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SARDAR PATEL UNIVERSITY
B.Sc. V Semester EXAMINATION
WEDNESDAY, 20th November 2013
10.30 A.m. To 01.30 p.m.
USO5CGEN04: Plant Biotechnology Max Marks- 70

Q1 Select a proper option from the following MCQ's (10)

1] Who is the father of Plant tissue culture?
a) Bonner b) Haberlandt c) Laibach d) Gautheret

2] The production of secondary metabolites require the use of
a) protoplast b) cell suspension c) meristem d) auxillary buds

3] Cybrids are produced by
a) Fusion of two different nuclei from two different species
b) Fusion of two same nuclei from same species
c) Nucleus of one species but cytoplasm from both the parent species
d) None of the above

4] Part of plant used for culturing is called
a) Scion b) Explant c) Stock d) Callus

5] Which of the following plant cell will show totipotency?
a) Xylem vessels b) Sieve tube c) Meristem d) Cork cells

6] Which vector is mostly used in crop improvement?
a) Plasmid b) Cosmid c) Phasmid d) Agrobacterium

7] Hairy root cultures for secondary metabolite production are induced by transforming plant cells with
a) virus b) *Agrobacterium tumefaciens*
c) Bacillus thuringiensis *d) Agrobacterium rhizogenes*

8] Biolistics (gene-gun) is suitable for
a) Constructing recombinant DNA by joining with vectors
b)Transformation of plant cells
c) Disarming pathogen vectors d) DNA finger printing

9] In Plant Biotechnology PEG is used to:
a)Cell culture preparation b)Protoplast fusion
c) Hardening d) Protoplast isolation

10] Which of the following metabolites are implicated in stress tolerance?
a) Proline b) Betaines c) Both (a) and (b) d) Citrate

[P.T.O]

Q2-Answer the following in brief (Any 10) [20]

1) Define totipotency.

2) Write the uses of cell suspension cultures.

3) "The Agrobacterium is considered as Natural Genetic engineer of plants." Comment.

4) What are secondary metabolites? Give any two examples with there utility.

5) Define micropropagation with its advantages and limitations.

6) Differentiate selectable and scorable gene marker.

7) How does Ti plasmid differ from Ri plasmid.

8) Discuss the significance of male steritity in crop improvement.

9) Explain ribozyme with an example.

10) Explain symmetric and asymmetric hybrid with an example.

11) Brieflv explain the use of CaCl2, Pectinase, Cellulase and PEG in somatic hybridization.

12) Give features of FlavrSavr tomato.

O3 (a) Describe the basic facilities for a plant tissue culture laboratorv. [6]

O3 (b) Give the principle and applicatin of plant tissue culture. [4]

OR

O3(a) Write a brief account of the media components and culture conditions required for plant tissue culture. [5]

Q3(b) Explain batch cultute and continuous culture in short. [5]

O4 Define Somaclonal variation. Brieflv describe the isolation and applications of somaclonal variants with exampes. [10]

OR

O4 Discuss Protoplast culture including its Isolation, Purification and Regeneration. [10]

O5 What is direct gene transfer? Enlist the various methods of direct gene transfer and discuss anv two in detail. [10]

OR

O5 Write a short note on following:

i) CAT ii) GUS iii) Promoters iv) T-DNA [2.5X4]

Q6(a) Give a detailed account on transgenics for herbicide tolerance in crop plants.[6]

O6 (b)Discuss the commercial significance of transgnic plant. [4]

OR

O6 Describe brieflv (Any Two)

i) Cry protein ii) Molecular Pharming iii) Edible vaccine [10]

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