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5. (i) How was synthetic form of insulin developed in labs? What are its advantages? (7)
- (ii) Explain the process of embryo culture with the help of suitable diagrams. Mention the applications of the technique. (8)
6. (i) How was Flavr Savr developed? How does it increase the shelf life of the crop? Explain the advantages and limitations of the transgenic. (8)
- (ii) Give a brief account of biosafety and ethical concerns associated with development and release of transgenic crops. (7)
7. (i) Explain the procedure of Agrobacterium-mediated transformation. Enumerate its advantages and limitations. (8)
- (ii) Explain the role of transgenics in bioremediation. (7)

(1000)

[This question paper contains 4 printed pages.]

20.12.2023(E)

Your Roll No.....

Sr. No. of Question Paper : 2234

G

Unique Paper Code : 2164002003

Name of the Paper : Plant Biotechnology

Name of the Course : **Common Prog. Group : G.E.**

Semester : III

Duration : 2 Hours

Maximum Marks : 80

**Instructions for Candidates**

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **five** questions in total.
3. Question No. 1 is **COMPULSORY**.
4. Attempt all parts of the question together.

1. (a) Expand following abbreviations (**any five**) :

(1×5=5)

(i) PAGE

(ii) EPSPS

(iii) MCS

(iv) GFP

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(v) CaMV 35S

(vi) PEG

(b) Define **any five** of the following : (1×5=5)

(i) Superbug

(ii) Totipotency

(iii) Plantibodies

(iv) Androgenesis

(v) T-DNA

(vi) BAP

(c) Fill in **any five** of the blanks : (5×1=5)

(i) \_\_\_\_\_ genes are used for growth and identification of transgenics growing in regeneration medium.

(ii) Crown gall disease in plants is caused by \_\_\_\_\_.

(iii) \_\_\_\_\_ gene was silenced in Flavr Savr® using genetic engineering.

(iv) Haploid plants can be produced by \_\_\_\_\_ culture.

(v) Plants tissues are encapsulated in \_\_\_\_\_ to form artificial seeds.

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(vi) \_\_\_\_\_ genes of Ti plasmid are responsible for T-DNA transfer into plants.

2. Differentiate between the following (**any three**) : (5×3=15)

(i) Marker and reporter genes

(ii) Direct and indirect somatic embryogenesis

(iii) Pluripotency and totipotency

(iv) Direct and indirect gene transfer

3. Write short notes on (**any three**) : (5×3=15)

(i) Applications of tissue culture

(ii) *Vir* genes

(iii) Production of cybrids

(iv) Round Up Ready soyabean

(v) Gene gun

4. (i) Give a detailed account of the development and mode of action of Bt cotton. What are its advantages? (8)

(ii) Explain the role of phytohormones in tissue culture. (7)

P.T.O.