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Invigilator's Signature :	

CS/M.Sc.(GE)/SEM-3/MSGEN(PBT)-305A/2009-10 2009

PLANT TISSUE CULTURE AND APPLICATION

Time Allotted: 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 :

 $5 \times 1 = 5$

- i) Myo-inositol is included in plant growth media to
 - a) enhance nutritional value
 - b) add colour
 - c) resist bacterial contamination
 - d) adsorb phenolic compounds.
- ii) High cytokinin concentration promotes
 - a) shoot formation
 - b) haploid plant formation
 - c) root formation
 - d) embryo formation.

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CS/M.Sc.(GE)/SEM-3/MSGEN(PBT)-305A/2009-10 Microspore culture is a method to develop iii) Virus free plan Triploid plants b) a) None of these. c) Haploid plants d) Protoplast is defined as iv) a) a cell without cytoplasmic organelles b) an extracellular organelle a cell without plasma membrane c) d) a cell without cell wall. v) Unlike the somatic cells of animals, plant cells can be grown in tissue culture and regenerate new plants becanuse a) plant cells are totipotent and redifferentiate again each cell contains the entire genome b) plant cells are able to express genes that were not c) previously expressed d) none of these. Which one is alkaloid?

a)

c)

Taxol

Artemisinin

b)

d)

Colchicine

Diosgenin.

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- vii) Cytodifferention is a process for production of
 - a) Xylem

- b) Phloem
- c) Meristematic cell
- d) none of these.
- viii) Somatic embryo is a product of
 - a) Double fertilization
- b) Triple fertilization
- c) Single fertilization
- d) Without fertilization.

GROUP - B

(Short Answer Type Questions)

Answer any three of the following.

 $3 \times 5 = 15$

- 2. Define totipotency in the light of dedifferentiation and redifferentiation. How animal cells differ from plant cells in this aspect? 4+1
- 3. Define organogenesis. What is the products of the process of organogenesis? 3 + 2
- 4. Distinguish between the characteristics of somatic embryo and shoot bud. Discuss the stages of somatic embryo during development. $2\frac{1}{2} + 2\frac{1}{2}$
- 5. What are the differences between primary and secondary metabolites? How do plants use their own secondary metabolites?
- 6. Discuss protoplast isolation methods.

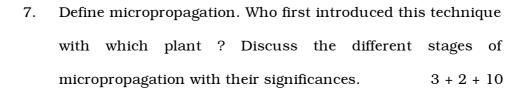
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GROUP - C

(Long Answer Type Questions)

Answer any *one* of the following.



8. Discuss the chemical regulation of the process of organogenesis with special reference to mention the importance of this process. Mention two factors responsible for somatic embryogenesis.

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