

(3 Hours)

[Total Marks: 80

N.B.: 1. **Question No. 1 is compulsory.**

2. Attempt **any three** out of remaining **five** questions.

- Q.1 a. Describe the stages involved in Micropropagation. 10
b. Describe the advantages & limitations of culturing animal cells. 10
- Q.2 a. Explain the requirements for a basic animal cell culture laboratory. 10
b. Define primary culture. Describe the steps involved in a primary culture. 10
- Q.3 a. Describe different chemical methods of gene transfer. 10
b. Explain various components of a plant tissue culture media. 10
- Q.4 a. Explain factors which affect single cell culture & State the applications of single cell cultures. 10
b. Explain application of animal cell cultures in antibody engineering and production of pharmaceutical products. 10
- Q.5 a. List different types of plant growth hormones & Explain role of individual hormones. 10
b. Give the properties of serum. Explain the advantages & disadvantages of a serum free media. 10
- Q.6 a. Artificial seeds help in solving the problem of dormancy in plants. Justify. 10
b. Explain the importance of scaling up of plant tissue cultures & different methods utilized in scaling up. 10
