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## Fourth Semester B.E. Degree Examination, Jan./Feb. 2023

### 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. Outline the construction of plant tissue culture lab layout with the help of a neat diagram. (10 Marks)
- b. In detail explain the process of maintenance of sterility during plant tissue inoculation. (10 Marks)

OR

- 2 a. Write explanatory note on the importance of water purification system. (10 Marks)
- b. Write a critical note on: i) CO<sub>2</sub> incubator ii) Colony counter. (10 Marks)

#### Module-2

- 3 a. Explain various physical factors that influence microbial media preparation. (10 Marks)
- b. Quoting example explain the role of growth regulators in plant regeneration under invitro condition. (10 Marks)

OR

- 4 a. Give the composition of DMEM. Write briefly about its physiochemical properties. (10 Marks)
- b. Explain the importance of BSS and Hank's salts in animal cell culture. (10 Marks)

#### Module-3

- 5 a. Write a detailed account on chick embryo fibroblast cell culture. (10 Marks)
- b. Outline in detail the steps involved in enzymatic and mechanical disaggregation of animal cell. (10 Marks)

OR

- 6 a. Write explanatory note on suspension culture. (10 Marks)
- b. What is stem cell? Briefly explain the types of its importance in diagnosis. (10 Marks)

#### Module-4

- 7 a. Explain in detail the practical applications of cellular totipotency. (10 Marks)
- b. Explain Somatic embryogenesis. Add a note on factors affecting it. (10 Marks)

OR

- 8 a. In detail explain the protocol of cell immobilization. Add a note on its applications and limitations. (10 Marks)
- b. Write a critical note on production of secondary metabolites through plant cell culture. (10 Marks)

#### Module-5

- 9 a. Elaborate on the methods involved in isolation of auxotrophic mutant. (10 Marks)
- b. With an appropriate example, explain the process of antibiotic production. (10 Marks)

OR

- 10 a. With a neat labeled diagram explain the replica plating technique. (10 Marks)
- b. Define microbial leaching. Explain in detail the leaching of copper using appropriate microbe. (10 Marks)