



Name :

Roll No. :

Invigilator's Signature :

**CS/M.Sc.(GE)/SEM-3/MSGEN(PBT)-305B/2009-10
2009**

GENETIC ENGINEERING IN PLANTS

Time Allotted : 2 Hours

Full Marks : 35

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

GROUP – A

(Multiple Choice Type Questions)

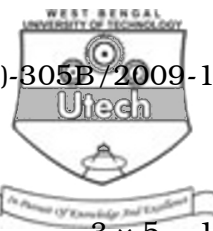
1. Choose the correct alternatives for any *five* of the following :

5 × 1 = 5

- i) The insecticidal crystalline protein from *B. thuringiensis* was originally classified as
 - a) α -endotoxin b) δ -endotoxin
 - c) β -endotoxin d) γ -endotoxin.
- ii) Ri plasmid is harboured in
 - a) *Agrobacterium rhizogenes*
 - b) *Agrobacterium tumifaciens*
 - c) *E. coli*
 - d) *Pseudomonas sp.*



- iii) The example of transgenic crop for improved vitamin content is
- a) Golden Rice
 - b) Round-up ready Canola
 - c) Flavr Savr tomato
 - d) Liberty link maize.
- iv) Gene silencing involves the production of
- a) ds DNA
 - b) ds RNA
 - c) plasmid
 - d) secondary metabolites.
- v) Opines are basically some unusual
- a) steroids
 - b) alkaloids
 - c) amino acids
 - d) all of these.
- vi) Getting DNA into cells by generating transient pores in the cell membrane with high voltage pulses is known as
- a) Electroporation
 - b) Microinjection
 - c) Electrocutation
 - d) Electrofusion.
- vii) T-DNA is
- a) DNA of plasmid origin which is transferred to the *Agrobacterium* chromosome
 - b) DNA from the chromosome of *Agrobacterium* species which is transferred to the plant genome
 - c) DNA of plasmid origin which is transferred to the plant genome
 - d) all of these.



GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following.

3 × 5 = 15

2. Discuss electroporation method of gene transfer.
3. Plants as bioreactors. Justify the comment with reason.
4. What is a transgene ? Which enzyme causes softening of tomato fruit during fruit ripening ? What is the first commercialized genetically engineered crop and what was the brand name ?
5. Write a short note on Biodegradable plastic.
6. What is Colmodulin ? What is its importance in plants ?

1 + 2 + 2

1 + 4

GROUP – C

(Long Answer Type Questions)

Answer any *one* of the following.

1 × 15 = 15

7. Discuss Herbicide resistance describing the pathways. Name some common insecticidal genes of plant origin.
8. What are molecular markers ? What are the different types of molecular markers ? Elucidate the steps in RFLP analysis. Why are DNA based molecular markers advantageous than morphological or biochemical markers ?

2 + 4 + 4 + 5