

## Biology Semester 2 Exam - B

### MATCHING - 1

Directions: Match the correct definition to the word and place the letter on the line.

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|--------------------------------|---|
| _____ 1. Binomial nomenclature | A. evolutionary history of a species based on comparative relationships of structures and comparisons of modern life forms with fossils |
| _____ 2. Kingdom               | B. structural adaptation that enables species to blend with their surroundings  |
| _____ 3. Taxonomy              | C. structures with common evolutionary origins  |
| _____ 4. Phylum                | D. walking upright on two legs  |
| _____ 5. Phylogeny             | E. all of the alleles in a population's genes   |
| _____ 6. Camouflage            | F. two word system developed by Carolus Linnaeus to name species  |
| _____ 7. Homologous structure  | G. branch of biology that groups and names organisms based on studies of their shared characteristics                                   |
| _____ 8. Prehensile tail       | H. functions like a fifth limb, provides the ability to grasp tree limbs or other objects and can support their body weight             |
| _____ 9. Gene pool             | I. largest taxonomic grouping of similar phyla or divisions   |
| _____ 10. Bipedal              | J. taxonomic grouping of similar classes  |

## MATCHING - 1

Directions: Match the correct definition to the word and place the letter on the line.

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|--------------------------------|---|
| ____ 1. Geographic isolation   | A. percentage of any allele in a population's gene pool   |
| ____ 2. hominid                | B. occurs whenever a physical barrier divides a population, which results in individuals no longer being able to mate |
| ____ 3. Allelic frequency      | C. body structure that has no function in a present day organism but was probably useful to an ancestor               |
| ____ 4. Vestigial structure    | D. idea that periods of speciation occur relatively quickly with long periods of genetic equilibrium in between       |
| ____ 5. Mimicry                | E. group that includes all non monkey arthropods, the living and the extinct gibbons, orang                           |
| ____ 6. Polyploidy             | F. any species with multiple sets of the normal set of chromosomes  |
| ____ 7. Genus                  | G. a species referred to as Homo sapiens  |
| ____ 8. Cro-magnon             | H. structural adaptation evolved in some species where one species resembles another                                  |
| ____ 9. Punctuated equilibrium | I. first word of a two part scientific name used to identify a similar group of species                               |
| ____ 10. Genetic drift         | J. alteration of allelic frequencies in a population by chance events   |

## MULTIPLE CHOICE

Directions: Circle the letter that best completes the statement.

1. Prokaryotes that live in most habitats are \_\_\_\_\_.
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|---------------|-------------------|
| A. protists   | C. archaebacteria |
| B. eubacteria | D. fungi          |
2. The system for identifying organisms that uses two words to name the species is \_\_\_\_\_.
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|--------------------------|--------------------|
| A. binomial nomenclature | C. cladistics      |
| B. dichotomus keying     | D. fan diagramming |



12. Which of the following would be a useful characteristic to use in cladistics?
- A. random differences
  - B. derived characteristic
  - C. similar habitat
  - D. mutations
13. Unlike a pedigree, a cladogram \_\_\_\_\_.
- A. shows ancestry
  - B. shows hypothesized phylogeny
  - C. indicates ancestry from two parents
  - D. explains relationships
14. Linnaeus based most of his classification system on \_\_\_\_\_.
- A. biochemical comparisons
  - B. cell organelles
  - C. embryology
  - D. structural comparisons
15. What type of evolutionary evidence do fossils provide?
- A. structural
  - B. functional
  - C. physiological
  - D. critical
16. Which of the following pairs of terms are related?
- A. analogous structure-butterfly wings
  - B. evolution-natural selection
  - C. vestigial structure-appendix
  - D. all the above
17. Which of the following statements is true about evolution?
- A. Individuals evolve more slowly than populations
  - B. Individuals evolve; populations don't
  - C. Individuals evolve by changing the gene pool
  - D. Populations evolve; individuals don't
18. The fish and whale are not closely related. Their structural similarities appear to be the result of \_\_\_\_\_.
- A. adaptive radiation
  - B. convergent evolution
  - C. divergent evolution
  - D. punctuated equilibrium
19. Two closely related species of raccoon live on opposite sides of a lake. The ancestral species probably evolved into two species because of \_\_\_\_\_.
- A. structural isolation
  - B. punctuated isolation
  - C. behavioral isolation
  - D. geographical isolation
20. Which of the following is an example of direct evidence for evolution?
- A. fossils
  - B. embryology
  - C. vestigial structure
  - D. bacterial resistance to penicillin

21. Which type of natural selection favors the average individuals in a population?

- A. directional
- B. disruptive
- C. stabilizing
- D. divergent

22. Unlike any other bird, the humming bird's wings allow them to hover and fly backwards. This is an example of \_\_\_\_\_ adaptation.

