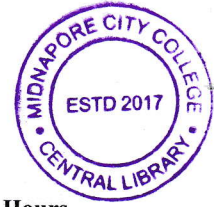


PG CBCS
M.Sc. Semester- IV Examination, 2022
Department of Zoology
PAPER: ZOO 403C



Full Marks: 40

Time: 2 Hours

Write the answer for each unit in separate sheet

The figures in the right-hand margin indicate full marks.
 Candidates are required to give their answers in their own words as far as practicable.

ZOO 403C.1: Genetic Diseases & Molecular Analysis

GROUP-A

- 1. Answer any two questions:** 2×2=4
- a) Why $CaCl_2$ used in transfection?
 - b) State the importance of T_m value in PCR.
 - c) What is the basic difference between a plasmid and a cosmid?
 - d) What is shot gun approach to sequencing?

GROUP-B

- 2. Answer any two questions:** 2×4=8
- a) What do you mean by repetitive DNA? How does repetitive DNA used in RFLP. 1+3
 - b) Compare Taq and Pfu polymerase. Schematically show how to construct double round nested primers. 2+2=4
 - c) How would you employ Fluorescence in situ hybridization (FISH) to detect specific DNA sequences in interphase cell? What is GISH? 3+1
 - d) Write the molecular and biochemical basis of Alzheimer's disease in human. 4

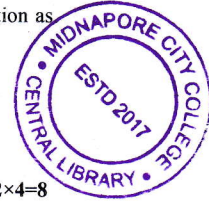
GROUP-C

- 3. Answer any one question:** 1×8=8
- a) (i) Illustrate how does DNA molecules be hybridized and detected through Southern Blotting?
 (ii) Mention the role of nitrocellulose in blotting. 6+2=8
 - b) (i) Describe the basic principle and procedure of dideoxy sequencing method of DNA Sequencing.
 (ii) Mention the advantages of Pyro sequencing over Sanger's sequencing. 3+5+2=8

ZOO 403C.2: Applied GeneticsGROUP-A**1. Answer any two questions:**

2×2=4

- a) What are the medical benefits of Human Genome Project?
- b) What are the two conserved sequences in light chain and heavy-chain DNA function as recombination signal sequences (RSSs)?
- c) Is there a genetic test for Huntington's disease?
- d) Which enzyme catalyzes the recombination of immunoglobulin genes?

GROUP-B**2. Answer any two questions:**

2×4=8

- a) Discuss the molecular diagnosis of Huntington's disease by RFLP. 4
- b) What is the function of immunoglobulin domains? What is the difference between Fab and Fe? 1+3
- c) Write a brief note on CpG island. 4
- d) What are the applications of RFLP analysis? 4

GROUP-C**3. Answer any one question:**

1×8=8

- a) What does VDJ recombination stand for? What are VD and J segments? Where does VDJ recombination occur? 4+3+1=8
- b) Give details of differential expression of membrane forms of μ m mRNA and δ m mRNA heavy chains of BCR regulated by alternative RNA processing. 8
