

Department of Biological Sciences
General Biology (304101)
First Hour Exam.

Name:.....
Registration Number:.....
Tuesday March 27th, 2012

Multiple Choice Questions: Choose the most appropriate answer and shade the letter corresponding to the correct answer on the computerized answer sheet.

1. Water molecules are able to form hydrogen bonds with.....

- A. oils. B. chloride ions. C. oxygen gas (O₂) molecules.
D. compounds that have polar covalent bonds. E. any compound that is not soluble in water.

2. Which of the following is a hydrophobic material?

- A. Cellulose. B. Table salt. C. Oil. D. Sugar. E. Amino acids.

3. What does heat of vaporization do to water?

- A. Increases water density.
B. Increases number of hydrogen ions in water.
C. Decreases number of hydrogen ions in water.
D. Breaks hydrogen bonds between water molecules.
E. Decreases water density.

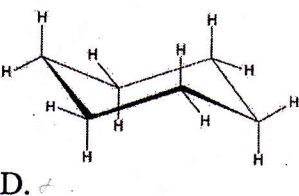
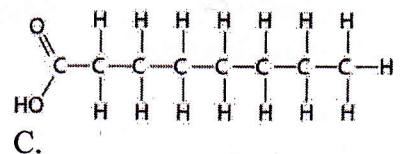
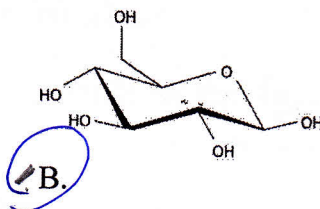
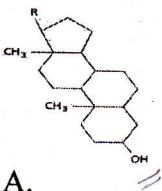
4. What do cohesion, surface tension, and adhesion have in common with reference to water?

- A. All are produced by covalent bonding.
B. All are properties related to hydrogen bonding.
C. All have to do with non-polar covalent bonding
D. All have to do with ionic bonding.
E. All of the above

5. The solute molecule (X) is most likely.....

- A. positively charged. B. negatively charged. C. without charge.
D. hydrophobic E. nonpolar.

6. Which of these molecules would be most soluble in water?



E. Both A and D

7. Which of the following is a FLASE statement concerning amino groups?

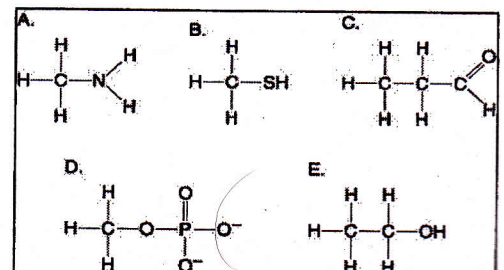
- A. They are basic. B. They are found in amino acids. C. They contain nitrogen.
D. They are nonpolar. E. They are ionized at cellular pH.

8. When you place a molecule that contain amino and carboxyl groups, the molecule functions as....

- A. an acid. B. a base. C. neither an acid nor a base.
D. both an acid and a base. E. a hydrophobic molecule.

9. Which molecule on the right contains a thiol group?

A B C D E



10. Which of the following biological molecules is not a polymer?

- A. Starch B. DNA C. Hemoglobin D. Lipid E. Chitin

11. The name of the molecule on the right is.....

- A. glucose. B. galactose. C. fructose. D. ribose. E. dihydroxyacetone.

12. Which pair of items is mismatched?

- A. Cellulose / α -1 \rightarrow 4 glycosidic linkage B. Cellulose / β -1 \rightarrow 4 glycosidic linkage
C. Starch / α -1 \rightarrow 4 glycosidic linkage D. Glycogen / highly branched polymer
E. Chitin / β -1 \rightarrow 4 glycosidic linkage

13. A biological molecule, which has the formula $C_nH_{2n}O_n$, is more likely to be.....

- A. an amino acid. B. a fatty acid. C. a carbohydrate.
D. a nucleoside. E. inorganic acid.

