



# CBCS SCHEME

17BT52

## Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020 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 vectors? Explain the salient features of YAC with a neat labeled diagram. (10 Marks)
- b. Write short notes on:
- Insertional vectors (10 Marks)
  - Phagemids. (10 Marks)

OR

- 2 a. What are restriction endonucleases? Give an explanatory note on the types and mode of action of restriction endonucleases. Add a note on exonucleases. (12 Marks)
- b. Discuss the mechanism and application of:
- PN Kase
  - Ligases
  - Methylases
  - Phosphatases. (08 Marks)

### Module-2

- 3 a. Briefly discuss the principle, procedure and applications of PCR. (10 Marks)
- b. What are probes? Discuss the various types of probes. (10 Marks)

OR

- 4 a. Discuss the processes involved in the construction of CDNA library. (10 Marks)
- b. Explain the process of isolation and purification of plasmid DNA. (10 Marks)

### Module-3

- 5 a. Agrobacterium tumefaciens is used as a work horse to genetically engineer plant genes. Justify the statement. (10 Marks)
- b. Discuss the gene transfer methods using electroporation and liposomes. Add a note on their applications. (10 Marks)

OR

- 6 a. Discuss the processes involved and applications of chloroplast transformation. (10 Marks)
- b. Write short notes on:
- Binary vector
  - Microinjection (10 Marks)

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.

**Module-4**

- 7 a. What are transgenic plants? Discuss the use of transgenic plants as bioreactors with suitable examples. (10 Marks)
- b. Explain the marker assisted selection in breeding of plants. (10 Marks)

**OR**

- 8 a. Describe briefly the various strategies involved in gene mapping of plants. (10 Marks)
- b. Write short notes on:
- i) Biopharming in animals
  - ii) Golden rice. (10 Marks)

**Module-5**

- 9 a. Explain the basic methodology of commercial production of recombinant insulin using genetically modified microorganisms. (10 Marks)
- b. Discuss in detail the production of antibiotics by genetic manipulation of microbes. (10 Marks)

**OR**

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

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