AU–72

B.Sc. (Part–I) Semester–II Examination

2S : BIOCHEMISTRY

(Biophysical and Biochemical Techniques)

Time : Three Hours] [Maximum Marks : 80

N.B. :– **All** questions are compulsory and carry equal marks except Q.No. **1** which carries **8** marks.

1. (A) Fill in the blanks :

(i) _____ is a technique used for amplification of DNA molecule.

(ii) A solution which resists sudden change in pH is known as _____.

(iii) _____ is a major buffer system present in blood.

(iv) _____ is defined as measure of randomness or disorder in a system. 2

(B) Choose the correct alternative :

(i) Chromatography with solid stationary phase is called :

(A) Circle chromatography (B) Square chromatography

(C) Solid chromatography (D) Adsorption chromatography

(ii) Mobile phase can be :

(A) Gas or liquid (B) Solid or liquid

(C) Only solid (D) Only gas

(iii) Which of the following techniques separates proteins on the basis of molecular weight only ?

(A) Native PAGE (B) SDS-PAGE

(C) Isoelectric focusing (D) None of the above

(iv) Which of the following chromatography techniques separates protein as per their molecular weight ?

(A) Ion exchange (B) Molecular sieve

(C) Paper chromatography (D) TLC 2

(C) Answer in one sentence :

(i) Define chromatography

(ii) Define pH

(iii) Define electrophoresis

(iv) Define open system. 4

2 (a) Explain the concept of entropy and give its significance. 4

(b) Discuss in brief thermodynamic systems. 4

(c) Explain standard free energy changes in coupled reactions. 4

OR

(p) Explain free energy and standard free energy. 4

(q) Explain the concept of redox potential and standard redox potential. 4

(r) Explain in brief biological oxidation reduction reactions. 4

3 (a) Explain measurement of pH by pH meter. 4

(b) Explain with example active and passive transport. 4

(c) Describe preparative ultracentrifugation. 4

OR

(p) Explain Henderson-Hasselbalch equation. 4

(q) Describe principle of reference electrode. 4

(r) Explain in brief concept of pH and buffers. 4

4. Explain principle and application of :

(a) Adsorption chromatography 4

(b) Gas liquid chromatography 4

(c) Paper chromatography 4

OR

(p) Affinity chromatography 4

(q) Thin layer chromatography 4

(r) HPLC. 4

5. Describe in detail isoelectric focusing and Northen Blotting. 12

OR

Explain paper electrophoresis and SDS-PAGE in detail. 12

6. Explain principle and application of :

(a) ESR 4

(b) NMR 4

(c) Flurometry 4

OR

(p) Flame photometry 4

(q) Spectrophotometer 4

(r) Mass spectroscopy. 4

7. Describe in detail RIA and ELISA. 12

OR

Explain in detail autoradiography and polymerase chain reaction. 12