5. (a) Give the reaction for the following **(any four)** :

(i) Effect of Alkali on RNA

(ii) Action of phospholipase A2 on lecithin

(iii) Decarboxylation of Histidine

(iv) Action of alkali on Glucose

(v) Action of lactase on lactose

(b) Draw a labelled titration curve of histidine and discuss how it can act as a buffer at physiological pH.

(c) Give the structural features of aggrecan.

(8,5,2)

6. Write short notes **(any 3)** :

(i) Glycosaminoglycans

(ii) Roles of Nucleotides

(iii) Lipids as signalling molecules

(iv) Eicosanoids (15)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5740 **K**

Unique Paper Code : 2492011101

Name of the Paper : Biomolecules

Name of the Course : **B.Sc. (Hons.) Biochemistry (NEP)**

Semester : I

Duration : 2 Hours Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. There are **6** questions.
3. **All** questions carry equal marks.
4. Attempt **4** questions in all.
5. Question no. **1** is compulsory.

1. (a) State True/False with explanation :

(i) Degree of unsaturation in lipids can be measured by saponification number.

(ii) The beta anomer of D-Glucose has a more stable conformation than the alpha form.

(iii) Proline and cysteine are called "helix breakers".

(iv) Glycosaminoglycans have a slippery gel-like consistency.

(v) Melting temperature of DNA is sequence independent.

(vi) B12 deficiency can take years to show symptoms whereas vitamin C deficiency symptoms can be seen in a few weeks.

(b) Define the following :

(i) Tm

(ii) Ampholytes

(iii) Globosides (12,3)

2. (a) Identify and give the structure **(any six)** :

(i) An Unusual base in RNA

(ii) A non-reducing di saccharide

(iii) Simplest aldose

(iv) Structural polysaccharide found in insects

(v) Achiral amino acid

(vi) A dicarboxylic amino acid

(vii) A phospholipid without a glycerol backbone

(b) Explain briefly :

(i) Mutarotation

(ii) Chargaff's Law (9,6)

3. (a) What are ether lipids? Discuss with a suitable example.

(b) Name the disease associated with the deficiency of vitamin B1, C, D, A, B2 and B12.

(c) Describe the features of the DNA double helix. (3,6,6)

4. Differentiate between :

(i) O-glycosylation and N-glycosylation

(ii) Enantiomers and Diastereomers

(iii) Aldonic acids and Uronic acids

(iv) Waxes and triacylglycerols

(v) tRNA and rRNA

(vi) Omega-3 and Omega-6 fatty acids