

**325609****May-2026****B.Sc. (Life Sciences)-VI SEMESTER****Animal Biotechnology****(BLS 602)**

Time : 3 Hours]

[Max. Marks : 75

*Instructions :*

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

**PART-A**

1. (a) Define restriction endonuclease. (1.5)
- (b) State any two types of cloning vectors. (1.5)
- (c) Define enzymatic disaggregation. (1.5)
- (d) What is yeast two-hybrid system? (1.5)
- (e) What do you mean by DNA Microarray ? (1.5)
- (f) Write down the differences between pluripotency, multipotency and totipotency. (1.5)
- (g) What do you mean by stem cell technology? (1.5)
- (h) What is DNase footprinting? (1.5)
- (i) What is an animal model? (1.5)
- (j) Define electroporation. (1.5)

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## PART-B

2. (a) Explain types of restriction enzymes and their biological role. (5)
- (b) Analyze recombinant DNA technology including vectors, cloning and gene transfer methods. (10)
3. (a) Explain different types of cell culture media and their advantages. (5)
- (b) Evaluate development of cell lines, suspension culture and totipotency in animal cell culture. (10)
4. Critically analyze different DNA sequencing techniques and examine how molecular markers (RFLP, AFLP, RAPD) are used for genetic analysis. (15)
5. (a) Write a descriptive note on Southern blotting. (5)
- (b) Explain the principle and working of Polymerase Chain Reaction (PCR). Discuss its different types and evaluate their applications in biotechnology and medical diagnostics. (10)
6. (a) Discuss ethical issues related to animal biotechnology. (5)
- (b) Explain the concepts of chromosome walking and chromosome painting. Analyze their techniques and applications in genetic mapping and genetic studies. (10)
7. Design a strategy for developing transgenic animals to improve human welfare. (15)