INDIAN SCHOOL AL WADI AL KABIR		
Class: XII	**DEPARTMENT OF SCIENCE -2025-26** **SUBJECT: BIOLOGY**	**DATE: 19/03/2025**
WORKSHEET NO: 1	**UNIT: REPRODUCTION** **CHAPTER: SEXUAL REPRODUCTION IN FLOWERING PLANTS**	**A4 FILE FORMAT**
CLASS & SEC:	**NAME OF THE STUDENT:**	**ROLL NO.**

MULTIPLE CHOICE QUESTIONS

1.A botanist studying Viola (common pansy) noticed that one of the two flower types withered and developed no further due to some unfavorable condition, but the other flower type on the same plant survived and it resulted in an assured seed set. Which of the following will be correct?

a) The flower type which survived is Cleistogamous and it always exhibits autogamy

b) The flower type which survived is Chasmogamous and it always exhibits geitonogamy.

c) The flower type which survived is Cleistogamous and it exhibits both autogamy and geitonogamy.

d) The flower type which survived is Chasmogamous and it never exhibits autogamy

2. To produce 400 seeds, the number of meiotic divisions required will be

a) 400

b) 200

c) 500

d) 800

3. Kiwi is a dioecious species. Which of the following methods can be RULED OUT as a possible mode of pollination in its case?

a) Cleistogamous autogamy

b) Chasmogamous autogamy

c) Geitonogamy

d) Xenogamy

4. Embryo sac is located inside the

a) Stigma

b) Ovule

c) Micropyle

d) Style

5. The structure of bilobed anther consists of

a) 2 thecae, 2 sporangia

b) 4 thecae, 4 sporangia

c) 4 thecae, 2 sporangia

d) 2 thecae, 4 sporangia

6. The thalamus contributes to the fruit formation in

a) Banana.

b) Orange.

c) Strawberry.

d) Guava

7. Generative nucleus divides forming

a) 2 male nuclei

b) 3 male nuclei

c) 2 female nuclei

d) 3 female nuclei

8. The two nuclei at the end of the pollen tube are called

a) Tube nucleus and a generative nucleus

b) Sperm and ovum

c) Generative nucleus and stigma

d) Tube nucleus and sperm

9. The coconut water from tender coconut is

a) Cellular endosperm.

b) Free nuclear endosperm.

c) Both cellular and nuclear endosperm.

d) Free nuclear embryo

10. In a fertilized ovule, n, 2n and 3n conditions occur respectively in

a) Antipodal, zygote and endosperm

b) Zygote, nucellus and endosperm

c) Endosperm, nucellus and zygote.

d) Antipodal, synergid and integuments

Question No. 11 to 15 consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

A. Both A and R are true and R is the correct explanation of A
B. Both A and R are true and R is not the correct explanation of A
C. A is true but R is false
D. A is False but R is true

11. **Assertion:** Geitonogamy is genetically similar to autogamy.
Reason: The pollen grains come from same plant

12. **Assertion:** A typical microsporangium of angiosperms is generally surrounded by four wall layers.
Reason: The outer three wall layers perform the function of protection and help in dehiscence of anther to release the pollen

13. **Assertion:** Gynoecium consists of pistil.
Reason: It represents the male reproductive part in flowering plants.

14. **Assertion:** Pollen mother cells (PMCs) are the first male gametophytic cells.
Reason: Each PMC gives rise to four pollens.

15. **Assertion:** Pollen grains from male parent are mostly transferred to the stigma in the female parent by some external agency.
Reason: This is because the male flowers or male organs have no internal device to reach the female organs in another flower

Case Study: -(1) Artificial Hybridization

Pollen-stigma compatibility is essential for successful pollination and fertilization. Once compatible pollen is accepted by pistil, events of fertilization proceed, whereas incompatible pollen will be rejected. This interaction where a pistil is capable of recognizing its pollen is the result of long-term pollen-pistil interaction and chemicals released by pollen.

