



University of Warmia and Mazury in Olsztyn
School of Medicine

Medical School Admission Test sample:

BIOLOGY



1. If humans and panda bears belong to the same class, then they must also belong to the same:

- a. Order
- b. Phylum**
- c. Family
- d. Species
- e. Genus

2. The direct energy source that drives ATP synthesis during oxidative phosphorylation is:

- a. The oxidation of glucose as well as other organic compounds
- b. The endergonic flow of electrons down the electron transport chain
- c. A difference of H^+ concentrations on opposite sides of the inner mitochondrial membrane**
- d. The transfer of phosphate to ADP
- e. The formation of cyclic AMP

3. Which of the following is NOT thought to be ancestral to humans?

- a. Primates
- b. Bony fish
- c. Amphibians
- d. Birds**
- e. All of the above

4. Which of the following is NOT a true statement describing the difference between monocots and dicots?

- a. Vascular bundles scattered in monocot stem, central vascular stele in dicot stem**
- b. One cotyledon in monocots, two cotyledon in dicot seeds.
- c. Usually only primary growth in monocots, secondary growth in many dicots
- d. Parallel veins in monocots, branching netlike venation in dicot leaves
- e. All of the above



5. Which of the following structures is incorrectly paired with a tissue?

- a. Haversian system – bone
- b. Platelets – blood
- c. Fibroblasts – skeletal muscle**
- d. Basement membrane – epithelium
- e. Cerebral cortex – Neurons

6. Compared to a smaller cell, a larger cell of the same shape has:

- a. Less surface area per unit of volume**
- b. Less surface area
- c. The same surface to volume ratio
- d. A smaller cytoplasm to nucleus ratio
- e. A smaller volume

7. Which of the following enzymes has the lowest pH optimum?

- a. Salivary amylase
- b. Pepsin**
- c. Pancreatic amylase
- d. Pancreatic lipase
- e. DNA ligase

8. A pea plant had green pods, which is a dominant phenotype. It was determined after a testcross that half the F1 population had green pods, and the other half had yellow pods, which is a recessive phenotype. We can say that the original pea plant was:

- a. Homozygous dominant
- b. Heterozygous**
- c. Homozygous recessive
- d. A genetic mutant
- e. Exhibiting genetic drift



9. After the surgical removal of a diseased gallbladder, a patient must be careful to limit their intake of:

- a. Simple carbohydrates
- b. lipids**
- c. complex carbohydrates
- d. proteins
- e. minerals

10. During the histology laboratory class of first year medical school, a student observes the epithelium of human skin, and notices the cells are layered, flat and scaly. The sample is:

- a. Stratified squamous**
- b. Simple squamous
- c. Pseudostratified cuboidal
- d. Stratified columnar
- e. Stratified cuboidal

11. Of the following physical responses, which is the best example of positive feedback?

- a. Increased blood glucose levels cause the secretion of insulin from the pancreas, which in turn lowers blood glucose levels
- b. A reduced concentration of oxygen in the lungs triggers the production of more red blood cells in order to carry more oxygen.
- c. When a certain nerve cell is stimulated, it causes sodium ions to leak into the cell. The influx of sodium causes even more sodium to then enter the cell as well.**
- d. An increased CO₂ concentration in the blood induces deeper more rapid breathing which expels the CO₂ from the lungs and, consequently, the blood.
- e. As the core body temperature rises, sweat is released to cool the body via evaporation

12. Molecular biologists designed a bacteriophage with the protein coat of phage T2 and the DNA of phage T4. If this composite phage is then allowed to infect bacteria, the phages produced in the host cells would be:

- a. The protein of T2 and the DNA of T4
- b. The protein and DNA of T4**
- c. The protein of T4 and the DNA of T2
- d. The protein and DNA of T2
- e. The phage will not be able to effectively infect bacteria



13. A woman has a color blind father. However, she is not colorblind. Her husband is also colorblind. The gene for being colorblind is X-linked recessive. What is the probability of their male offspring being colorblind?

- a. 100 %
- b. 75 %
- c. 50%**
- d. 25%
- e. 0%

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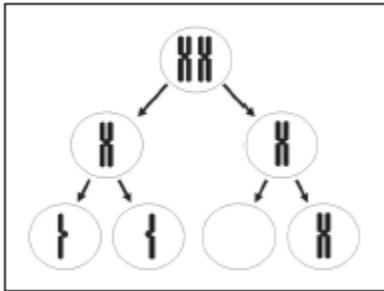
15. The largest unit in which gene flow is possible is a:

- a. Population
- b. Species**
- c. Genus
- d. Subspecies
- e. population

16. Which of the following structures is incorrectly paired with a tissue?

- a. Haversian system – bone
- b. Platelets – blood
- c. Fibroblasts – skeletal muscle**
- d. Basement membrane – epithelium
- e. Cerebral cortex – Neurons

17. The diagram below shows an error in a biological process. What is the process?



- a. Crossing over
- b. Meiosis**
- c. Mitosis
- d. Pleiotropy
- e. Misogyny

18. This biome exhibits the greatest diversity in plant species.

- a. grassland
- b. tropical rain forest**
- c. taiga
- d. tundra
- e. deciduous forest

19. How does DNA differ from RNA?

- a. Two of their nitrogenous bases are different
- b. They contain different sugars**
- c. RNA consists of two strands in a double helix, while DNA is single stranded
- d. All of the nitrogenous bases are different
- e. There is no difference, they are just two abbreviations for the same biochemical

20. Human sex hormones are classified as:

- a. Proteins
- b. Lipids**
- c. Triacylglycerols
- d. Amino acids
- e. Oligosaccharides