

Quiz 4

Biology 1408 Dr. S

Review and Chapters 13 & 14

Name \_\_\_\_\_

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**

- 1) Life is organized in a hierarchical fashion. Which one of the following sequences illustrates that hierarchy as it *increases* in complexity? 1) \_\_\_\_\_
- A) ecosystem, molecule, cell, tissue, organism, organ system, organ, community
  - B) cell, molecule, organ system, organ, population, tissue, organism, ecosystem, community
  - C) ecosystem, population, organ system, cell, community, molecule, organ, organism, tissue
  - D) organism, organ system, tissue, population, organ, community, cell, ecosystem, molecule
  - E) molecule, cell, tissue, organ, organ system, organism, population, community, ecosystem
- 2) Which one of the following not necessarily true of all living things? 2) \_\_\_\_\_
- A) are made of organic molecules
  - B) have some form of replication
  - C) are all composed of cells.
  - D) maintain homeostasis
  - E) can gain living properties from other organisms
- 3) You notice that over the past month, many students have started wearing a new style of school sweat shirt. You think to yourself, maybe the bookstore recently started selling this new sweat shirt style. This prediction is 3) \_\_\_\_\_
- A) a type of control.
  - B) an experiment.
  - C) an example of an experimental question.
  - D) an example of a hypothesis.
  - E) a type of observation.
- 4) The role of a control in an experiment is to 4) \_\_\_\_\_
- A) provide a basis of comparison to the experimental group.
  - B) ensure repeatability.
  - C) prove that a hypothesis is correct.
  - D) prove that a hypothesis is correct and ensure repeatability.
  - E) None of the choices are correct.
- 5) An independent variable is best defined as: 5) \_\_\_\_\_
- A) A type of experimental control
  - B) The effect of an observation
  - C) A response
  - D) The cause of an observation
- 6) The nucleus of an atom contains 6) \_\_\_\_\_
- A) only electrons.
  - B) only protons.
  - C) only neutrons.
  - D) protons and electrons.
  - E) protons and neutrons.
- 7) A solution with a pH of 7 is 7) \_\_\_\_\_
- A) strongly basic.
  - B) weakly acidic.
  - C) strongly acidic.

- D) weakly basic.
- E) neutral.

- 8) The storage form of carbohydrates in animals is \_\_\_\_\_ and in plants is \_\_\_\_\_. 8) \_\_\_\_\_
- A) glycogen . . . cellulose
  - B) starch . . . glycogen
  - C) glycogen . . . starch
  - D) sucrose . . . glycogen
  - E) cellulose . . . glycogen
- 9) Which one of the following is *true* about the ATP molecule? 9) \_\_\_\_\_
- A) It contains the six-carbon sugar hexose.
  - B) It contains two phosphate groups.
  - C) It fuels the kinetic energy needs of a cell
  - D) Extremely stable bonds link the second and third phosphate groups.
  - E) None of the choices are correct.
- 10) The *active site* of an enzyme is 10) \_\_\_\_\_
- A) the highly changeable portion of an enzyme that adapts to fit the substrates of various reactions.
  - B) the region of a product that detaches from the enzyme.
  - C) the region of a substrate that is changed by an enzyme.
  - D) the region of an enzyme that attaches to a substrate.
  - E) None of the choices are correct.
- 11) Which of the following molecules assist enzyme function? 11) \_\_\_\_\_
- A) alkaloids
  - B) ribosomes
  - C) vitamins
  - D) cyanide
  - E) None of the choices are correct.
- 12) Which of the following are products of cellular respiration? 12) \_\_\_\_\_
- A) glucose and carbon dioxide
  - B) oxygen and carbon dioxide
  - C) oxygen and energy to make ATP
  - D) energy to make ATP and carbon dioxide
  - E) oxygen and glucose
- 13) Osmosis can be defined as 13) \_\_\_\_\_
- A) the diffusion of a solute.
  - B) endocytosis.
  - C) active transport.
  - D) the diffusion of nonpolar molecules.
  - E) the diffusion of water.
- 14) The term *anaerobic* means 14) \_\_\_\_\_
- A) without  $O_2$ .
  - B) without bacteria.
  - C) without ATP.
  - D) without  $C^{O_2}$ .
  - E)

with O<sub>2</sub>.

