003

29

Data Base File Number
742

S4K6

ANSWER 2

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recycling

886. Some people make compost piles consisting of weeds and other plant materials. When the compost has decomposed, it can be used as fertilizer. The production and use of compost is an example of

(1) the introduction of natural predators

(2) the use of fossil fuels

(3) the deforestation of an area

(4) the recycling of nutrients

Regents Date
June2009

27

Data Base File Number
195

S4K7

ANSWER 4

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red cell

887. As a human red blood cell matures, it loses its nucleus. As a result of this loss, a mature red blood cell lacks the ability to

(1) take in material from the blood

(2) release hormones to the blood

(3) pass through artery walls

(4) carry out cell division

S4K1

ANSWER 4

Regents Date
Aug2007

3

Data Base File Number
3

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renewable energy

888. As water flows downhill, its energy can be used to generate electricity. Later, this water may evaporate, fall as rain, and be used again to generate electricity in the same way. This explains why electricity generated with water is considered

(1) a source of water pollution

(2) a renewable form of energy

(3) more expensive than nuclear energy

(4) responsible for global warming

S4K7

ANSWER 2

Regents Date
Jan2012

17

Data Base File Number
405

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replication

889. Which statement is true of both mitosis and meiosis?

(1) Both are involved in asexual reproduction.

(2) Both occur only in reproductive cells.

(3) The number of chromosomes is reduced by half.

(4) DNA replication occurs before the division of the nucleus.

S4K4

ANSWER 4

Regents Date
Jan2005

14

Data Base File Number
553

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reproduction

890. Which situation would be part of the normal reproductive cycle of a human?

(1) the presence of testosterone regulating gamete production in a male

(2) estrogen in concentrations that would produce sperm in a female

(3) a high progesterone level in a male

(4) a low insulin level in either a male or a female

S4K4

ANSWER 1

Regents Date
Aug2012

18

Data Base File Number
459

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reproduction

891. Estrogen has a direct effect on the

(1) formation of a zygote

(2) changes within the uterus

(3) movement of an egg toward the sperm

(4) development of a placenta within the ovary

S4K4

ANSWER 2

Regents Date Jan2006 11

Data Base File Number 480

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reproduction

892. Which statement describes the reproductive system of a human male?

(1) It releases sperm that can be used only in external fertilization.

(2) It synthesizes progesterone that regulates sperm formation.

(3) It produces gametes that transport food for embryo formation.

(4) It shares some structures with the excretory system.

S4K4

ANSWER 4

Regents Date Jan2006 17

Data Base File Number 485

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reproduction

893. Which statement concerning production of offspring is correct?

(1) Production of offspring is necessary for a species to survive, but it is not necessary for an individual to survive.

(2) An organism can reproduce without performing any of the other life processes.

(3) Production of offspring is necessary for an individual organism to survive, while the other life processes are important for a species to survive.

(4) Reproduction is a process that requires gametes in all species.

S4K4

ANSWER 1

Regents Date Jan2009 14

Data Base File Number 162

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reproduction / female

894. Which statement does not correctly describe an adaptation of the human female reproductive system?

(1) It produces gametes in ovaries.

(2) It provides for external fertilization of an egg.

(3) It provides for internal development of the embryo.

(4) It removes excretions produced by the fetus.

S4K4

ANSWER 2

Regents Date Aug2002 19

Data Base File Number 818

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reproduction / male

895. Regulation of sexual reproductive cycles of human males is related most directly to the presence of the hormone

(1) estrogen

(2) progesterone

(3) testosterone

(4) insulin

S4K4

ANSWER 3

Regents Date
Jan2002

17

Data Base File Number
865

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reproduction / male

896. The reproductive system of the human male produces gametes and

(1) transfers gametes to the female for internal fertilization

(2) produces enzymes that prevent fertilization

(3) releases hormones involved in external fertilization

(4) provides an area for fertilization

S4K4

ANSWER 1

Regents Date
Jan2003

18

Data Base File Number
736

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reproduction / male

897. The reproductive system of a male mammal provides

(1) support for the internal development of the embryo

(2) materials through the placenta

(3) a means for the delivery of gametes

(4) the ovaries for gamete production

S4K4

ANSWER 3

Regents Date
June2013

17

Data Base File Number
956

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reproductive success

898. Which characteristic of sexual reproduction has specifically favored the survival of animals that live on land?

(1) fusion of gametes in the outside environment

(2) male gametes that may be carried by the wind

(3) fertilization within the body of the female

(4) female gametes that develop within ovaries

S4K4

ANSWER 3

Regents Date
Aug2001

22

Data Base File Number
930

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reproductive success

899. In order for a species to evolve, it must be able to

(1) consume a large quantity of food

(2) reproduce successfully

(3) maintain a constant body temperature

(4) be domesticated

S4K3

ANSWER 2

Regents Date
Aug2012
10

Data Base File Number
451

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reproductive success

900. A species of bird known as Bird of Paradise has been observed in the jungles of New Guinea. The males shake their bodies and sometimes hang upside down to show off their bright colors and long feathers to attract females. Females usually mate with the FLASHIEST males. These observations can be used to support the concept that

(1) unusual courtship behaviors lead to extinction

(2) some organisms are better adapted for asexual reproduction

(3) homeostasis in an organism is influenced by physical characteristics

(4) behaviors that lead to reproductive success have evolved

S4K3

ANSWER 4

Regents Date
June2010
13

Data Base File Number
264

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respiration

901. What is the carbon-containing molecule that humans exhale and the process that produces it?

(1) carbon dioxide produced by photosynthesis

(2) carbon dioxide produced by respiration

(3) carbon dioxide produced by ATP

(4) carbon dioxide produced by mitochondria

S4K5

ANSWER 2

Regents Date
Aug2004
58

Data Base File Number
725

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respiration

902. Which statement best describes cellular respiration?

(1) It occurs in animal cells but not in plant cells.

(2) It converts energy in food into a more usable form.

(3) It uses carbon dioxide and produces oxygen.

(4) It stores energy in food molecules.