It is very important to understand pollen-pistil interaction in hybridization. It is one of the innovative methods of the crop production improvement program. During artificial hybridization, only the desired pollen grains are introduced to the stigma through pollination. This helps to avoid unwanted pollen rejection and saves time. Also, the plants with the desired characteristics can be grown.

a) Which period in fertilisation process is referred as pollen -pistil interaction. (1)

b) How is this interaction initiated and what is the result of this interaction. (1)

c) In hybridization, why is understanding pollen- pistil interaction considered as one of the innovative methods of the crop production improvement program. (2)

OR

What are the steps included during artificial hybridization?

Case Study: -(2) Pollination

Observe the given pictures that depicts pollination process in plants. Pollination is the transfer of pollen grains from the anther to the stigma of the same flower or different flowers of the same kind.

A

B

a) Identify the type of pollination shown in figure A & B

b) How is geitonogamy different from xenogamy?

c) State any two features of their (Fig.A & B) i) Flower ii) Anther

OR

c) Ms. Aishwarya is making a display about the process of sexual reproduction in plants. She writes down the stages:

1. An insect enters a flower, and pollen from the anthers sticks to the insect's body and legs.
2. The insect flies to a different flower.
3. Pollen from the insect's body and legs sticks to the stigma of the new flower.

4. The pollen grain grows a tube from the stigma down to the ovule.
5. Part of the pollen grain moves down the tube toward the ovule.
6. Part of the pollen grain joins with the ovule inside the ovary and makes a seed.

i)Which number describes pollination?

ii)Which number describes fertilization?

TWO MARKS QUESTIONS

1. What is apomixis, what will be the advantage of making the hybrids into apomicts?
2. You see many embryos in an orange seed? Give reason.
3. The flower of brinjal is chasmogamous, while that of beans is cleistogamous. How are they different from each other?
4. Differentiate between albuminous and non-albuminous seeds, giving one example of each.
5. Differentiate between perisperm and endosperm giving one example.

THREE MARKS QUESTIONS

6.A flower of tomato plant following the process of sexual reproduction produces 240 viable seeds, answer the following questions in relation to it.

i) How many megaspore mother cells and microspore mother cells are involved in the above process?

ii) How many male gametes and meiotic divisions will be required to produce the male gametes.

iii) How many female gametes and meiotic divisions will be required to produce the female gametes

7.State the significance of pollination. List any four differences between wind pollinated and insect pollinated flowers. Banana is a parthenocarpic fruit, whereas apple a false fruit. How are they different from each other with respect to seeds?

8. (i) Where is Sporopollenin present in plants?

(ii) State its significance with reference to its chemical nature.

(iii) Why can pollen grain be preserved for many years.

9.Why do pollen grains of some flowers trigger “sneezing” in some people?

10.Write notes on different types of endosperm development

FIVE MARKS QUESTIONS

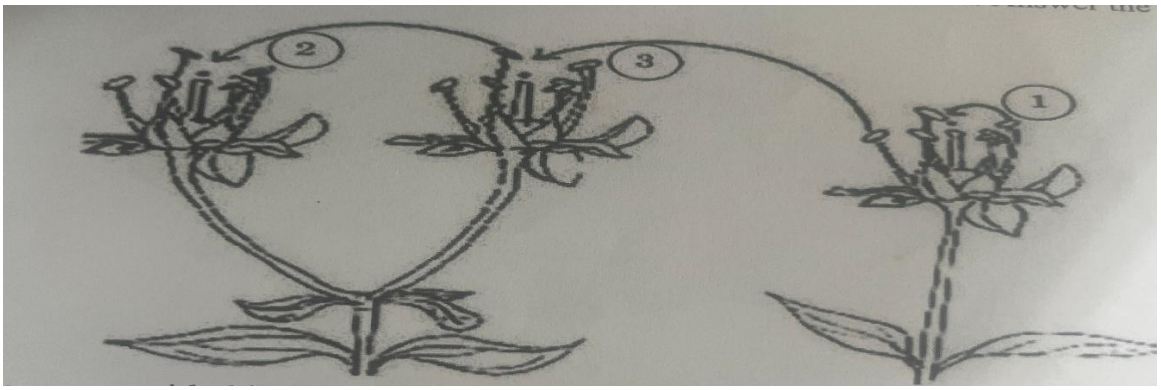
11.Give reasons why:

(a) Most zygote in angiosperms divide only after certain amount of endosperm is formed.
(b) Groundnut seeds are ex-albuminous and castor seeds are albuminous
(c) Micropyle remains as a small pore in the seed coat of a seed.
(d) Integuments of an ovule harden and the water content is highly reduced, as the seed matures.

