Biology Review Test

Name _____

Science Olympiad Anatomy and Physiology

Section One: Multiple Choice

Directions: *Select the best answer to each question.*

_____ 1. Which of the following is not true about carbohydrates?

a. major source of energy
b. made of carbon, hydrogen, oxygen, and nitrogen
c. include sugars and starches
d. 2:1 ratio of hydrogen to oxygen atoms

_____ 2. What is the function of lipids in humans?

a. insulation
b. energy storage
c. cushioning
d. all of the above

_____ 3. Which of the following is not a function of smooth endoplasmic reticulum?

a. lipid synthesis
b. detoxification in liver cells
c. calcium ion storage
d. formation of transport vesicles

_____ 4. Which of the following is not an example of passive transport?

a. diffusion
b. osmosis
c. endocytosis
d. facilitated transport

_____ 5. Which brain structure do cells ultimately communicate their homeostatic needs to?

a. corpus callosum
b. cerebellum
c. optic chiasma
d. hypothalamus

_____ 6. Which of the following is not a difference between anaerobic and aerobic respiration?

a. amount of ATP produced
b. molecules required
c. light levels necessary
d. none of the above

_____ 7. What molecule is broken down during the beginning of aerobic respiration?

a. carbon dioxide
b. lactic acid
c. glucose
d. ATP

_____ 8. What is the equation that summarizes cellular respiration?

a. $C_6H_{12}O_6 + 6\ O_2 \rightarrow 6\ CO_2 + 6\ H_2O + \text{Energy}$
b. $6\ CO_2 + 6\ H_2O + \text{Energy} \rightarrow C_6H_{12}O_6 + 6\ O_2$
c. $ADP + P_i + \text{Energy} \rightarrow ATP$
d. $C_6H_{12}O_6 \rightarrow \text{Lactic Acid} + 2\ ATP$

_____ 9. In which type of cell does lactic acid fermentation take place?

a. stomach
b. muscle
c. liver
d. all of the above

_____ 10. Which of the following is not a function of enzymes?

a. provide energy to cells
b. work as catalysts
c. aid in digestion
d. none of the above

_____ 11. Which of the following occurs during an enzyme-catalyzed reaction?

a. substrate enters active site of enzyme
b. products leave active site of enzyme
c. enzyme-substrate complex forms
d. all of the above

_____ 12. What are the components of a nucleotide?

a. five-carbon sugar, phosphate groups, and nitrogenous base
b. six-carbon sugar, phosphate groups, and nitrogenous base
c. five-carbon sugar, phosphate groups, and hydrogenous base
d. six-carbon sugar, phosphate groups, and hydrogenous base

_____ 13. Which of the following does not occur during DNA replication?

a. double-strand unravels
b. complementary bases match
c. each strand makes exact copy of itself
d. none of the above

_____ 14. What is the longest part of the cell cycle?

a. interphase
b. prophase
c. telophase
d. metaphase

_____ 15. What is the correct order of events in mitosis?

a. prophase → metaphase → telophase → anaphase
b. telophase → metaphase → anaphase → prophase
c. prophase → metaphase → anaphase → telophase
d. metaphase → prophase → anaphase → telophase

_____ 16. What is the result of meiosis?

a. two daughter cells
b. four haploid cells
c. two gametes
d. two body cells

_____ 17. Which of the following is the best definition of trait?

a. synonym of allele
b. characteristic inherited from parents
c. physical appearance
d. genetic makeup of an individual

_____ 18. Which of the following was one of Mendel's Laws of Inheritance?

a. Law of Nondisjunction
b. Law of Genetic Variation
c. Law of Segregation
d. all of the above

_____ 19. Which of the following is controlled by polygenic inheritance?

a. height
b. hair color
c. eye color
d. all of the above

_____ 20. What are disease-causing organisms called?

a. microorganisms
b. pathogens
c. viruses
d. parasites

Section Two: True or False
Directions: *Indicate whether each statement is true or false.*

_____ 21. Enzymes, hormones, and antibodies are all composed of proteins.

_____ 22. The Golgi apparatus forms lysosomes and transports macromolecules.

_____ 23. Phospholipids with hydrophilic heads and hydrophobic tails form the cell membrane.

_____ 24. When a cell is immersed in a hypotonic solution, water tends to enter it.

_____ 25. ADP stands for adenine diphosphate.

_____ 26. pH level affects enzymes.

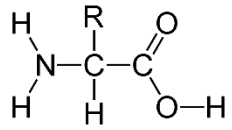
_____ 27. Nitrogenous bases are held together by weak peptide bonds in DNA.

_____ 28. Cell division is not complete without cytokinesis.

_____ 29. During mitosis, chromosomes are duplicated.

_____ 30. There are no codominant traits expressed in humans.

Section Three: Diagram
Directions: *Match each molecule to its identity.*



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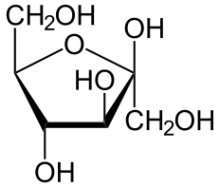

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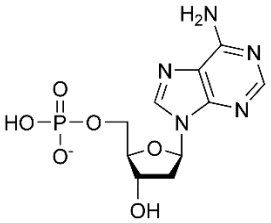

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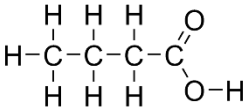

d

_____ 31. amino acid

_____ 32. nucleotide

_____ 33. monosaccharide

_____ 34. fatty acid

Section Four: Short Answer
Directions: *Answer each prompt completely.*

35. Identify any three organelles found in human cells not previously defined on this test and describe their functions.

36. Why is cellular respiration a necessity to human life? Explain.

37. Draw a Venn diagram comparing and contrasting DNA and RNA.

38. Order and describe each step of mitosis. Why is it important that the daughter cells produced are identical to their parent?

39. In humans, dimples are dominant to no dimples. A man who is hybrid and a woman who is homozygous recessive for the trait have a child. Create a Punnett square for this child and state the genotype and phenotype ratios.

40. Why are some bacteria resistant to antibiotics?