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) Electrocution 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 ransfer.

3. Plants as bioreactors. Justify the comment with reason.

4. What is a transgene ? Which enzyme causes softening of tomoto fruit during fruit ripening ? What is the first commercialized genetically engineered crop and what was the brand name ? 1 + 2 + 2

5. Write a short note on Biodegradable plastic.

6. What is Colmodulin ? What is its importance in plants ? 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. 13 + 2

8. What are molecular markers ? What are the different types of molecular markers ? Elucidate the steps in RELP analysis. Why are DNA based molecular markers advantageous than morphological or biochemical markers ? 2 + 4 + 4 + 5