Roll No. .....

Total Pages : 03

757201

May 2026

M.Sc. (Zoology) (Second Semester)

Animal Biotechnology (ZOP-102-V)

Time : 3 *Hours*] [*Maximum Marks* : 75

Note : It is compulsory to answer all the questions (1.5 marks each) of Part A in short. Answer any *four* questions from Part B in detail. Different sub-parts of a question are to be attempted adjacent to each other.

Part A

1. (a) Who is the father of animal cell culture and what was his novel discovery ? 1.5

   (b) What is the difference between gene editing and gene silencing ? 1.5

   (c) Explain the terms organotypic and histotypic culture. 1.5

   (d) Define the term xenotransplantation. 1.5

   (e) Write down the difference between adherent and suspension culture. 1.5

(f) Define Microsatellite. 1.5

(g) State two applications of cell culture-based vaccines. 1.5

(h) What is secondary cell culture ? 1.5

(i) Define organ culture. 1.5

(j) What is regenerative medicine ? 1.5

Part B

2. (a) Discuss the key components involved in designing and maintaining an animal cell culture laboratory. 10

(b) Explain types of cell culture media and their composition. 5

3. (a) Explain various applications of animal biotechnology and critically assess their benefits and limitations in healthcare and agriculture. 5

(b) Examine tissue disaggregation methods and evaluate their effectiveness in obtaining viable cells. 10

4. Critically evaluate stem cell technology and propose its applications in tissue engineering. 15

5. (a) Write a descriptive note on stem cell banking. 5

(b) Describe the process of developing transgenic animals and analyze the roles of gene editing, gene correction and gene silencing in their applications. 10

6. (a) Analyze methods of animal cloning and their importance. 10

(b) Write a detailed note on biopharming. 5

7. Evaluate ethical and social issues related to human cloning, organ transplantation and genome research. 15

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