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Reg. No. : .....

Code No. : 7435

Sub. Code : ZBOM 32

M.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2023.

Third Semester

Botany — Core

BIOCHEMISTRY AND BIOPHYSICS

(For those who joined in July 2021–2022 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Which one of the following polysaccharides is present in the exoskeleton of invertebrates  
(a) Chitin (b) Cellulose  
(c) Pectin (d) Starch
2. Which one of the glycoproteins in causes blood clotting  
(a) Thyrotropin (b) Erythropoietin  
(c) Proteases (d) Fibrinogen

3. Which one of the following is an Oxygen-Binding Protein?

(a) Insulin (b) Globins  
(c) Calmodulin (d) Avidin

4. Choose the sulfur-containing amino acid

(a) Arginine (b) Histidine  
(c) Cystine (d) Aspartate

5. Which one of the following enzymes is responsible for Cardiac arrest?

(a) Lactate dehydrogenase  
(b) Creatine phosphokinase  
(c) Serum glutamate pyruvate transaminase  
(d) Serum glutamate oxaloacetal transamin

6. Which one of the following is an unsaturated fatty acid

(a) Arachidonic acid (b) Arachidic acid  
(c) Stearic acid (d) Palmitic acid

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7. The degree of unsaturation of lipids can be measured as

- (a) Saponification number
- (b) Reichert Meisel number
- (c) Iodine number
- (d) All of the above

8. As per the law of thermodynamics, during an interaction, energy can change from one form to another, but the total amount of energy ———

- (a) Increase                      (b) Decreases
- (c) Becomes Zero              (d) Remains Constant

9. The enthalpy of a substance (denoted by  $h$ ), is defined as

- (a)  $h = u - pv$                       (b)  $h = u + pv$
- (c)  $h = -u + pv$                       (d)  $h = -u - pv$

10. Which of the following is the correct criteria for a spontaneous process

- (a)  $\Delta S_{\text{system}} + \Delta S_{\text{surroundings}} > 0$
- (b)  $\Delta S_{\text{system}} - \Delta S_{\text{surroundings}} > 0$
- (c)  $\Delta S_{\text{surroundings}} > 0$  only
- (d)  $\Delta S_{\text{system}} > 0$  only

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PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Difference between disaccharides and polysaccharides.

Or

(b) Define (i) maltose (ii) amino sugars (iii) starch.

12. (a) Describe brief notes on glycoproteins and any four functions.

Or

(b) Write a brief note on the functions of proteins.

13. (a) Write short notes on isomerism in unsaturated fatty acids.

Or

(b) Give a brief account of essential fatty acids.

14. (a) Give short notes on the thermodynamics of enzymatic reactions.

Or

(b) Write an account on applications of enzymes.

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15. (a) Write short notes on entropy.

Or

- (b) Write a short note on electron emission and its types.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Describe a detailed essay on the classification of Carbohydrates.

Or

- (b) Give a detailed account of pentoses and their structures.

17. (a) Give a detailed account of the functions of proteins.

Or

- (b) Write an essay on proteins and peptides.

18. (a) Describe a detailed account of the classification of lipids.

Or

- (b) Give a detailed account of biologically important fatty acids.

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19. (a) Write a detailed account of factors affecting enzyme activity.

Or

- (b) Give a detailed essay on enzyme specificity.

20. (a) Give a detailed account of thermodynamics.

Or

- (b) Describe the detailed-on phosphorescence.

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