

[4]

SECTION 'C'

4 × 10 = 40

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

UNIT-I

Q. 1. Describe various methods used for culture and growth of single cell.

OR

What do you mean by micropropagation? Describe different pathways and stage of micropropagation.

UNIT-II

Q. 2. Describe methods of protoplast fusion and the development of somatic hybrid. What are the role of somatic hybrid is crop improvement.

OR

What is meant by androgenesis? Describe direct and indirect androgenesis and factors affecting androgenesis.

UNIT-III

Q. 3. What do you mean by cryopreservation? Describe it is the following heads –

(a) freezing and storage (b) Thawing (c) Reculture

OR

What are cryoprotectants? Describe the role of cryoprotectants in cryopreservation.

UNIT-IV

Q. 4. How secondary metabolites can be produced in culture? What are the yield enhancement method of extraction of secondary metabolite.

OR

Describe the classes of secondary metabolite in following heads –

(a) Alkaloids (b) Phenols (c) Terpenoids

-----XXX-----

[1]

ROLL NO.....

BOT. 403/21

IV SEMESTER EXAMINATION, 2021

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 × 8 = 16

MCQ (Multiple Choice Questions)

- Who gave the concept of cell totipotency in plants-
(a) A.C. Hildebrandt (b) F.C. Steward
(c) G. Haberlandt (d) A.C. Braun
- What pH a tissue culture medium is suitable for growth-
(a) 5.0 (b) 5.8 (c) 8.7 (d) 7.0
- The osmoticum generally used during protoplast culture is -
(a) Sorbitol (b) Sucrose
(c) Maniritol (d) Both (a) and (b)

[2]

4. ----- is used to check viability of protoplast -
- (a) Safranin staining
 - (b) Fluorescein diacetate (FDA) staining
 - (c) Aceto carmine
 - (d) Only (a)
5. Slow freezing method of cryopreservation is done at ----- degree Celsius/min.
- (a) 0.5 - 5.0
 - (b) 0.4 - 5.0
 - (c) 0.3 - 5.0
 - (d) 0.2 - 5.0
6. The first species in which in-vitro non-zygotic embryogenesis was reported -
- (a) Tobacco
 - (b) Carrot
 - (c) Arabidopsis
 - (d) Onion
7. Insect resistance in the transgenic plant has been achieved by -
- (a) Transferring genes for Pt. toxins
 - (b) Transferring genes for protease.
 - (c) Transferring genes for other insecticidal secondary metabolites
 - (d) All of the above
8. Hairy root culture for secondary metabolites production are induced by transferring plant cell with -
- (a) Virus
 - (b) Agro bacterium tumefaciens
 - (c) Agro bacterium rhizogens
 - (d) Bacillus thuringiensis

[3]

SECTION 'B'

4 × 6 = 24

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

UNIT-I

- Q. 1.** Write note on-
Meristem and shoot tip culture.

OR

Ms. Medium.

UNIT-II

- Q. 2.** Describe the propagation of plants through somatic embryogenesis with reference to indirect method.

OR

Briefly explain the role of enzymes in protoplast isolation giving suitable examples.

UNIT-III

- Q. 3.** Write note on –
Determination of survival viability of germplasm.

OR

Pre growth and vitrification of germplasm.

UNIT-IV

- Q. 4.** Write a short account of somaclonal variation and its advantages and disadvantages.

OR

What are elicitors? Describe their types and name of elicitors used to induce secondary metabolite in plant cell.