S4K5

ANSWER 2

Regents Date
Aug2005
19

Data Base File Number
608

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respiration

903. All life depends on the availability of usuable energy. This energy is released when

(1) organisms convert solar energy into the chemical energy found in food molecules

(2) respiration occurs in the cells of producers and high-energy molecules enter the atmosphere

(3) cells carry out the process of respiration

(4) animal cells synthesize starch and carbon dioxide

S4K5

ANSWER 3

Regents Date
Jan2008

21

Data Base File Number

87

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respiration

904. Base your answer to this question on the information given and on your knowledge of biology. A student is opening and closing clothespins as part of a lab activity. The student begins to experience muscle fatigue, and the rate at which the student is opening and closing the clothespins slows. The fatigue is due to

(1) an increase of metabolic waste products in the muscles

(2) an increase in the pulse rate of the student

(3) a decrease of metabolic waste products in the muscles

(4) a decrease in the pulse rate of the student

LAB2

ANSWER 1

Regents Date
Jan2013

75

Data Base File Number

642

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respiration

905. Base your answer to this question on the information given and on your knowledge of biology. A student is opening and closing clothespins as part of a lab activity. The student begins to experience muscle fatigue, and the rate at which the student is opening and closing the clothespins slows. In order for the muscle fatigue to end, the muscle cells must be provided with

(1) oxygen

(2) nitrogen

(3) carbon dioxide

(4) amino acids

LAB2

ANSWER 1

Regents Date
Jan2013

76

Data Base File Number

643

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respiration

906. Which phrase best describes cellular respiration, a process that occurs continuously in the cells of organisms?

(1) removal of oxygen from the cells of an organism

(2) conversion of light energy into the chemical bond energy of organic molecules

(3) transport of materials within cells and throughout the bodies of multicellular organisms

(4) changing of stored chemical energy in food molecules to a form usable by organisms

S4K5

ANSWER 4

Regents Date June2001

23

Data Base File Number

903

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respiration

907. What happens to certain nutrient molecules after they pass into muscle cells?

(1) They are replicated in the nucleus.

(2) They are acted on by enzymes and release the energy they contain.

(3) They are changed into tissues and organs in the cytoplasm.

(4) They enter chloroplasts, where they can absorb light energy.

S4K1

ANSWER 2

Regents Date June2001

3

Data Base File Number

887

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respiration

908. In the cells of the human body, oxygen molecules are used directly in a process that

(1) releases energy

(2) digests fats

(3) synthesizes carbohydrate molecules

(4) alters the genetic traits of the cell

S4K1

ANSWER 1

Regents Date June2013

36

Data Base File Number

967

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respiration

909. Fish absorb oxygen through the gills, earthworms absorb oxygen through the skin, amebas take in oxygen through the cell membranes, and cows inhale oxygen through the nasal passages into their lungs. This statement demonstrates that living things

(1) rely on similar or the same processes, but accomplish them in different ways

(2) rely on different processes and accomplish them in different ways

(3) rely on different processes, but perform them in the same or related ways

(4) have no relationship to one another, and are all independent individuals

S4K1

ANSWER 1

Regents Date
June2013

1

Data Base File Number
943

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ribosome

910. Which cell structure is correctly paired with its primary function?

(1) ribosome-protein synthesis

(2) mitochondrion-movement

(3) vacuole-cell division

(4) nucleus-storage of nutrients

S4K1

ANSWER 1

Regents Date
Aug2011

3

Data Base File Number
360

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ribosome

911. Which organelle is correctly paired with its specific function?

(1) cell membrane--storage of hereditary information

(2) chloroplast--transport of materials

(3) ribosome--synthesis of proteins

(4) vacuole--production of ATP

S4K1

ANSWER 3

Regents Date
Jan2007

4

Data Base File Number
49

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ribosome

912. If the ribosomes of a cell were destroyed, what effect would this most likely have on the cell?

(1) It would stimulate mitotic cell division.

(2) The cell would be unable to synthesize proteins.

(3) Development of abnormal hereditary features would occur in the cell.

(4) Increased protein absorption would occur through the cell membrane.

S4K2

ANSWER 2

Regents Date
Jan2010

7

Data Base File Number
232

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ribosome

913. The interaction of which two systems provides the molecules needed for the metabolic activity that takes place at ribosomes?

(1) digestive and circulatory
(2) reproductive and excretory
(3) immune and nervous
(4) respiratory and muscular

S4K1

ANSWER 1

Regents Date
Jan2011

25

Data Base File Number
322

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ribosome

914. In a cell, information that controls the production of proteins must pass from the nucleus to the

(1) cell membrane
(2) chloroplasts
(3) mitochondria
(4) ribosomes

S4K1

ANSWER 4

Regents Date
June2004

6

Data Base File Number
678

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ribosome

915. A pesticide that kills an insect by interfering with the production of proteins in the insect would most directly affect the activity of

(1) ribosomes
(2) minerals
(3) chloroplasts
(4) mitochondria

S4K1

ANSWER 1

Regents Date
June2012

21

Data Base File Number
432

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ribosome

916. In a cell, protein synthesis is the primary function of

(1) ribosomes
(2) mitochondria
(3) chloroplasts
(4) vacuoles

S4K1

ANSWER 1

Regents Date
June2013

10

Data Base File Number
949

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scavenger

Regents Date
Aug2009

917. Base your answer to this question on the passage included in this question, and on your knowledge of biology.
To most people, using maggots (fly larvae) for a medical treatment is not a great idea. However, to many doctors, fly larvae do have a place in medicine, and that place is inside open wounds. In maggot debridement therapy, live fly larvae are mixed into a dressing for a wound and the area is covered with gauze. Maggots, which will only eat dead tissue, feed on damaged flesh and leave the healthy tissue behind. In the process, the maggots excrete an antimicrobial chemical that helps cleanse the wound of pathogens. When the dressing is cut away two or three days later, the maggots, now up to 10 times their original size, are easily removed. Question: What is the meaning of the term DEBRIDEMENT?

(1) excretions of pathogens
(2) impaired wound healing
(3) removal of dead tissue
(4) destruction of antimicrobial chemicals

44

S1K1

Data Base File Number

226

ANSWER 3

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scientific data

Regents Date
Jan2008

918. A biologist used the internet to contact scientists around the world to obtain information about declining amphibian populations. He was able to gather data on 936 populations of amphibians, consistin of 157 species from 37 countries. Results showed that the overall numbers of amphibians dropped 15% a year from 1960 to 1966 and continued to decline about 2% a year through 1997. What is the importance of collecting an extensive amount of data such as this?

(1) Researchers will now be certain that the decline in the amphibian populations is due to pesticides.
(2) The data collected will prove that all animal populations around the world are threatened.
(3) Results from all parts of the world will be found to be identical.
(4) The quantity of data will lead to a better understanding of the problem.

31

S1K1

Data Base File Number

95

ANSWER 4

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scientific inquiry

919. Which source would provide the most reliable information for use in a research project investigating the effects of antibiotics on diseasecausing bacteria?

(1) the local news section of a newspaper from 1993

(2) a news program on national television about antigens produced by various plants.

(3) a current professional science journal article on the control of pathogens

(4) an article in a weekly news magazine about reproduction in pathogens

S1K1

ANSWER 3

Regents Date
Aug2005

33

Data Base File Number

616

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scientific inquiry

920. In 1910, Thomas Morgan discovered a certain pattern of inheritance in fruit flies known as sex linkage. This discovery extended the ideas of inheritance that Gregor Mendel had discovered while working with garden peas in 1865. Which principle of scientific inquiry does this illustrate?

