2013

M.Sc.

1st Semester Examination

BIOTECHNOLOGY

PAPER—BIT-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.

Illustrate the answers wherever necessary.

Group—A

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

(a) Distinguish between nucleotides and nucleosides.

(b) State the saponification process in triacyl glycerol.

(c) Define Zwitter ions.

(d) What is Cot value ?

(e) Define the role of ammonium sulphate $[(NH_4)_2SO_4]$ during protein purification by dialysis method.

(f) 'Entropy is involved in the maintenance of the membrane polarization of a living cell" — Comment.

(g) Can enzyme change the equilibrium constant (KCl) and free energy change (ΔG°) of the enzyme catalysed reaction?

(h) What is Chargaff's rule?

Group—B

Answer any *two* questions from the following : 5×2

2. Describe the different chemical properties of protein. 5

3. What are R and T states of allosteric enzyme? How are they unregulated? 3+2

4. Explain the entropy change of a young man, old man and at their death. 5

5. What is 'micelle'? State the importance of 'micelle' in drug delivery. 1+4

Group—C

Answer any *two* questions from the following : 2×10

6. (a) Write some tests to check purity of fats and oils.

(b) Differentiate between oxidative and hydrolytic Rancidity.

(c) Briefly describe Lipid peroxidation.

(d) Which antioxidant is used in food preservation ?

5+2+2+1

7. (a) Elaborate the organization of eukaryotic DNA.

(b) How do you explain size of DNA molecule and contour length ?

(c) What is melting temperature (Tm) of a DNA molecule ?

5+3+2

8. (a) What is meant by the term chemical shift of a particular proton in NMR spectroscopy ?

(b) Distinguish between Stokes and anti-Stokes spectra.

(c) "IR spectra is often characterized as molecular finger prints." Justify this statement.

(d) Write down the biological applications of (32_P) and [I – 131].

3+2+3+2

9. (a) Why multienzyme complexes are evolved?

   (b) Discuss the functions of 'fatty acid synthase' multienzyme complex.

   (c) What is Q_{10} value?

2+6+2
