2022

(Held in 2023)

BOTANY

(Theory Paper)

Paper Code : BOT-303

(Reproductive and Developmental Biology)

Full Marks – 80

Pass Marks – 32

Time – Three hours

The figures in the margin indicate full marks for the questions.

1. Choose the correct answers from the following :

    1×6=6

    (a) The Synergids are

    (i) Haploid   (ii) Diploid

    (iii) Triploid   (iv) Both haploid and diploid

    (b) Apomixis is a type of reproduction that results in the development of a/an

    (i) Embryo from endosperm

    (ii) Embryo from nucleus

[Turn over

(iii) New organism without fusion of gametes

(iv) Fusion of gametes

(c) Embryo sac is also known as

(i) Microgametophyte

(ii) Megagametophyte

(iii) Microsporangum

(iv) Megasporangium

(d) An exine of pollen grains are composed of

(i) Cutin

(ii) Sporopollenin

(iii) Suberin

(iv) Callose

(e) The occurrence of double frtilization was first discovered in

(i) Mango and sugarcane

(ii) Papaya and pea

(iii) *Lilium* and *Fritillaria*

(iv) Maize and rice

(f) Function of tapetum is

(i) Protective   (ii) Nutritive

(iii) Germination   (iv) Both (i) and (ii)

2. Answer the following short questions : 2×5=10

(a) What is false fruit ? Cite an example of it.

(b) Define parthenogenesis. State its significance.

(c) What is melissopalynology ? State its importance.

(d) Differentiate between plant and animal developmental biology.

(e) What is pathenocarpic fruit ? State its importance.

3. Write short notes on any *six* of the following :
5×6=30

(a) Barrier of fertilization

(b) Cryopreservation techniques

(c) Shoot development process

(d) Types of dicot need

(e) Development of microgametogenesis

(f) Application of stem cells

(g) Ovary culture

(h) Specification

(i) Homeotic gene.

4. Answer any *two* of the following questions :

$$10 \times 2 = 20$$

(a) What is Cellular diversity ? Discuss briefly, why developmental biology is considered as sequential event.
$$2+8=10$$

(b) What is Double fertilization ? Discuss the development of dicot embryo with neat labelled diagrams.
$$2+8=10$$

(c) Define Cell potency. Discuss the types of potency with giving examples.
$$2+8=10$$

5. Answer any *one* of the following questions.

$$14 \times 1 = 14$$

(a) What is Endosperm ? Give an account on different types of endosperm on the basis of their mode of development. Mention the functions of endosperm.
$$2+8+4=14$$

(b) Write notes on :
$$7 \times 2 = 14$$

(i) Importance of pollen study

(ii) ABC model of flower development.