SECTION 'C' $4 \times 10 = 40$

Long Answer questions (Word limit 400-450 words.)

UNIT-I

Q. 1. Describe different methods of clonal propagation in plant tissue culture.

OR

Discuss plant tissue culture under following heads-

(a) History (b) Cellular differentiation

(c) Totipotency (d) Media for plant tissue culture

UNIT-II

Q. 2. Describe the possible mechanism of protoplast –fusion. What are the importance and limitations of protoplast fusion.

OR

Give an account of mechanism / techniques and importance of Androgenesis.

UNIT-III

Q. 3. Explain briefly the procedure of cryopreservation.

OR

Write note on -

(a) Cryoprotectant

(b) Determination of survival viability of germ plasm.

UNIT-IV

Q. 4. Give detailed account on transgenics for biotic stress.

OR

Describe different invotro techniques by which secondary metabolites are synthesized.

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ROLL NO.....

BOT. 403/22

IV SEMESTER EXAMINATION, 2022

M.Sc. (BOTANY)

PAPER-III

PLANT CELL, TISSUE AND ORGAN CULTURE

TIME: 3 HOURS **MAX.- 80**

MIN.- 16

Note: The question paper consists of three sections A, B & C. All questions are compulsory.
Section A- Attempt all multiple choice questions.
Section B- Attempt one question from each unit.
Section C- Attempt one question from each unit.

SECTION 'A' $2 \times 8 = 16$

MCQ (Multiple Choice Questions)

1. The ability of the component cells of callus to form a whole plant is called -

(a) Redifferentiation (b) Dedifferentiation

(c) Either (a) or (b) (d) None of these

2. The culture of cells in liquid agitated medium is called -

(a) Liquid culture (b) Micro propagation

(c) Agar culture (d) Suspension culture

3. Synthetic seeds are produced by -

(a) Sodium chloride (b) Sodium acetate

(c) Sodium alginate (d) Sodium nitrate

4. Cybrids are produced by -

(a) Fusion of two different nuclei from two different species.

(b) Fusion of two nuclei from same species

(c) Nucleus of one species but cytoplasm from both the parent species.

(d) None of above

5. Polyethelene glycol (PEG) is -

(a) Fusogenic chemical (b) Electrofusion stimulant

(c) Callus stimulant (d) Differentiation stimulant.

6. The ∝-amylase inhibitor gene was transferred to modify which of the following trait -

(a) Food digestibility (b) Amino acid balance

(c) Insect resistance (d) Fungal resistance

7. Which of the following secondary metabolic is used as anticancer agent -

(a) Digoxin (b) Vincristine

(c) Atropine (d) Codeine

8. The source of macerozyme in protoplast culture -

(a) Trichoderma sp. (b) Rhizopus sp.

(c) Bacillus sp. (d) Aspergillus sp.

SECTION 'B' $4 \times 6 = 24$

Short Answer Type Questions (Word limit 200-250 words.)

UNIT-I

Q. 1. Describe the methods involved in the surface sterilization of explant and nonliving articles used is plant tissue culture.

OR

Describe principle, types and method of suspension culture.

UNIT-II

Q. 2. Briefly explain the technique of isolation of protoplast by enzymatic method.

OR

Describe the technique, principle, types and factors affecting somatic embryogenesis.

UNIT-III

Q. 3. Write note on -

(i) (a) Thawing (b) Vitrification

OR

(ii) Germplasm storage

UNIT-IV

Q. 4. Explain the methods of immobilized cell system.

OR

Write an explanatory note on – Artificial seed.