



# CBCS SCHEME

18BT44

Fourth Semester B.E. Degree Examination, Jan./Feb. 2021

## Cell Culture Techniques

Time: 3 hrs.

Max. Marks: 100

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

### Module-1

- 1 a. With illustrations/examples, distinguish between:
  - i) Asepsis and sterility (05 Marks)
  - ii) Dry and Moist heat sterilization (05 Marks)
  - iii) Slow cooling and rapid freezing [Mentioning their advantages/limitations] (05 Marks)
- b. With diagram layout explain the cell culture lab. (05 Marks)

OR

- 2 Distinguish between the following with respect to their applications in cell culture, highlighting advantages and limitations:
  - a. Horizontal and Vertical LAF. (10 Marks)
  - b. Dry and Humid CO<sub>2</sub> incubator. (10 Marks)

### Module-2

- 3 Evaluate the role of the following with respect to cell culture:
  - a. Serum-containing media vs serum-free media. (10 Marks)
  - b. BSS vs undefined culture media (10 Marks)

OR

- 4 a. 'Use of antibiotics in animal cell culture media has its advantages and disadvantages'. Do you agree with this statement? Substantiate with reasons. (05 Marks)
- b. 'Phenol red is preferable to other pH indicators in animal cell culture media'. Is this statement true or false? Why? (05 Marks)
- c. How would a culture medium for plant cells differ from animal cell culture? (10 Marks)

### Module-3

- 5 a. What is trypsinization? Compare warm and cold trypsinization, highlighting the advantages and limitations of both. (10 Marks)
- b. Discuss the applications of animal cell culture for invitro testing of drugs. (05 Marks)
- c. Explain the characterization and maintenance of cell lines. (05 Marks)

OR

- 6 a. Which is preferable- enzymatic or mechanical disaggregation of tissues? Substantiate with reasons. (10 Marks)
- b. Write short note on cryopreservation and fate mapping. (10 Marks)

### Module-4

- 7 a. Enumerate the process of somatic embryogenesis. (10 Marks)
- b. Describe any one method for secondary metabolite production from plant cells. (10 Marks)

OR

- 8 a. How do the following differ with respect to their applications:  
i) Totipotency and pluripotency. (05 Marks)  
ii) Primary and secondary metabolites. (05 Marks)  
b. Write the process for synthetic seed production. (05 Marks)  
c. Describe the process of immobilization of plant cell culture. (05 Marks)

**Module-5**

- 9 a. Discuss the necessity of strain improvement. (05 Marks)  
b. Define microbial leaching. Quote 3 relevant examples. (06 Marks)  
c. What is the replica plating method? It is true that it can be used for both positive as well as negative selection/identification of mutant strains? Justify whether yes/no. (09 Marks)

OR

- 10 a. Discuss the role of microbes in waste treatment with any one suitable example. (10 Marks)  
b. "Symbolic relationship among microbes can be used to advantage in industrial processes as well". Justify this statement whether true or false. (10 Marks)

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