Anatomy & Physiology Practice Exam #2

Name: _____ **Date:** _____

1. Nitrogenous wastes result from the metabolism of

   A. amino acids B. glucose molecules

   C. fatty acids D. water molecules

2. Which substances are most commonly used as building blocks in the synthesis of some lipids?

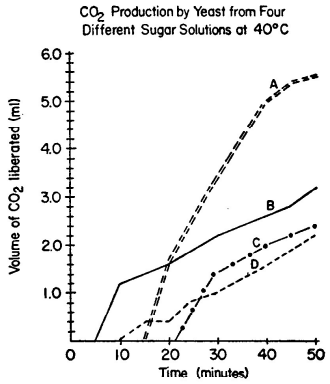
   A. sugars and starches

   B. amino acids and nucleotides

   C. starches and enzymes

   D. glycerol and fatty acids

3. After how many minutes was the volume of CO_2 liberated from sugar *A* solution equal to the volume of CO_2 liberated from sugar *B* solution?



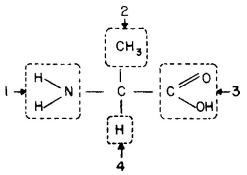
   A. 5 B. 10 C. 20 D. 25

4. Which process is most directly responsible for the production of CO_2 in these sugar solutions?

   A. respiration B. transpiration

   C. translocation D. photosynthesis

5. Which group of atoms varies from one type of amino acid to another?



   A. 1 B. 2 C. 3 D. 4

6. Which groups are directly involved in the formation of peptide bonds?

   A. 1 and 2 B. 2 and 3

   C. 2 and 4 D. 1 and 3

7. Starch molecules are synthesized from glucose within most cells of a leaf during the daylight hours. During the night, this starch may be changed back into glucose by the process of

   A. intracellular digestion

   B. extracellular digestion

   C. dehydration synthesis

   D. aerobic respiration

8. Which term best describes a solution with a pH of 5?

   A. acidic B. neutral

   C. basic D. colorless

9. The process in which the net movement of molecules is from a region of lower concentration to a region of higher concentration is known as

   A. active transport B. diffusion

   C. osmosis D. passive transport

10. An ameba absorbs oxygen from its environment and releases carbon dioxide into its environment. This process is known as

    A. active transport

    B. respiratory gas exchange

    C. anaerobic cellular respiration

    D. enzymatic hydrolysis

11. Which structure produces a substance that aids in the mechanical breakdown of fats?

    A. liver B. thyroid gland

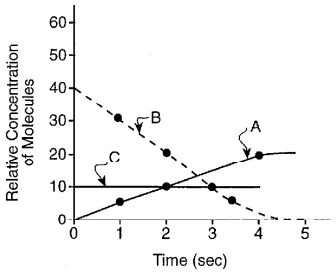
    C. testis D. pituitary gland

12. An inorganic compound essential to the survival of animals is

A. glucose B. salt

C. maltase D. cellulose

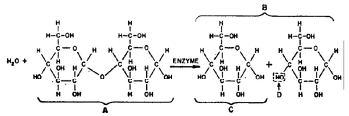
13. The graph pictured shows the relative concentrations of molecules of three different substances A, B, and C, in a reaction involving the synthesis of maltose from glucose. The change in the concentration of maltose molecules is represented by



A. A, only B. B, only

C. C, only D. both B and C

14. Which letter indicates a molecule of disaccharide?



A. *A* B. *B* C. *C* D. *D*

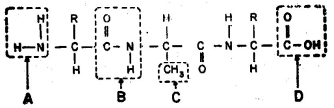
15. A biochemist was given a sample of an unknown organic compound and asked to determine the class of organic compounds to which it belonged. The chart shown represents the results of biochemist's analysis of the sample. Based on these results, to which class of organic compounds did this sample belong?

Element	Number of Atoms per Molecule
C	12
H	22
O	11
S	0
N	0
P	0

A. lipid B. protein

C. salt D. carbohydrate

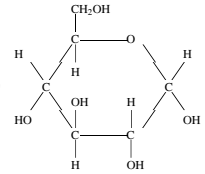
16. Which group of atoms represents a carboxyl (acid) group?



A. *A* B. *B* C. *C* D. *D*

17. Which structural formulas of organic compounds shown represent carbohydrates?

A)



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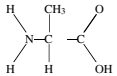

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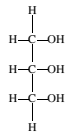
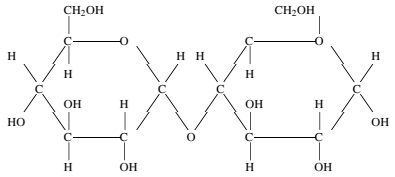


D)



A. *A* and *B* B. *B* and *C* C. *C* and *D* D. *A* and *D*

18. Select the compound, *chosen from the list below*, which is most closely associated with this statement:

These molecules often function as coenzymes.

