BIO 1130FF

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

Saturday, November 9, 2013

Part A: Multiple choice questions
26 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.

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 What are bacteriophages?

a. Bacteria that infect viruses.
X b. Viruses that infect bacteria.
c. Viruses that infect plants.
d. Bacteria that are derived from viruses.

FF.2 Collapsing red suns explode huge amounts of this element into the universe

a. Helium
b. Hydrogen
X c. Carbon
d. Silica

FF.3 The biological species concept cannot be applied to two possibly different species that are _____.

X a. asexual
b. sexual
c. similar
d. plants

FF.4 Which of these statements about prokaryotes is correct?

a. Bacterial cells conjugate to mutually exchange genetic material.
b. Their genetic material is confined within a nuclear envelope.
c. Genetic variation in bacteria is not known to occur, nor should it occur, because of their asexual mode of reproduction.
X d. They divide by binary fission, without mitosis or meiosis.

FF.5 Which of the following best describes the phylogenetic relationship between protists, fungi, plants, and animals?

a. Animals and plants share a common protist ancestor, while fungi arose from a different protist ancestor.
b. Fungi and plants share a common protist ancestor, while animals arose from a different protist ancestor.
X c. Fungi and animals share a common protist ancestor, while plants arose from a different protist ancestor.
d. Plants, animals, and fungi each arose from a different protist lineage.

FF.6 Which of the following would characterize a ring species?

a. The species is remarkably uniform in behavior and ecology.
X b. Gene flow between distant populations occurs only through intermediate populations.
c. Ring species exchange genes with a broad range of similar species.
d. The range of a ring species is tightly constrained by gene flow.

FF.7 Which of the following structures is characteristic of a gram-negative bacterial cell, but not of a gram-positive bacterial cell?

a. capsule
X b. outer membrane
c. cell wall made mostly of peptidoglycan
d. single-layered cell wall

FF.8 What is the main structure of a virus?
a. RNA surrounded by a nuclear envelope.
X b. Nucleic acid molecules surrounded by a protein coat or capsid.
c. Single cell with nucleus and organelles.
d. A cytoplasm enclosed by a membrane.

FF.9 Secondary endosymbiosis occurs when a
a. non-photosynthetic eukaryote engulfs a photosynthetic prokaryote.
b. photosynthetic eukaryote engulfs a photosynthetic prokaryote.
c. photosynthetic eukaryote engulfs a non-photosynthetic prokaryote.
X d. non-photosynthetic eukaryote engulfs a photosynthetic eukaryote.

FF.10 Which reproductive isolating mechanism separates a pair of species that routinely interbreed but never produce fertilized eggs after mating?
a. mechanical
b. postzygotic
X c. gametic
d. hybrid breakdown

FF.11 The slight negative charge at one end of one water molecule is attracted to the slight positive charge of another water molecule. What is this attraction called?
a. a covalent bond
b. a hydrophilic bond
c. an ionic bond
X d. a hydrogen bond
e. a hydrophobic bond

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 A primary endosymbiosis event would be expected to produce a plastid with _____ membranes, while secondary endosymbiosis should produce a plastid with _____ membranes.
a. two; three
b. one; two
X c. two; four
d. three; four

FF.14 The term phytoplankton refers to a collection of small _____ protists that live in bodies of water.
a. multicellular
b. multinucleated
c. parasitic
X d. photosynthetic

FF.15 In animal cells, the latent phase of infection is one where the virus _____.

X a. remains in the cell in an inactive form
b. cannot infect the host cell
c. is reproducing and releasing new viral particles
d. is transferring bacterial genes from one bacterium to another

FF.16 The contractile vacuole functions to _____.

a. store energy-rich molecules
b. propel the cell through water, mud, or bodily fluids
c. digest prey
X d. expel water that enters through osmosis

FF.17 Which of the following statements about archaea is correct?

a. Their cell walls contain peptidoglycan.
b. Most are pathogens.
X c. Many are extremophiles.
d. They have no traits in common with eukaryotic cells.

FF.18 Which eons had atmospheric oxygen present for the entire eon?

a. Hadean
b. Archean and Proterozoic
c. Proterozoic
d. Phanerozoic
X e. Proteozoic and Phanerozoic

FF.19 In a single molecule of water, two hydrogen atoms are bonded to a single oxygen atom by

a. ionic bonds.
X b. polar covalent bonds.
c. nonpolar covalent bonds.
d. van der Waals interactions.
e. hydrogen bonds.

FF.20 Which species concept is based on the idea that all individuals of a species share measurable physical traits that distinguish them from members of other species?

a. biological
b. phylogenetic
X c. morphological.

FF.21 Which of the following describes what happens when a bacteriophage enters the lysogenic stage?

a. It enters the host cell and kills it immediately.
b. It enters the host cell, picks up host DNA, and leaves the cell unharmed.
c. It merges with the host cell plasma membrane, forming an envelope, and then exits the cell.
X d. It injects its DNA into the host cell DNA, and the host DNA integrates viral DNA into the host genome.

FF.22 Total number of microtubular strands surrounding the central core of a centrosome.

a. 9
b. 11
c. 18
X d. 27
e. 28

FF.23 Number of possible different gametes in a eukaryote with 5 pairs of chromosomes.

a. 5
b. 8
c. 10
X d. 32
e. 64

FF.24 Cytoskeletal mictrotubules are composed of this protein.

a. actin
b. myosin
c. kinesin
X d. tubulin
e. dyenin

FF.25 Though plants, fungi, and prokaryotes all have cell walls, we place them in different taxa. Which of these observations comes closest to explaining the basis for placing these organisms in different taxa, well before relevant data from molecular systematics became available?

a. Some closely resemble animals, which lack cell walls.
b. Some have cell walls only for support.
c. Some have cell walls only for protection from herbivores.
X d. Their cell walls are composed of very different biochemicals.
e. Some have cell walls only to control osmotic balance.

FF.26 Structural differences that prevent pollen exchange between two related species of flowering plants are examples of which reproductive isolating mechanism?

a. gametic
b. ecological
c. temporal
X d. mechanical