

BIO 1130FF

An introduction to Organismal biology
Midterm examination
Worth either 15% or 20% of your final grade

Saturday, October 2, 2010

Part A: Multiple choice questions
20 points (1 point/question)

- a) Fill in the bubbles for your name and student number and BIO1130FF for the course code. Fill in the same information in text in the boxes above the bubbles.
- b) Use only a pencil to fill in the answer sheet. If you erase a question be sure to erase all of the pencil mark. Don't place any marks anywhere on the sheet other than where the bubbles are for personal information or your answers.
- c) Do not place any answers on the question sheet.
- d) This is not an open book exam.
- e) **CAUTION to minimize paper waste this part of the exam has been printed back to back**

NOTE: If you do not fill in the student number and course code as **BIO1130FF** it will be impossible to identify your answer sheet and you will receive a **ZERO** for this part of the exam

BIO 1130FF - Midterm Examination – October 2, 2010
Multiple choice questions - Place your answers on the answer sheet

1. Why does ice float in liquid water?
 - a. Ice always has air bubbles that keep it afloat.
 - ☒ b. Hydrogen bonds stabilize and keep the molecules of ice farther apart than the water molecules of liquid water.
 - c. The crystalline lattice of ice causes it to be denser than liquid water.
 - d. The ionic bonds between the molecules in ice prevent the ice from sinking.
 - e. The liquid water molecules have more kinetic energy and thus support the ice.

2. What gives rise to the cohesiveness of water molecules?
 - a. ionic bonds
 - ☒ b. hydrogen bonds
 - c. hydrophobic interactions
 - d. nonpolar covalent bonds
 - e. both hydrophobic interactions and ionic bonds

3. The Irish elk and the mammoth are two of the 23 large animals that this scientist found as used as evidence for this process.
 - a. Spontaneous generation
 - b. Scala naturae
 - ☒ c. Extinction
 - d. Transmutation of species
 - e. Transition fossils

4. Which of the following best describes a Linnean binomen?
 - a. A combination of a noun and adjective in Latin
 - b. A unique name of all living species.
 - c. Two words.
 - d. both a and b.
 - ☒ e. both a and c.

5. Which of the following is the true unit of Darwinian evolution; in other words, which of these is subject to meaningful evolutionary change by natural selection?
 - a. phenotypes
 - b. communities
 - ☒ c. populations
 - d. individuals

6. According to the transmutation of species principle of use and disuse, the form of body parts in offspring
 - a. is not changeable.
 - b. is the result of natural selection.
 - ☒ c. is the result of how much the offspring uses a particular body part.
 - d. is inherited based on phenotypic changes that occur in parents during their lifetime

7. Why did Darwin argue that evidence of extinction supports the theory of evolution?
- a. It shows that reproduction is more important than survival of the fittest.
 - X b. It shows that the number and types of species have changed over time.**
 - c. It shows that nothing lasts forever.
 - d. It shows that lower organisms have died to make way for humans.
8. Which one of the following predictions follows from the sexual selection hypothesis for why giraffes have long necks?
- X a. In contests over females, the male with the longest neck should have an advantage over the other males.**
 - b. Young males that are given extra amounts of high-quality food should grow particularly long, strong necks.
 - c. In contests over females, the best-nourished male should always, or almost always, win.
 - d. In natural populations, female neck length should decline over time.
9. Carbon is an important element for biology because
- a. It has the ability to form six covalent bonds.
 - X b. Of the variety of carbon skeletons and functional groups that can be built on them.**
 - c. Carbon is so rare, organisms conserve it highly.
 - d. It has very high electronegativity and forms highly stable bonds.
10. The recent transition fossil, *Puijia darwini*, found in the Canadian north is an important transition fossil because it demonstrates which of the following transitions?
- a. Marine to terrestrial
 - b. Freshwater to terrestrial
 - X c. Terrestrial to water**
 - d. Terrestrial to air
11. Which of these theories, proposed by Jean Baptiste de Lamarck, did Darwin reject in his theory of evolution?
- a. the relationship between organisms and their environment
 - b. the passing of changes from one generation to the next
 - X c. the mechanism by which species change**
 - d. the concept of species change
12. The “father of taxonomy” worked with these organisms
- a. Vertebrates
 - b. All animals
 - X c. Plants**
 - d. Both plants and animals
 - e. Fungi

13. Which of the following statements is most consistent with essentialism?
- a. All living things have changed slowly over time and this explains the gradual changes in the rock layers.
 - b. All living things on the planet have remained unchanged since they were first placed on the plant
 - X c. A characteristic set of unchanging properties defines every living organism found on earth.**
 - d. extinctions are the result of catastrophic events like the biblical flood.
 - e. Species changed as they dispersed from the center of creation.
14. Which naturalist(s)/biologist(s) finally disproved spontaneous generation and proposed the germ theory.
- X a. Pasteur**
 - c. Lamark
 - b. Leclerc
 - d. Schleiden and Schwann
 - e. Huxley
15. Protobionts (protocells) are
- a. a group of abiotically produced inorganic molecules surrounded by a membrane-like structure.
 - X b. a group of abiotically produced organic molecules surrounded by a membrane-like structure.**
 - c. a group of biotically produced inorganic molecules surrounded by a membrane-like structure.
 - d. a group of biotically produced organic molecules surrounded by a membrane-like structure.
16. Which gas was originally missing in the Miller-Urey experiments
- a. Methane (CH₄)
 - b. Hydrogen (H₂)
 - c. Ammonia (H₃)
 - X d. Carbon dioxide (CO₂)**
 - e. None of the above.
17. Which of the following is the correct typographic presentation for the genus species name for the Canadian Beaver?
- a. *castor Canadensis*
 - b. *Castor Canadensis*
 - c. *Castor canadensis*
 - X d. *Castor canadensis***
18. What was the major stumbling block for the acceptance of natural selection as a mechanism for evolution when proposed by Darwin?
- X a. lack of a plausible theory of heredity**
 - b. lack of a fossil record
 - c. lack of observational and experimental data
 - d. strong evidence for inheritance of acquired traits

19. Two species that belong to the same genus must also belong to the same

- a. class.
- b. kingdom.
- c. phylum.
- d. order.
- X e. all of the above**

20. At what temperature is water at its densest?

- a. 0°C
- b. 32°C
- c. 212°C
- X d. 4°C**
- e. 100°C