Exam. Code : 211203
Subject Code : 3882

M.Sc. Zoology 3rd Semester

RESEARCH TECHNIQUES

Paper–ZOOC–701

Time Allowed—3 Hours] [Maximum Marks—100

Note :— Section A : All questions are compulsory and each question carries **2** marks.

Section B : This Section has eight questions. The student will have to attempt **four** questions, **one** from each unit. Each question carries **20** marks.

SECTION–A

1. Define the following :
   (a) Centrifugation
   (b) Retention Factor
   (c) Fluorescence
   (d) Nuclear Overhauser Effect
   (e) Solvent Perturbation
   (f) Isoelectric focusing
   (g) Gradient Gel
   (h) Radioisotope
   (i) Radioactive Decay Energy
   (j) Stock Shift. 2×10=20

SECTION–B

UNIT–I

2. (a) Write a note on the basic principles of sedimentation.

   (b) Give detailed account of different types of rotors being used in centrifugation. 10+10=20

3. (a) Write a note on the principle and applications of ion exchange chromatography.

   (b) Discuss about the advantages of HPLC over other chromatographic techniques. 10+10=20

UNIT–II

4. (a) Write a note on principle and applications of Mass Spectroscopy.

   (b) Define Lambert Beer Law and differentiate between single beam and double beam UV/visible spectrophotometers. 10+10=20

5. Explain the principles and applications of :

   (a) IR Spectroscopy

   (b) NMR Spectroscopy. 10+10=20

UNIT–III

6. (a) Give detailed account of general principles of electrophoresis.

   (b) Discuss in detail about the different support media being used for electrophoresis. 10+10=20

7. Explain the following :

   (a) Capilliary electrophoresis

   (b) Isoelectric focusing. 10+10=20

UNIT–IV

8. Discuss in detail about :

   (a) The interaction of radioactivity with matter.

   (b) Biological applications of radioisotopes.

   10+10=20

9. Explain the theory and applications of solid and liquid scintillation counters. 20