(1) A control group must be part of a valid experiment.

(2) Scientific explanations can be modified as new evidence is found.

(3) The same experiment must be repeated many times to validate the results.

(4) Values can be used to make ethical decisions about a scientific discovery.

S1K1

ANSWER 2

Regents Date
Aug2007

2

Data Base File Number

2

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scientific inquiry

921. Which statement most accurately describes scientific inquiry?

(1) It ignores information from other sources.

(2) It does not allow scientists to judge the reliability of their sources.

(3) It should never involve ethical decisions about the application of scientific knowledge.

(4) It may lead to explanations that combine data with what people already know about their surroundings.

S1K1

ANSWER 4

Regents Date
Jan2007

33

Data Base File Number

73

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scientific inquiry

922. A scientist was investigating why a particular tree species grows only in a specific environment. To determine physical conditions the tree species needs to survive, an appropriate study should include

(1) the identification of organisms in the food web in that environment

(2) an analysis of the arrangement of the leaves on the trees

(3) the identification of all tree species in the area

(4) an analysis of the soil around the tree

S1K2

ANSWER 4

Regents Date
Jan2009

37

Data Base File Number

176

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scientific inquiry

923. The blood of newborn babies is tested to determine whether a certain substance is present. This substance indicates the presence of the disorder known as PKU, which may result in mental retardation. Babies with this disorder are put on a special diet to prevent mental retardation. In this situation, which action is usually taken first?

(1) treating the expression of the disorder

(2) preventing the expression of the disorder

(3) controlling the disorder

(4) diagnosing the disorder

S4K5

ANSWER 4

Regents Date
June2001

27

Data Base File Number

906

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scientific inquiry

924. In his theory, Lamarck suggested that organisms will develop and pass on to offspring variations that they need in order to survive in a particular environment. In a later theory, Darwin proposed that changing environmental conditions favor certain variations that promote the survival of organisms. Which statement is best illustrated by this information?

(1) Scientific theories that have been changed are the only ones supported by scientists.

(2) All scientific theories are subject to change and improvement.

(3) Most scientific theories are the outcome of a single hypothesis.

(4) Scientific theories are not subject to change.

S1K1

ANSWER 2

Regents Date
June2002

3

Data Base File Number

835

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scientific inquiry

925. A great deal of information can now be obtained about the future health of people by examining the genetic makeup of their cells. There are concerns that this information could be used to deny an individual health insurance or employment. These concerns best illustrate that

(1) scientific explanations depend upon evidence collected from a single source

(2) scientific inquiry involves the collection of information from a large number of sources

(3) acquiring too much knowledge in human genetics will discourage future research in that area

(4) while science provides knowledge, values are essential to making ethical decisions using this knowledge

S1K1

ANSWER 4

Regents Date
June2003

4

Data Base File Number

756

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scientific method

926. A scientist is planning to carry out an experiment on the effect of heat on the function of a certain enzyme. Which would not be an appropriate first step?

(1) doing research in a library

(2) having discussions with other scientists

(3) completing a data table of expected results

(4) using what is already known about the enzyme

S1K1

ANSWER 3

Regents Date
Aug2004

1

Data Base File Number

695

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scientific method

927. Which statement best describes a scientific theory?

(1) It is a collection of data designed to provide support for a prediction.

(2) It is an educated guess that can be tested by experimentation.

(3) It is a scientific fact that no longer requires any evidence to support it.

(4) It is a general statement that is supported by many scientific observations.

S1K1

ANSWER 4

Regents Date
Aug2005
3

Data Base File Number

595

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scientific method

Regents Date
Aug2012

928. An investigation was carried out to determine which of three antibacterial soaps is most effective. Four petri dishes labeled A, B, C, and D were set up. The same amount and type of bacteria was added to each dish. Next, 2 mL of a different brand of soap were added to dishes B, C, and D. Then, 2 mL of water were added to dish A, instead of soap. The dishes were incubated at 37°C for 24 hours. At the end of the investigation, the amount of bacteria in each dish was determined. Dish D had the least bacteria. It was concluded that the soap in dish D was the most effective soap to use against bacteria. Which statement best decribes the validity of this conclusion?

(1) The conclusion is not valid since the same amount of bacteria was used in each dish.

(2) The conclusion is valid since too small a sample of bacteria was used in this investigation.

(3) The conclusion is valid since the amounts of bacteria were measured at the end of the investigation.

(4) The conclusion might not be valid since the investigation was carried out only once.

S1K1

ANSWER 4

32

Data Base File Number

471

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scientific method

Regents Date
Jan2002

929. In an investigation to determine the change in heart rate with increased activity, a biology teacher asked students to take their pulses immediately before and immediately after exercising for 2 minutes. The data showed an average heart rate of 72 beats per minute before exercising and 90 beats per minute after exercising. If a valid conclusion is to be made from the results of this investigation, which assumption must be made?

(1) In most students, the average heart rate is not affected by exercise.

(2) Exercise causes the heart rate to slow down.

(3) Each student exercised with the same intensity.

(4) The heart rate of each student goes up 18 beats after jogging for 2 minutes.

S1K3

ANSWER 3

52

Data Base File Number

883

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scientific method

930. In Texas, researchers gave a cholesterol-reducing drug to 2,335 people and an inactive substitute (placebo) to 2,081. Most of the volunteers were men who had normal cholesterol levels and no history of heart disease. After 5 years, 97 people getting the placebo had suffered heart attacks compared to only 57 people who had received the actual drug. The researchers are recommending that to help prevent heart attacks, all people (even those without high cholesterol) take these cholesterol-reducing drugs. In addition to the information above, what is another piece of information that the researchers must have before support for the recommendation can be justified?

(1) Were the eating habits of the two groups similar?

(2) How does a heart attack affect cholesterol levels?

(3) Did the heart attacks result in deaths?

(4) What chemical is in the placebo?

