CH 1 B SEXUAL REPRODUCTION IN FLOWERING PLANTS (PYQ)

NOTE: Write to the point answer .

1. Pollen grains represent:

(a) Saprophyte (b) Gametophyte

(c) Male Gametophyte (d) None of these

2. Which one of the following statements is not true?

(a) Exine of pollen grains is made up of sporopollenin.

(b) Pollen grains of many species cause severe allergies.

(c) Stored pollen in liquid nitrogen can be used in the crop breeding programmes.

(d) Tapetum helps in the dehiscence of anther.

3. Proximal end of the filament of stamen is attached to the

(a) connective (b) placenta

(c) thalamus or petal (d) anther

4. Male gametes in angiosperms are formed by the division of

(a) microspore (b) generative cell

(c) vegetative cell (d) microspore mother cell

5. In an angiosperm, how many microspore mother cells are required to produce 100 pollen grains?

(a) 25 (b) 50 (c) 75 (d) 100

6. Generative cell was destroyed by laser but a normal pollen tube was still formed because

(a) vegetative cell is not damaged

(b) contents of killed generative cell stimulate pollen growth

(c) laser beam stimulates growth of pollen tube

(d) the region of emergence of pollen tube is not harmed

7. **Assertion :** If pollen mother cells has 42 chromosomes, the pollen has only 21 chromosomes.

Reason : Pollens are formed after meiosis in pollen mother cell

8. An anther with malfunctioning tapetum often fails to produce viable male gametophytes. Give any one reason.

9. Write down the ploidy of the cell of microspore tetrad

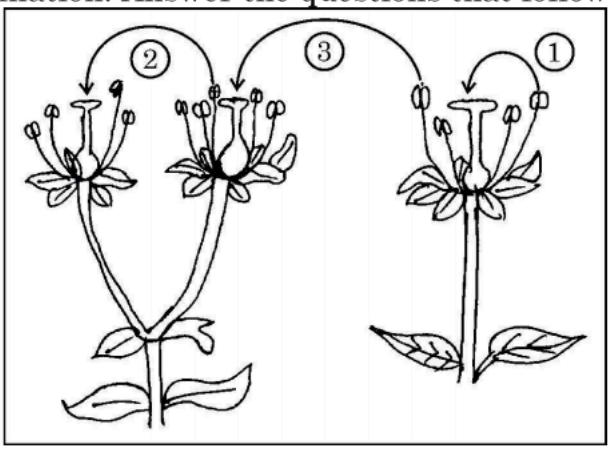
10. With a neat labelled diagram, describe the parts of a typical angiosperm ovule.

11.. Draw a diagram of a male gametophyte of an angisperm. Label any four parts. Why is sporopollenin considered the most resistant organic material?

(A) (a) Distinguish between the two cells enclosed in a mature male gametophyte of an angiosperm.

(b) Study the diagram given below showing the modes of pollination. Answer the questions that follow.

12.



Diameter of the pollen grain generally is

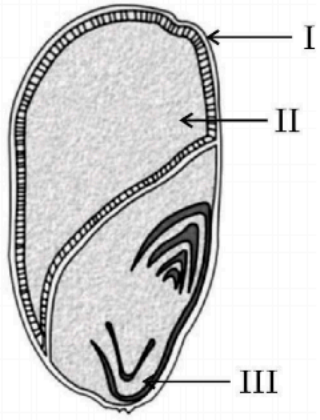
(A) 5 to 10 micrometer (B) 10 to 15 micrometer

(C) 25 to 50 micrometer (D) 50 to 100 micrometer

13.

14.

Given below is a diagram of T.S. of a monocot seed with parts I, II & III labelled :



Choose the option where parts I, II and III are identified correctly.

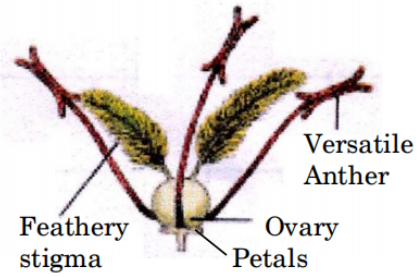
	I	II	III
(A)	Pericarp,	Endosperm,	Scutellum
(B)	Pericarp,	Endosperm,	Coleorhiza
(C)	Scutellum,	Pericarp,	Coleorhiza
(D)	Coleorhiza,	Scutellum,	Pericarp

(A) (i) Describe the process of megasporogenesis in an angiosperm.

(ii) Draw a diagram of a mature embryo sac of an angiosperm. Label its any four parts.

15.

16. Given below is a flower with its characteristic features specialised for the most common type of abiotic pollination.



Answer the following questions based on the above diagram :

(a) Name the mode of abiotic pollination that will be adopted by the given plant species in the above picture.

(b) State the need of exposed large feathery stigmas for the flower.

(c) What will be the two important adaptations in the pollen grains of the flowers pollinated by the above mode of pollination ?

(d) What could be the probable reason for the petals being small and non-green ?

17. (a) (i) Explain how does double fertilisation take place in a flowering plant.

