Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/M.Sc. (GE)/SEM-3/MSGEN (PBT)-304-B/2010-11

2010-11

PLANT DEVELOPMENTAL GENETICS

Time Allotted : $1\frac{1}{2}$ 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 : $5 \times 1 = 5$

i) The *Gigantea* mutant in *Arabidopsis* is responsible for

a) Flower promoting b) Stem lengthening

c) Delaying flowering d) None of these.

ii) The first division of the zygote during embryogeneis in plant is

a) Longitudinal b) Symmetrical

c) Asymmetrical d) None of these.

iii) The stalk with which the ovule remains attached to the placenta is called

a) Hilum b) Funicle

c) Nucellus d) Micropyle.

iv) The development of embryos from the cells of nucellus or integument is known as

a) Apogamy b) Apospory

c) Parthenogenesis d) Adventive embryony.

v) For the formation of embryo sac the functional megaspore undergoes

a) Three meiotic division b) Two mitotic division

c) Three mitotic division d) Two meiotic division.

vi) Zinc finger proteins and helix-turn-helix proteins are

a) .types of DNA-binding proteins

b) .involved in the control of translation

c) .components of ribosomes

d) .part of the hemoglobin in blood cells.

vii) Homeotic mutation is one which

a) is present in only one form in an individual

b) substitutes one body part for another in development

c) results in development of a tumor

d) is wild type at one temperature and abnormal at another.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Discuss in brief about information transmission between plant cell layers during development.

3. How do the post-embryonic development, planes of cell division and germ line development differ in plants from animal development ?

4. How do segment deletion mutants affect patterning in *Arabidopsis* ?

5. Discuss how the genes control flowering in monocotyledonous plants.

6. During embryogenesis the first division differs in higher plants from that of lower plants. Discuss.

GROUP – C

(Long Answer Type Questions)

Answer any *one* of the following. 1 × 15 = 15

7. Describe seedling development in plants. Explain how cytokinin can promote light mediated development with example and diagram. 6 + 9

8. Write down the molecular basis of SAM development. How are meristems established in plants ? 10 + 5