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63/2(SEM-3) BOT-303

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

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- (iii) New organism without fusion of gametes
- (iv) Fusion of gametes
- (c) Embryo sac is also known as
 - (i) Microgametophyte
 - (ii) Megagametophyte
 - (iii) Microsporangium
 - (iv) Megasporangium
- (d) An exine of pollen grains are composed of
 - (i) Cutin
 - (ii) Sporopollenin
 - (iii) Suberin
 - (iv) Callose
- (e) The occurrence of double fertilization 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 : $2 \times 5 = 10$
 - (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 parthenocarpic fruit ? State its importance.
3. Write short notes on any six of the following : $5 \times 6 = 30$
 - (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 :

10×2=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.

14×1=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 : 7×2=14

(i) Importance of pollen study

(ii) ABC model of flower development.