S1K3

ANSWER 1

Regents Date Jan2003

26

Data Base File Number

740

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scientific method

931. A biologist reported success in breeding a tiger with a lion, producing healthy offspring. Other biologists will accept this report as fact only if

(1) research shows that other animals can be crossbred

(2) the offspring are given a scientific name

(3) the biologist included a control in the experiment

(4) other researchers can replicate the experiment

S1K3

ANSWER 4

Regents Date Jan2003

1

Data Base File Number

727

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scientific method

932. The analysis of data gathered during a particular experiment is necessary in order to

(1) formulate a hypothesis for that experiment

(2) develop a research plan for that experiment

(3) design a control for that experiment

(4) draw a valid conclusion for that experiment

S1K3

ANSWER 4

Regents Date Jan2004

1

Data Base File Number

644

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scientific method

933. Conclusions based on an experiment are most likely to be accepted when

(1) they are consistent with experimental data and observations

(2) they are derived from investigations having many experimental variables

(3) scientists agree that only one hypothesis has been tested

(4) hypotheses are based on one experimental design

S1K1

ANSWER 1

Regents Date Jan2010

31

Data Base File Number 251

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scientific method

934. Diagrams, tables, and graphs are used by scientists mainly to

(1) design a research plan for an experiment

(2) test a hypothesis

(3) organize data

(4) predict the independent variable

S1K3

ANSWER 3

Regents Date June2001

1

Data Base File Number 885

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scientific method

935. The current knowledge concerning cells is the result of the investigations and observations of many scientists. The work of these scientists forms a well-accepted body of knowledge about cells. This body of knowledge is an example of a

(1) hypothesis

(2) controlled experiment

(3) theory

(4) research plan

S1K1

ANSWER 3

Regents Date June2002

1

Data Base File Number 833

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scientific method

936. A student observes that an organism is green. A valid conclusion that can be drawn from this observation is that

(1) the organism must be a plant

(2) the organism cannot be single celled

(3) the organism must be an animal

(4) not enough information is given to determine whether the organism is a plant or an animal

S1K3

ANSWER 4

Regents Date June2003

1

Data Base File Number 754

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scientific method

937. Which statement best describes the term THEORY as used in the gene-chromosome theory?

(1) A theory is never revised as new scientific evidence is presented.

(2) A theory is an assumption made by scientists and implies a lack of certainty.

(3) A theory refers to a scientific explanation that is strongly supported by a variety of experimental data.

(4) A theory is a hypothesis that has been supported by one experiment performed by two or more scientists.

S1K1

ANSWER 3

Regents Date
June2004

2

Data Base File Number

675

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scientific method

938. Researchers performing a well-designed experiment should base their conclusions on

(1) the hypothesis of the experiment

(2) data from repeated trials of the experiment

(3) a small sample size to insure a reliable outcome of the experiment

(4) results predicted before performing the experiment

S1K1

ANSWER 2

Regents Date
June2005

1

Data Base File Number

574

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scientific method

939. A student was comparing preserved specimens of three plant species, X, Y, and Z, in a classroom. Which statement is an example of an observation the student could have made and NOT an inference?

(1) The leaves produced by plant X are 4 cm across and 8 cm in length.

(2) Plant Y has large purple flowers that open at night.

(3) Plant X produces many seeds that are highly attractive to finches.

(4) The flowers of plant Z are poisonous to household pets.

LAB1

ANSWER 1

Regents Date
June2006

66

Data Base File Number

520

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scientific method

940. A science researcher is reviewing another scientist's experiment and conclusion. The reviewer would most likely consider the experiment INVALID if

(1) the sample size produced a great deal of data

(2) other individuals are able to duplicate the results

(3) it contains conclusions not explained by the evidence given

(4) the hypothesis was not supported by the data obtained

S4K3

ANSWER 3

Regents Date
June2006

32

Data Base File Number

518

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selective breeding

941. Research applications of the basic principles of genetics have contributed greatly to the rapid production of new varieties of plants and animals. Which activity is an example of such an application?

(1) testing new fertilizers on food crops

(2) selective breeding of plants and animals that exhibit high resistance to disease

(3) developing new irrigation methods to conserve water

(4) using natural predators to control insect pests

S4K2

ANSWER 2

Regents Date
Aug2003

11

Data Base File Number

788

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selective breeding

942. In some cases, humans have chosen to mate certain individual farm animals within a species. For example, by allowing only the largest cattle to reproduce over many generations, strains of very large cattle have been produced. This process is known as

(1) natural selection

(2) direct harvesting

(3) selective breeding

(4) dynamic equilibrium

S4K2

ANSWER 3

Regents Date
Aug2009

6

Data Base File Number

203

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selective breeding

943. The pedigree of Seattle Slew, a racehorse considered by some to be one of the fastest horses that ever lived, includes very fast horses on both his mother's side and his father's side. Seattle Slew most likely was a result of

(1) environmental selection
(2) alteration of DNA molecules
(3) selective breeding
(4) a sudden mutation

S4K2

ANSWER 3

Regents Date Aug2010

23

Data Base File Number 296

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selective breeding

944. Over the past few thousand years, humans have helped to bring about changes in many plant and animal species in order to make them more useful. Examples include strong workhorses, hunting dogs, large-eared corn, and beautiful flower varieties. These changes were primarily brought about by humans, using the process of

(1) mitosis
(2) selective breeding
(3) cloning
(4) natural selection

S4K2

ANSWER 2

Regents Date Aug2013

6

Data Base File Number 974

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selective breeding

945. When humans first domesticated dogs, there was relatively little diversity in the species. Today, there are many variations such as the German shepherd and the dalmation. This increase in diversity is most closely associated with

(1) cloning of selected body cells
(2) selective breeding
(3) mitotic cell division
(4) environmental influences on inherited traits

S4K2

ANSWER 2

Regents Date Jan2002

9

Data Base File Number 861

---

selective breeding

946. To produce large tomatoes that are resistant to cracking and splitting, some seed companies use the pollen from one variety of tomato plant to fertilize a different variety of tomato plant. This process is an example of

(1) selective breeding
(2) DNA sequencing
(3) direct harvesting
(4) cloning

S4K2

ANSWER 1

Regents Date Jan2004

10

Data Base File Number 652

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selective breeding

947. In order to produce the first white marigold flowers, growers began with the lightest yellow-flowered marigold plants. After crossing them, these plants produced seeds, which were planted, and only the offspring with very light-yellow flowers were used to produce the next generation. Repeating this process over many years, growers finally produced a marigold flower that is considered the first white variety of its species. This procedure is known as

(1) differentiation
(2) cloning
(3) gene insertion
(4) selective breeding

Regents Date
Jan2008

7

S4K2

Data Base File Number
79

ANSWER 4

---

selective breeding

948. Selective breeding has been used for thousands of years to

(1) develop bacteria that produce human insulin
(2) clone desirable plant varieties
(3) develop viruses that protect against diseases
(4) produce new varieties of domestic animals

Regents Date
Jan2012

7

S4K2

Data Base File Number
395

ANSWER 4

---

selective breeding

949. The Old English Bulldog is extinct. To produce a new English Bulldog, dogs having the desired physical features, but not the aggressive nature of the old bulldogs, were mated. The result was a bulldog that was similar in appearance to the extinct bulldog, but without its fierce nature. Which technique was most likely used to develop this new variety of dog?

(1) cloning
(2) inducing mutations
(3) genetic engineering
(4) selective breeding

Regents Date
Jan2013

9

S4K2

Data Base File Number
624

ANSWER 4

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selective breeding

950. Which process is a common practice that has been used by farmers for hundreds of years to develop new plant and animal varieties?

