BIO 1130FF

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

Saturday, October 3, 2015

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

FF.1 Charles Darwin's eventual role on the Beagle was to _____.

a. assist the ship in its surveying mission
b. develop the theory of evolution
c. collect evidence to support the theory of evolution
X d. serve as a naturalist

FF.2 Dog breeders maintain the purity of breeds by keeping dogs of different breeds apart when they are fertile. This kind of isolation is most similar to which of the following reproductive isolating mechanisms?

a. mechanical isolation
X b. habitat isolation
c. gametic isolation
d. reduced hybrid fertility
e. hybrid breakdown

FF.3 You are studying lizards in the field. The range of the northern population, species 1, overlaps the range of the southern population, species 2. You find hybrids in the zone of overlap. What is happening?

a. The postzygotic isolating mechanisms aren't working.
b. Hybrids are best adapted to this region where overlap occurs.
c. Reinforcement is occurring.
X d. There is not enough information to decide what is happening.

FF.4 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.

FF.5 Unlike Lamarckian evolution Darwn's evolutionary scheme was

a. a linear pattern
b. a cladistic pattern
X c. a branching pattern
d. a essentialism pattern

FF.6 Fossils are very rare because:

a. Only mineral skeletons fossilize
X b. Decomposition cycles usually prevent fossilization
c. There is no way to predict where they can be found
d. All of the above
e. Only a and b from above

FF.7 On a cladogram, the tips of all the branches represent

X a. groups of organisms that share a common ancestor.
b. common characters.
c. distinguishing characters.
d. common ancestors.

FF.8 On what basis does the biological species concept define species?

X a. reproductive characteristics
b. genetic characteristics
c. morphological characteristics
d. all of the above

FF.9 The binomial system of nomenclature was devised by:

a. Mendel
X b. Linnaeus
c. Darwin
d. Lamark
e. Wallace

FF.10 Monophyletic groups have this number of ancestors.

X a. One
b. The number is unknown
c. Two
d. I could be any number more than two

FF.11 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.

FF.12 The cladistic approach to estimating phylogenetic trees is most like the approach of which species concept?

a. Biological species concept
b. Morphospecies concept
X c. Phylogenetic species concept

FF.13 Which of the following taxon categories has the highest number of species in it?

a. Genus
b. Family
c. Order
X d. Phylum

FF.14 Early scientists studying biogeography noticed that _____.

a. there is a limited, easily documented number of species found in similar habitats around the world
X b. different species with similar forms occupy similar habitats on different continents
c. identical species occupy similar habitats around the world
d. most species are widely distributed around the world

FF.15 The concept for examining speciation by reconstructing the evolutionary tree is the

a. examination of clinal variation.
b. morphological species concept.
X c. phylogenetic species concept.
d. biological species concept.

FF.16 Which of the following examples correctly demonstrates Darwin's mechanism for evolution?

a. Giraffes necks became longer over many generations as they stretched to reach leaves higher in trees, and passed the longer stretched neck on to their offspring.
X b. Those ancestors of woolly mammoths born with slightly more hair survived and reproduced at a higher rate in cold weather than those born with less hair.
c. As evolution progressed, ape mothers gave birth to human babies.
d. Mutations caused white moths to become black when smoke from industry coated tree trunks with soot.

FF.17 Which of the following statements is not a possible mechanism for evolution as proposed by Jean Baptiste de Lamarck?

a. Body parts grow in proportion to how much they are used, while unused body parts shrink.
b. Changes acquired in an organism's lifetime are passed on to its offspring.
X c. Only the fittest organisms survive.
d. A metaphysical "perfecting principle" caused organisms to become better suited to their environments.

FF.18 Which of the following could be a vicariance event for species in that habitat?

a. Radiation near Chernobyl increases mutation rate, causing an increase in autopolypolidy.
X b. The level of water in a lake recedes, creating two lakes where there used to be one.
c. Some insects get blown in a storm to a new mountain range, where they lay eggs.
d. All of the above could be vicariance events for species in that habitat.

FF.19 Which of the following statements best describes the rationale for applying the principle of parsimony in constructing phylogenetic trees?

a. The molecular clock validates the principle of parsimony.
X b. Similarity due to common ancestry should be more common than similarity due to convergent evolution.
c. Parsimony allows the researcher to "root" the tree.
d. The out-group roots the tree, allowing the principle of parsimony to be applied.

FF.20 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.