14. Which of the following is FALSE about Oils?

- A. They are plant products.
B. They have three saturated fatty acids.
C. They have one or more unsaturated fatty acids.
D. They are liquid at room temperature.
E. They contain glycerol.

15. Phospholipids may contain.....

- A. glycerol B. choline. C. phosphate
D. saturated and unsaturated fatty acids E. all of the above

16. Which of the following is FALSE about cholesterol? It.....

- A. has four fused rings. B. has hydroxyl group. C. has an amino group.
D. contains 27 carbons. E. has a hydrocarbon side chain.

17. Which of the following is not a disaccharide?

- A. sucrose B. maltose C. lactose D. chitin E. none of the above

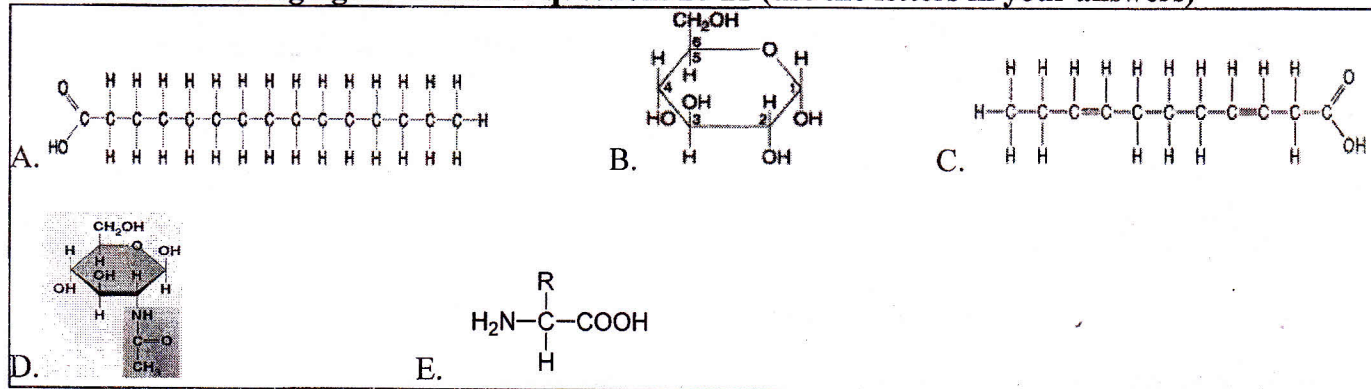
18. A peptide bond is formed between.....

- A. hydroxyl and amino groups.
B. carboxyl and amino groups.
C. amino and sulfhydryl groups.
D. carboxyl and hydroxyl groups.
E. amino and carbonyl groups.

19. In which level of protein structure, R groups interactions can be found?

- A. Primary structure. B. Secondary structure. C. Tertiary structure.
D. Quaternary structure. E. both C and D

Refer to the following figure to answer questions 20-21 (use the letters in your answers)



20. Which of these compounds represent the building unit of a protein?

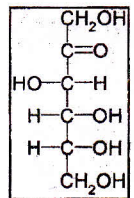
- A B C D E

21. Which of these compounds represent the building unit of unsaturated fat?

- A B C D E

22. Uacil is as a.....

- A. purine. B. pyrimidine. C. nucleoside. D. nucleotide. E. none of the above



23. The covalent bond that forms between two nucleotides is called.....

- A. hydrogen. ☒ B. phosphodiester. C. peptide. D. glycosidic. E. disulfide.

24. Nucleic acids are polymers of

- A. monosaccharides. B. fatty acids. C. amino acids.
☒ D. nucleotides. E. steroids.

25. Which type of microscope would you use to study a living cell?

- ☒ A. Compound-light microscope
B. Scanning electron microscope
C. Transmission electron microscope
D. Only B and C
E. All of the above

26. Which one of the following statements about cell fractionation is FALSE?

- A. It is used to isolate cellular structures. B. It is used separate cell organelles.
C. It begins with gentle disruption of the cell. D. It uses an ultracentrifuge.
☒ E. It is used to study cell surface.