(1) cloning
(2) genetic engineering
(3) cutting DNA and removing segments
(4) selective breeding for desirible traits

Regents Date June2002

13

S4K2

Data Base File Number 841

ANSWER 4

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selective breeding

951. One variety of strawberry is resistant to a damaging fungus, but produces small fruit. Another strawberry variety produces large fruit, but is not resistant to the same fungus. The two desirable qualities may be combined in a new variety of strawberry plant by

(1) cloning
(2) asexual reproduction
(3) direct harvesting
(4) selective breeding

Regents Date June2005

6

S4K2

Data Base File Number 578

ANSWER 4

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selective breeding

952. For centuries, certain animals have been crossed to poduce offspring that have desirable qualities. Dogs have been mated to produce Labradors, beagles, and poodles. All of these dogs look and behave very differently from one another. This technique of producing organisms with specific qualities is known as

(1) gene replication
(2) natural selection
(3) random mutation
(4) selective breeding

Regents Date June2008

12

S4K3

Data Base File Number 111

ANSWER 4

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selective breeding

953. Selective breeding is a technique that is used to

(1) give all organisms a chance to reproduce
(2) produce organisms from extinct species
(3) produce offspring with certain desirable traits
(4) keep farm crops free of all mutations

Regents Date June2011

14

S4K2

Data Base File Number 338

ANSWER 3

---

selective breeding

954. In the past, humans developed varieties of dogs, such as the German shepherd and the bearded collie, using

(1) selective breeding for particular traits

(2) recombination of genes during mitosis

(3) mutations present only in body cells

(4) natural selection of favorable traits

S4K2

ANSWER 1

Regents Date June2013

14

Data Base File Number 953

---

sex hormones

955. As women age, their reproductive cycles stop due to decreased

(1) digestive enzyme production

(2) production of ATP

(3) levels of specific hormones

(4) heart rate

S4K4

ANSWER 3

Regents Date Aug2007

17

Data Base File Number 14

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sexual reproduction

956. Which organism would most likely have new gene combinations?

(1) a frog that was produced from a skin cell of a frog

(2) a hamster resulting from sexual reproduction

(3) a bacterium resulting from asexual reproduction

(4) a starfish that grew from part of a starfish

S4K4

ANSWER 2

Regents Date Aug2012

23

Data Base File Number 463

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sexual reproduction

957. Which sequence best represents sexual reproduction?

(1) mitosis → gametes → zygote → fertilization

(2) gametes → meiosis → mitosis → fertilization

(3) fertilization → gametes → meiosis → zygote

(4) meiosis → gametes → fertilization → zygote

S4K4

ANSWER 4

Regents Date June2013

16

Data Base File Number 955

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sickle cell anemia

Regents Date
Aug2009

958. The sickle-cell trait is an inherited condition resulting from the presence of abnormal molecules of the protein hemoglobin in red blood cells. A person with the sickle-cell trait may have a child with the same condition because the child receives from the parent

(1) abnormal red blood cells

(2) abnormal hemoglobin molecules

(3) a code for the production of abnormal hemoglobin

(4) a code for the production of abnormal amino acids

8

Data Base File Number
205

S4K2

ANSWER 3

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sickle cell anemia

Regents Date
Jan2006

959. Base your answer to this question on the information given and on your knowledge of biology. Sickle-cell anemia is an inherited disease that occurs mainly in people from parts of Africa where malaria is common. It is caused by a gene mutation that may be harmful or beneficial. A person with two mutant genes has sickle-cell disease. The hemoglobin of a person with sickle-cell disease twists red blood cells into a crescent shape. These blood cells cannot circulate normally. Symptoms of the disease include bleeding and pain in bones and muscles. People with sickle-cell disease suffer terribly in childhood and, until modern medicine offered treatment, most of them died before reproducing. An individual who has one mutant gene is protected from malaria because the gene changes the hemoglobin structure in a way that speeds removal of malaria-infected cells from circulation. A person with two normal genes has perfectly good red blood cells, but lacks resistance to malaria. Which statement about having one sickle-cell gene is correct?

(1) It is fatal to anyone who inherits the gene.

(2) It is beneficial to anyone who inherits the gene

(3) It is beneficial in certain environments.

(4) It is beneficial or harmful depending on whether it is common or rare.

48

Data Base File Number
499

S4K3

ANSWER 3

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simple sugar

Regents Date
June2005

960. In plants, simple sugars are least likely to be

(1) linked together to form proteins

(2) broken down into carbon dioxide and water

(3) used as a source of energy

(4) stored in the form of starch molecules

2

Data Base File Number
575

S4K1

ANSWER 1

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soil nutrients

961. A limiting factor unique to a field planted with corn year after year is most likely

(1) temperature

(2) sunlight

(3) water

(4) soil nutrients

S4K6

ANSWER 4

Regents Date
June2010

41

Data Base File Number
278

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species relationships

962. The tall wetland plant, purple loosestrife, was brought from Europe to the United States in the early 1800s as a garden plant. The plant's growth is now so widespread across the United States that it is crowding out a number of native plants. This situation is an example of

(1) the results of the use of pesticides

(2) the recycling of nutrients

(3) the flow of energy present in all ecosystems

(4) an unintended effect of adding a species to an ecosystem

S4K7

ANSWER 4

Regents Date
June2002

35

Data Base File Number
855

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species relationships

963. A particular species of unicellular organism inhabits the intestines of termites, where the unicellular organisms are protected from predators. Wood that is ingested by the termites is digested by the unicellular organisms, forming food for the termites. The relationship between these two species can be described as

(1) harmful to both species

(2) parasite/host

(3) beneficial to both species

(4) predator/prey

S4K6

ANSWER 3

Regents Date
June2004

25

Data Base File Number
688

---

sperm

964. Which reproductive structure is correctly paired with its function?

(1) uterus -- usual site of fertilization

(2) testis -- usual location for egg development

(3) ovary -- delivers nutrients to the embryo

(4) sperm -- transports genetic material

S4K4

ANSWER 4

Regents Date
Aug2005

17

Data Base File Number
606

---

sperm

965. Which statement correctly describes the genetic makeup of the sperm cells produced by a human male?

(1) Each cell has pairs of chromosomes and the cells are usually genetically identical.

(2) Each cell has pairs of chromosomes and the cells are usually genetically different.

(3) Each cell has half the normal number of chromosomes and the cells are usually genetically identical.

(4) Each cell has half the normal number of chromosomes and the cells are usually genetically different.

