

**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. 5
  
- 3. "Amphoteric nature of amino acids is biologically significant" — explain the statement with examples. Define isoelectric point. 4+1
  
- 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 mucopolysaccharides in the living system.

- (d) Name the nucleoside, and the nucleotide corresponding to the base 'cytosine'.

2+2+4+2

9. (a) What is Chargraff's rule ?
- (b) Explain melting temperature ( $T_m$ ) of DNA with DNA denaturation curve.
- (c) How does the  $T_m$  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

---