Multiple Choice

Identify the choice that best completes the statement or answers the question.

___ 1. Which of the following statements describe what all members of a population share?
   a. They are temporally isolated from each other.
   b. They are geographically isolated from each other.
   c. They are members of the same species.
   d. They have identical genes.

___ 2. All the genes of all members of a particular population make up the population’s
   a. relative frequency.
   b. phenotype.
   c. genotype.
   d. gene pool.

___ 3. Interbreeding among members of a population results in
   a. different types of alleles in the gene pool.
   b. changes in the relative frequencies of alleles in the gene pool.
   c. no changes in the relative frequencies of alleles in the gene pool.
   d. an absence of genetic variation in the population.

___ 4. Gene shuffling includes the independent movement of chromosomes during meiosis as well as
   a. mutations from radiation.
   b. changes in the frequencies of alleles.
   c. crossing-over.
   d. mutations from chemicals.

___ 5. The gene shuffling that occurs as part of sexual reproduction
   a. changes the gene pool’s allele frequencies.
   b. does not change the gene pool’s allele frequencies.
   c. keeps the phenotypes consistent.
   d. is caused by radiation or chemicals.

___ 6. An example of a single-gene trait is
   a. widow’s peak in humans.
   b. weight of human infants at birth.
   c. height in humans.
   d. beak size in the Galápagos finches.

___ 7. The phenotypes for a typical polygenic trait can often be expressed as
   a. a bar graph.
   b. a bell-shaped curve.
   c. Mendelian ratios.
   d. allele frequencies.
8. Compared to a polygenic trait, a single-gene trait tends to have
   a. fewer phenotypes.
   b. more phenotypes.
   c. the same number of phenotypes.
   d. phenotypes that form a bell-shaped curve.

9. Which of the following is NOT a way in which natural selection affects the distribution of phenotypes?
   a. directional selection
   b. stabilizing selection
   c. disruptive selection
   d. chance events

10. In a population of finches in which one group of birds has a short, parrotlike beak and another group has a long, narrow beak, what process has probably occurred?
    a. directional selection
    b. disruptive selection
    c. stabilizing selection
    d. genetic drift

11. Which of the following events do biologists consider a random change?
    a. directional selection
    b. speciation
    c. disruptive selection
    d. genetic drift

12. One similarity between natural selection and genetic drift is that both events
    a. are based completely on chance.
    b. begin with one or more mutations.
    c. involve a change in a population’s allele frequencies.
    d. take place only in very small groups.

13. One of the conditions required to maintain genetic equilibrium is
    a. natural selection.
    b. mutations.
    c. nonrandom mating.
    d. no movement into or out of the population.

14. The genetic equilibrium of a population can be disturbed by each of the following EXCEPT
    a. nonrandom mating.
    b. movement into and out of the population.
    c. a large population size.
    d. mutations.

15. According to the Hardy-Weinberg principle, genetic equilibrium would be more likely in a population of mice if
    a. the population size rapidly decreases.
    b. mutation rates within the population rise.
    c. no natural selection takes place.
    d. there is frequent movement into and out of the population.
16. What situation might develop in a population having some plants whose flowers open at midday and other plants whose flowers open late in the day?
   a. behavioral isolation
   b. geographic isolation
   c. temporal isolation
   d. genetic drift

17. What proportion of all species that have ever lived has become extinct?
   a. less than 1 percent
   b. approximately one-half
   c. more than 99 percent
   d. 100 percent

18. To be useful as an index fossil, a species must have existed for a
   a. long period over a wide geographic range.
   b. long period over a small geographic range.
   c. short period over a wide geographic range.
   d. short period over a small geographic range.

19. How would you date a sample of rock that you suspect as being one of the earliest on Earth?
   a. Use a radioactive isotope with a short half-life.
   b. Use a radioactive isotope with a long half-life.
   c. Use an index fossil.
   d. Use a microfossil.

20. The endosymbiotic theory proposes that eukaryotic cells arose from
   a. individual prokaryotic cells.
   b. multicellular prokaryotes.
   c. communities formed by prokaryotes.
   d. communities formed by eukaryotes.

21. Which of these facts about mitochondria and chloroplasts constitute(s) support for the endosymbiotic theory?
   a. Their DNA resembles bacterial RNA.
   b. Their ribosomes resemble the ribosomes of bacteria.
   c. Like bacteria, they reproduce by mitosis.
   d. all of the above

22. The process by which two species, for example, a flower and a pollinating insect, evolve in response to changes in each other over time is called
   a. convergent evolution.
   b. adaptive radiation.
   c. coevolution.
   d. punctuated equilibrium.

23. A single species that has evolved into several different forms that live in different ways has undergone
   a. adaptive radiation.
   b. coevolution.
   c. punctuated equilibrium.
   d. mass extinction.
24. A pattern in which species experience long, stable periods interrupted by brief periods of rapid evolutionary change is called
   a. convergent evolution.
   b. coevolution.
   c. adaptive radiation.
   d. punctuated equilibrium.

25. Why did oceans not exist on Earth nearly 4 billion years ago?
   a. No water molecules were present.
   b. Water remained a gas because Earth was very hot.
   c. Water existed as ice because Earth was very cold.
   d. There was no oxygen gas in the atmosphere.

26. Miller and Urey’s experiments attempted to demonstrate
   a. how Earth first formed.
   b. whether DNA or RNA evolved first.
   c. whether organic molecules could have formed before life was present.
   d. how the deepest part of Earth formed.
Ch.16-17 Review
Answer Section

MULTIPLE CHOICE

1. C
2. D
3. C
4. C
5. B
6. A
7. B
8. A
9. D
10. B
11. D
12. C
13. D
14. C
15. C
16. C
17. C
18. C
19. B
20. C
21. B
22. C
23. A
24. D
25. B
26. C