S4K4

ANSWER 4

Regents Date
Aug2006

10

Data Base File Number

527

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sperm

966. A large number of sperm cells are produced by males every day. This large number of sperm cells increases the chance that

(1) at least one sperm cell will be reached when the eggs swim toward the sperm cells in the ovary

(2) several sperm cells will unite with an egg so the fertilized egg will develop properly

(3) some of the sperm cells will survive to reach the egg

(4) enough sperm cells will be present to transport the egg from where it is produced to where it develops into a fetus

S4K4

ANSWER 3

Regents Date
Aug2009

16

Data Base File Number

211

---

sperm

967. Testosterone directly affects the

(1) formation of a zygote

(2) changes within an ovary

(3) production of sperm cells

(4) development of a placenta

S4K4

ANSWER 3

Regents Date
June2013
31

Data Base File Number

966

staining

968. When using a compound light microscope, the most common reason for staining a specimen being observed is to

(1) keep the organism from moving around
(2) make the view more colorful
(3) determine the effects of chemicals on the organism
(4) reveal details that are otherwise not easily seen

Regents Date
June2011

36

Data Base File Number
355

LABA

ANSWER 4

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starch

969. Starch molecules present in a maple tree are made from materials that originally entered the tree from the external environment as

(1) enzymes
(2) simple sugars
(3) amino acids
(4) inorganic compounds

Regents Date
Aug2006

19

Data Base File Number
536

S4K1

ANSWER 4

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starch

970. Most of the starch stored in the cells of a potato is composed of molecules that originally entered these cells as

(1) enzymes
(2) simple sugars
(3) amino acids
(4) minerals

Regents Date
June2006

6

Data Base File Number
504

S4K1

ANSWER 2

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starch

971. Before starch can enter a cell, it must be

(1) absorbed by simple sugars
(2) diffused into simple sugars
(3) digested to form simple sugars
(4) actively transported by simple sugars

Regents Date
June2013

9

Data Base File Number
948

S4K1

ANSWER 3

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stomate

S4K5

ANSWER 2

Regents Date
Aug2010

21

Data Base File Number
294

972. The leaves of a plant are dotted with openings known as stomata. When open, stomata allow the plant to exchange gases and allow moisture to evaporate, helping to draw water from the roots up into the plant. These activities help the plant to

(1) produce light energy
(2) maintain homeostasis
(3) decompose organic matter
(4) synthesize minerals

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stomate

S4K5

ANSWER 3

Regents Date
June2005

21

Data Base File Number
585

973. The interaction between guard cells and a leaf opening would NOT be involved in

(1) diffusion of carbon dioxide
(2) maintaining homeostasis
(3) heterotrophic nutrition
(4) feedback mechanisms

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succession

S4K6

ANSWER 3

Regents Date
Aug2006

23

Data Base File Number
538

974. As succession proceeds from a shrub community to a forest community, the shrub community modifies its environment, eventually making it

(1) more favorable for itself and less favorable for the forest community
(2) more favorable for itself and more favorable for the forest community
(3) less favorable for itself and more favorable for the forest community
(4) less favorable for itself and less favorable for the forest community

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succession

S4K6

ANSWER 3

Regents Date
Aug2013

27

Data Base File Number
992

975. After a building was torn down and the area was cleared, grasses began to grow in the area. Several years later, small bushes replaced the grasses. This pattern of plant growth is known as ecological

(1) stability
(2) cultivation
(3) succession
(4) coordination

---

succession

976. Years after the lava from an erupting volcano destroyed an area, grasses started to grow in that area. The grasses were gradually replaced by shrubs, evergreen trees, and finally, by a forest that remained for several hundred years. This entire process is an example of

(1) feedback

(2) ecological succession

(3) plant preservation

(4) deforestation

Regents Date
Jan2008

26

Data Base File Number
91

S4K6

ANSWER 2

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succession

977. Lichens and mosses are the first organisms to grow in an area. Over time, grasses and shrubs will grow where these organisms have been. The grasses and shrubs are able to grow in the area because the lichens and mosses

(1) synthesize food needed by producers in the area

(2) are at the beginning of every food chain in a community

(3) make the environment suitable for complex plants

(4) provide the enzymes needed for plant growth

Regents Date
June2005

26

Data Base File Number
588

S4K6

ANSWER 3

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succession

978. A volcanic eruption destroyed a forest, covering the soil with volcanic ash. For many years, only small plants could grow. Slowly, soil formed in which shrubs and trees could grow. These changes are an example of

(1) manipulation of genes

(2) evolution of a species

(3) ecological succession

(4) equilibrium

Regents Date
June2008

28

Data Base File Number
122

S4K6

ANSWER 3

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succession / secondary

979. After a fire destroys a forest, the area will most likely

(1) remain bare land indefinitely

(2) develop into a desert area

(3) develop into an entirely different type of forest after hundreds of years

(4) recover through gradual changes back to a point of long-term stability

Regents Date
Aug2011

26

Data Base File Number
376

S4K6

ANSWER 4

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succession / secondary

980. What would most likely occur after an ecosystem is disrupted by fire?

(1) The ecosystem would eventually return to its original state.

(2) The ecosystem would return to its previous state immediately.

(3) The ecosystem would evolve into a new ecosystem that is totally different from the original.

(4) The ecosystem would become an ever-changing environment with no stability.

S4K6

ANSWER 1

Regents Date Jan2002

31

Data Base File Number

877

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succession / secondary

981. A fire burns an oak forest down to bare ground. Over the next 150 years, if the climate remains constant, this area will most likely

(1) remain bare ground

(2) return to an oak forest

(3) become a rain forest

(4) become a wetland

S4K6

ANSWER 2

Regents Date Jan2006

27

Data Base File Number

493

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succession / secondary

982. What will most likely result after a fire or other natural disaster damages an ecosystem in a certain area?

(1) The area will remain uninhabited for an indefinite number of centuries.

(2) A stable ecosystem will be reestablished after one year.

(3) An ecosystem similar to the original one will eventually be reestablished if the climate is stable.

(4) The stable ecosystem that becomes reestablished in the area will be different from the original.

S4K6

ANSWER 3

Regents Date June2001

33

Data Base File Number

911

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survival success

983. The Florida panther, a member of the cat family, has a population of fewer than 100 individuals and has limited genetic variation. Which inference based on this information is valid?

(1) These animals will begin to evolve rapidly.

(2) Over time, these animals will become less likely to survive in a changing environment

(3) These animals are easily able to adapt to the environment.

(4) Over time, these animals will become more likely to be resistant to disease.

Regents Date
Aug2003

19

Data Base File Number

792

S4K3

ANSWER 2

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survival success

984. Which group would most likely have the greatest survival success during a long period of environmental changes?

(1) a small population of rabbits living in a field of grass

(2) a large population of red ants living in a forest

(3) an endangered population of polar bears living near an iceberg

(4) one species of bird that nests only in sugar maple trees

Regents Date
Aug2011

12

Data Base File Number

365

S4K6

ANSWER 2

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survival success

985. Some behaviors such as mating and caring for young are genetically determined in certain species of birds. The presence of these behaviors is most likely due to the fact that

(1) birds do not have the ability to learn

(2) individual birds need to learn to survive and reproduce

(3) these behaviors helped birds to survive in the past

(4) within their lifetimes, birds developed these behaviors

Regents Date
June2002

17

Data Base File Number

844

S4K3

ANSWER 3

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synthesis

986. A colony of bacteria growing on a culture medium is successfully synthesizing an organic compound. Which procedure would be LEAST likely to have an effect on this synthesis?

