

B.Sc. (Part-I) Semester-II Examination
2S : BIOCHEMISTRY
(Biophysical and Biochemical Techniques)

Time : Three Hours]

[Maximum Marks : 80

Note :— All questions are compulsory and carry equal marks except Question No. 1 which carries 8 marks.

1. (A) Fill in the blanks :— 2
- (i) RIA stands for _____.
 - (ii) Movement of ions or molecules from a region of high concentration to low concentration is known as _____.
 - (iii) Technique used for separation of protein on the basis of molecular weight is _____.
 - (iv) Negative logarithm of hydrogen ion concentration is _____.
- (B) Choose the correct alternative :— 2
- (i) Oxidation is defined as :
 - (a) Addition of oxygen
 - (b) Loss of hydrogen
 - (c) Loss of electron
 - (d) All of the above
 - (ii) Ion exchange chromatography is based on :
 - (a) Electrostatic attraction
 - (b) Affinity
 - (c) Adsorption
 - (d) Partition
 - (iii) A solution which resists sudden change in pH is known as :
 - (a) Buffer
 - (b) Standard
 - (c) Acidic
 - (d) Basic
 - (iv) In spontaneous reactions value of ΔG is :
 - (a) Negative
 - (b) Positive
 - (c) Zero
 - (d) None of the above
- (C) Answer in **ONE** sentence :— 4
- (i) Define redox potential.
 - (ii) Define dialysis.
 - (iii) Define Spontaneous reaction.
 - (iv) Define Beer's Lambert Law.
2. (A) Describe first and second law of thermodynamics. 4
- (B) Describe application of Gibbs free energy change in Biochemistry. 4
- (C) Explain standard free energy change in coupled reactions. 4

OR

- (P) Describe various thermodynamics systems. 4
- (Q) Explain relation between standard redox potential and free energy change. 4
- (R) Explain the concept of Entropy. 4
3. (A) Explain application of dialysis in Biochemistry. 4
- (B) Describe measurement of pH by indicators. 4
- (C) Comment on preparative ultracentrifugation. 4
- OR**
- (P) Explain the concept of pH and buffers. 4
- (Q) Describe Handerson-Hasselbalch equation. 4
- (R) Explain active and passive transport. 4
4. Describe principle of : 4
- (A) Ion exchange chromatography. 4
- (B) Paper chromatography. 4
- (C) Molecular sieve chromatography. 4
- OR**
- Explain applications of :
- (P) Ion exchange chromatography. 4
- (Q) Gas liquid chromatography. 4
- (R) HPLC. 4
5. Describe in detail Western blotting. 12
- OR**
- Describe in detail SDS-PAGE and isoelectric focusing. 12
6. (A) Describe Beer Lambert's Law. 4
- (B) Describe Principle of fluorometry. 4
- (C) Explain principle of mass spectroscopy. 4
- OR**
- (P) Describe applications of NMR. 4
- (Q) Describe principle of ESR. 4
- (R) Write in brief about flame photometry. 4
7. Explain in detail with suitable diagram principle and application of ELISA. 12
- OR**
- Explain in detail isotopic tracer techniques and add a note on autoradiography. 12