

G-4/411/21

Roll No.

M.Sc. IV Semester Examination, 2021**BOTANY****Paper III****(Biotechnology-I)**

Time : 3 Hours]

[Max. Marks : 80

Note : All questions are compulsory. Question Paper comprises of 3 sections. Section A is objective type/multiple choice questions with no internal choice. Section B is short answer type with internal choice. Section C is long answer type with internal choice.

SECTION A**1×8=8****(Objective Type Questions)**

1. Who of the following is known as the father of tissue culture ?
 (a) Schleiden (b) Schwann
 (c) Mendel (d) Haberlandt
2. Calcium in tissue culture medium plays an significant role in :
 (a) DNA synthesis
 (b) Cell wall formation
 (c) Maintaining osmotic pressure
 (d) Protein synthesis

P.T.O.

3. Complementation test is used in :
 (a) Selection of medium
 (b) Selection of viable cell
 (c) Selection of somatic hybrids
 (d) Selection of protoplasm
4. Somatic embryos are derived from :
 (a) Pollen grains (b) Ovules
 (c) Zygote (d) Somatic cells
5. Which of the following is cryoprotectant ?
 (a) DMSO (b) Glycerol
 (c) Mannose (d) All of the above
6. Which of the following is form of IPR (Intellectual property right) ?
 (a) Patent (b) Trade mark
 (c) Copyright (D) All of the above
7. Protein that functions in cold stress tolerance :
 (a) Chaperones (b) Osmotin
 (c) Antifreeze proteins (d) All of the above
8. Lethal gene Recombinase gene and repressor gene are involved in :
 (a) Golden rice technique
 (b) Terminator seed technology
 (c) Abiotic stress technique
 (d) Production of herbicide resistant plant

G-4/411/21

SECTION B**4×6=24****(Short Answer Type Questions)**

Note : *Attempt one question from each unit.*

Unit-I

1. Give the significance of micronutrients in tissue culture media.

Or

Explain the concept of totipotency and cellular differentiation.

Unit-II

2. Give the methods of identification and selection of somatic hybrids.

Or

What are cybrids ? Explain.

Unit-III

3. Give the methods of determination of survival and viability after having in cryopreservation technique.

Or

What are trade marks and trade secrets ? Explain.

G-4/411/21

P.T.O.

Unit-IV

4. Give the methods of selection of cell lines producing high amount of an useful secondary metabolite.

Or

Give the strategy and genes involved in the production of golden rice.

SECTION C**12×4=48****(Long Answer Type Questions)**

Note : *Attempt one question from each unit.*

Unit-I

1. Give the technique of single cell culture and its application.

Or

Describe the process of organogenesis via callus formation.

Unit-II

2. Describe the mechanism, technique and utility of somatic embryogenesis.

Or

Describe the technique of protoplasm isolation and culture.

G-4/411/21

Unit-III

- 3.** What do you understand by germplasm ? Give the techniques of germplasm storage and cryopreservation.

Or

Explain IPR (Intellectual property rights) under following heads :

- (a) Process and requirements for filing patent,
- (b) Plant breeders right (PBR),
- (c) WIPO (World Intellectual Property Organisation).

Unit-IV

- 4.** Give the strategies for the development of transgenic plant for abiotic stresses.

Or

Give the strategies for the development of flavr savr tomato to increase its shelf life.

★ ★ ★ ★ ★ c ★ ★ ★ ★ ★