CHAPTER 1 – BSC 1005 (General Education Biology Lecture, Professor Chiappone)  
INTRODUCTION: BIOLOGY TODAY (Simon et al. 2013, 5th edition)  
SAMPLE QUESTIONS

1. What is biology?  
   (a) the scientific study of life  
   (b) the scientific study of the environment  
   (c) the scientific study of DNA  
   (d) the scientific study of ecosystems  
   (e) the scientific study of organelles

2. What are the two main processes that ecosystems depend upon?  
   (a) speciation and evolution  
   (b) nutrient cycling and energy flow  
   (c) photosynthesis and primary production  
   (d) decomposition and nutrient recycling  
   (e) sunlight and photosynthesis

3. Which of the following is a producer?  
   (a) house plant  
   (b) earthworm  
   (c) dog  
   (d) sun  
   (e) cat

4. Which of the following structures can perform all the activities required for life?  
   (a) DNA molecules  
   (b) cells  
   (c) A, G, C, and T  
   (d) organelles  
   (e) nuclei

5. Humans are composed of ________ cells.  
   (a) bacterial  
   (b) archaeal  
   (c) eukaryotic  
   (d) plant  
   (e) prokaryotic

6. The DNA of a eukaryotic cell is found within the _________.  
   (a) archaea  
   (b) nucleus  
   (c) prokaryotic cell  
   (d) ecosystem  
   (e) insulin

7. What is a gene?  
   (a) a type of eukaryotic cell  
   (b) a type of animal cell  
   (c) an organelle that houses DNA
(d) a type of prokaryotic cell
(e) a unit of heredity

8. More than half of all known species are __________.
   (a) plants
   (b) fish
   (c) insects
   (d) bacteria
   (e) vertebrates

9. How does taxonomy assist biologists?
   (a) by providing easily remembered scientific names for organisms
   (b) by explaining why life exists
   (c) by categorizing diverse items into smaller and smaller numbers of groups
   (d) by reducing life to its smallest common denominator, the cell
   (e) all of the above

10. Which kingdom of Eukarya consists primarily of unicellular organisms?
    (a) Plantae
    (b) Bacteria
    (c) Fungi
    (d) Protista
    (e) Animalia

11. Members of the kingdom Plantae differ from members of the other kingdoms of Eukarya in that most members of the kingdom Plantae __________.
    (a) are decomposers
    (b) are unicellular
    (c) are consumers
    (d) obtain food by ingestion
    (e) produce their own food

12. Which of these is most closely associated with Darwin?
    (a) DNA
    (b) ecosystem structure
    (c) the three domains of life
    (d) organelles
    (e) natural selection

13. Unequal reproductive success __________.
    (a) can lead to a population being less well adapted to its environment
    (b) increases variation
    (c) always decreases the size of a population
    (d) does not affect the frequency of expression of traits in succeeding generations of a population
    (e) can lead to natural selection

14. What accounts for the different breeds of domesticated dogs?
    (a) overproduction
    (b) natural selection
    (c) competition
    (d) artificial selection
15. Science is __________.
   (a) the explanation of phenomena based on supernatural causation
   (b) the inquiry-based effort to describe and explain nature
   (c) the search for truth
   (d) an organized set of principles for how to ethically and morally behave
   (e) all of the above

16. Which of these statements is correct?
   (a) Scientific ideas are subjected to repeated testing.
   (b) Science can be used to prove or disprove the idea that deities or spirits cause earthquakes and other natural disasters.
   (c) Science does not require observations that other people can confirm.
   (d) In science, a hypothesis is an absolute truth.
   (e) Only discovery science can lead to important conclusions about nature.

17. How does inductive reasoning differ from deductive reasoning?
   (a) Discovery science utilizes deductive reasoning, not inductive reasoning, to establish conclusions.
   (b) Deductive reasoning involves going from the specific to the general, whereas inductive reasoning involves going from the general to the specific.
   (c) Inductive reasoning is based on hypotheses, and deductive reasoning is not.
   (d) Inductive reasoning is based on experimentation, and deductive reasoning is based on observation.
   (e) Inductive reasoning involves going from the specific to the general, whereas deductive reasoning involves going from the general to the specific.

18. A hypothesis is a/an __________.
   (a) tentative explanation
   (b) guess
   (c) fact
   (d) observation
   (e) theory

19. You try to start your car, but it does not start. Which of these is deductive testing?
   (a) My car will not start.
   (b) My car's battery is dead.
   (c) If I recharge the battery, then my car will start.
   (d) My car is too old to function properly.
   (e) What is wrong with my car?

20. In a scientific experiment, the control group __________.
   (a) serves as a basis of comparison with the experimental group
   (b) is subjected to the factor whose effect is being tested
   (c) allows for the simultaneous testing of multiple variables
   (d) is required for the validity of discovery science
   (e) serves to increase the sample size of the experiment

21. Antibiotic resistance evolves in bacteria because __________.
   (a) the presence of antibiotics favors bacteria that already have genes for resistance
(b) farmers do not use enough antibiotics in animal feed
(c) doctors do not prescribe antibiotics for diseases caused by viruses
(d) the antibiotics create resistance genes in bacteria
(e) none of the above

22. In the process of evolution by natural selection illustrated in the accompanying figure, which of the following is the mechanism or agent of natural selection?
   (a) artificial selection
   (b) selective breeding
   (c) selective predation
   (d) selective beetles
   (e) selective trees
Population with varied inherited traits.

Elimination of individuals with certain traits.

Reproduction of survivors.

Increasing frequency of traits that enhance survival and reproductive success.