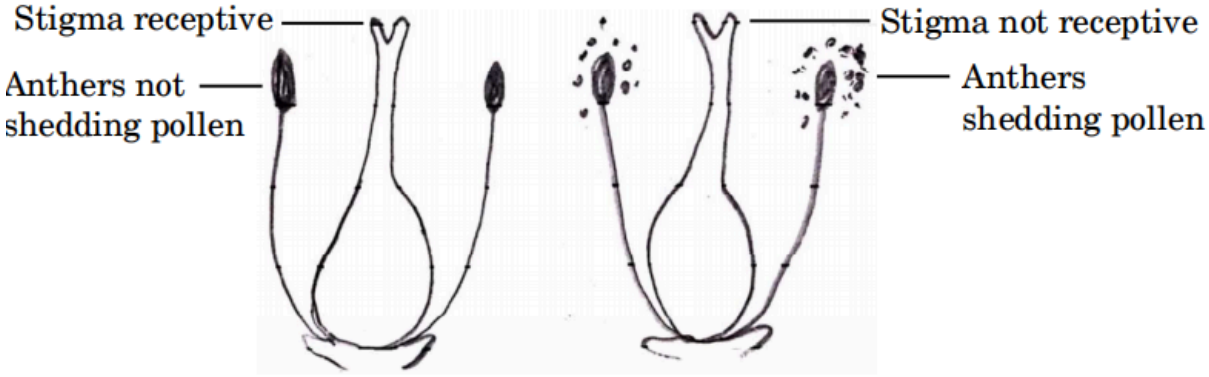
(ii) Write the fate of the products of double fertilization in these plants.

18. (i) Explain the structure of a typical monocotyledonous embryo of a flowering plant.

(ii) How are multiple embryos formed in a citrus fruit ? What is the mechanism known as ?

19.

Many of the flowering plants producing hermaphrodite flowers have developed many devices to discourage self-pollination and to encourage cross-pollination. Given below is a picture of one such outbreeding device in a flowering plant. Study the picture and answer the questions that follow :



Flowers present on different plants of same species

(a) Explain how the given type of pollination is advantageous to the plant.

(b) Can this flowering plant show geitonogamy ? Justify your answer.

20. Select the statements that are true for pollination mechanism in

flowering plants from the given options.

(i) In *Vallisneria*, the female flowers are pollinated by pollen grains inside the water.

(ii) In *Zostera*, pollen grains are released on the surface of water.

(iii) In most of the water-pollinated species, pollen grains are covered by a mucilaginous coating.

(iv) Pollination by water is quite rare and limited to about 30 genera.

Choose the correct answer :

(A) (i) and (ii) (B) (ii) and (iii)

(C) (iii) and (iv) (D) (i) and (iv)

21.

Flowering plants with hermaphrodite flowers have developed many reproductive strategies to ensure cross-pollination. Study the given outbreeding devices adopted by certain flowering plants and answer the questions that follow.

Pollen grains / Stigma	Pollen grains of Plant A	Pollen grains of Plant B	Pollen grains of Plant C
Stigma of Plant A	×	✓	✓
Stigma of Plant B	✓	×	✓
Stigma of Plant C	✓	✓	×

Note :

All plants belong to the same species.

× – No pollen tube growth/inhibition of pollen germination on stigma.

✓ – Pollen germination on stigma.

(a) Name and define the outbreeding device described in the above table.

(b) Explain what would have been the disadvantage to the plant in the absence of the given strategy. *3*

22. (a) (i) Explain the structure of a mature embryo sac of a typical flowering plant.

(ii) How is triple fusion achieved in these plants ?

23.

The following question is based on pollination. Study the figures carefully and answer the questions that follow.

