19. (a) Discuss about Ramachandran plot and its significance in validating the protein structure.

Or

(b) Write a note on biosynthesis of non- essential aminoacids.

20. (a) Write the steps involved in the chemical synthesis of oligonucleotides.

Or

(b) Discuss about intermediary metabolism and KEGG pathway.

SECTION C — (3 × 10 = 30)

Answer any THREE questions.

21. Explain about the enzymes involved in redox reactions and electron transport chain in mitochondria and its importance in bioenergetics.

22. Discuss in detail about classification of carbohydrates with their chemistry and properties.

23. Define lipoprotein. Discuss its types and role. Add a short note on metabolic disorders in lipid metabolism.

24. Discuss about the amino acid catabolic processes-
(a) Transamination,
(b) Deamination,
(c) Ammonia formation.
What is urea cycle? Explain about the process and its significance.

25. Explain about the biosynthesis and catabolism of pyrimidines.

(For candidates admitted from 2022–2023 onwards)

M.Sc. DEGREE EXAMINATION, NOVEMBER 2023

Biotechnology — Core Choice Course

BIOCHEMISTRY

Time : Three hours Maximum : 75 marks

SECTION A — (20 marks)

I. (A) Choose the correct answer : (5 × 1 = 5)

1. Gluconeogenesis is decreased by

(a) Glucagon (b) Epinephrine

(c) Glucocorticoids (d) Insulin

2. In electron transport chain, the more positive the E_0, the greater the tendency of the oxidant member of that pair to

(a) Lose electrons

(b) Gain electrons

(c) Lose (or) gain electrons

(d) Lose and gain electrons

3. Denaturation of proteins results in

(a) Disruption of primary structure

(b) Breakdown of peptide bonds

(c) Destruction of hydrogen bonds

(d) Irreversible changes in the molecule

4. Gangliosides are the glycolipids occurring in

(a) Brain (b) Liver

(c) Kidney (d) Muscle

5. PRPP synthetase is allosterically inhibited by

(a) AMP (b) ADP

(c) GMP (d) All of these

(B) Fill in the blanks : (5 × 1 = 5)

6. Compounds having the same structural formula but differing in spatial configuration are known as _____.

7. Our body can get pentoses from _____ pathway.

8. _____ are composed of Sphingosine, fatty acids, galactose.

9. Abnormal chain of amino acids in sickle cell anaemia is _____.

10. The end product of purine catabolism in man is _____.

II. Answer the following questions : (5 × 2 = 10)

11. Ionophore

12. HMP shunt

13. Ketogenesis

14. PDB

15. KEGG

SECTION B — (5 × 5 = 25)

Answer ALL the question choosing either (a) or (b)

16. (a) Discuss about Fl /F0 ATPase structure and mechanism of action.

Or

(b) Explain about the regulation of oxidative phosphorylation.

17. (a) Explain about Gluneogenesis pathway.

Or

(b) Discuss in short about metabolic disorders associated with carbohydrate metabolism.

18. (a) Discuss about LMSD and Lipid Bank.

Or

(b) Describe about Ketogenesis and its control.