- 15) What is the normal complement of sex chromosomes in a human male? 15) \_\_\_\_\_
- A) two X chromosomes
  - B) one Y chromosome
  - C) two Y chromosomes
  - D) one X chromosome and one Y chromosome
  - E) two X chromosomes and one Y chromosome
- 16) Which of the following produces specialized cells during embryology? 16) \_\_\_\_\_
- A) differentiation.
  - B) segmentation
  - C) mitosis.
  - D) meiosis
  - E) G1
- 17) Which of the following represents the sequence in which most animals develop? 17) \_\_\_\_\_
- A) zygote, blastula, gastrula, organ formation.
  - B) blastula, zygote, organ formation, gastrula.
  - C) zygote, gastrula, organ formation, blastula.
  - D) zygote, gastrula, blastula, organ formation.
  - E) zygote, organ formation, blastula, gastrula .
- 18) Genetic variations in natural populations develop due to: 18) \_\_\_\_\_
- A) random mutations of the DNA.
  - B) environmental catastrophies.
  - C) changes in the environment.
  - D) individual activities.
  - E) changes in diet.
- 19) Which organism is least likely to survive to reproduce? 19) \_\_\_\_\_
- A) a plant that has a sweet flavor before it flowers
  - B) a flower that produces a scent that attracts bees
  - C) a seahorse that mimics the weeds in which it lives
  - D) a shrub that produces a toxin in its flower buds that repels deer
  - E) a dark-furred rodent that comes out only at night
- 20) An antibiotic is given repeatedly to treat a recurrent ear infection. It worked initially but now is no longer effective. This indicates that the *Streptococcus* bacterium: 20) \_\_\_\_\_
- A) are infectious only if they are sensitive to the antibiotic.
  - B) is very sensitive to the antibiotic.
  - C) experienced natural selection that has allowed the resistant *Streptococcus* to survive and multiply.
  - D) is being treated with an antibiotic that has experienced a manufacturing error, making it infective.
- 21) Inheritable mutations in the genes of an individual arise due to: 21) \_\_\_\_\_
- A) random chance.
  - B) artificial selection.
  - C) vigorous exercise or effort.
  - D) other species in the environment.
  - E) environmental change.

- 22) Which of the following statements about mutations is TRUE? 22) \_\_\_\_\_
- A) Mutations are almost always better for the organism.
  - B) Mutations occur at random and are by chance.
  - C) Mutations have no effect on the survival and reproduction of an organism.
  - D) Mutations are caused by natural selection.
  - E) Mutations almost always leave the organism worse off than before.
- 23) A change in the frequency of a phenotype in a population is likely caused by: 23) \_\_\_\_\_
- A) artificial selection.
  - B) uniformitarianism.
  - C) Natural selection
  - D) Continuum
- 24) Scientists realized that most species produce many more offspring than is necessary to maintain a constant population. The "excess" individuals in a population: 24) \_\_\_\_\_
- A) evolve to become new species.
  - B) die before they can reproduce.
  - C) migrate to another location.
  - D) mutate and are able to adapt to new environments.
- 25) The theory of natural selection states that: 25) \_\_\_\_\_
- A) individuals that mutate in response to changes in their environment will contribute the most genes to the next generation.
  - B) all individuals live to reproduce in each generation.
  - C) the most well-adapted individuals in their environments survive and reproduce, contributing the most genes to the next generation.
  - D) random assortment of genes results in better physical characteristics in the following generations.
  - E) only the largest and strongest individuals survive.
- 26) Natural selection is BEST described as: 26) \_\_\_\_\_
- A) increasing the perfection of a species.
  - B) the ability to generate new traits that better suit the species.
  - C) working on the existing variation of traits to favor those better suited to the organism's environment.
  - D) causing the death of a significant proportion of the population.
  - E) driving the species toward an eventual endpoint in which the species possesses the best possible adaptations for that particular environment.
- 27) Which of the following is an excellent example of artificial selection? 27) \_\_\_\_\_
- A) the ability to gain muscle mass by using steroids
  - B) the many different breeds of domestic cats
  - C) cheetahs that can outrun their prey
  - D) green tree frogs that blend perfectly into their leafy surroundings
  - E) all of the above
- 28) Which of the following situations can occur to insect pests in due to the used of pesticides? 28) \_\_\_\_\_
- A) Cockroaches not killed by the poison form the largest population
  - B) Cockroaches are only able to eat poison bait.
  - C) The poisoned bait caused a mutation that makes the roaches more sensitive to it.
  - D) Roaches that ate the poison bait became addicted to it.
- 29) Natural selection causes changes in the next generation of: 29) \_\_\_\_\_

