CHAPTERWISE QUESTION

BIOLOGY

SEXUAL REPRODUCTION IN FLOWERING PLANTS

CLASS XII **Time : 1½ hrs.**

SET A **Mark : 35**

SECTION - A OBJECTIVE TYPE **8 × 1 = 8**

1. In a flower, if the megaspore mother cell forms megaspores without undergoing meiosis and if one of the megapores develops into an embryosac, its nuclei would be

   a) haploid b) diploid

   c) a few haploid and a few diploid d) with varying ploidy

2. In the embryos of a typical dicot and a grass, true homologous structures are

   a) coleorhiza and coleoptile b) coleoptile and scutellum

   c) cotyledons and scutellum d) hypocotyl and radicle

3. From the statements given below choose the option that is true for a typical female gametophyte of a flowering plant

   a) It is eight - nucleate and seven celled at maturity

   b) It is free nuclear during the development

   c) It is situated inside the integument but outside the nucellus

   d) it has an egg apparatus situated at the chalazal end

   a) i and iv b) ii and iii c) i and ii d) ii and iv

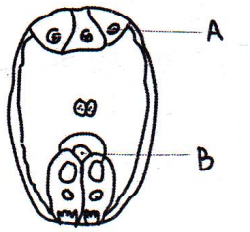
4. Study the diagram given below and choose the correct option against 'A' and 'B'

   a) Ovule, A - egg, B - polar body

   b) Embryo sac; A - Antipodals; B - Egg

   c) Anther; A - Endothecium; B - Connective

   d) Stigma; A - Central cell; B - Antipodals



5 The common function of nucellus and cotyledons is

   a) Reproduction b) pollination

   b) Nourishment d) Both b and c

6. A dicotyledonous plant bears flowers but never produces fruits and seeds. The most probable cause for the above situation is

   a) plant is dioecious and bears both only pistillate flowers

   b) Plant is dioecious and bears both pistillate and staminate flowers

   c) Plant is monoecious

   d) Plant is dioecious and bears only staminate flowers

OR

The function of tapetum in microsporangium is

a) it nourishes the developing pollen grains
b) It performs the function of protcetion
c) It helps in dehiscence of anther to release pollen grains
d) It undergoes meiotic divisions to form microspore tetrads.

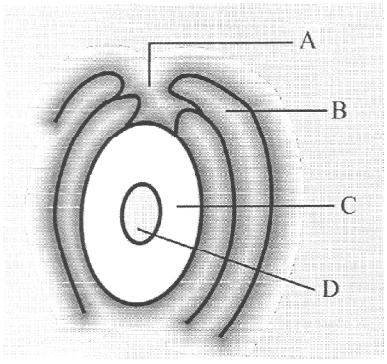
Assertion Reason type questions.
In the following questions, a statement of assertion (A) is followed by a statement reason (R). Mark the correct choice as:

a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
c) Assertion (A) is true but reason (R) is false.
d) Assertion (A) is false but reason (R) is true.

7. Assertion : In apomixis plants of new genetic variations are not produced.
   Reason : In apomixis, reductional division takes place
8. Assertion : Chasmogamous flowers produce assured seed set
   Reason : Chasmogamous flower do not open at all

SECTION - B (Answer any three) **3 × 2 = 6**

9. Among the animals, insects particularly bees are the dominant pollinating agents. List any four characteristic features of the insect pollinated flower.
10. How is pollination carried out in water plants?
11. Name the parts A, B, C and D of the anatropous ovulie given below



12. Which type of pollination ensures the arrival of genetically different pollen grains to stigma?

SECTION - C(Answer any Four) **4 × 3 = 12**

13. Continued self pollination leads to inbreeding depression. List three devices, which flowering plant have developed to discourage self - pollination.

14. List any three difference between pollinated flower and insect pollinated flower

15. What is polyembryony and how can it be commercially exploited?

16 In a generative cell of two celled pollen divides in the pollen tube, but not in a three celled pollen. Give reasons.

17. What are the possible types of pollination in chasmogamous flowers. Give reasons.

SECTION - D **4 × 1 = 4**

18. **Read the following and answer to questions given below:**

Pollination, transfer of pollen grains from the stamens, the flower parts that produce them,to the ovule bearing organs or to the ovules (seed precursors) themselves. Self pollination occurs in flowers where the stamen and carpel mature at the same time, and are positioned so that the pollen can land on the flower's stigma. This method of pollination does not require an investment from the plant to provide nectar and pollen as food for pollinators. Flowers often attract pollinators with food rewards, in the form of nectar.Pollinators are a key part of healthy ecosystems. A wider diversity of pollinators in many ecosystems is relate to greater overall biodiversity, or variety among living organisms. These living organisms include our cultivated plants, which depend on pollinators. As native pollinators lose more and more habitat, they need our support if we want to continue to benefit from the vital pollination services they provide.

a) Mention the pollinating agent of an inflorescence of small dull coloured flowers with well exposed stamens and large feathery stigma. give any one characteristic of a pollen grain produced by such flower.

b) Name the type of pollination that ensures genetic variation.

c) Can cross pollination occur in cleistogamous flowers? Give reasons for your answer.

OR

How is it possible in Oxalis and Viola Plants to produce assured seed sets even in the absence of pollinators?

SECTION - E **1 × 5 = 5**

19. (a) Draw the embryo sac of a flowering plant and label the parts.

