This question paper contains 2 printed pages. Roll No. 17.6.4844

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M.Sc. (Previous) Examination – 2024

ZOOLOGY

Third Paper

(Molecular Biology and Biotechnology)

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
