

إذا ثبت نتيجة التحقيق أن الطالب حاول الغش أو اشترك أو شرع فيه أثناء تأدية الامتحان في احد المواد توقع عليه العقوبات التالية مجتمعة:  
 أ. اعتباره راسبا في المادة.  
 ب. إلغاء تسجيله في بقية المواد المسجلة له في ذلك الفصل.  
 ج. فصله من الجامعة لمدة فصل دراسي واحد يلي الفصل الذي ضبط فيه.

**Multiple Choice Questions: Choose the most appropriate answer and shade the letter corresponding to the correct answer on the computerized answer sheet. Be sure to code in your Registration Number correctly. (0.5 pt each)**

1. Which is FALSE about a water molecule?

- A. It is polar      B. Its atoms are bonded by polar covalent bonds      C. It contains an electronegative atom  
**D. Each water molecule is bonded to 4 neighbors at 100 °C**      E. It carries partial negative and positives charges

2. Which pair about water is MISMATCHED?

- A. High surface tension / Walking of an insect on water  
 B. High specific heat / Resists changing its temperature  
 C. When solidifies / Floating ice insulate the marine organisms below from the cold air  
 D. Reaction with sulfur and nitrous oxides in air / acid precipitation  
**E. Acid precipitation / pH > 5.2**

3. In NaCl solution,

- A. each Na<sup>+</sup> and Cl<sup>-</sup> is surrounded by a hydration shell.  
 B. Na<sup>+</sup> attract water molecules through oxygen atoms  
 C. Cl<sup>-</sup> attract water molecules through hydrogen atoms  
**D. all of the above**  
 E. none of the above

Match the terms in Column I with those in Column II to answer questions 4-6:

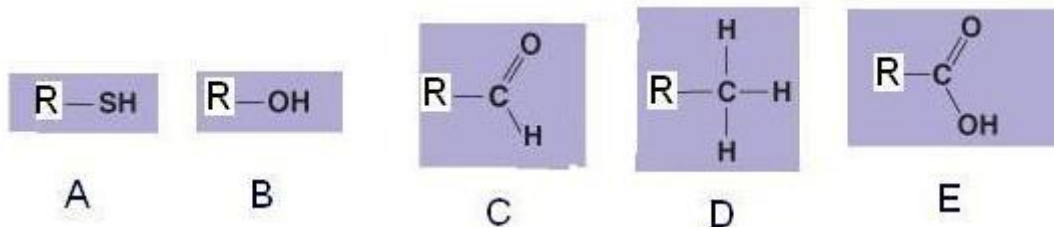
Column I

- ...**C**.....4. Cohesion  
 ....**D**.....5. Hydrophilic water-insoluble substance  
 ....**A**.....6. Evaporative cooling

Column II

- A. Prevents terrestrial organisms from overheating  
 B. 580 cal/g at 25 °C  
 C. Holds the water column in plants  
 D. Cellulose  
 E. Oil

Refer to the following figure to answer questions 7-8:



7. Which one of the above functional groups is found in all amino acids?

- A.      B.      C.      D.      **E.**

8. The dehydration reaction between the functional groups "B" and "E" results in formation of

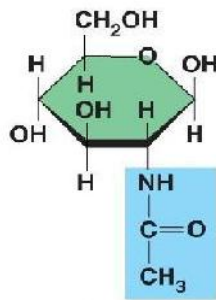
- A. glycosidic linkage      **B. ester bond**      C. peptide bond      D. disulfide bridge      E. hydrogen bond

9. Lactose consists of .....molecules

- A. two glucose      B. two fructose      C. two galactose      D. glucose & fructose      **E. glucose & galactose**

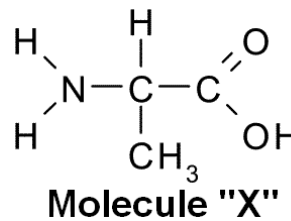
10. Hydrolysis of amylopectin composed of 100 monomers and branched at 3 sites requires ..... water molecules.

Refer to the following figure to answer questions 11-12:



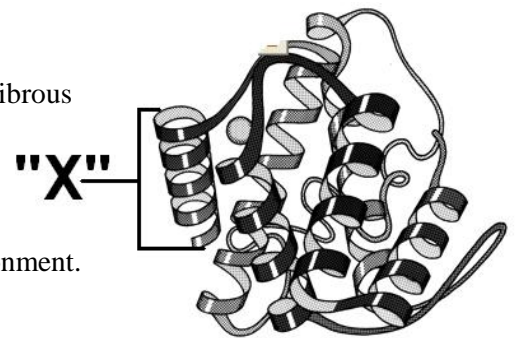
11. The figure represents  
 A. an  $\alpha$ -pentosamine      B. a  $\beta$ -pentosamine  
 C. an  $\alpha$ -hexosamine      **D. a  $\beta$ -hexosamine**      E. none of the above
12. The polymer of the above sugar is found in  
 A. plant cell wall      B. **exoskeleton of arthropods**      C. human muscle      D. amylopectin      E. glycogen
- 
13. Lipids share one important trait that they are  
 A. polymers      B. hydrophilic      **C. hydrophobic**      D. triglycerol      E. formed by condensation reaction
14. Butter is solid at room temperature because it  
 A. is a macromolecule      B. has hydrophilic behavior      C. has hydrophobic behavior  
**D. contains saturated fatty acids**      E. contains unsaturated fatty acids
15. Phospholipid consists of  
 A. a glycerol + 3 saturated fatty acids      B. a glycerol + 3 unsaturated fatty acids      C. 4 fused rings  
**D. a glycerol + 2 fatty acids + a polar head group**      E. a glycerol + 2 fatty acids + a nonpolar head group
16. Which pair is MISMATCHED?  
 A. Defensive protein / Antibodies      B. **Denatured protein / Functional protein**      C. Steroid / Cholesterol  
 D. Disulfide bonds / Protein tertiary structure      E. Hemoglobin / Quaternary structure

