

SEAT No. _____

No. of Printed Pages : 2

[63] SARDAR PATEL UNIVERSITY
M.Sc. (II Semester- CBCS) Examination
Subject: Biochemistry
PS02EBIC02; Plant Biotechnology
Tuesday, 17-04-2018
Time: 2.00 p.m. to 5.00 p.m.

Total Marks: 70

Note: Figures in brackets indicate marks

Answer all the questions in the given answer book

Q1 Choose the appropriate answer for the following multiple choice questions: (8x1=8)

- i) The chemicals ascorbic acid, citric acid or polyvinyl pyrrolidone are used either alone or in combination along with nutrient medium to reduce _____ from explants.
- (a) Phenolic substances (b) fungal and bacterial growth
(c) secondary metabolites (d) callus formation
- ii) Which chemical treatment is most effective and widely used for producing diploid plants from haploid plants?
- (a) Spermidine (b) Flurodioxyuridine
(c) Nitrous oxide (d) Colchicine
- iii) _____ occur in plant cell, tissue and organ cultures due to chromosomal mosaicism of explants cells and/or high concentrations of growth hormones
- (a) Genetic variation (b) organelle variation
(c) somaclonal variation (d) None of these
- iv) _____ are synthesized in plants, but not utilized by the plants for growth and development. However helps in plant protection and has economic value.
- (a) Secondary metabolites (b) Primary metabolites
(c) Both (a) & (b) (d) Growth hormones
- v) Which of the following enzymes can be used for production of Protoplasts from suspension cultures, callus tissues or intact tissues by enzymatic treatment with:
- (a) cellulytic enzymes (b) pectolytic enzymes
(c) cellulytic and pectolytic enzymes (d) proteolytic and cellulytic enzymes
- vi) Molecules that stimulate the defense responses in plants are known as ____
- (a) Elicitors (b) Inducers
(c) Enhancers (d) Stimulators
- vii) The GFP reporter system is advantageous over other systems since
- (a) It is a standalone system
(b) it is non toxic
(c) It can be expressed in prokaryotic and eukaryotic cells
(d) all of above
- viii) Intellectual property rights not patentable are protected by
- (a) Trade right (b) Copy right
(c) Trade secret (d) All of them

CP.T.O.)

Q2 Answer any SEVEN of the following in brief: (7x2=14)

- (a) Nurse culture technique and its merits.
- (b) Why *in vitro* developed plantlets need hardening before transfer to soil? Give reasons.
- (c) Draw a flow chart for preparation of synthetic seed.
- (d) Differentiate normal seed and synthetic seed
- (e) Function of PEG in protoplast fusion
- (f) Brief Note on: Reporter genes.
- (g) Write down the disadvantages of Paterning
- (h) Distinguish between RAPD and RFLP
- (i) Role of Vir 'A' and Vir 'G' genes in *Agrobacterium* mediated transformation

Q3 (a) Explain the methods and factors affecting the haploid production and its applications. (6)

- (b) Discuss the cellular competence in *in vitro* morphogenesis. Write in detail the different pathways of *In vitro* morphogenesis? (6)

OR

- (b) With suitable examples explain different applications of embryo cultures. (6)

Q4 (a) What are the advantages of micropropagation over conventional cropping methods? Discuss in detail the stages of Micropropagation. (6)

- (b) Write short notes on somaclonal variation (6)

OR

- (b) Describe the procedure for generation of somatic hybrids and fusion products. (6)

Q5 (a) Explain different strategies for *in vitro* germplasm conservation. (6)

- (b) Draw a schematic diagram of Ti-Plasmid. Describe the vector based strategies used for construction of recombinant Ti-Plasmid in *Agrobacterium* (6)

OR

- (b) Explain any two strategies used for *in vitro* germplasm storage. (6)

Q6 (a) Explain the signal transduction pathways acting during plant defense. (6)

- (b) What is MAS? Write down the basic steps for performing MAS in the laboratory (6)

OR

- (b) Give a detailed account of GTT and TRIPS. (6)

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