Living Environment Review Booklet

Instructions to the Students: This booklet contains Regents questions taken from past examinations. They cover the material that you have been working on in your Regents Living Environment classes. There are 50 multiple choice questions in the booklet. It is suggested that you complete ten (10) questions per day. Please make sure to select the choice that you feel best answers the question or completes the statement.

Please make sure to complete all questions and if there are any questions that you do not fully understand, make a notation on the question and be sure to ask you teacher for the explanation when you return to school.

The questions in this packet are from the New York State Education Department at http://www.nysedregents.org/testing/scire/regentlive.html.
You can visit this link for additional Regents exams and practice.

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1. A stable pond ecosystem would not contain

(1) materials being cycled
(2) oxygen
(3) decomposers
(4) more consumers than producers

2. Certain poisons are toxic to organisms because they interfere with the functions of enzymes in mitochondria. This results directly in the inability of the cell to
(1) store information
(2) build proteins
(3) release energy from nutrients
(4) dispose of metabolic wastes

3. 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

4. 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

5. 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

6 A stable ecosystem would *not* contain

(1) materials being cycled
(2) consumers without producers
(3) decomposers
(4) a constant source of energy

7. 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

8. 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

9. 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

10. 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 (3) an organelle
(2) an organ (4) an organ system

11. 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

12. 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

13. 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.

14. 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

15. Which process will increase variations that could be inherited?
(1) mitotic cell division
(2) active transport
(3) recombination of genes
(4) synthesis of proteins

16. 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

17. 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 (3) pH
(2) temperature (4) location

18. 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.

19. In 1995, during an Ebola virus outbreak, approximately 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.

20. 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

21. 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

22. 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

23. 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

24. 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) recycling programs
(3) human population
(4) atmospheric changes

25. 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

26. 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

27. Data were collected by counting gas bubbles released in a 5-minute period when the light source was placed at various distances from the experimental setup. The data are shown in the table below.

Data Table

Distance From Light (cm)	Bubbles in 5-Minute Period
15	27
23	20
30	13
45	6

The number of bubbles released when the light source is at a distance of 38 centimeters would most likely be closest to

(1) 6
(2) 10
(3) 13
(4) 22

28. 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.

29. 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

30 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

Base your answers to questions 31 through 33 on the passage below and on your knowledge of biology.

Overstaying Their Welcome: Cane Toads in Australia

Everyone in Australia is in agreement that the cane toads have got to go. The problem is getting rid of them. Cane toads, properly known as *Bufo marinus*, are the most notorious of what are called invasive species in Australia and beyond. But unlike other species of the same classification, cane toads were intentionally introduced into Australia. The country simply got much more and much worse than it bargained for.

Before 1935, Australia did not have any toad species of its own. What the country did have, however, was a major beetle problem. Two species of beetles in particular, French's Cane Beetle and the Greyback Cane Beetle, were in the process of decimating [destroying] the northeastern state of Queenland's sugar cane crops. The beetle's larvae were eating the roots of the sugar cane and stunting, if not killing, the plants. The anticipated solution to this quickly escalating problem came in the form of the cane toad. After first hearing about the amphibians in 1933 at a conference in the Caribbean, growers successfully lobbied to have the cane toads imported to battle and hopefully destroy the beetles and save the crops....

The plan backfired completely and absolutely. As it turns out, cane toads do not jump very high, only about two feet actually, so they did not eat the beetles that for the most part lived in the upper stalks of cane plants. Instead of going after the beetles, as the growers had planned, the cane toads began going after everything else in sight— insects, bird's eggs and even native frogs. And because the toads are poisonous, they began to kill would-be predators. The toll on native species has been immense....

31. State *one* reason why the cane toads were imported to Australia. [1]

32. Identify *one* adaptation of cane toads that made them successful in their new environment. [1]

33. State *one* specific example of how the introduction of the cane toads threatened biodiversity in Australia. [1]

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

(1) ATP (3) DNA

(2) glucose (4) starch

35. The chemical that is responsible for the *decrease* in blood glucose concentration is released by

(1) muscle cells
(2) guard cells
(3) the ovaries
(4) the pancreas

36 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

37 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 (3) conservation
(2) a trade-off (4) technology

38 A food chain is represented below.

GRASS – CRICKET – FROG – OWL

This food chain contains

(1) 4 consumers and no producers
(2) 1 predator, 1 parasite, 2 producers
(3) 2 carnivores and 2 herbivores
(4) 2 predators, 1 herbivore, 1 producer

39 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

40 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

41. 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.

42 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

43. 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

44. 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.

45. An organelle that releases energy for metabolic activity in a nerve cell is the

(1) chloroplast (3) mitochondrion
(2) ribosome (4) vacuole

46. 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

47. 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

48. 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

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

(1) a scalpel
(2) hormones
(3) electrophoresis
(4) enzymes

50. 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