

M.Sc.(Chem.) Semester - 4 (CBCS) Examination
Oct/Nov -2020 [NEW COURSE]
Chemistry of Biomolecules (Elective-1)

Time: 2:00 Hours

Marks: 56

Instructions:

1. Figures to the right indicate marks.
 2. There are five questions in the question paper.
 3. Answer any four of the following questions.
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Unit-1 [14 marks]Answer ALL questions

- Q.1 (a) Answer the following questions in brief** **4 Marks**
- (1) What is isoelectric point? What will be charge on a protein suspended in a buffer having pH greater than the pI of that protein? 2
- (2) What are denaturing agents? Give two chemical denaturing agents used for denaturing protein in laboratory? 2
- Q.1 (b) Answer any two questions out of three.** **10 Marks**
- (1) Describe in details the classification of amino acids? 5
- (2) Describe in details the different levels of protein structure. Discuss the different types of bonds present in structure. 5
- (3) Explain the principle and methodology of Edman protein sequencing. 5

Unit-2 [14 marks]Answer ALL questions

- Q.2 (a) Answer the following questions in brief** **4 Marks**
- (1) What is activation energy? What effect enzymes have on activation energy of a reaction? 2
- (2) What are co-factors of enzymes? Give one example of an enzyme and its cofactor. 2
- Q.2 (b) Answer any two questions out of three.** **10 Marks**
- (1) Discuss in details the classification of enzymes. 5
- (2) Derive the Michaelis Menten equation. Discuss the assumptions on which it is based. 5
- (3) What is enzyme inhibition? Compare the effect of competitive, non-competitive and un competitive inhibitors on enzyme activity and kinetic parameters? 5

Unit-3 [14 marks]Answer ALL questions

- Q.3 (a) Answer the following questions in brief** **4 Marks**
- (1) What is the $\lambda_{\max}$ of DNA? Which component of DNA absorbs the U.V. light? 2
- (2) Define hyperchromic shift. What is its significance? 2
- Q.3 (b) Answer any two question out of three.** **10 Marks**
- (1) Discuss in details the structure of DNA. 5
- (2) What is melting temperature? How can it be determined? 5
- (3) Explain the principle and procedure of Sangers method of DNA sequencing? 5

Unit-4 [14 marks]

Answer ALL questions

- Q.4 (a) Answer the following questions in brief 4 Marks**
- (1) What are glycolipids? Give one example of glycolipid. 2
 - (2) What is cholesterol? What is its role in human body? 2
- Q.4 (b) Answer any two questions out of three. 10 Marks**
- (1) Describe in details the structure and function of phospholipids? 5
 - (2) What are prostaglandins? What is their function in human body? 5
 - (3) Schematically depict the classification of lipids? 5

Unit-5 [14 marks]

Answer ALL questions

- Q.5 (a) Answer the following questions in brief 4 Marks**
- (1) Define carbohydrates? Which sugar is also commonly known as “table sugar”? 2
 - (2) What are epimers? Give example of a sugar that is epimer of glucose. 2
- Q.5 (b) Answer any two questions out of three. 10 Marks**
- (1) What is mutarotation? Why does it happen and how is it measured? 5
 - (2) What are polysaccharides? Discuss different types and significance of polysaccharides with examples? 5
 - (3) List down different reactions of carbohydrates due to presence of aldehyde and ketone groups. 5
