

B.Sc. BIOTECHNOLOGY
First Semester
Biochemistry-I
(BBT- 04)

Duration: 3Hrs.

Full Marks: 70

Part-A (Objective) =20
Part-B (Descriptive)=50

(PART-B: Descriptive)

Duration: 2 hrs. 40 mins.

Marks: 50

1) Write short notes on the following: (any five)

2×5=10

- a) Photosynthetic apparatus
- b) Saponification
- c) Cholesterol
- d) Basic amino acids
- e) Peptide bond
- f) Forces involved in tertiary structure of proteins
- g) Light reaction

2) Answer the following questions: (any five)

3×5=15

- a) What are the steps involved in the Calvin cycle of photosynthesis?
- b) Write in short about the mitochondrial respiratory chain
- c) What are essential fatty acids? Explain their importance in animals.
- d) Describe the regulation of Pentose Phosphate Pathway
- e) What are phospholipids? Explain their biological importances.
- f) Differentiate between glycogen and starch
- g) What are disaccharides? Explain with suitable examples

3) Answer the following: (any five)

- a) Describe TCA cycle. How many ATP is generated from four molecule of acetyl CoA?
4+1=5
- b) What is photosynthesis? Describe the Z- scheme
2+3=5
- c) What is the importance of glycolysis? Describe the process
1+4=5
- d) Describe the biological roles of carbohydrates.
5
- e) Where does glyoxylate cycle occur? Describe and mention it's importance in plants.
1+4=5
- f) Describe gluconeogenesis. State it's importance in plants and animals.
3+2=5
- g) What are the different levels of organisation of proteins? Explain with examples. **5**

- 11) Choose the mismatch
- Amylose contains α (1 \rightarrow 4) glycosidic bond
 - D-glucose 1-phosphate phosphoric acid ester of glucose.
 - Glycosides forms when sugar reacts with acid
 - Acetal forms when hemiacetal reacts with alcohol.
- 12) The sugar residues of Amylose are
- α (1 \rightarrow 4) linkages
 - β (1 \rightarrow 4) linkages
 - Galactose units only
 - Fructose units only
- 13) Which of the following is not a biological role of fatty acids?
- Essential component of plasma membrane
 - Stored as triglycerols in the body
 - Acts as intracellular second messenger
 - Mainly contains odd no. of carbons
- 14) Which of the following lipids have a net negative charge?
- Phosphatidyl choline
 - Cholesterol
 - Phosphatidyl serine
 - Phosphatidylethanolamine
- 15) Gangliosides contain-
- A ceramide structure
 - Glucose or Galactose
 - Sialic acid
 - All of the above
- 16) Which of the following does not belong to glycosphingolipids?
- Cerebrosides
 - Gangliosides
 - Globosides
 - Sphingomyelin
- 17) Which of the following statement is incorrect?
- Fatty acid synthesis occurs in cytosol of animal cells
 - Fatty acid desaturation and elongation occurs in ER
 - In diabetes mellitus ketone bodies production increases and results in ketoacidosis
 - None of the above.
- 18) Cholesterol is essential for normal membrane functions because it
- Cannot be made by higher organism
 - Spans the thickness of the bilayer
 - Keeps membrane fluidity
 - Catalyses lipid flip flop in the bilayer
- 19) High solubility of amino acids in water is due to
- Presence of side chain
 - Dipolar ion structure
 - Unipolarity
 - Hydrophilic nature of the amino group
- 20) An α helix represents
- Primary structure of a protein
 - Secondary structure of a protein
 - Tertiary structure of a protein
 - Aggregation of proteins.