12.With the help of a neat labelled diagram explain the wall layers of a mature anther of angiosperms.

13.Illustrate the process of megasporogenesis and embryo sac development

14. Study the diagram given below showing the modes of pollination. Answer the questions that follow.



1) Identify the technical terms used for each of the pollen transfer methods labeled as I, 2 & 3

2) Explain how the following plants accomplish successful pollination:

i) Water lily

ii) Vallisneria

3) Flowering plants have evolved various mechanisms to prevent inbreeding depression. Describe one hereditary and one physiological mechanism that helps the plants to achieve this goal.

FEW IMPORTANT PREVIOUS BOARDS QUESTIONS

15.Explain any three advantages the seeds offer to angiosperms. (3)

16.Name the product of fertilization that forms the kernel of coconut. How does the kernel differ from coconut water? (2)

17.Write the cellular contents carried by the pollen tube. How does the pollen tube gain its entry into the embryo sac? (2)

18.Draw a labeled schematic diagram of the transverse section of a mature anther of an angiosperm plant. (3)

19.a) Describe in sequence the process of megasporogenesis in angiosperms.

(b) Draw the seven celled structure formed and label all the different cells. (5)

20.Draw a labeled diagram of globular embryonic stage of angiosperms. (2)

21.Draw a diagrammatic sectional view of a mature anatropous ovule and label the following parts in it: (5)

(i) that develops into seed coat.

(ii) that develops into an embryo after fertilization.

(iii) that develops into an endosperm in an albuminous seed

(iv) through which the pollen tube enters the embryo sac.

(v) that attaches the ovule to the placenta.

Hints & Marks for few questions

MULTIPLE CHOICE QUESTIONS – ANSWERS

1-a	**2-c**	**3-b**	**4-b**	**5-b**
6-c	**7-a**	**8-a**	**9-b**	**10-a**
11-a	**12-a**	**13-c**	**14-a**	**15-a**

Q.NO.	**HINTS**	**MKS.**
1	**Development of seeds without fertilisation+ 2 advantages**	**2**
2	**Polyembryo -apomixis+ from parts like nucellus**	**2**
4	**Seeds are with endosperm – albuminous, Seeds are without endosperm – non-albuminous, examples**	**2**
5.	**Perisperm – remnant of nucellus in seed, endosperm – reserve food material for embryo + examples**	**2**

6.	**i) MMC-960 ; ii) M.G-240, Meiotic divisions-60; iii) F.G-240, Meiotic divisions-960**	**3**
7	**Banana – fruits are formed without fertilisation and hence seedless fruits, orange – seeds consist of more than one embryo**	**3**
8	**(i) Exine of microspores (ii) Highly stable and thus pollen grains are even preserved in fossils (iii) Due to the presence of sporopollenin**	**3**
10	**Nuclear type of endosperm development and cellular type of development**	**3**
11	**(a) Provides nutrition for embryo** **(b) Absence and presence of endosperm** **(c) Facilitates moisture and oxygen entry** **(d) Helps in the storage of seeds for long time** **(e) Developed from thalamus and not from fertilized ovary**	**5**
14	**1-autogamy + 2-geitonogamy + 3-Xenogamy + water lily-insect pollination**+ Vallisneria-water pollinated-explain + **physiology mechanism-pollen release & stigma release not synchronized + genetic-self incompatibility-prevent pollen pistil interaction**	**5**
15	**Product of sexual reproduction and thus provides variations, Dormancy and thus can be stored, pollination and fertilisation are not depending on water**	**3**
16	**Product of fertilisation – PEN, nuclear endosperm development, wall formation limited to peripheral sides, central free nuclei**	**2**
17	**2 male gametes, chemotropism, enters into ovule through Micropyle and embryo sac with the help of filiform apparatus in synergid**	**2**
21	**(i) Diagram + label (i) integuments, (ii) egg, (iii) polar nuclei,** **(iv) one of the synergid (v) funicle)**	**5**

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