

[This question paper contains 2 printed pages.]

Your Roll No.....

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Sr. No. of Question Paper : 5292

Unique Paper Code : 2164002003

Name of the Paper : PLANT BIOTECHNOLOGY

Name of the Course : **BOTANY-GE**

Semester : VIII

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
3. Question no. 1 is compulsory.
4. Attempt any four questions in all.
5. All parts of a question should be answered together.

Q1.a) Fill in the blanks:

5 marks

- i) Flavr savr Tomato was developed by biotechnology company.
- ii) The genetically modified organism for bioremediation developed by A.M. Chakraborty is known as
- iii) is known as the father of plant tissue culture.
- iv) The bacterial cells ready for the uptake of foreign DNA are known as
- v) Cellular totipotency was discovered for the first time by

b) Match the following:

5 marks

- | | |
|-----------------------------------|-----------------------------------|
| i) Golden Rice | a) Stanley Cohen and Paul Berg |
| ii) Reporter gene | b) Hind III |
| iii) Restriction Endonucleases | c) Sipra Guha and S.C. Maheshwari |
| iv) Androgenesis | d) Ingko Potrykus |
| v) First recombinant DNA molecule | e) GUS |

5 marks

c) Define the following:

- i) Totipotency
- ii) Superbug
- iii) Luciferase
- iv) Triploids
- v) Microprojectile bombardment

Q2. Write short notes on (any five):

(5 X 3 =15 marks)

- i) Micropropagation
- ii) Artificial seeds
- iii) Selectable marker genes
- iv) *Agrobacterium* mediated transformation
- v) Moondust carnations
- vi) Cybrids

Q3. Differentiate between (any three):

(3 X 5= 15 marks)

- i) Organogenesis and somatic embryogenesis
- ii) Type I and type II restriction endonuclease
- iii) Vaccines and edible vaccines
- iv) Electroporation and microinjection

Q4. a) Explain cloning and selection of transformants.

8 marks

b) Describe the role of plasmids as vectors in cloning.

7 marks

Q5. a) Describe and discuss five major applications of recombinant DNA technology. 10 marks

b) Why are nutrient mediums important for plant tissue culture? Discuss the role of vitamins and plant growth regulators in nutrient medium. 5 marks

Q6. a) Trace the historical development of plant biotechnology, highlighting key milestones and paradigm shifts. 7 marks

b) Discuss the applications of transgenic plants in enhancing crop productivity.

8 marks