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[52] SEAT No._____ SARDAR PATEL UNIVERSITY

5th Semester B.Sc Examination

Monday, 29th October 2018

10:00 a.m. to 01:00 p.m.

Subject: Genetics

Paper Code: US05CGEN04(Plant Biotechnology)

Note: i) Attempt all questions. Total Marks: 70

ii) Marks are indicated on the right hand side.

Q.1 Answer the following Multiple Choice Questions. All are compulsory 10

1. Plant tissue culture technique is a redefined method of _____
   a) Hybridization b) Asexual reproduction c) Vegetative propagation d) selection
2. In PTC, the callus tissues can be regenerated into complete plantlets primarily by altering the concentration of
   a) Sugars b) Amino acids c) Hormones d) Vitamins
3. Polyethylene glycol is
   a) Fusogenic chemical b) Electro fusion stimulant c) Callus stimulant d) Differentiation stimulant
4. Somaclonal variation apperars in plants
   a) Growing in polluted soil or water b) Exposed to gamma rays c) Raised in tissue culture d) Transformed by r-DNA technology
5. Which of the following does not play any role in the infection of plant cell by the Ti plasmid of A. tumefaciens?
   a) T-DNA b) Virulence region c) Origin region d) 25 base pair repeats
6. Microprojectile method of gene transfer in plants involves delivery of DNA
   a) with the help of micromanipulator b) with the help of bolistics c) with the help of needles d) any of the above
7. Agrobacterium based gene transfer is efficient
   a) only with monocots b) only with dicots c) with both monocots and dicots d) with majority monocots and few dicots
8. Cry genes or Bt genes are obtained from
   a) Cotton pest b) Tobacco plant c) *Bacillus thuringiensis* d) Coli.
9. Bar gene encodes for
   a) Neomycin phosphotransferase b) Phenyl transferas c) Phosphinthricin acetyl transferase d) Hygromycin phosphotransferae
10. _____gene detoxify herbicide bromoxynil.
    a) Nitrilase b) CAT c) Glutathion –S-Transferase d) PAT

Q.2 Attempt *Any ten* of the following 20

1. How plant tissue culture plays a vital role in agriculture.
2. Define totipotency, dedifferentiation,cybrid and heterokaryon.
3. Define and explain sub protoplasts.
4. What do you understand by somatic hybrids and cybrids.
5. What are selectable markers and scorable markers?
6. Explain the limitations and advantages with biolistic method.
7. Define artificial seeds. Give their significance.
8. Expand these abbreviations--PAT & CCC.
9. With the help of diagram explain helper plasmid.
10. Define edible vaccine and give its advantages.
11. What is barnase / barstar system?
12. What are 'flavrsavr' tomato?

(P.T.O)

Q.3	What is sterilization? List the factors affecting it. Explain any two sterilization techniques in detail.	10
	OR	
Q.3A	Discuss somatic embryogenesis	05
B	Describe the continuous culture in detail.	05
Q.4 A	Define and explain the production and significance of haploids	05
B	Write a note on Micropropogation.	05
	OR	
Q.4	List the various methods used for protoplast fusion. Explain chemical method in detail.	10
Q.5A	Discuss how Ti plasmid transfers its T-DNA to a plant.	07
B	Write a note of CAT.	03
	OR	
Q.5A	List the various methods used for the direct gene transfer and explain in detail any two methods.	07
B	Write a note on GUS.	03
Q.6	Write a note on A) Cry protein B) Molecular Pharming	10
	OR	
Q.6A	Discuss commercial significance of transgenic plants.	05
B	Write note on golden rice.	05