17. Which of the following is FALSE about molecule "X"? It  
 A. has nonpolar side chain (R group)  
**B. is hydrophobic**  
 C. is water soluble  
 D. has acidic and basic functional groups  
 E. has asymmetric carbon atom

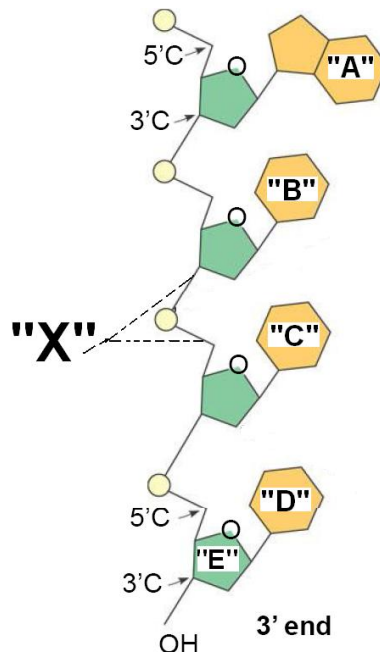


Refer to the figure to answer questions 18-20:

18. This figure represents the .....structure of a protein.  
 A. primary      B. secondary      **C. tertiary**      D. quaternary      E. fibrous
19. This structure could be affected by  
 A. a single amino acid substitution in the protein.  
 B. hydrolysis with enzymes  
 C. alteration (change) in the pH, salt concentration and temperature of its environment.  
**D. all of the above**  
 E. none of the above
20. Part "X" of this structure is  
 A. called  $\alpha$  helix      B. maintained by H-bonds      C. composed of amino acids bonded by peptide bonds  
**D. all of the above**      E. both A and B



Refer to the figure to answer questions 21-23:



21. Which of the following is a purine?

- A. B. C. D. E.

22. Bond "X" is called

- A. peptide  
B. ester  
**C. phosphodiester**  
D. disulphide  
E. glycosidic

23. The combination of "D" and "E" is called

- A. nucleoside**  
B. nucleotide  
C. polynucleotide  
D. nucleic acid  
E. none of the above

24. Resolving power of a microscope

- A. is the maximum distance between 2 points that can still be viewed as 2 points  
**B. is the minimum distance between 2 points that can still be viewed as 2 points**  
C. is the average distance between 2 points that can still be viewed as 2 points  
D. increases with the wavelength of light  
E. none of the above

25. Cell fractionation is

- A. the separation of the cellular organelles  
B. requires the use of electron microscope  
C. starts with homogenization of the tissue  
**D. both A and C**  
E. all of the above

26. Eukaryotic cells have all of the following EXCEPT:

- A. nucleus bounded with a single membrane**  
B. free ribosomes  
C. membrane-bound organelles  
D. genetic material within the nucleus  
E. plasma membrane

27. Which is FALSE about the nucleolus? It

- A. is prominent in protein synthesizing cells  
**B. contains functional ribosomes**  
C. contains ribosomal subunits  
D. contains rRNA genes  
E. is found in the nucleus

28. Ribosomes are

- A. the site of protein synthesis  
B. complexes of RNA and protein  
C. either free or bound  
D. found in prokaryotic and eukaryotic cells  
**E. all of the above**

29. Endomembrane system includes

- A. lysosomes  
B. endoplasmic reticulum  
C. Golgi apparatus  
D. central vacuoles  
**E. all of the above**

30. Smooth endoplasmic reticulum functions in all of the following EXCEPT:

- A. detoxification of drugs and poisons  
B. participation in lipids synthesis  
C.  $\text{Ca}^{++}$  storage in muscles  
**D. storage of potassium ions to help in muscle contraction**  
E. participation in carbohydrates metabolism

31. The organelle that is made of stacked, flattened membranous sacs, and functions in finishing, sorting, and shipping of cell products is:

- A. rough endoplasmic reticulum  
B. smooth endoplasmic reticulum  
**C. Golgi apparatus**  
D. chloroplast  
E. lysosomes

32. Central vacuole functions in all the following EXCEPT:

- A. pumping excess water from the cell in some protozoa**  
B. storage of inorganic compounds  
C. storage of organic compounds  
D. storage of pigments  
E. plant defense against predators

33. The secondary plant cell wall is located between the

- A. middle lamella and the primary cell wall
- C. plasma membrane and primary cell wall**
- E. two phospholipid layers of plasma membrane

- B. extracellular matrix and primary cell wall
- D. plasma membrane and cytosol

34. Which pair is mismatched?

- A. Thylakoids / Chloroplasts
- B. Proteoglycans / Plant cell wall**
- C. Glyoxysomes / Convert lipids to carbohydrates
- D. Keratins / Intermediate filaments
- E. Peroxisomes / Catalase

Refer to the following five terms (A-E) to answer questions 35-38. Choose the most appropriate term for each phrase.

- A. Chloroplast
- B. Collagen filaments
- C. Mitochondrion
- D. Actin filaments
- E. Cilia and flagella

.....**E**.....35. Contain microtubules

.....**C**.....36. It has cristae

.....**D**.....37. Works with myosin in muscle contraction

.....**A**.....38. Converts light energy into chemical energy

Refer to this figure to answer questions 39-40

39. Plasmodesmata in plant cells are *most* similar in function to structure:

- A.      B.      C.      **D.**      E.

40. Which structure represents a desmosome?

- A.      B.      **C.**      D.      E.

