



MID SEMESTER Test-II,
AUTUMN 2024-25 (January - 2025)

Name of Program - PhD
Course Name – DSE Microbiology
Course Code - MB20P104

Maximum Durations: 1:5 Hrs.

Maximum Marks: 30

SECTION - A

1. Objective Type Questions (ALL QUESTIONS ARE COMPULSORY)

(5X1 = 05)

- a Toxicity is characterized by?
(i) Instability (ii) Dosage
(iii) Volume (iv) Temperature
- b The most common solidifying agent used in micropropagation is
(i) Dextran (ii) Mannan
(iii) Agar (iv) All of these
- c What is the primary purpose of Agrobacterium-mediated gene transfer in plant tissue culture?
(i) Micropropagation (ii) Production of artificial seeds
(iii) Double fertilization (iv) Introduction of foreign genes into plants
- d Which of the following methods is NOT a semi-empirical calculation method?
(i) AM1 (ii) PM3
(iii) HF (iv) None of the above three
- e In molecular docking, what does the term "grid search" refer to?
(i) Searching for proteins in a database (ii) Systematic sampling of conformations to find the optimal interaction
(iii) Minimizing energy by quantum mechanics (iv) A visualization tool for molecular models

SECTION - B

2. Short Answer Type Questions (Attempt any THREE)

(3X5 =15)

- a. What are feeder layers, and why are they used in tissue engineering?
b. What is the hybridoma technology? Explain the process of hybridoma technology in detail.
c. What is a potential advantage of using embryonic stem cells for tissue engineering technology?
d. Explain the significance of energy minimization in molecular modeling.
e. Describe the principle of flow cytometry. Discuss its applications in biological research.

SECTION - C

4. Long Answer Type Questions (Attempt any ONE)

(1X10=10)

- a. Describe the process of micropropagation in plant tissue culture and its applications.
b. Describe the steps involved in homology modeling for protein structure prediction. Why is it important in molecular modeling?
