BAT list: Evolution
Chapters 10 & 11

Evolution Unit Vocabulary – know what these terms mean, you do not have to define them.

Convergent evolution	Evolution	Divergent evolution	Embryology
Biogeography	Genetic drift	Gradualism	Charles Darwin
Natural selection	Vestigial structure	Homologous structure	Gene flow
Analogous structure	Punctuated equilibrium	Speciation	Convergent evolution
Diversity	Mutation	Allelic frequency	

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

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. What is the theory of evolution?

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.
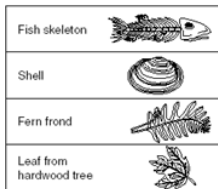

A)

B)

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

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

7. What is natural selection?

8. What is an example of artificial selection (human caused evolution)?

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

Ch 10.4 Evidence of Evolution (pg 298-304)

10. Compare homologous, analogous, and vestigial structures.

11. Identify the structures below as analogous, homologous, or vestigial.
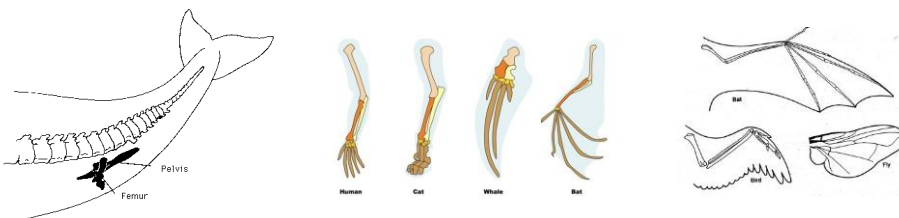
12. What type of evidence of evolution is MOST accurate in terms of determining how related organisms are?

13. Using the table below, which animal is the least closest related to humans? Explain how you know.

Amino Acid Sequences in Primates				
Baboon	**Chimp**	**Lemur**	**Gorilla**	**Human**
ASN	SER	ALA	SER	SER
THR	THR	THR	THR	THR
THR	ALA	SER	ALA	ALA
GLY	GLY	GLY	GLY	GLY
ASP	ASP	GLU	ASP	ASP
GLU	GLU	LYS	GLU	GLU
VAL	VAL	VAL	VAL	VAL
ASP	GLU	GLU	GLU	GLU
ASP	ASP	ASP	ASP	ASP
SER	THR	SER	THR	THR
PRO	PRO	PRO	PRO	PRO
GLY	GLY	GLY	GLY	GLY
GLY	GLY	SER	GLY	GLY
ASN	ALA	HIS	ALA	ALA
ASN	ASN	ASN	ASN	ASN

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

14. What is the ultimate source of genetic variation?

15. What is allele frequency?

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

17. How does crossing over in meiosis provide a source of genetic variation?

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

18. Sketch and label each graph for punctuated equilibrium, gradualism, divergent evolution and convergent evolution. Include a short description of each.

19. Does natural selection produce changes in populations or in individuals?

20. 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)

21. What is gene flow?

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

23. What is genetic drift?

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

25. 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 11.6 Speciation through Isolation (pg 332-335)

26. What is convergent evolution?

27. What is divergent evolution?

28. Which type of structures (homologous or analogous) are representative of convergent evolution?
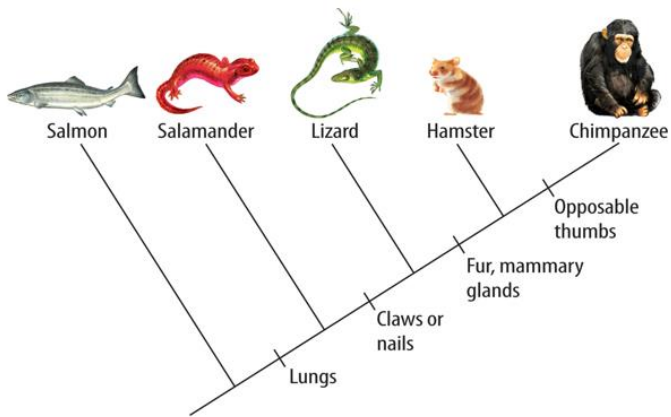
29. Which type of structures (homologous or analogous) are representative of divergent evolution?

30. What is co-evolution?

31. Explain gradualism.

32. Explain punctuated equilibrium.

33. Use the cladogram below to answer the questions

Salmon   Salamander   Lizard   Hamster   Chimpanzee

Opposable thumbs

Fur, mammary glands

Claws or nails

Lungs

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?