



Name :

Roll No. :

Invigilator's Signature :

CS/M.Sc. (GE)/SEM-3/MSGEN (PBT)-305-A/2010-11

2010-11

PLANT TISSUE CULTURE AND APPLICATION

Time Allotted : $1\frac{1}{2}$ Hours

Full Marks : 35

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *five* of the following :

5 × 1 = 5

- i) Basal medium is defined as a medium
 - a) without nitrogen source
 - b) with hormones
 - c) without agar-agar
 - d) devoid of any growth regulators.
- ii) Vinblastine, an antineoplastic used to treat Hodgkin's disease and other lymphomas is an extract of
 - a) *Papaver sp*
 - b) *Nicotiana sp*
 - c) *Catharanthus sp*
 - d) *Strychnos sp.*
- iii) Example of plant originated insecticide is
 - a) Colchicine
 - b) Pyrethrin
 - c) Rosemarinic acid
 - d) Vincristine.



- iv) Genetic uniformity is maintained through
- a) Callus culture
 - b) Shoot bud multiplication
 - c) Callus regeneration
 - d) None of these.
- v) Cytodifferentiation is a process for production of
- a) Xylem
 - b) Phloem
 - c) Meristematic cell
 - d) None of these.
- vi) Coconut milk is used as
- a) Nutrient source
 - b) Hormone
 - c) Carbon source
 - d) Mineral spruce.
- vii) High auxin concentration promotes
- a) Shoot formation
 - b) Root formation
 - c) Callus formation
 - d) Embryo formation.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. What is somaclonal variation ? Discuss the molecular basis of somaclonal variation. $1 + 4$
3. Write short note on any *one* of the following : 1×5
- a) Hairy root culture
 - b) Elicitors
 - c) Vitrification.



4. What are the stages of micropropagation ? Discuss the problems associated with micropropagation of plants.
5. Discuss the protoplast fusion method.
6. Discuss Genetic basis of plant pathogen interaction mentioning *R* genes and *R* gene mediated resistance.

GROUP – C

(Long Answer Type Questions)

Answer any *one* of the following. $1 \times 15 = 15$

7. Differentiate between open and continuous cultures. What are chemostat and turbidostat culture types ? Discuss the techniques for estimation of cell growth in a suspension culture. What are the major advantages expected from cell suspension culture system over conventional cultivation of whole plant for the production of secondary metabolites ? Enumerate the important application of cell suspension culture. $3 + 3 + 4 + 2\frac{1}{2} + 2\frac{1}{2}$
8. What is Clonal propagation ? What do you mean by dedifferentiation and redifferentiation of plant cells ? What are artificial seeds ? Discuss the key steps for the assessment of somaclonal variation (variants) in a typical culture regime. Discuss the general routes of somatic embryogenesis. $2 + 3 + 2 + 5 + 3$
