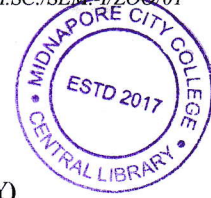


PG (CBCS)
M.Sc. Semester-I Examination, 2022
ZOOLOGY
PAPER: ZOO 103

(IMMUNOLOGY AND METHODS IN BIOLOGY)

Full Marks: 40

Time: 2 Hours



Write the answer for each unit in separate sheet

UNIT-I

IMMUNOLOGY

GROUP-A

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

- a) What are NK cells? Mention its function.
- b) What are the advantages of ELISA over RIA?
- c) What do you mean by adjuvant? Give example.
- d) What are APC? Give example.

GROUP-B

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

- a) What are primary and secondary lymphoid organs? Give example. Describe in brief the structure of any one primary lymphoid organ. 1+3
- b) Make a comparative account of Class I MHC peptide and Class II MHC peptide interaction with proper illustration.
- c) i. What is titer? 2
ii. What do mean by antigen processing and presentation? 2
- d) What do you mean by antigenic determinant? All immunogens are antigens but all antigens are not immunogens- justify. 1+3

GROUP-C

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

- a) Distinguish between MHC Class I and MHC Class II. Name two 'reporter enzymes' and their respective Chromagenic substrates frequently used in immunohistochemistry. 4+2+2
- b) Write notes on (*any two*) 4+4
 - i. Immunohistochemistry
 - ii. ADCC
 - iii. IgA
 - iv. Classical pathway of complement activation

P.T.O.

(2)

ZOO 103.2
METHODS IN BIOLOGY

GROUP-A



4. Answer any **TWO** from the following questions:

2×2=4

- a) What are the optimum physiochemical parameters for biodegradation?
- b) What are the characteristic features of a typical YAC vector?
- c) Why type I and III endonucleases are not used in gene cloning experiments?
- d) Why acrylamide and bis-acrylamide are simultaneously used in SDS-PAGE?

GROUP-B

5. Answer any **TWO** from the following questions:

2×4=8

- a) Briefly describe the Southern blotting hybridization process. Mention its applications. 3+1
- b) Briefly describe different in-situ and ex-situ bioremediation techniques. Name two enzymes responsible for bioremediation. 3+1
- c) How do bacteria protect their genomic DNA from their own restriction enzymes? What is the principle of ultracentrifugation process? 2+2
- d) Differentiate between First- and Second-Dimension steps of 2D Gel Electrophoresis. Mention two important significances of PCR in forensic science.

GROUP-C

6. Answer any **ONE** from the following questions:

1×8=8

- a) Briefly describe the construction process of Oil Eating Bug or Super Bug. Write the principle of affinity chromatography? What is cryopreservation? 4+3+1
- b) 'Larger molecules migrate faster than smaller molecules in Gel Filtration Chromatography'- accept or decline the statement with proper reasoning. Mention the role of CsCl density gradient centrifugation in the purification of plasmid DNA. Mention three important significance of PFGE. 3+2+3