27. The upper limit of cell size is determined by

- ☒ A. cell surface area / volume ratio. B. the amount of DNA inside the cell.
C. the components of the cellular membrane. D. whether it has or has not chloroplast.
E. the number of organelles that can be packed inside the cell.

28. Which statement is FALSE concerning cell nucleus?

- A. It is found only in eukaryotes.
B. It contains the nucleolus.
C. It contains genetic material.
D. It is surrounded by a double membrane.
☒ E. It directs sugar synthesis in the cytoplasm.

29. Which of the following organelle(s) is present in animal cells but not in plant cells?

- A. Plastids. B. Cell wall. C. Central vacuole. ☒ D. Lysosomes. E. Mitochondria.

30. The cytosol is best described as the.....

- A. fluid within the nucleus.
B. network of intermediate filaments.
☒ C. semifluid substance in which organelles are suspended.
D. internal contents of organelles.
E. fluid inside the membrane bounded organelles.

31. Which number(s) represent(s) the hydrophobic region of the plasma membrane?

- A. 1 ☒ B. 2 C. 3 D. 1 & 3 E. 2 & 3

32. The letter X represents.....

- A. free ribosomes ☒ B. bound ribosomes C. nucleoli
D. nuclei E. nuclear pores

33. Which pair is mismatched?

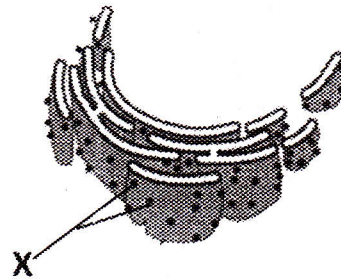
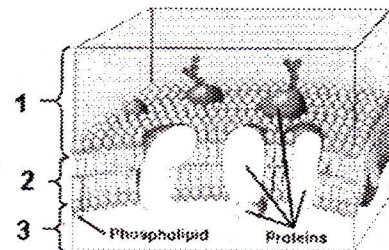
- A. Chloroplast/ site of photosynthesis
☒ B. Microfilaments/ nuclear lamina
C. Cristae/ inner mitochondrial membrane
D. Peroxisomes / H_2O_2
E. Glyoxysomes/ oil-storing tissues of plant seeds

34. Which of the following organelle is bounded by a single membrane?

- A. Mitochondrion B. Chloroplast C. Nucleus ☒ D. Peroxisome E. both A and B

35. In a plant cell, DNA is found in the.....

- A. nucleus B. mitochondria C. chloroplasts ☒ D. all of the above E. both B and C



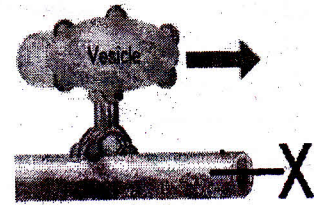
Refer to the figure on the right to answer questions 36-37:

36. Fiber "X" is a/an

- ☒ A. microtubule B. microfilament C. actin filament
D. intermediate filament E. none of the above

37. Movement of the vesicle on fiber "X".....

- A. could be from RER to Golgi apparatus. B. requires a motor protein.
☒ C. requires ATP. ☒ D. all of the above
E. both A and B



38. Which of the following is TRUE about the plant secondary cell wall? It is.....

- A. thick and strong.
B. thin and flexible.
C. located between the middle lamella and plasma membrane.
D. located between the plasma membrane and the primary cell wall.
☒ E. both A and D

39. Which of the following attaches the extracellular matrix of an animal cell to the plasma membrane?

- A. Collagen fibers ☒ B. Fibronectin C. Proteoglycans D. Tubulin E. Microfilaments

40. Which of the following cellular junction is necessary for communication between animal cells?

- A. Tight junctions B. Desmosomes ☒ C. Gap junctions D. Plasmodesmata
E. both C and D