(i) Which guides the entry of pollen tube?

(ii) Which develops into endosperm?

(iii) Which fuses with male gamete to form zygote?

(b) What will be the fate of antipodal cells after fertilisation?

(c) Name the cell that develops into embryo Sac. How many embryo sacs are formed from one megaspore mother cell?

OR

I) Explain the structure of a maize grain with the help of a diagram

II) Why cannot we use the term maize seeds for maize grains?

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SET B **Mark : 35**

SECTION - A OBJECTIVE TYPE **8 × 1 = 8**

1. Remnants of nucellus are persistent during seed development in

   a) Pea b) Ground nut c) Wheat d) Black pepper

2. The portion of embryonal axis between plumule and cotyledons is called

   a) heploicotyls b) epicotyls c) coleorhizae d) coleoptile

3. The phenomenon observed in some plants where in parts of the sexual apparatus is used for forming embryos without fertilisation is called

   a) Parthenocarpy b) Apomixis

   c) Vegetative propagation d) Sexual reproduction

4. Embryosac is to ovule as ..... is to an anther

   a) stamen b) filamemt c) pollen grain d) Androecium

5. Match the terms in column I with the items in column II.

(1) Autogamy	(A)Transfer of pollen grains from anther to sugma of the same flower
(2) Geitonogamy	(B) transfer of pollen grains from anther to stigma of flower of another plant of similar type.
(3) Xenogamy	(C) Transfer of pollen grains from th anther to the stigma of another flower of the same plant

   a) 1 - A 2 - C 3 - B b) 1 - A 2 - B 3 - C

   c) 1 - C 2 - B 3 - A d) 1 - B 2 - A 3 - C

6. In a flower, if the megaspore mother cell forms megaspores without under going meiosis and if one of the megaspores develops into an embryosac, its nuclei would be

   a) Haploid b) Diploid

   c) a few haploid and a few diploid d) with varying ploidy

OR

If a normal plant suddenly started reproducing parthenogenetically, the number of chromosomes of the parent will be

a) One half b) One fourth c) Double d) same

Assertion Reason type questions.

In the following questions, a statement of assertion (A) is followed by a statement reason (R). Mark the correct choice as:

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c) Assertion (A) is true but reason (R) is false.

d) Assertion (A) is false but reason (R) is true.

7. Assertion : exine is made up of sporo pollenin
   Reason : Pollen grains are well preserved as fossils.

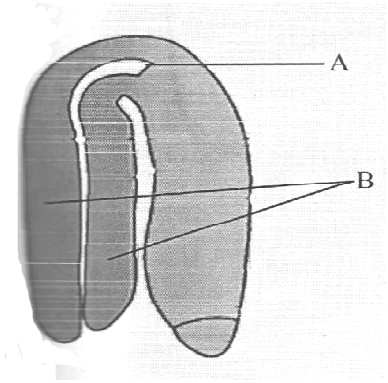
8. Assertion : Geitonogamy involves a pollinating agent
   Reason : Genetically geitonogamy is similar to autogamy

SECTION - B (Answer any three) **3 × 2 = 6**

9. Are pollination and fertilisation necessary in apomixis? Give reasons?

10. Fruits generally develops from ovary but in few species thalamus contributes to fruit formation.
    Name the two categorise of fruits and give one example of each.

11. In the given figure 1 of a dicot embryo, label the parts (A) and (B) and given their function.



12. State the characteristics of insect pollinated flowers.

SECTION - C(Answer any Four) **4 × 3 = 12**

13. Name the parts of pistil which develop into fruit and seeds ?

14. Continued self pollination leads to inbreeding depression. List three devices which flowering plant have developed to discourage self pollination.

15 Describe the structure of pollengrain?

16. Does self incompatibility impose any restrictions on autogamy. Give reasons and suggest the method of pollination in such plants.

17. Are partthenocarpy and apomixis different phenomena? Discuss their benefits.

SECTION - D **4 × 1 = 4**

18. **Read the following and answer to questions given below:-**

Flower has two parts of a typical stamen the long as slender stalk called the sterile filament and the terminal generally bilobed structure called the fertile anther. The proximal end of the filament is attached to the thalamus or the petal or perianth of the flower. Two anther lobes are separated in the anterior region by a deep groove however attached to each other on the back side by sterile parenchymatous tissue connective tissue has vascular strand xylem and phloem. The number and length of stamen are variable in flowers of different species - herero stamens. A typical angiosperm anther is bilobed with each lobe having two thecae they are dithecous. Often a longitudual groove runs lengthwise separating the theca

a) How many nuclei are present in a fully developed male gametophyte of flowering plants?
b) A bilobed dithecous anther has 100 microspore mother cells per microsporangium.
   How many male gametophytes this anther can produce?
c) Indicate the stage where meiosis occurs(1, 2 or 3) in the flow chart

OR

What happens when an anther with malfunctioning tapetum forms male gametophytes?

SECTION - E **1 × 5 = 5**

19. i) Why the zygote does not divide for some time in fertilized ovule?
ii) What is polyembryony? Give an example.
iii) in fruits, what is formed from following parts:-

a) Ovary wall
b) Outer integument
c) Inner integument
d) zygote
e) primary endosperm
f) Ovary
g) Nucellus

OR

Describe the post - fertilization changes taking place in a flowering plant?