2018

BOTANY

BOT 303

REPRODUCTIVE AND DEVELOPMENTAL BIOLOGY

Full Marks: 80

Time: 3 hours.

The figures in the margin indicates full marks for the questions :

1. Answer the following MCQ, (All questions are compulsory) (1x7=7)

   i. Even in absence of pollinating agents, seed setting is assured in

   a. Commelina

   b. Zostera

   c. Salvia

   d. Fig

   ii. Which one of the following pairs of plant structures has haploid number of chromosomes?

   a. Nucellus and antipodal cell

   b. Egg nucleus and secondary nucleus

   c. Megaspore mother cell and antipodal cell

   d. Egg cell and antipodal cell

   iii. The member of the Cyperaceae exhibit a special mode of pollen development, that is-------

   a. Of the four nuclei formed after meiosis all four is functional

   b. Of the four nuclei formed after meiosis only one is functional

c. Of the four nuclei formed after meiosis only two is functional

d. Of the four nuclei formed and one is functional

iv. Choose the mis-matched option

a. Wind-Cannabis: Anaemophily

b. Water---Zoostera: Hydrophily

c. Insect---Salvia: Entomophily

d. Birds---Kigelia: Ornithophily

v. Match the following (Choose the correct matching)

a.	Grew (1682)	i. Haploid pollen grain of Datura innoxia
b.	Camerarius (1694)	ii. Discovery of pollen tube
c.	Amici (1824)	iii. Pollen grain influenced the ovary to produce fruit
d.	Guha and Maheshwari (1964, 1966)	iv. Female mulberry without male plant produce abortive seed

A. a-i; b-ii; c-iii; d-iv B. a-iii; b-iv; c-ii; d-i

C. a-iv; b-i; c-iii; d-iv D. a-iii; b-ii; c-i; d-iv

vi. Plants of which one of the following groups of genera are pollinated by the same agency

a. Triticum, Cocos, Mangifera

b. Ficus, Kigelia, Casuarina

c. Salvia, Morus, Euphorbia

d. Bombax, Butea and Bauhinia

vii. The chief composition of pollenkitt or the surface pollen cement contains

a. Carotenoid and flavonoid

b. By directly penetrating the egg

c. Between one synergids and central cell

d. By knocking off the antipodal cells.

2. Answer the following short questions. (Any seven) (2x7=14)

a. What is tapetum? What are its different types?

b. What is obturator ? Write its function.

c. What is parthenocarpy? What are the types of parthenocarpy? Give examples.

d. What is naked embryo sac? Give example of four genera which shows naked embryo sac.

e. Define cell fate? How cell fate is committed ?

f. Write briefly the pollination found in the genus *Ficus*?

g. Write the functions of stigmatic and stylar exudates.

h. Differentiate between cell commitment and specification.

3. Answer the following question: (Any four) (4x5=20)

a. Describe briefly the reasons of the male sterility in angiosperms?

b. Write briefly on the development of male gametophyte of a typical angiosperm.

c. What are pollinia? Brief about the different pollen viability tests? 1+4=5

d. Write an explanatry note on pollen pistil interaction.

e. Write a brief note on applications of steamcell in redical Science?

4. Answer the following questions (Any three) (3x9=27)

a. What is true fruit? Give an outline of fruit classification with examples. (1+8=9)

b. What is megasporogenesis? Discuss briefly the development of female gametophyte. (1+8=9)

c. What is potency? Give an account on different types of potency with examples. (1+8=9)

d. What is 'Gray crescent'? Give an illustrated account on how it is important in amphibian eggs.

5. Answer the following question: (Any one) (1x12=12)

a. Discuss the factors, method and significance of anther and pollen culture.

b. Define polarity. Give an illustrated account on the significance of polarity formation in amphibian eggs. (2+10=12)

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