A. Carbohydrates B. Lipids

C. Proteins D. Vitamins

E. Water

19. Not all human cells are capable of synthesizing all the compounds required for life. Those compounds that can *not* be synthesized must be ingested. These ingested compounds include

A. mutagenic agents

B. neurotransmitters

C. essential amino acids

D. digestive enzymes

20. Which organic compounds undergo partial chemical digestion in the human mouth?

A. carbohydrates B. fats

C. proteins D. amino acids

21. The reactants represented by letter B are

Reactants	Products	Enzyme Involved
maltose, water	A	maltase
B	amino acids	protease
lipids, water	fatty acids, glycerol	C

A. glucose and water

B. ATP and water

C. dipeptides and water

D. alcohol and water

22. In living organisms, lipids function mainly as

A. sources of stored energy and transmitters of genetic information

B. sources of stored energy and components of cellular membranes

C. transmitters of genetic information and catalysts of chemical reactions

D. catalysts of chemical reactions and components of cellular membranes

23. Which is a characteristic of an enzyme?

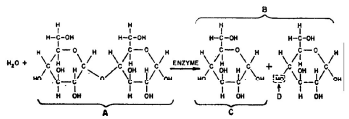
A. It is an inorganic catalyst.

B. It is destroyed after each chemical reaction.

C. It provides energy for any chemical reaction.

D. It regulates the rate of a specific chemical reaction.

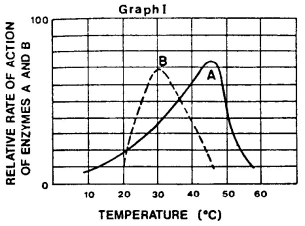
24. Which enzyme would most likely catalyze this reaction?

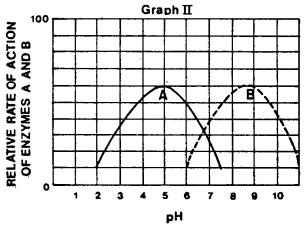


A. protease B. maltase

C. lipase D. ATPase

25. Graph I shows the relationship between the relative rates of activity of enzymes *A* and *B* and temperature. Graph II shows the relationship between the relative rates of activity of enzymes *A* and *B* and pH.





Under which conditions is enzyme *A* most effective?

A. at 40°C and a pH of 5

B. at 45°C and a pH of 5

C. at 45°C and a pH of 9

D. at 50°C and a pH of 9

26. Enzymes are similar to antibodies in that both

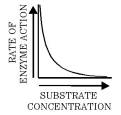
A. are produced by neurohormones

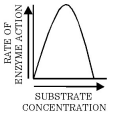
B. slow the rate of chemical reactions

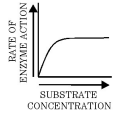
C. are highly specific in their action

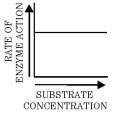
D. are involved in hydrolysis reactions

27. Which graph below best illustrates the pattern of enzyme action rates when a specific substrate is slowly added to a system with a fixed enzyme concentration?

A. 

B. 

C. 

D. 

28. The distortion (change in shape) of enzyme molecules which occurs at high temperatures is known as

A. synthesis B. specificity

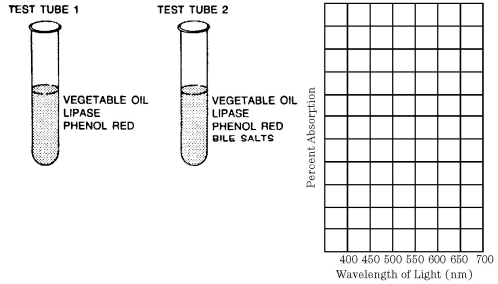
C. replication D. denaturation

29. **Procedures**

1) A student mixed appropriate amounts of vegetable oil (fat source), lipase and phenol red (an indicator which is pink in the presence of a base and yellow in the presence of an acid) in test tube number 1.

2) In test tube number 2, the student mixed the same amounts of vegetable oil, lipase, and phenol red as in test tube number 1 and then added some bile salts (a fat emulsifier).

3) In test tube number 3, the student mixed the same amounts of vegetable oil, phenol red, and bile salts as in test tube 2.



Note: The contents of the three test tubes were all pink in color at the beginning of the investigation and were all kept at room temperature.

Data Table

Time	Color Changes		
	Test Tube 1	Test Tube 2	Test Tube 3
0	pink	pink	pink
15 min	pink	yellow	pink
30 min	pink	yellow	pink
45 min	yellow	yellow	pink
60 min	yellow	yellow	pink

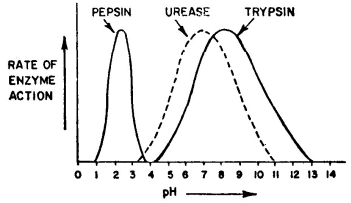
Which process occurred in test tubes 1 and 2?

A. enzymatic hydrolysis B. dehydration synthesis C. osmosis D. pinocytosis

30. The color change that occurred in the contents of test tube 2 was most likely due to the increasing amount of

A. glucose molecules B. glycerol molecules C. fatty acid molecules D. amino acid molecules

31. The graph shows the relationship between the rate of enzyme action and pH for three enzymes: pepsin, urease, and trypsin.



Which of these enzymes function in the most similar pH range?

A. urease and trypsin B. pepsin and urease

C. trypsin and pepsin

32. A change in the rate of enzyme action in aquatic invertebrates would most directly result from a change in the

A. number of consumers in the water

B. number of producers in the water

C. temperature of the water

D. salt concentrations