Sub. Code: 6323

Sub. Code - 6723

2123

B.E. (Bio-Technology) Seventh Semester

BIO-713: Plant Tissue Culture

Time allowed: 3 Hours Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Section.

X-X-X

1. Answer briefly:

   a) Give a well labelled diagram of pollen grain.
   b) Differentiate between IAA and 2,4 D.
   c) Explain the role of suspensor in embryogenesis.
   d) Give function of Vir A protein.
   e) Define callus.
   f) Give two applications of double haploids.
   g) Define ovular pollination.
   h) Give composition and function of middle lamella.
   i) Name two gelling agents used in plant tissue culture.
   j) Define meristemoid. 1x10

SECTION A

2a. Give function of various inorganic nutrients and growth regulators in plant tissue culture media. 5

b. Explain different techniques for isolation and culture of single cell. 5

3a. Explain the mechanism of cellular dedifferentiation in plants from a fully differentiated state. 5

b. Elucidate various steps in protoplast isolation and somatic hybridization. 5

4. Write short note 5,5

   a) Stages of somatic embryogenesis. Role of auxin and abscisic acid in the process.
   b) Androgenesis and double haploid production

SECTION B

5a. Discuss briefly techniques employed for overcoming the fertilization barrier in plants. 5

b. Explain various challenges faced during long term storage of germplasm and techniques employed to minimize damage to cells in the process. 5

6. Explain various direct and indirect transformation techniques for creating crop that are disease resistant, environmental stress tolerant and have an improved nutrient composition. 10

7. Explain the use of plant cell/ tissue culture for the production of secondary metabolites. Is plant cell culture a sustainable means of secondary metabolite production. Explain. 10

X-X-X