2025

(NEP—2020)

(4th Semester)

BOTANY (MAJOR)

(Embryology of Angiosperms)

Full Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

(SECTION : A—OBJECTIVE)

(*Marks* : 10)

Tick (✓) the correct answer in the brackets provided : 1×10=10

1. Triple fusion in angiosperms leads to the formation of

(a) diploid endosperm ( )

(b) haploid embryo ( )

(c) triploid endosperm ( )

(d) triploid embryo ( )

2. In some plants, fertilization does not take place, but seeds still develop. This phenomenon is known as

(a) parthenogenesis ( )

(b) polyembryony ( )

(c) parthenocarpy ( )

(d) apomixis ( )

3. The process by which the pollen tube enters the ovule through the micropyle is called

(a) chalazogamy ( )

(b) mesogamy ( )

(c) porogamy ( )

(d) syngamy ( )

4. Which gene family is responsible for self-incompatibility in plants?

(a) S-gene ( )

(b) MADS-box gene ( )

(c) ABC genes ( )

(d) Homeotic genes ( )

5. Self-incompatibility in plants can be overcome by

(a) genetic modification ( )

(b) application of chemicals like CO_2 and growth regulators ( )

(c) artificial pollination techniques ( )

(d) All of the above ( )

6. Which of the following layers of the anther provides nutrition to the developing microspores?

(a) Endothecium ( )

(b) Tapetum ( )

(c) Epidermis ( )

(d) Middle layer ( )

7. Which is the most common type of ovule in angiosperms?

(a) Orthotropous ( )

(b) Anatropous ( )

(c) Campylotropous ( )

(d) Amphitropous ( )

8. Which of the following represents the most common type of embryo sac in angiosperms?

(a) Polygonum type ( )

(b) Oenothera type ( )

(c) Peperomia type ( )

(d) Adoxa type ( )

9. How many megaspores are typically formed after meiosis in the megaspore mother cell?

(a) One ( )

(b) Two ( )

(c) Four ( )

(d) Eight ( )

10. Which type of megaspore development is most common in angiosperms?

(a) Monosporic ( )

(b) Bisporic ( )

(c) Tetrasporic ( )

(d) Polyspermic ( )

(SECTION : B—SHORT ANSWERS)

(*Marks* : 25)

Write short notes on *five*, taking at least *one* from each Unit : 5×5=25

UNIT—I

1. Chalazogamy

2. Triple fusion

UNIT—II

3. Self-incompatibility

4. Biological significance of incompatibility

UNIT—III

5. Structure of pollen

6. Structure of female gametophyte

UNIT—IV

7. Monosporic type of embryo sac

8. Nuclear endosperm

(SECTION : C—DESCRIPTIVE)

(*Marks* : 40)

Answer *four* of the following, taking at least *one* from each Unit : 10×4=40

UNIT—I

1. What is pollination? Describe the types of pollination. What are the characteristics of the plants for effective pollination and the agents involved in cross-pollination? 2+2+3+3=10

2. Write short notes on the following : 5×2=10

(a) Types of parthenocarpy

(b) Cleavage polyembryony

UNIT—II

3. What is sexual incompatibility? Describe the types of self-incompatibility. 2+8=10

4. Describe the different methods to overcome incompatibility. 10

UNIT—III

5. Write a note on the general account of the female gametophyte in angiosperm and draw a well labelled diagram. 10

6. Describe in detail the process of microsporogenesis with diagrams. 10

UNIT—IV

7. What is endosperm? Describe the structure and different types of endosperms found in angiosperms. 10

8. Describe megagametogenesis. Also describe the types of megagametogenesis found in angiosperms. 10

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