

5663

M.Sc. (Previous) Examination – 2024

ZOOLOGY

Third Paper

(Molecular Biology and Biotechnology)

2982020

Time Allowed: Three Hours

Maximum Marks: 100

*Note – In M.Sc. Zoology Previous Examination the theory papers will have the following pattern.*

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

*(i) Question number 1 will be compulsory and will have 20 very short answer question of 1 mark 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 number 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.*

**Part-A**

1. Answer the following questions in brief -

[20×1=20]

- (i) What is the function of the quadruplex DNA?
- (ii) What is Chargaff's rule of DNA?
- (iii) ✓ What is the function of histone proteins?
- (iv) ✓ What are binding proteins in DNA replication?
- (v) What is TATA box?
- (vi) ✓ Name the 5 subunits of bacterial RNA polymerase.
- (vii) ✓ What is RNA cap?
- (viii) What are the nuclear export factors?
- (ix) Name the organelle known as protein factory.
- (x) ✓ What do you mean by gene knockout?
- (xi) What is the function of FRT?
- (xii) ✓ What is the meaning of in situ hybridization?
- (xiii) Why is physical mapping important?
- (xiv) What is the SOS response?
- (xv) What is germplasm preservation?
- (xvi) When was Human Genome Project completed?
- (xvii) What is Bioethics?
- (xviii) Which hormones are used in superovulation?
- (xix) What is the GIFT method?
- (xx) ✓ What are the advantages of RAPD markers?

### Part-B

2. (a) Describe the unusual secondary structures of DNA with diagram. [10]  
(b) Explain the process of transcription in eukaryotic cells with suitable diagrams. [10]

OR

Write short notes on - [4×5=20]

- (a) Factors affecting RNA stability
- (b) Polyadenylation
- (c) Properties of Genetic code
- (d) Equivalence rule

3. Explain the following - [2×10=20]

- (a) Post translational modifications of proteins
- (b) Cre-lox recombination

OR

Write short notes on - [4×5=20]

- (a) Holliday Junction
- (b) Double strand break repair
- (c) RecA recombinase
- (d) Splicing

4. Explain the following - [2×10=20]

- (a) Southern hybridization
- (b) Molecular markers

OR

Write short notes on - [4×5=20]

- (a) RELP
- (b) Map based cloning
- (c) STS
- (d) Genetic mapping

5. Describe in brief the following - [2×10=20]

- (a) Transgenic animals
- (b) Bioethics for experimental animals

OR

Write short notes on - [4×5=20]

- (a) Stem cells
- (b) Chimera formation
- (c) ART
- (d) Transgenesis