Test date: _____ Name:_____

BAT list: Evolution

Chapters 10 & 11

Evolution Unit Vocabulary			
Convergent evolution	Evolution	Adaptive radiation	Divergent evolution
Embryology	Geographic isolation	Genetic drift	Gradualism
Charles Darwin	Natural selection	Stasis	Artificial selection
Vestigial structure	Homologous structure	Gene flow	Analogous structure
Gene pool	Comparative anatomy	Selective breeding	Phylogeny
Law of Superposition	Punctuated equilibrium	Speciation	Genetic equilibrium
Coevolution	Stabilizing selection	Directional selection	Disruptive selection
Diversity	Recombination	Mutation	

Ch 10.2 Darwin's Observations (pg 290-291)

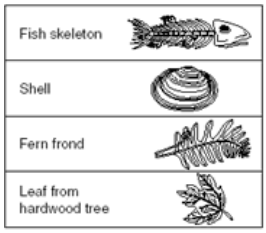
1. What accounts for the variations among species that Darwin observed?

2. What is an adaptation?

3. What adaptations did Darwin observe in the finches of the Galapagos Islands?

4. Explain what is meant by descent with modification.

5. Based on your knowledge of the Law of Superposition, identify A) which fossil is the oldest and the youngest and B) what information can be learned about the environment from the fossils present.



6. What could account for fossils of marine organisms being found on top of modern-day mountain ranges?

7. What is biogeography?

8. Explain why the same alligator-like fossil could be found on both the southern tip of Africa and South America even though they are now separated by an ocean.

Ch 10.3 Theory of Natural Selection (pg 290-291)

9. Compare natural selection, selective breeding, and artificial selection.

10. Explain how artificial selection can be an example of human caused evolution.

11. What are the 4 main principles of natural selection?

12. Why must there be variation within a population for natural selection to occur?

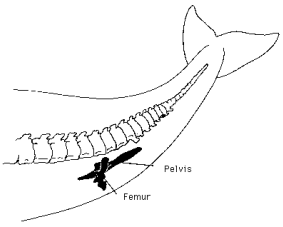
13. How do the structural and the physiological adaptations of organisms support the idea of natural selection?

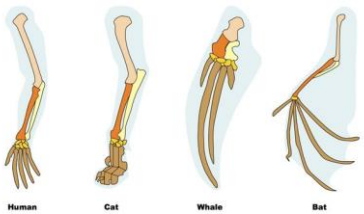
Ch 10.4 Evidence of Evolution (pg 298-304)

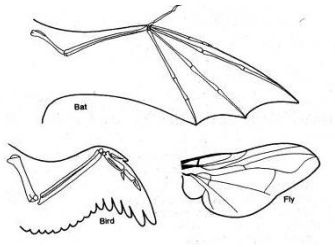
14. Identify the four sources of evidence for evolution that Darwin based his ideas on.

15. Compare homologous, analogous, and vestigial structures.

16. Identify the structures below as analogous, homologous, or vestigial and then identify if they are examples of convergent or divergent evolution.







17. Given an example of a vestigial structure and explain how they are critical evidence for evolution?

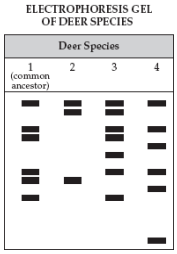
18. Use the table below to determine which organisms are most closely related and explain how you know.

Horse	gln	pro	phe	thr	thr	ala
Chicken	gln	glu	phe	ser	thr	asp
Tuna	gln	glu	phe	ser	thr	asp
Frog	gln	ala	phe	ser	thr	asp

19. What type of evidence of evolution is MOST accurate in terms of determining how related organisms are?

20. How has biotechnology, specifically gel electrophoresis, added to our understanding of evolution?

21. Using the DNA fingerprint below, which deer is most closely related to the common ancestor? Explain how you know.



Ch 11.1 Genetic Variations within Populations (pg 316-317)

22. Describe the two main sources of genetic variation.

23. What is a gene pool?

24. What is allele frequency?

25. Why does genetic variation increase the chance that some individuals in a population will survive?

26. How does crossing over in meiosis provide a source of genetic variation? (draw a diagram if it helps you)

Ch 11.2 Natural Selection in Populations (pg 318-321)

27. Sketch and label each graph for directional, stabilizing, and disruption selection. Include a short description of each.

28. Does natural selection produce changes in populations or in individuals and why?

29. Why is it said that natural selection acts on the phenotypes rather than on the genetic material of organisms?

Ch 11.3 Other Mechanisms of Evolution (pg 323-325)

30. What is another way to describe gene flow?

31. Describe how gene flow can increase genetic variation within two neighboring populations.

32. How can a lack of gene flow between populations lead to speciation?

33. What is genetic drift?

34. Name two processes by which genetic drift can occur.

35. Explain why mutation and genetic drift are random events while natural selection is not.

36. How do genetic drift, gene flow, mutation and recombination affect the gene pool?

37. Would a population with a lot of genetic variation or a little genetic variation be more likely to have individuals that can adapt to a changing environment? Explain your answer.

Ch 11.5 Speciation through Isolation (pg 332-335)

38. What is reproductive isolation?

39. How can reproductive isolation lead to speciation?

40. What are the three major ways that populations can become isolated?

Ch 11.6 Speciation through Isolation (pg 332-335)

41. What is convergent evolution?

42. What is divergent evolution?

43. What is adaptive radiation?

44. Which type of structures (homologous or analogous) are representative of convergent evolution?

45. Which type of structures (homologous or analogous) are representative of divergent evolution?

46. What is co-evolution?

47. How are predator-prey relationships an example of co-evolution?

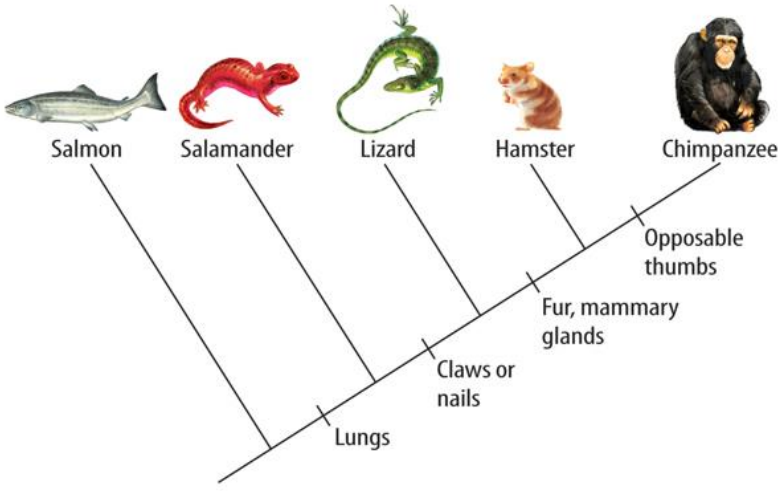
48. Explain the theory of gradualism.

49. Sketch the graph that represents gradualism.

50. Explain the theory of punctuated equilibrium.

51. Sketch the graph that represents punctuated equilibrium

52. Use the cladogram below to answer the questions



a. Which organism(s) do not have lungs?

b. Which organism(s) have fur and mammary glands?

c. Would all of these organisms have a common ancestor? Why or why not?