

M.Sc.(Chem.) Semester - 4 (CBCS) Examination
May/June-2021 (NEW COURSE)
Chemistry of Biomolecules (Elective-1)

Time: 1:30 Hours

Marks: 42

Instructions:

1. Figures to the right indicate marks.
2. There are five questions in the question paper.
3. Answer any three of the following questions.

Unit-1 [14 marks]Answer ALL questions

- Q.1 (a)** Draw the structure of aromatic and acidic amino acids. **4 Marks**
- Q.1 (b)** Answer any two question out of three. **10 Marks**
- Calculate the isoelectric point of Aspartic acid $pK_{a(\alpha\text{-carboxyl group})} = 1.88$, $pK_{a(\alpha\text{-ammonium ion})} = 9.60$ and $pK_{a(\text{side chain or R group})} = 3.65$. At which pH 4 what will be the structure of the aspartic acid molecules.
- (1) 5
 - (2) Describe proteoglycans. 5
 - (3) Discuss amino acid as a zwitterion with diagram. 5

Unit-2 [14 marks]Answer ALL questions

- Q.2 (a)** What will happen in deficiency of vitamin C and A? **4 Marks**
- Q.2 (b)** Answer any two question out of three. **10 Marks**
- (1) Elaborate Michaelis- Menten kinetics with an appropriate graph. 5
 - (2) Discuss about structure and biological functions of coenzyme-A. 5
 - (3) Depict the structure and discuss the biological functions of FAD. 5

Unit-3 [14 marks]Answer ALL questions

- Q.3 (a)** Describe the types of RNA. **4 Marks**
- Q.3 (b)** Answer any two question out of three. **10 Marks**
- (1) What is composition of DNA? Explain it with structure. 5
 - (2) Draw the structure of RNA nucleotides and Explain composition of nucleotides. 5
 - (3) How Renaturation of DNA is dependent on supercoiling and linking no. of DNA? 5

Unit-4 [14 marks]Answer ALL questions

- Q.4 (a)** Write a note on phospholipid and glycolipid. **4 Marks**
- Q.4 (b)** Answer any two question out of three. **10 Marks**
- (1) Why butter is solid and olive oil is liquid at room temperature? Explain with composition difference. 5
 - (2) Differentiate between saturated and unsaturated fats with the help of diagrams. 5
 - (3) Explain the difference between cis fat and trans fat and state why trans fats are bad for health in comparison to cis fats? 5

Unit-5 [14 marks]Answer ALL questions

- Q.5 (a)** Explain steps for cyclic structure formation of glucose. **4 Marks**
- Q.5 (b)** Answer any two question out of three. **10 Marks**
- (1) Illustrate Fischer projection & D L Notation for sugars. 5
 - (2) Elucidate structures of aldose sugars in chart form. 5
 - (3) Describe any two hetero polysaccharide with structure. 5