- A. physiological
- B. structural
- C. reproductive
- D. embryological

23. An example of a vestigial human structure is the \_\_\_\_\_.

- A. eye
- B. big toe
- C. appendix
- D. ribs

24. Which diagram with branches that represent the hypothesized phylogeny or evolution of a species or group; uses bioinformatics, morphological studies, and information from DNA studies

- A. taxonomy
- B. cladogram
- C. character
- D. cladistics

25. What is a taxonomic group that contains related families?

- A. class
- B. archae
- C. domain
- D. order

26. What is the taxonomic method that models evolutionary relationships based on shared derived characters and phylogenetic trees

- A. cladistics
- B. family
- C. division
- D. character

27. What grouping of organisms or objects based on a set of criteria that helps organize, communicate, and retain information?

- A. cladistics
- B. character
- C. molecular clock
- D. classification

28. Which is the model of DNA sequences to estimate phylogeny and rate of evolutionary change that uses comparisons?

- A. classification
- B. molecular clock
- C. cladistics
- D. character

29. What branch of biology identifies, names, and classifies species based on their natural relationships?

- A. character
- B. taxonomy

- C. taxon
- D. cladistics

30. What is the evolutionary history of a species called?

- A. morphology
- B. phylogeny

- C. cladogram
- D. analogous

**FILL IN~1**

**Directions: Using the word bank fill in the blank with the correct word.**

|                               |                               |                   |                   |
|-------------------------------|-------------------------------|-------------------|-------------------|
| <b>punctuated equilibrium</b> | <b>geographical isolation</b> | <b>gene pool</b>  | <b>variations</b> |
| <b>natural selection</b>      | <b>mimicry</b>                | <b>artificial</b> | <b>camouflage</b> |
| <b>homologous</b>             | <b>adaptive radiation</b>     |                   |                   |

1. Speciation due to physical barriers occurs as a result of \_\_\_\_\_.
2. The mechanism that Darwin proposed to explain how species adapt to their environments over many generations is \_\_\_\_\_.
3. \_\_\_\_\_ is the structural adaptation of an organism that enables it to resemble another harmful or distasteful species.
4. A subtle adaptation that allows an organism to blend in to its surroundings is known as \_\_\_\_\_.
5. A species may find its way to an island and then evolve into many species in a process called \_\_\_\_\_.
6. The scientific hypothesis that explains how an ancestral population of elephants speciated quite rapidly after a long period of stability is \_\_\_\_\_.
7. An understanding of population genetics depends on an understanding of the \_\_\_\_\_, which is a collection of all the alleles in a population.
8. The differences in the size of the peanuts in a bag is called \_\_\_\_\_.
9. The existence of desirable characteristics in both crops and domestic animals results from the process called \_\_\_\_\_ selection.
10. The wings of bats and the forelimbs of crocodiles are examples of \_\_\_\_\_ structures.

**FILL IN - 2**

**Directions: Using the word bank fill in the blank with the correct word.**

**adaptive radiation**

**mimicry**

**gene pool**

**polyploid**

**vestigial structure**

**camouflage**

**genetic drift**

**natural selection**

**stabilizing selection**

**artificial selection**

**allelic frequency**

**punctuated equilibrium**

1. \_\_\_\_\_ is a technique in which the breeder selects particular traits.
2. A structural adaptation enabling an organism to blend in with its environment\_\_\_\_\_.
3. Another structural adaptation called \_\_\_\_\_ protects an organism by copying the appearance of another species.
4. The total number of genes present in a population is the \_\_\_\_\_.
5. The \_\_\_\_\_ is the percentage of a particular allele in a population.
6. The alteration of allelic frequencies by chance events is known as \_\_\_\_\_.
7. \_\_\_\_\_ is the type of selection that favors average individuals in a population.
8. Any species with a multiple set of chromosomes is known as a(n)\_\_\_\_\_ .
9. \_\_\_\_\_ is a mechanism for change in a population in which organisms with a favorable variation live, reproduce and pass on their favorable traits.
10. The concept that evolution occurs over long periods of stability that are interrupted by geologically brief periods of change is known as\_\_\_\_\_.
11. Any structure that is reduced in function in a living organism but may have been used in an ancestor is known as a(n)\_\_\_\_\_.
12. The evolution of an ancestral species into an array of species that occupy different niches is called \_\_\_\_\_.

**Short Answers: Answer all question with complete sentences. Spelling and grammar counts.**

1. Explain how mimicry and camouflage help species survive.

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2. How do homologous structures provide evidence for evolution?

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3. What happened to the ancestor of the honey creeper when it left the mainland and encountered the diverse niches of Hawaii?

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4. What is adaptive radiation?

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5. When will convergent evolution occur?

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6. Explain why the evolution of resistance to antibiotics in bacteria is an example of directional selection.

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7. How can geographic isolation change a populations gene pool?

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8. Which taxon contains the largest number of species?

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9. List 5 of the 6 kingdoms.

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10. Make a list of a minimum of five physical features you could use to classify trees.

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**ESSAY**

**Directions: Pick one (1) essays. On a separate sheet of paper write at least one paragraph (5-7 sentences) for each.**

1. How might the bright colors of poisonous species aid in their survival?
2. Describe adaptive radiation as a form of divergent evolution.
3. What are two advantages of using scientific names for organisms?
4. What was one shortcoming of Aristotle's classification system?