

- A. These are the items to focus on in addition to using your LECTURE NOTES as a study tool.
- B. You should also take the “Practice EXAM 1 on CH 22-25” on MOODLE to assess how well you know the material before taking the EXAM on Thursday 9/19/2019. By not using this practice exam, you do not have an assessment on how well you understand the material prior to the exam.
- C. You can also go into Mastering Biology and create practice exams and review materials to see how well you understand the material prior to taking our exam.

CH 22

1. Historically, who and when did individuals contribute to ideas about what we know as “evolution” today.
 - a. Lamarck vs. Darwin?
2. What exactly specifically were Darwin’s contributions to the area of “evolution”
 - a. What were his research areas?
 - b. How did his ideas differ from others?
 - c. What were his 3 broad observations and how do they tie to evolution?
 - d. How do Artificial Selection, Natural Selection, and Adaptation differ?
3. What are the key features of Natural Selection?
4. What are the four types of data document the pattern of evolution and examples of each one?
5. What is the difference between Anatomical and Molecular Homologies and how can they be used in studying evolution?
 - a. What are vestigial structures?
6. Understand the difference between Analogous & Homologous Structures
 - a. Be able to compare and contrast organisms for these types of structures.
 - b. Explain why convergent evolution does not provide information about ancestry.
7. How can Biogeography be used to help understand evolutionary events.

CH 23

1. How does the process of Natural Selection work?
 - a. Populations?
 - b. Individuals?
2. What is genetic variation and how does it relate to the process of evolution?
 - a. Introns vs. Exons?
 - b. Sex determination mechanisms in various organisms
 - c. What are “mutations” and examples of different types?
3. Sexual reproduction as it relates to evolution
 - a. three areas of sexual reproduction that contribute to genetic variation
4. Application of Hardy Weinberg (HW)
 - a. You will have an example on the exam where you will need to apply the HW formula and interpret your results. You will NOT be allowed to use a calculator.
 - b. Conditions required for HW
5. What are the three major factors alter allele frequencies and bring about most evolutionary change?
 - a. Natural selection
 - b. Genetic drift
 - c. Gene flow
 - d. Difference between founder effect and bottleneck effect?
6. What are the three modes of selection and how do they differ from each other?
7. What is Sexual Selection and how does it relate to evolutionary events?
 - a. sexual dimorphism
 - b. intra-sexual selection
 - c. inter-sexual selection
8. What is Balancing selection?
 - a. Frequency-dependent selection
 - b. Heterozygote advantage as it relates to malaria

CH 24

1. What are the different ways in which we can define a “species”?
 - a. How do they differ from each other?
 - b. Which one is best/worst?
 - c. Which one is most generally accepted as the most accurate?
2. What is Reproductive isolation and how does it relate to mating success?
 - a. prezygotic barriers and examples
 - b. postzygotic barriers and examples
3. What are the ways/mechanisms in which speciation can occur?
 - a. Allopatric speciation
 - b. Sympatric speciation
4. What is polyploidy and how does it happen?
 - a. autopolyploid?
 - b. allopolyploid?
5. What is a hybrid zone and how can these zones occur?
 - a. What is the result of a hybrid zone over time?
 - i. Reinforcement
 - ii. Fusion
 - iii. Stability
6. What is punctuated equilibrium and how does it relate to speciation events?
7. Difference between Microevolution and Macroevolution?

CH 25

1. Characteristics of early Earth?
2. Important people/experiments as they relate to examining the physical/chemical characteristics of early Earth
3. Why are meteorites important to study as they relate to “life”?
4. What is a “protocell” and why are they important to study/understand as they relate to “life”?
5. What is a “fossil” and why are they important to study/understand as they relate to “life”?
 - a. Carbon dating?
 - b. Half-life?
6. The geologic record is divided into four major eons
 - a. Hadean
 - b. Archaean
 - c. Proterozoic
 - d. Phanerozoic eons
 - e. What are some major events that take place in each eon?
7. What is a stromatolite and how old are they?
8. When did atmospheric oxygen appear in the fossil record?
9. When did the first eukaryotic cells appear in the fossil record?
 - a. serial endosymbiosis?
10. What is the key evidence supporting an endosymbiotic origin of mitochondria and plastids?
11. Importance of the Cambrian “explosion”?
12. How do mass extinctions play a role in evolution?
 - a. How many occurred?
 - b. Factors that might have contributed to mass extinction events?
 - c. Consequences of mass extinctions?
13. What is “Adaptive radiation”?
 - a. examples?