(1) adding more subunits of the organic compound to the medium

(2) lowering the pH of the medium

(3) raising the temperature of the colony from 20°C to 30°C

(4) increasing the number of hormone molecules in the colony

Regents Date
Aug2003

25

Data Base File Number
797

S4K5

ANSWER 4

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synthesis

987. Which two terms are considered to be opposite processes?

(1) photosynthesis and autotrophic nutrition

(2) cloning and mitosis

(3) digestion and synthesis

(4) dynamic equilibrium and homeostasis

Regents Date
Aug2012

3

Data Base File Number
445

S4K1

ANSWER 3

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synthesis

988. Which statement concerning simple sugars and amino acids is correct?

(1) They are both wastes resulting from protein synthesis.

(2) They are both building blocks of starch.

(3) They are both needed for the synthesis of larger molecules.

(4) They are both stored as fat molecules in the liver.

Regents Date
Jan2004

5

Data Base File Number
648

S4K1

ANSWER 3

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synthesis

989. Which sequence represents the correct order of events for the production of necessary complex molecules after food is taken in by a multicellular animal?

(1) diffusion -> synthesis -> absorption -> digestion -> circulation

(2) circulation -> diffusion -> synthesis -> absorption -> digestion

(3) digestion -> absorption -> circulation -> diffusion -> synthesis

(4) synthesis -> digestion ->absorption -> diffusion -> circulation

S4K1

ANSWER 3

Regents Date
Jan2011

12

Data Base File Number

314

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synthesis

990. Which two systems are most directly involved in providing molecules needed for the synthesis of fats in human cells?

(1) digestive and circulatory

(2) excretory and digestive

(3) immune and muscular

(4) reproductive and circulatory

S4K1

ANSWER 1

Regents Date
June2004

3

Data Base File Number

676

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synthesis

991. Which group contains only molecules that are each assembled from smaller organic compounds?

(1) proteins, water, DNA, fats

(2) proteins, starch, carbon dioxide, water

(3) proteins, DNA, fats, starch

(4) proteins, carbon dioxide, DNA, starch

S4K5

ANSWER 3

Regents Date
June2005

17

Data Base File Number

583

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technological advancement

992. Which result of technological advancement has a positive effect on the environment?

(1) development of new models of computers each year, with disposal of the old computers in landfills

(2) development of new models of cars that travel fewer miles per gallon of gasoline

(3) development of equipment that uses solar energy to charge batteries

(4) development of equipment to speed up the process of cutting down trees

S4K7

ANSWER 3

Regents Date
Jan2008

29

Data Base File Number

94

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testes

993. Testes are adapted to produce

(1) body cells involved in embryo formation

(2) immature gametes that undergo mitosis

(3) sperm cells that may be involved in fertilizatior

(4) gametes with large food supplies that nourish a developing embryo

S4K4

ANSWER 3

Regents Date
Aug2002
20

Data Base File Number
819

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tissue

994. The respiratory system includes a layer of cells in the air passages that clean the air before it gets to the lungs. This layer of cells is best classified as

(1) a tissue

(2) an organ

(3) an organelle

(4) an organ system

S4K1

ANSWER 1

Regents Date
Jan2009
6

Data Base File Number
157

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transport / oxygen

995. Which organ system in humans is most directly involved in the transport of oxygen?

(1) digestive

(2) nervous

(3) excretory

(4) circulatory

S4K1

ANSWER 4

Regents Date
June2009
2

Data Base File Number
178

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uterus

996. Within which structure in the human body does specialization of parts of the developing baby take place?

(1) ovary

(2) uterus

(3) testis

(4) pancreas

S4K4

ANSWER 2

Regents Date
June2001
18

Data Base File Number
900

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vaccination

997. Many vaccinations stimulate the immune system by exposing it to

(1) antibodies

(2) enzymes

(3) mutated genes

(4) weakened microbes

S4K5

ANSWER 4

Regents Date
Jan2003

8

Data Base File Number
733

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vaccination

998. Vaccinations help prepare the body to fight invasions of a specific pathogen by

(1) inhibiting antigen production

(2) stimulating antibody production

(3) inhibiting white blood cell production

(4) stimulating red blood cell production

S4K5

ANSWER 2

Regents Date
Jan2006

23

Data Base File Number
490

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vaccination

999. Which activity would stimulate the human immune system to provide protection against an invasion by a microbe?

(1) receiving antibiotic injections after surgery

(2) choosing a well-balanced diet and following it throughout life

(3) being vaccinated against chicken pox

(4) receiving hormones contained in mother's milk while nursing

S4K5

ANSWER 3

Regents Date
June2003

26

Data Base File Number
769

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vaccination

1000. Which statement best describes what will most likely happen when an individual receives a vaccination containing a weakened pathogen?

(1) The ability to fight disease will increase due to antibodies received from the pathogen.

(2) The ability to fight disease caused by the pathogen will increase due to antibody production.

(3) The ability to produce antibodies will decrease after the vaccination.

(4) The ability to resist most types of diseases will increase.

S4K5

ANSWER 2

Regents Date
June2004

22

Data Base File Number
685

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vaccination

S4K5

ANSWER 3

1001. Which statement best describes how a vaccination can help protect the body against disease?

(1) Vaccines directly kill the pathogen that causes the disease.

(2) Vaccines act as a medicine that cures the disease.

(3) Vaccines cause the production of specific molecules that will react with and destroy certain microbes.

(4) Vaccines contain white blood cells that engulf harmful germs and prevent them from spreading throughout the body.

Regents Date
June2007

21

Data Base File Number

41

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vaccine

S4K5

ANSWER 3

1002. The use of a vaccine to stimulate the immune system to act against a specific pathogen is valuable in maintaining homeostasis because

(1) once the body produces chemicals to combat one type of virus, it can more easily make antibiotics

(2) the body can digest the weakened microbes and use them as food

(3) the body will be able to fight invasions by the same type of microbe in the future

(4) the more the immune system is challenged, the better it performs

Regents Date
Aug2004

17

Data Base File Number

707

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vaccine

S4K5

ANSWER 4

1003. A vaccine used against an infectious disease may contain

(1) specialized blood cells

(2) toxic enzymes

(3) a variety of antibiotics

(4) weakened pathogens

Regents Date
Aug2009

19

Data Base File Number

215

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vaccine

1004. When a new viral infection appears in a population, scientists usually try to develop a vaccine against the virus. Which substances would most likely be contained in the new vaccine?

