

Unit III

6. (a) What are Lipid ? Discuss briefly the classification of lipids with suitable examples. Discuss their biological roles. **10**
- (b) What are Fatty Acids ? Differentiate between saturated, mono-unsaturated and poly-unsaturated fatty acids with examples. **6**
7. (a) Define saponification value, acid value and iodine number and their significance. **8**
- (b) Write down the structure and biological function of terpenes and sterols. **8**

Unit IV

8. Describe the chemical structure, base composition and nomenclature of nucleoside and nucleotide in DNA. Write down the important features of double helical structure of DNA. What are the structural differences between various forms of DNA ? **16**

Roll No.

Exam Code : J-21

Subject Code—52666

M.Sc. EXAMINATION

(Re-appear) (Batch 2017)

(First Semester)

BIOTECHNOLOGY

BT-101

Biomolecules

Time : 3 Hours

Maximum Marks : 80

Note : Attempt any *Five* questions. Q. No. **1** is compulsory. All questions carry equal marks.

(Compulsory Question)

1. (a) Differentiate between optical isomer and geometric isomers. **8×2=16**
- (b) Briefly explain the role of chaperons in proteins folding.

- (c) Write a short note on structure and functions of prostacyclins.
- (d) Diagrammatically show the structure of the following peptide :
Gly-Lys-Met-Gln
- (e) What are essential amino acids ? Draw the structure of at least *three* essential amino acids.
- (f) What is Chargaff's rule ?
- (g) What is meant by Reichert-Meissel number ?
- (h) Explain the biological functions of nucleotides.

Unit I

- 2. (a) What are Polysaccharides ? How many types these are ? Describe the structural and functions of mucopolysaccharides and peptidoglycans. **8**
- (b) What are Heteropolysaccharides ? Describe the heteropolysaccharides of algal cell wall. **8**

- 3. (a) What is Henderson-Hasselbalch Equation ? Discuss its application in buffer preparation. **8**
- (b) Write a short note on ionization and fitness of the aqueous environment for living organism. **8**

Unit II

- 4. (a) How are the amino acids classified based on the properties of their R groups ? Draw the structure of two amino acids from each class. **8**
- (b) What are Proteins ? Describe different levels of structural organization. **8**
- 5. (a) What is Peptide Bond ? What do the notation ϕ and ψ represent while depicting the conformation of peptide. **6**
- (b) How would you determine the amino acid sequence of a peptide ? Using Merrifield's solid phase synthesis techniques outline the steps for the synthesis of a dipeptide Ala-Gly. **10**

9. (a) What do you understand by DNA denaturation ? What is the significance of T_m (melting temperature) of DNA ? Describe various factors affecting T_m value. **8**
- (b) DNA is the genetic material. Support your answer with experimental evidences. **8**

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