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M.Sc. (Final) EXAMINATION, 2023
ZOOLOGY
Fourth Paper
[Tools and Techniques in Biology]

Maximum Marks : 100

Time Allowed : Three Hours

Note : The theory paper of M.sc. Final (Zoology) will have the following pattern.

Question paper will have 5 (five) questions in all having equal marks.

- (i) Question number 1 will be compulsory and will have 10 very short answer question of 2 marks each.
- (ii) Question number 2 and 3 will consist of only short answer type questions with 4 subdivisions of 5 marks each. There will be internal choice, in these questions.
- (iii) Question numbers 4 and 5 will be long answer type questions with internal choice.

No supplementary answer-book will be given to any candidate. Hence the candidates should write the answer precisely in the main answer-book only.

All the parts of one question should be answered at one place in the answer-book. One complete question should not be answered at different places in the answer-book.

Write your roll number on question paper before start writing answer of questions.

1. Answer briefly :

10x2=20

- (i) Ocular micrometer
- (ii) Differential centrifugation
- (iii) Radioactive tracers
- (iv) Staining of lipids
- (v) Restriction enzymes
- (vi) In-vivo assays
- (vii) Biotinylated DNA Probes
- (viii) Hybridoma
- (ix) Freeze fracture
- (x) Cell proliferation assays

2. Briefly discuss :

4x5=20

- (a) Principle behind Phase contrast microscopy
- (b) Thin layer Chromatography
- (c) Radioisotopes
- (d) UV- spectrophotometer

OR

- (a) Working of Scanning Electron Microscope
- (b) Affinity chromatography
- (c) Freeze drying technique
- (d) Liquid Scintillation Counter

3. Comment upon :

- (a) Formaldehyde fixative
- ~~(b)~~ Applications of RDT
- ~~(c)~~ Chemical assays
- ~~(d)~~ Cell Viability testing

4x5=20

OR

- (a) Polymerase Chain Reaction
- (b) cDNA libraries
- (c) Ideal Properties of a fixative
- (d) Cot Curve

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4. Explain DNA transformation technique and its applications.

OR

Describe designing, functioning and requirements of Tissue culture laboratory.

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5. Give a detailed account of working and principle of various types of Electrophoresis.

OR

Discuss principle behind various Blotting techniques.

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