

Fifth Semester B.E. Degree Examination, Dec.2024/Jan.2025 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. Briefly explain the various steps involved in the creation of rDNA molecule. (10 Marks)
- b. What are vectors? Explain the salient features of BAC with a neat diagram. (10 Marks)

OR

- 2 a. What are restriction endonucleases? Classify them by discussing their distinguishing features. (10 Marks)
- b. Write short notes on:
 - i) Methylases
 - ii) Ligases
 (10 Marks)

Module-2

- 3 a. Briefly discuss the principle, procedure and applications of PCR. (10 Marks)
- b. Elucidate the technique of southern blotting technique and its applications. (10 Marks)

OR

- 4 a. What are DNA libraries? Explain the method of constructing genomic DNA library. (10 Marks)
- b. Discuss the various methods of plasmid isolation. (10 Marks)

Module-3

- 5 a. Give an account on Agrobacterium mediated gene transfer in plants. (10 Marks)
- b. Write short notes on :
 - i) Microinjection
 - ii) Liposome mediated gene transfer.
 (10 Marks)

OR

- 6 a. Explain the construction of co-integrated vectors to mediate gene transfer in plants. (10 Marks)
- b. Discuss any two chemical methods of gene transfer. (10 Marks)

Module-4

- 7 a. In detail, discuss the applications of animals as bioreactors for the production of recombinant proteins. (10 Marks)
- b. What are transgenic plants? Give an account on the development of biotic stress resistant plants. (10 Marks)

OR

- 8 a. What is marker assisted selection? Give an account on marker assisted selection in the genetic improvement of livestock. (10 Marks)
- b. Write short notes on :
i) RFLP ii) Herbicide resistant plants (10 Marks)

Module-5

- 9 a. Explain the basic methodology of commercial production of recombinant insulin using GMOs (Genetically Modified Organisms). (10 Marks)
- b. Describe the process involved in the production of monoclonal antibodies. (10 Marks)

OR

- 10 a. Outline the various strategies involved in cancer gene therapy (10 Marks)
- b. Write short notes on :
i) Gene silencing ii) Challenges of gene therapy (10 Marks)

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