

# BIO 1130FF

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

Saturday, October 1, 2016

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

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.

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.

Do not place any answers on the question sheet.

This is not an open book exam.

No calculators permitted.

**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

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- FF.1 The best classification system is that which most closely
- a. unites organisms that possess similar morphologies.
  - b. reflects the basic separation of prokaryotes from eukaryotes.
  - c. corroborates the classification scheme in use at the time of Charles Darwin.
  - X** d. reflects evolutionary history.
  - e. conforms to traditional, Linnaean taxonomic practices.
- FF.2 Which scientist is considered to be the first student of natural history, the study of the variety of organisms and their form?
- X** a. Aristotle
  - b. Carolus Linnaeus
  - c. Galileo Galilei
  - d. Charles Darwin
- FF.3 Some molecular data place the giant panda in the bear family (Ursidae) but place the lesser panda in the raccoon family (Procyonidae). Consequently, the morphological similarities of these two species are probably due to
- a. inheritance of shared derived characters.
  - X** b. possession of analogous structures.
  - c. sexual selection.
  - d. possession of shared primitive characters.
  - e. inheritance of acquired characteristics
- FF.4 Lamarck's theory of evolution proposed which of the following?
- a. species change through time.
  - b. organisms change in response to their environment.
  - c. new characteristics are passed from one generation to the next.
  - X** d. all of these.
- FF.5 Which of the various species concepts distinguishes two species based on the degree of genetic exchange between their gene pools?
- a. ecological
  - b. morphological
  - c. phylogenetic
  - X** d. biological
- FF.6 Which of the following combinations represent prezygotic mechanisms of isolation?
- a. hybrid sterility and temporal isolation
  - b. mechanical and hybrid breakdown
  - c. hybrid breakdown and gametic isolation
  - X** d. mechanical and temporal isolation
- FF.7 Lava flows on the island of Hawaii have been observed to subdivide existing fruit fly populations, leading to new species. What speciation mechanism best describes this process?
- a. sympatric
  - b. parapatric
  - X** c. allopatric
  - d. clinal variation

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- FF.8 Which of the following statements is not a key part of Darwin's theory?
- a. populations change over time as adaptive traits increase in frequency.
  - b. changes that an organism acquires during its lifetime are inherited by its offspring.
  - c. variability in characteristics allows some individuals to better survive and reproduce than others.
  - d. individuals of the same species compete with each other for limited resources.
- FF.9 Which of the following does NOT contribute to the study of evolution?
- a. population genetics
  - b. inheritance of acquired characteristics
  - c. the fossil record
  - d. comparative morphology
- FF.10 The phenomenon of fusion is likely to occur when, after a period of geographic isolation, two populations meet again and
- a. the hybrid zone is inhospitable to hybrid survival.
  - b. their chromosomes are no longer homologous enough to permit meiosis.
  - c. a constant number of viable, fertile hybrids is produced over the course of generations.
  - d. a decreasing number of viable, fertile hybrids is produced over the course of generations.
  - e. an increasing number of viable, fertile hybrids is produced over the course of generations.
- FF.11 The first classification of plants created during the Greek and Roman ages divided the plants into groups based on:
- a. seed morphology
  - b. the shapes of the leaves of the plant
  - c. their flowers
  - d. the reproductive structures of the plant.
- FF.12 Which species concept is based on the idea that all individuals of a species share measurable traits that distinguish them from members of other species?
- a. biological
  - b. phylogenetic
  - c. morphological
  - d. clinal
- FF.13 Shared derived characters are most likely to be found in taxa that are
- a. monophyletic.
  - b. polyphyletic.
  - c. paraphyletic.
- FF.14 The concept for examining speciation by reconstructing the evolutionary tree is the
- a. examination of clinal variation.
  - b. morphological species concept.
  - c. phylogenetic species concept.
  - d. biological species concept.

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FF.15 Charles Darwin made his most important observations that later led him to develop what we now know as the theory of evolution \_\_\_\_\_.

- a. as a student studying at Cambridge University
- b. as a young naturalist working in the Asian tropics
- X** c. on a voyage on the surveying ship Beagle that sailed around the world
- d. after viewing collections of specimens at various museums in Europe

FF.16 Which of the following statements about of the evolution of horses is false?

- X** a. the evolution of the horse is characterized by a general pattern of increasing size across species.
- b. early equine ancestors were browsers, not grazers.
- c. as the evolution of the horse progressed there was a reduction of number of toes in some lineages.
- d. as the evolution of the horse progressed there was an increase on the size of their molars to better grind up the grasses they ate.

FF.17 Which of the following were discoveries or advances in the natural sciences occurred in the Muslim world during the period when Europe was in the medieval age?

- a. catalogue of over 1000 plants important as either food or medicines
- b. the scientific method
- c. evolution and the food chain as a struggle for existence
- X** d. all of the above (a, b, and c.)
- e. only a and c.

FF.18 Two species of frogs belonging to the same genus occasionally mate, but the offspring fail to develop and hatch. What is the mechanism for keeping the two frog species separate?

- X** a. the postzygotic barrier called hybrid inviability
- b. the prezygotic barrier called hybrid sterility
- c. the postzygotic barrier called hybrid breakdown
- d. gametic isolation
- e. adaptation

FF.19 In the classification scheme after Kingdom, Phylum, Class comes this taxon.

- a. Family
- b. Genus
- c. Species
- X** d. Order

FF.20 About which of these did Darwin have a poor understanding?

- a. the factors that cause individuals in populations to struggle for survival
- X** b. the sources of genetic variations among individuals
- c. how a beneficial trait becomes more common in a population over the course of generations
- d. that individuals in a population exhibit a good deal of variation