2013

M.Sc.

1st Semester Examination

BIOCHEMISTRY

PAPER—BIC-101

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer all questions.

Group—A

1. Answer any five from the following questions : 5×2

   (a) Name two helix-destabilizing amino acids.

   (b) Intake of fish oil is good for health — Explain.

   (c) Name two amino acids which are not present in natural proteins.

(Turn Over)
(d) Dietary purines are not essential — Explain.

(e) What is Rancidity?

(f) Write down the structures of one blood clotting agent and one blood anti coagulating agent.

(g) Distinguish between ionization potential and electron affinity. Name two biologically important anions.

(h) Define mutarotation with examples.

**Group—B**

Answer any two from the following questions: 5×2

2. Mention the structure and function of NAD.

3. "Amphoteric nature of amino acids is biologically significant" — explain the statement with examples. Define isoelectric point.

4. Why are triglycerides not significant components of lipid bilayers? Why are essential fatty acids not synthesized in the body?

2.5×2
5. What are the different forms of DNA? How do they differ? Find out the molecular weight of a linear DNA of 60 helical turns [the average mol. wt. of a base pair is 660 Dalton].

1+2+2

**Group—C**

Answer any two from the following questions: 2×10

6. Describe the structural features and biological significances of different phospholipids. What are sialic acids?

4+4+2

7. What are the different features of the Watson-Crick double helical structure of DNA? Discuss the different types of weak interactions present in double helical structure of DNA.

6+4

8. (a) Explain the use of carbohydrate as a future energy source.

(b) Write the important industrial applications of cellulose.

(c) Explain with examples the role of mucopoly-saccharides in the living system.
(d) Name the nucleoside, and the nucleotide corresponding to the base 'cytosine'.  

2+2+4+2

9. (a) What is Chargaff's rule?

(b) Explain melting temperature (Tm) of DNA with DNA denaturation curve.

(c) How does the Tm of DNA alter with the addition of an intercalating agent in DNA solution?

(d) Why DNA renaturation is a time-consuming process?  

2+4+2+2