

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) Capillary 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