

## UNIT 1 REVIEW

### **A.) Evidence of Evolution**

1. Define Evolution
2. What is the difference between Organic and Geological Evolution?
3. How do we know evolution has occurred?
4. List the 5 studies that support and provide evidence of evolution
5. What are homologous structures? Give an example
6. What are analogous structures? Give an example
7. What is a vestigial structure? Give an example

### **B.) Early Evolution Theories**

8. List and describe the three components of Lamarck's theory of evolution
9. What was the significance of Weissman's experiment?
10. List and describe the components of Darwin's theory of evolution
11. Why was Darwin's theory called "Natural Selection"?
12. What was the flaw in Darwin's theory?

### **C.) Modern Theory of Evolution**

13. Does the environment act upon phenotypes, or genotypes?
14. Compare and contrast Directional / Disruptive / Stabilizing selections
15. Describe Sexual Selection
16. Compare and Contrast Intrasexual and Intersexual Selection
17. What is Artificial Selection

18. List 4 specific sources of variation
19. Explain how the following maintain variation in a population:  
Diploidy / Outbreeding / Balanced polymorphism / Heterozygote advantage  
Hybrid vigor (heterosis) / Frequency-dependent Selection / Gene Flow
20. List and Describe the 5 Agents of Evolution
21. Describe how the Founder Effect and Bottleneck Effect cause Genetic Drift

#### **D.) Population Genetics**

22. What is meant by "genetic equilibrium"
23. List the 5 conditions that maintain the Hardy-Weinberg Equilibrium
24. Write the Hardy-Weinberg Equations
25. What do the following represent:  
 $p^2$ ,  $q^2$ ,  $2pq$ ,  $p$ ,  $q$
26. In most natural population, Hardy-Weinberg conditions are not obeyed.  
So, why do we use the equations?

#### **E.) Speciation**

27. Explain the difference between Gradualism and Punctuated Equilibrium
28. Define "species"
29. Describe Allopatric speciation
30. Describe Sympatric speciation
31. What is polyploidy and what is its significance in speciation?
32. Describe Adaptive Radiation
33. Define Reproductive Isolation
34. List and describe the 5 prezygotic isolating mechanisms
35. List and describe the 3 postzygotic isolating mechanisms

36. Give examples and explain the difference between:  
Divergent / Convergent / Parallel / and Coevolution
37. What is "cline" effect

**F.) The Origin of Life**

38. Define Chemical Evolution
39. What is the Heterotroph Hypothesis or Theory?
40. Describe primitive earth's atmosphere
41. How were the primordial seas formed?
42. How were the first complex macromolecules formed?
43. What is a proteinoid?
44. What is a protobiont?
45. What are microspheres and coacervates?
46. What formed the atmospheric Oxygen and ozone layer?
47. Describe the "Endosymbiotic Theory"
48. List 4 pieces of evidence that support the endosymbiotic theory