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MBC–001

M. SC. (BIOCHEMISTRY) (MSCBCH)

Term-End Examination

December, 2024

MBC–001 : CONCEPTS OF BIOCHEMISTRY

Time : 3 Hours *Maximum Marks : 100*

Note : *(i) Answer any **five** questions.*

(ii) All questions carry equal marks.

(iii) Draw figures and flow charts wherever required.

1. (a) Explain the following : 5+5=10

   (i) Chemical composition of a normal human

   (ii) van der Waals interactions in aqueous systems

   (b) Describe the structure and biological roles of proteoglycans. How do acid derivatives and amino sugars contribute to cellular functions ? 5+5

2. (a) Classify lipids on the basis of fatty acids and explain the properties of fatty acids. 10

   (b) What are the specialised functions of lipids in the biological system ? 10

3. (a) Outline the methods used for the elucidation of structure of proteins. Why is determining the primary structure critical for understanding protein function ? 10

   (b) How does protein denaturation and renaturation affect the protein structure ? 10

4. Explain the significance of protein folding and describe how misfolding can lead to neurodegenerative diseases. Provide examples of such diseases and their relationship to protein dynamics. 7+7+6

5. (a) Explain the tertiary structure of DNA and various factors which contribute to its stability. 10

   (b) Describe the following : 5+5

   (i) Sphingolipids

   (ii) Glycerophospholipids

6. (a) Describe the chemical synthesis of oligonucleotides using the phosphate and phosphite methods. 10

   (b) Explain the role of Vitamin A in vision cycle. 10

7. (a) Give a detailed account on any *three* protein isolation methods. 15

   (b) Draw the structure of lactose and maltose. 5

8. (a) Write a note on functional importance of bacterial cell wall polysaccharides. Explain their clinical relevance. 12

   (b) Write a note on the structure and functions of sterols. 8

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