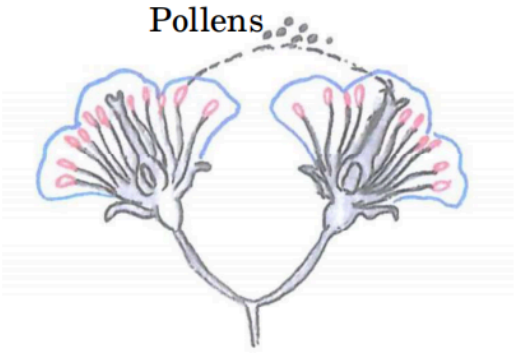


Figure A

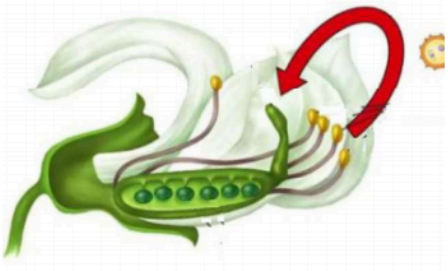


Figure B

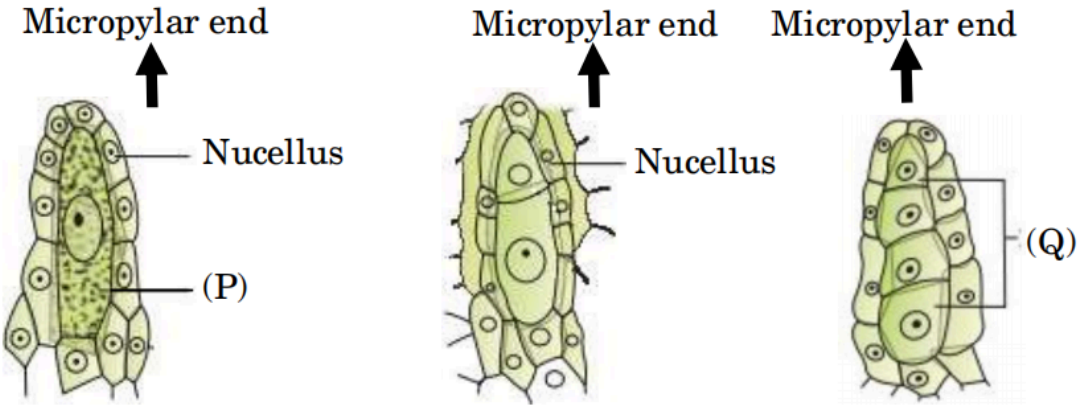
(a) Give the scientific terms for the processes taking place in Figures A and B respectively.

(b) Mention two conditions necessary for the process occurring in Figure B.

(c) (i) State one advantage and one disadvantage of the process occurring in Figure B.

24.

(b) Study the figures given below showing initial stages in the formation of female gametophyte and answer the questions that follow.



(i) Identify (P) and (Q).

(ii) I. What kind of division does cell (P) undergo to form (Q) ?

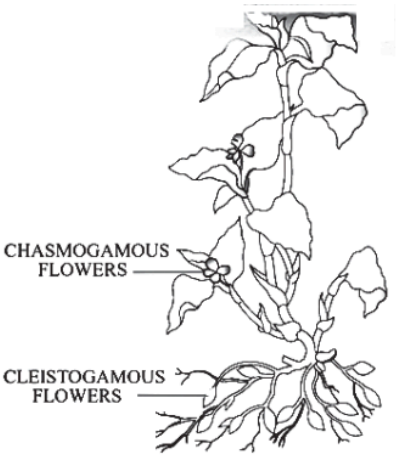
II. How many (Q) cells form the embryo sac ? What is the name given to such kind of development ?

III. How many free nuclear mitotic divisions will the functional megaspore undergo to form the embryo sac ?

IV. Describe the structure of a mature female gametophyte.

25.

(ii) Identify the figure below and write any two feature that relates to it.



26. Given below are the events that are observed in an artificial hybridisation programme. Arrange them in the correct sequential order and select the correct option.

(i) Re-bagging

(ii) Selection of parents

(iii) Bagging

(iv) Dusting the pollens on stigma

(v) Emasculation

(vi) Collection of pollens from male parent

Options : (A) (ii), (iii), (v), (vi), (iv), (i)

(B) (ii), (v), (iii), (vi), (iv), (i)

(C) (v), (ii), (iii), (vi), (i), (iv)

(D) (ii), (iii), (vi), (iv), (v), (i)

27. Choose the option that correctly describes the gynoecium of Michelia :

(A) Multicarpellary, Apocarpous (B) Bicarpellary, Apocarpous

(C) Multicarpellary, Syncarpous (D) Bicarpellary, Syncarpous

28. Select the statements that are true for a typical monocotyledonous embryo from the given options.

(i) Scutellum is present towards the centre of the embryonal axis.

(ii) Embryonal axis of the lower end has radicle and root cap covered by coleoptile.

(iii) The portion of embryonal axis above the level of attachment of scutellum is epicotyl.

(iv) Shoot apex and few leaf primordia of embryo are enclosed in a hollow foliar structure.

Choose the correct answer from the following :

(A) (i) and (ii) (B) (ii) and (iii)

(C) (iii) and (iv) (D) (i) and (iv)

29. Flowering plants with hermaphrodite flowers have developed many reproductive strategies to ensure cross-pollination. Study the given outbreeding devices adopted by certain flowering plants and answer the questions that follow.

Pollen grains / Stigma	Pollen grains of Plant A	Pollen grains of Plant B	Pollen grains of Plant C
Stigma of Plant A	×	✓	✓
Stigma of Plant B	✓	×	✓
Stigma of Plant C	✓	✓	×

Note :

All plants belong to the same species.

× – No pollen tube growth/inhibition of pollen germination on stigma.

✓ – Pollen germination on stigma.

(a) Name and define the outbreeding device described in the above table.

(b) Explain what would have been the disadvantage to the plant in the absence of the given strategy. *3*

30. Select the statements that are true for outbreeding devices in the flowering plants.

(i) They discourage cross-pollination and ensure self-pollination.

(ii) They are advantageous as they lead to inbreeding depression.

(iii) Self-incompatibility prevents self-pollen from fertilising the ovules.

(iv) To prevent self-pollination in some species pollen release and stigma receptivity are not synchronised.

Choose the correct answer :

(A) (i) and (ii) (B) (ii) and (iii)

(C) (iii) and (iv) (D) (i) and (iv)