



Fifth Semester B.E. Degree Examination, Jan./Feb. 2023 Genetic Engineering and Applications

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. What are restriction endonucleases? Explain in detail its various types. (10 Marks)
b. Write short notes on: i) Phosphatases ii) YAC. (10 Marks)

OR

- 2 a. Explain in detail about steps involved in construction of recombinant DNA molecule. (12 Marks)
b. List out silent features of ideal vectors. (04 Marks)
c. Write a note on polynucleotide kinase. (04 Marks)

Module-2

- 3 a. Explain in detail principle, procedure and application of PCR. (10 Marks)
b. Explain northern hybridization and add a note on its applications. (10 Marks)

OR

- 4 a. Explain the steps involved in isolation and purification of genomic DNA. (10 Marks)
b. Differentiate between genomic and cDNA libraries. (05 Marks)
c. Explain RT-PCR and its applications. (05 Marks)

Module-3

- 5 a. Infer on agrobacterium tumefaciens mediated gene transfer in plants. (10 Marks)
b. Describe in detail chloroplast transformation and its applications. (10 Marks)

OR

- 6 a. Discuss the gene transfer methods using microinjection and gene gun method. Add a note on their applications. (12 Marks)
b. Write a note on transformation and transfection. (08 Marks)

Module-4

- 7 a. Define biopharming. Explain with respect to plants as bioreactors. (10 Marks)
b. List out different techniques in genetic mapping and explain its basis. (10 Marks)

OR

- 8 a. How marker assisted selection useful in breeding of plants? (10 Marks)
b. Write a note on biotic and abiotic stress. (05 Marks)
c. Explain animals as bioreactors for recombinant proteins. (05 Marks)

Module-5

- 9 a. Describe the production of monoclonal antibodies by hybridoma technology. (12 Marks)
b. Explain the role of biotechnology in gene therapy in the treatment of SCID. (08 Marks)

OR

- 10 a. What are the challenges and future of gene therapy? (06 Marks)
b. Explain the role of biotechnology in clearing oil spills. (08 Marks)
c. Write a note on gene targeting and gene silencing. (06 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.