

M.Sc.(Chem.) Semester - 4 (CBCS) Examination
March/April - 2024 (NEW COURSE)
Chemistry of Biomolecules (Elective-1)

Time: 02:30 Hours**Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

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- Q.1 (A)** What do you mean by Isoelectric point? Explain different bonds involved in protein structure. (04)
- Q.1 (B)** Answer any two question out of three. (10)
- (1) Discuss amino acid as a zwitterion with diagram.
 - (2) Discuss properties of Amino acid.
 - (3) 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.
- Q.2 (A)** Depict the structure and discuss biological functions of NADP⁺. (04)
- Q.2 (B)** Answer any two question out of three. (10)
- (1) Depict the structure and discuss the biological functions of FAD.
 - (2) What will happen in deficiency of vitamin C and A?
 - (3) Describe Michaelis- Menten equation with an appropriate graph.
- Q.3 (A)** Describe the Watson and Crick model of DNA. (04)
- Q.3 (B)** Answer any two question out of three. (10)
- (1) What is composition of DNA? Explain it with structure.
 - (2) Draw and describe the structure and function of major types of RNA.
 - (3) Describe hyperchromicity and hypochromicity of DNA.
- Q.4 (A)** Enlist the functions of lipids. (04)
- Q.4 (B)** Answer any two question out of three. (10)
- (1) Describe the structure of phospholipids and their role in cell membranes.
 - (2) Discuss rules of Nomenclature for Fatty acids.
 - (3) Write a note on phospholipid and glycolipid.
- Q.5 (A)** Describe stereo isomerism of sugars. (04)
- Q.5 (B)** Answer any two question out of three. (10)
- (1) Write a note on any three Disaccharide with structure.
 - (2) Elucidate structures of aldose sugars in chart form.
 - (3) Describe any two homopolysaccharide with structure.
