BIOL 1000 practice Questions - Sept 24, 2013

NOTE: These questions are to be used as a study guide and may not be representative of all test questions

1. Which of the following is NOT true of pigments?

A. they are made up of alternating single and double bonds
B. they possess colour corresponding to the colour of absorbed light
C. they possess delocalized electrons that absorb light energy and move to an excited state.
D. it is characterized by a conjugated system

2. Which of the following is TRUE with respect to Retinal?

A. It is a light absorbing protein only found in plants and bacteria.
B. Proteins will absorb light and cause a change in the structure retinal.
C. It is found in Rod shaped bacteria.
D. It is also known as Rhodopsin.
E. A conformation shift of retinal will affect protein activity.

3. What role does the eyespot play in *Chlamydomonas*?

A. It detects light direction and intensity.
B. It detects light direction.
C. It detects photosynthesis.
D. It detects light intensity.

4. The root (main trunk) of the phylogenetic tree represents_____.

A. The big bang (start of the universe)
B. An extinct lineage
C. The common ancestor for life
D. The number of species present in a population

5. Which of the following is (are) true of natural selection?

A. requires genetic variation
B. results in change over time
C. involves differential reproductive success
D. B and C only
E. A, B, and C

6. What is a hypothesis?

A. the same thing as an unproven theory
B. a question that can be tested and is falsifiable
C. an experiment that has been conducted once and is based on previous data
D. a question that, once tested and proven, never changes

7. A localized group of organisms that belong to the same species is called a

A. biosystem.
B. community.
C. population.
D. ecosystem.
E. family.

8. Which of the following statements about plants is true?

A. They contain chloroplasts but not mitochondria.
B. They contain a cell wall made of carbohydrate surrounded by a second lipid bilayer
C. They are generally photoautotrophs
D. All of the above

9. What is the flow of information that the central dogma refers to?

A. DNA → RNA → protein
B. DNA → protein → RNA
C. RNA → protein → DNA
D. RNA → DNA → protein

10. The cytoskeleton_____.

A. Is composed primarily of protein.
B. Is composed of RNA and protein with some carbohydrates.
C. Is a rigid support system for the cell, much like our own skeleton.
D. Is only found in plant cells.

11. Prokaryotic cells do not contain_____.

A. A plasma membrane
B. A cell wall
C. Ribosomes
D. A nucleus

12. Which of the following gives additional protection to some bacteria?

A. The plasma membrane
B. The nucleoid
C. The capsule
D. The cell wall

13. Prokaryotic and eukaryotic cells generally have which of the following features in common?

A. a membrane-bounded nucleus
B. a cell wall made of cellulose
C. ribosomes
D. flagella or cilia that contain microtubules
E. linear chromosomes made of DNA and protein

14. Which of the following statements, about mitochondria and chloroplasts, does NOT support the Theory of Endosymbiosis?

A. Both are about the same size and shape as many bacterial cells.
B. They contain DNA
C. They contain ribosomes
D. Both organelles are surrounded by a membrane

15. What is the relationship between the rough endoplasmic reticulum (ER) and the Golgi apparatus?

A. Both are involved in protein synthesis and/or modification.
B. Both are derived from the mitochondrial membrane.
C. Both are associated with bound ribosomes.
D. A, B and C

16. An amoeba (single-celled eukaryote) engulfs a bacterium. The bacterium is now enclosed in a vesicle inside the amoeba. What is likely to happen next?

A. The enzymes in the vesicle will break down the bacterium.
B. The bacterium will die then be moved into the Golgi for digestion.
C. The bacterium will be released into the cytoplasm where it will be targeted by special digestive enzymes.
D. The vesicle will fuse with a lysosome.

17. A eukaryotic cell is lacking tubulin. What may be the result?

A. The nucleus will collapse
B. Organelle transport is not possible
C. Inability to build intermediate filaments
D. Vesicular movement is only possible in the plus direction

18. I am studying a cell and note that it has huge amounts of smooth ER. Which of the following explanations best fits this observation?

A. It has been damaged by ultraviolet light.
B. It is producing large amounts of lipid.
C. It is producing large amounts of protein.
D. It is producing large amounts of cytoskeleton.

19. I am studying a prokaryote that gets its energy by oxidizing hydrogen sulphide (H_2S) and obtains its carbon from carbon dioxide (CO_2). It is a

A. Chemoautotroph.
B. Photoautotroph.
C. Chemoheterotroph.
D. Photoheterotroph.

20. Plasmodesmata in plant cells are most similar in function to which of the following structures in animal cells?

A. Ribosomes
B. Desmosomes
C. Gap junctions
D. Tight junctions

21. Ions can travel directly from the cytoplasm of one plant cell to the cytoplasm of an adjacent cell through

A. plasmodesmata.
B. intermediate filaments.
C. tight junctions.
D. desmosomes.

22. The tertiary structure of a protein is the

A. bonding together of several polypeptide chains by weak bonds.
B. order in which amino acids are joined in a polypeptide chain.
C. unique three-dimensional shape of the fully folded polypeptide.
D. overall protein structure resulting from the aggregation of two or more polypeptide subunits.

23. Which of the following types of molecules are the major structural components of the cell membrane?

A. phospholipids and cellulose
B. nucleic acids and proteins
C. phospholipids and proteins
D. proteins and cellulose

24. The "fluid mosaic model" applies to all membranes. What does the "mosaic" portion of the statement refer to?

A. The multiple and constant movements of phospholipids
B. The identical composition of the two monolayers
C. The slow movement of proteins relative to phospholipids
D. The many different lipids and proteins composing the membrane

25. In an aqueous environment, how are the phospholipids of a membrane arranged?

A. in a single layer
B. in a bilayer, with the fatty acid tails located at the surface
C. in a bilayer, but the phospholipids have no specific orientation
D. in a bilayer, with the polar heads of each layer located at the surface

EXAMPLE SHORT ANSWER QUESTION

(Many of the Learning Objectives would also make good short answer questions.)

1a) What is the function of lysosomes in eukaryotic cells? (1mark)

b) What, if anything, would happen to a eukaryotic cell if lysosomes were NO LONGER present? Explain why this would occur. (2marks)