

[100]

SEAT No. _____

No. of Printed Pages : 2

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SARDAR PATEL UNIVERSITY
M.Sc. (IV SEMESTER) EXAMINATIONS
18th MARCH, 2019 (MONDAY)
TIME: 2.00 p.m TO 5.00 p.m
PAPER: PS04CBOT21- PLANT BIOTECHNOLOGY

TOTAL MARKS: 70

I. Choose the most appropriate answer:

(8 marks)

1. Cellular differentiation and morphogenesis in in vitro is primarily controlled by
 - (a) Auxins alone
 - (b) cytokinins alone
 - (c) auxin-cytokinin ratio
 - (d) growth hormone
2. Which type of cultures are used for production of disease free plants
 - (a) Callus cultures
 - (b) Anther cultures
 - (c) Node cultures
 - (d) Meristem cultures
3. Which growth hormone is supplemented in the medium in lieu of suspensor during zygotic embryo cultures
 - (a) IAA
 - (b) Kinetin
 - (c) GA₃
 - (d) ABA
4. Which substance is used as an osmoticum during the isolation and culture of protoplasts
 - (a) Glucose
 - (b) Starch
 - (c) Mannitol
 - (d) Sucrose
5. Somaclonal variation in cultures arise mainly due to:
 - (a) Chromosomal mosaicism of explants cells
 - (b) Higher concentrations of growth hormones
 - (c) Single gene mutations in cultured cells due to culture conditions
 - (d) All of these
6. Resistance to herbicide Glyphosphate in transgenic plants is brought about by
 - a) Overproduction of RNA polymerase
 - b) Decreasing the production of EPSP synthase
 - c) Overproduction of EPSP synthase
 - d) Overproduction of chorismate
7. The following techniques can be used to introduce foreign DNA into plants except
 - a) Biolistics
 - b) Ti plasmid
 - c) breeding
 - d) mutation
8. Biolistics is a process in which
 - a) DNA coated microprojectiles are allowed to pierce host cells
 - b) DNA is directly injected into the host cells by a microcapillary
 - c) Two protoplasts are fused
 - d) A voltage is applied on host cells

(1)

(P.T.O)

II. Answer briefly on any seven:

(14 marks)

- (i) Leptohormone theory
- (ii) IEDCs and PEDCs
- (iii) Cryopreservation
- (iv) Nurse culture method
- (v) Synthetic seed
- (vi) Protoplast fusion products
- (vii) Molecular Pharming
- (viii) Cointegrative vectors
- (ix) T4 DNA ligase

- Q1. (A) Discuss briefly the applications of various tissue culture systems in crop improvement (6)
- (B) What is Micropropagation? Explain briefly various stages of micropropagation. Write the advantages of micropropagation. (6)
- OR**
- (B) Differentiate between: (6)
- i. Organogenesis and embryogenesis
 - ii. Zygotic embryo and somatic embryo
- Q2. (A) Write notes on Haploid cultures and their applications in agriculture (6)
- (B) Write notes on applications of zygotic embryo cultures with suitable examples (6)
- OR**
- (B) Write notes on *in vitro* production of secondary metabolites (6)
- Q3. (A) Write notes on Protoplast isolation and regeneration (6)
- (B) What are restriction enzymes? Explain the salient features of type II enzymes (6)
- OR**
- (B) Explain DNA ligation. What are the essential conditions for ligation? (6)
- Q4. (A) Write a note on: (6)
- (i) GFP
 - (ii) Luciferase
- (B) Explain the pros and cons of BT brinjal (6)
- OR**
- (B) Describe the strategy for manipulation of fruit ripening by genetic engineering (6)