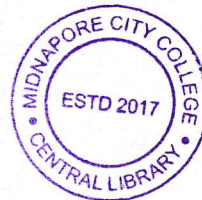


PG (CBCS)
M.Sc. Semester-III Examination, 2022
ZOOLOGY
PAPER: ZOO 303C
(GENETICS AND MOLECULAR BIOLOGY)



Full Marks: 40

Time: 2 Hours

Write the answer for each unit in separate sheet

UNIT: ZOO 303C.1

GENETICS

GROUP-A

1. Answer any TWO from the following questions: 2×2=4

- a) Mention the function of steroidogenic factor 1?
- b) Draw interaction site between a Yeast 5' splice site and U6 snRNA.
- c) Suppose a mutation occurred in the SRY gene on the human Y chromosome, knocking out its ability to produce the TDF. Predict the phenotype of an individual who carried this mutation and a normal X chromosome.
- d) What is the function of Bax and Bcl-2?

GROUP-B

2. Answer any TWO from the following questions: 2×4=8

- a) Explain the roles of identified genes that are important in the clearance of apoptotic cells in *C. elegans*.
- b) Outline the mechanism of two step lariat model of splicing with appropriate diagram.
- c) Describe the Holliday Model with suitable diagram.
- d) Illustrate the role of acetylation and methylation in chromosome remodeling.

Group-C

3. Answer any one from the following questions: 1×8=8

- a) Describe briefly the process of formation of apoptosome and its binding of caspases 9 leading to apoptosis with proper diagram.

(1)

P.T.O.

- b) Elaborate sex specific processing of the primary transcript of *dsx* gene and *sxl* gene in *Drosophila*.



UNIT: ZOO 303C.2
MOLECULAR BIOLOGY

GROUP-A

4. Answer any TWO from the following questions: 2×2=4

- a) What are composite transposons? Give an example.
- b) Why SOS repair is called error prone repair?
- c) What do you mean by germline gene therapy?
- d) What is genomic imprinting in epigenetic?

GROUP-B

5. Answer any TWO from the following questions: 2×4=8

- a) What are IS elements? How target site duplication takes place?
- b) Briefly explain the Double strand break repair by homologous recombination in eukaryotes.
- c) Briefly explain the mechanism of production of mature TGF-β.
- d) What is the role of P53 in Cancer?

GROUP-C

6. Answer any ONE from the following questions: 1×8=8

- a) Briefly explain the Sleeping beauty transposon system for transgene expression in transgenic cells and organisms. Draw a labeled diagram of Tn10 transpos. 6+ 2
- b) Briefly describe the structure of Toll like receptor and explain the TLR signaling pathway. 2+6