A) communities

B) individuals

C) genes

D) populations

- 30) Natural selection can be defined as: 30) \_\_\_\_\_
- A) one species diverging into two species.
  - B) an individual changing into another species.
  - C) a change in the phenotype of an individual over his or her lifetime.
  - D) a change in the genetic makeup of a population over time.
  - E) a change in the genetic makeup of an organism over time.
- 31) Mutations are important because they: 31) \_\_\_\_\_
- A) provide variation that can result in evolutionary change.
  - B) usually provide an individual with increased reproductive rates.
  - C) occur in response to environmental demands.
  - D) are always beneficial in the individuals affected by them.
- 32) Which of the following can be measured to estimate an organism's evolutionary fitness? 32) \_\_\_\_\_
- A) the size of its offspring
  - B) the number of gametes it produces over its lifetime
  - C) the number of offspring it produces over its lifetime
  - D) the number of offspring it produces over its lifetime that survive to breed
  - E) the number of eggs it produces over its lifetime
- 33) If the tallest and shortest individuals of a population of humans do not survive and reproduce as well as the individuals of "average" height, which type of selection would most likely result? 33) \_\_\_\_\_
- A) artificial selection
  - B) stabilizing selection
  - C) directional selection
  - D) disruptive selection
- 34) In a certain species of salmon, some adult males are extremely large whereas other adult males are very small, compared to the females. There are no intermediate-sized adult males in the population. This is probably due to: 34) \_\_\_\_\_
- A) disruptive selection.
  - B) directional selection.
  - C) artificial selection.
  - D) stabilizing selection.
- 35) In one butterfly species, the colors of individuals range from white to black, with many shades of gray in between. If the butterflies in a mountain population become more and more similar in color over several generations (for example, if most butterflies are the same shade of gray), what kind of evolutionary force is likely acting on the population? 35) \_\_\_\_\_
- A) disruptive selection
  - B) directional selection
  - C) stabilizing selection
  - D) artificial selection
- 36) Evolution by natural selection is: 36) \_\_\_\_\_
- A) a process that has occurred only in the past.
  - B) a rare event that has never been observed by scientists.
  - C) a process that occurs as a result of differences in fitness.
  - D) currently occurring but only in scientific laboratories.
  - E) constantly occurring at the same rate in all organisms.
- 37) Suppose a population of mostly sand-colored crabs migrates from a sand beach to a pebble beach and evolves a darker, speckled coloration that closely resembles the pebble beach. This is an example of: 37) \_\_\_\_\_
- A) genetic drift.
  - B) sexual selection.

- C) stabilizing selection.
- D) disruptive selection.
- E) directional selection.

- 38) The elaborate courtship displays common among animals are the result of: 38) \_\_\_\_\_
- A) disruptive selection.
  - B) random mating.
  - C) spontaneous mutations.
  - D) sexual selection.
  - E) stabilizing selection.
- 39) Which one of the following is *false*? Natural selection 39) \_\_\_\_\_
- A) is contingent upon time and place.
  - B) is more of an editing process than a creative mechanism.
  - C) can be seen to be working in organisms alive today.
  - D) and evolutionary change can occur in a short time.
  - E) results from an organism's needs.
- 40) The degree of adaptation that can occur in a population is limited by 40) \_\_\_\_\_
- A) None of the choices are correct.
  - B) the amount and kind of genetic variation in a population.
  - C) the amount of genetic variation in a population.
  - D) the kind of genetic variation in a population.
  - E) the need of the individuals.

- 1) E
- 2) C
- 3) D
- 4) A
- 5) D
- 6) E
- 7) E
- 8) C
- 9) C
- 10) D
- 11) C
- 12) D
- 13) E
- 14) A
- 15) D
- 16) A
- 17) A
- 18) A
- 19) A
- 20) C
- 21) A
- 22) B
- 23) C
- 24) B
- 25) C
- 26) C
- 27) B
- 28) A
- 29) D
- 30) D
- 31) A
- 32) D
- 33) B
- 34) A
- 35) C
- 36) C
- 37) E
- 38) D
- 39) E
- 40) B