

22/8/22

**M.Sc. (BIOTECHNOLOGY) SEMESTER II
EXAMINATION, AUGUST 2022**

PAPER CODE-MBT-CC203

**PAPER TITLE: PLANT TISSUE CULTURE AND ITS
APPLICATIONS**

Time: Three Hours

Maximum Marks: 75

Attempt all questions. All parts of a question must be attempted in continuation. Start answer to a fresh question on a new page. Cite examples and draw labeled diagrams wherever necessary.

Question No.1.

A. Explain the following:

[2×5=10]

- a) Embryogenesis
- b) Soma clones
- c) Endosperm culture
- d) Cybrids
- e) Ovary culture

B. Write your answers in one or two lines for the following: [1×5=5]

- a) What is embryo rescue?
- b) Which particles are used in the biolistic gun method of genetic transformation?
- c) Name any two enzymes used in protoplast isolation.
- d) Who is the father of plant tissue culture?
- e) How rooting and shooting growth is controlled by auxin concentration?

Question No.2.

Attempt any three of the following:

[5×3=15]

- a) Describe techniques and utility of androgenesis.
- b) Enumerate the steps involved in the establishment and maintenance of suspension culture.
- c) Discuss organogenesis and embryogenesis.
- d) Enumerate the various components of solid nutrient media suitable for plant tissue culture.
- e) Discuss the ABC model of floral development in *Arabidopsis*.

Question No.3.

Attempt any two of the following:

[7.5×2=15]

- a) What is the somaclonal variation? Mention its applications.
- b) Write a short note on the synthetic seeds and cryopreservation.
- c) Describe the procedure to develop herbicide-resistant plants using plant tissue culture technology.
- d) Discuss the role of plant tissue culture technology in crop improvement.

Question No.4.

Attempt any two of the following:

[7.5×2=15]

- a) What is somatic hybridization? Mention its applications.
- b) Compare and contrast the Electroporation and Microprojectile bombardment methods of genetic transformation.
- c) Give an account of protoplast isolation and fusion methods.
- d) Describe the procedural steps of any one direct gene transfer method in detail.

Question No.5.

Write a note on any three of the following:

[5×3= 15]

- a) Concept of cellular differentiation
- b) Sterilization techniques employed in plant tissue culture
- c) Root culture and its applications
- d) Induction of triploid
- e) Applications of somaclonal variations

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