(1) live bacteria that ingest viruses
(2) white blood cells from an infected individual
(3) weakened viruses associated with the infection
(4) a variety of microbes that will attack the virus

S4K5

ANSWER 3

Regents Date Aug2010

5

Data Base File Number 283

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vaccine

1005. A vaccine for the viral disease known as chicken pox would contain

(1) a large amount of live virus
(2) a dead or weakened form of the pathogen
(3) several different antibiotics
(4) a small number of white blood cells

S4K5

ANSWER 2

Regents Date Jan2014

9

Data Base File Number 1005

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vacuole

1006. What is the main function of a vacuole in a cell?

(1) storage
(2) coordination
(3) synthesis of molecules
(4) release of energy

S4K1

ANSWER 1

Regents Date June2010

6

Data Base File Number 259

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variation

1007. Some variation must be present in a population in order for natural selection to take place. These variations arise from mutations in the DNA and

(1) sorting of chromosomes during sexual reproduction
(2) combining of chromosomes during organ development
(3) changing of chromosomes during cloning
(4) removal of chromosomes during selective breeding

S4K2

ANSWER 1

Regents Date Aug2013

9

Data Base File Number 977

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variation

S4K3

ANSWER 3

1008. Which process is LEAST likely to add to the variety of traits in a population?

(1) deletion of bases from DNA

(2) genetic engineering

(3) accurate replication of DNA

(4) exchange of segments between chromosomes

Regents Date
Jan2005

8

Data Base File Number
547

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variation

S4K3

ANSWER 2

1009. The sorting and recombination of genes during reproduction is important to evolution because these processes

(1) decrease variation and help maintain a stable population

(2) increase variation that enables species to adapt to change

(3) decrease the chances of producing offspring that are adapted to the environment

(4) increase the ability of all the offspring to adapt to the environment

Regents Date
Jan2011

15

Data Base File Number
315

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variation

S4K3

ANSWER 2

1010. Which processes lead to the greatest variety of genetic combinations?

(1) asexual reproduction and cloning

(2) meiosis and fertilization

(3) meiosis and mitosis

(4) cloning and mitosis

Regents Date
Jan2014

26

Data Base File Number
1018

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variation

S4K3

ANSWER 4

1011. The variations that exist in a population of wild giraffes are usually a result of events that occur during

(1) mitotic division

(2) genetic engineering

(3) asexual reproduction

(4) sexual reproduction

Regents Date
Jan2014

5

Data Base File Number
1001

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vegetative population

1012. Potatoes were the main crop in Ireland in the 1800s. Almost the entire population of Ireland was dependent on a single variety of potato, the "lumper." These potatoes were reproduced by a method of asexual reproduction known as vegetative propagation. In the middle of the 1800s, a disease caused by a fungus killed almost the entire lumper crop within two years. As a result, millions of people in Ireland died of starvation.
The most likely reason the potato disease was able to destroy the potato crop in such a short time is that the

(1) potato population lacked variations

(2) lumper variety had a long reproductive cycle

(3) lumper had several variations caused by vegetative propagation

(4) potato population in Ireland utilized all of the finite resources

S4K3

ANSWER 1

Regents Date
Jan2014

40

Data Base File Number

1026

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vegetative propagation

1013. A tree produces only seedless oranges. A small branch cut from this tree produces roots after it is planted in soil. When mature, this new tree will most likely produce

(1) oranges with seeds, only

(2) oranges without seeds, only

(3) a majority of oranges with seeds and only a few oranges without seeds

(4) oranges and other kinds of fruit

S4K4

ANSWER 2

Regents Date
Jan2007

16

Data Base File Number

59

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water balance

1014. Damage to which structure will most directly disrupt water balance within a single-celled organism

(1) ribosome

(2) cell membrane

(3) nucleus

(4) chloroplast

S4K2

ANSWER 2

Regents Date
Jan2008

2

Data Base File Number

75

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wet mount

1015. A wet-mount slide preparation of a specimen is stained in order to

(1) eliminate some organelles

(2) make cell structures more visible

(3) use the high-power lens

(4) remove water from the slide

LABS

ANSWER 2

Regents Date
Aug2010

32

Data Base File Number

303

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white blood cell

1016. Which activity is NOT a response of human white blood cells to pathogens?

(1) engulfing and destroying bacteria

(2) producing antibodies

(3) identifying invaders for destruction

(4) removing carbon dioxide

S4K5

ANSWER 4

Regents Date
Aug2001

24

Data Base File Number
932

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white blood cell

1017. Some human white blood cells help destroy pathogenic bacteria by

(1) causing mutations in the bacteria

(2) engulfing and digesting the bacteria

(3) producing toxins that compete with bacterial toxins

(4) inserting part of their DNA into the bacterial cells

S4K5

ANSWER 2

Regents Date
Aug2006

21

Data Base File Number
541

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white blood cell

1018. Which activity is not a function of white blood cells in response to an invasion of the body by bacteria?

(1) engulfing these bacteria

(2) producing antibodies to act against this type of bacteria

(3) preparing for future invasions of this type of bacteria

(4) speeding transmissions of nerve impulses to detect these bacteria

S4K5

ANSWER 4

Regents Date
Jan2005

20

Data Base File Number
558

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white blood cell

1019. An infection in the body might result in a sudden

(1) decrease in the activity of antigens produced by the mitochondria

(2) decrease in the amount of DNA present in the nuclei of cells

(3) increase in the activity of white blood cells

(4) increase in the number of red blood cells

S4K5

ANSWER 3

Regents Date
Jan2014

13

Data Base File Number
1007

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white blood cell

1020. A function of white blood cells is to

(1) transport oxygen to body cells

(2) produce hormones that regulate cell communication

(3) carry glucose to body cells

(4) protect the body against pathogens

S4K5

ANSWER 4

Regents Date June2011

23

Data Base File Number

345

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zygote

1021. A scientist wants to change the DNA of a sexually reproducing organism and have the new DNA present in every cell of the organism. In order to do this after fertilization, she would change the DNA in the

(1) zygote

(2) placenta

(3) testes of the father

(4) ovaries of the mother

S4K2

ANSWER 1

Regents Date Aug2011

10

Data Base File Number

363

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zygote

1022. A human zygote is produced from gametes that are usually identical in

(1) the expression of encoded information

(2) the number of altered genes present

(3) chromosome number

(4) cell size

S4K2

ANSWER 3

Regents Date June2002

10

Data Base File Number

840

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zygote

1023. Tissues develop from a zygote as a direct result of the process of

(1) fertilization and meiosis

(2) fertilization and differention

(3) mitosis and meiosis

(4) mitosis and differentiation

S4K4

ANSWER 4

Regents Date June2007

16

Data Base File Number

36
