

Chapter – 4 REPRODUCTION IN PLANTS

Blue print – 1 X 1 =1, 1 X 2 =2 and 1 X 5 = 5 Total marks - 8

PART - A

1. The method of reproduction in unicellular organisms like amoeba and bacteria in which they split into two equal halves and produce new ones is called _____.

- i) fragmentation ii) binary fission iii) budding iv) spore formation

Answer: ii) Binary fission

2. In sexual reproduction of flowering plants, the first event involved in this is _____.

- i) fertilization ii) germination iii) regeneration iv) pollination

Answer: iv) Pollination

3. Which of the following statement is true?

- i) Thin-walled non-mobile spores are called zoospores.
ii) A motile asexual spore produced by some algae, bacteria and fungi are Akinetes.
iii) Uninucleate, non-motile, asexual spores produced by fungus are called conidia.
iv) Thick-walled vegetative cells produced by algae during adverse conditions are called aplanospores.

Answer: Uninucleate, non-motile, asexual spores produced by fungus are called conidia.

4. The fertilized ovary is a fruit. The fruit that develops from a single flower with multicarpellary, apocarpous superior ovary is _____.

- i) Aggregate fruit ii) Composite fruit iii) Simple fruit iv) Multiple fruit

Answer: i) Aggregate fruit

5. If a water soaked seed is pressed, a small drop of water comes out through the _____.

- i) stomata ii) lenticel iii) micropyle iv) radical

Answer: iii) Micropyle

6. The mango fruit is called a stone fruit because it has _____.

- i) skinny epicarp ii) stony mesocarp iii) fleshy endocarp iv) hard endocarp

Answer: iv) Hard endocarp

7. Pick out the wrong statement.

- i) In a dicot seed there is a short longitudinal whitish ridge called the raphae.
ii) The minute opening in a dicot seed is known as micropyle.
iii) The rudimentary stem portion is known as radicle.
iv) The rudimentary root portion is called radicle.

Answer: iii) The rudimentary stem portion is known as radicle.

8. Consider the following statements regarding the dispersal of fruits and seeds by wind and select the correct answer.

- i) Fruits and seeds are dispersed with a sudden jerk by an explosive mechanism.
ii) The fruits of tridax carry a persistent calyx modified into pappus.
iii) The fruits of xanthium have sharp pointed stiff hooks.
iv) The mesocarp of coconut is fibrous.

Answer: ii) The fruits of tridax carry a persistent calyx modified into pappus.

9. The product of triple fusion which acts as nutritive tissue for the development of an embryo is _____.

- i) zygote ii) placenta iii) scutellum iv) endosperm

Answer: iv) Endosperm

10. The disadvantage of self-pollination is _____.

- i) There is no wastage of pollen grains. ii) The seeds are less in number.
iii) Self-pollination is sure in bisexual flowers iv) Flowers need not depend on agents of pollination.

Answer: ii) The seeds are less in number.

11. The flower is important to a plant because it helps in _____.

- i) attracting ii) production of nectar iii) pollination iv) sexual reproduction

Answer: iv) Sexual reproduction

12. The essential organs of the flower are _____.

- i) Calyx and Corolla ii) Androecium and Gynoecium iii) Calyx and Androecium iv) Corolla and Gynoecium

Answer: ii) Androecium and Gynoecium

13. Cross pollination is important for producing _____.

- i) new varieties of plants ii) plants with better growth iii) disease resistant plants iv) all of the above

Answer: iv) All of the above

14. Anemophily occurs in _____ .

- i) Vallisneria ii) Grass iii) Coconut iv) Datura

Answer: ii) Grass

15. Which of the following structure / arrangement favours entamophily ?

- i) Pollen grains with wings and feathery stigma ii) Colourful petals and nectar secretion
iii) A bunch of flowers with less pollen iv) Pollen grains with mucous covering.

Answer: ii) Colourful petals and nectar secretion

16. Post-fertilization, the ovule changes into a/an _____ .

- i) seed ii) fruit iii) endosperm iv) pericarp.

Answer: i) Seed

17. Which of the following is correctly matched?

- i) False fruit – mango ii) Multiple fruit – apple iii) Aggregate fruit – polyalthia iv) Caryopsis – banana

Answer: iii) Aggregate fruit – polyalthia

18. Identify the mismatched pair.

- i) Legume – Dry dehiscent fruit ii) Cypsela – Dry indehiscent fruit
iii) Pome – Fleshy fruit iv) Regma – Resembles legume

Answer: iv) Regma – Resembles legume

PART - B

19. Write any two differences between asexual and sexual modes of reproduction.

Answer:

No.	Asexual reproduction	Sexual reproduction
1.	It takes place by means of spores .	It takes place by means of gametes ie sperm and egg .
2.	It occurs in lower group of plants. Eg. Algae, Fungi etc	It occurs in higher group of plants.

20. What is vegetative propagation? Mention the vegetative propagules in: i) Bryophyllum ii) Spirogyra

Answer: It is the ability of plants to reproduce by bringing forth new plants from the existing vegetative structures such as root, stem and leaf.

Plant	Vegetative propagules
i) Bryophyllum	Buds produced by leaves.(Budding)
ii) Spirogyra	Fragments of plant body. (Fragmentation)

21. Arrange the following events of sexual reproduction in plants in the correct sequential order :
seed formation, pollination, dispersal of seeds, fertilization.

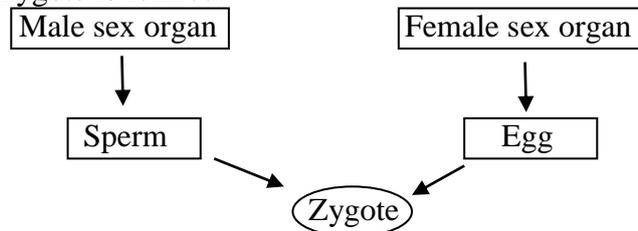
Answer: Pollination → Fertilization → Seed Formation → Dispersal of seeds

22. Define pollination.

Answer: The transfer of pollen grains from the anther to stigma of a flower is called pollination.

23. Define fertilization.

Answer: The fusion of a male gamete (Sperm) with a female gamete (Egg) is known as fertilization. As the result of fertilization zygote is formed.



24. Name the agents of pollination in the following cases:

- i) Bright coloured flowers with scent and nectar glands.
ii) No colour / scent/ nectar but pollen grains are dry, light weight and powdery. Stigma is feathery.

Also mention the plants in cases (i) & (ii).

Answer:

Adaptation	Agents for pollination	Plants
i) Bright coloured flowers with scent and nectar glands.	Insects (Entamophily)	Rose , Lilly etc
ii) No colour / scent/ nectar but pollen grains are dry, light weight and powdery. Stigma is feathery.	Wind (Anemophily)	Pine , Grass etc

25. Name the events (i) & (ii) and mention the nature of the nuclear structures formed at the end in the following cases:

(i) male gamete (n) + egg (n) = Zygote (2n)

(ii) male gamete (n) + secondary nucleus (2n) = Endosperm nucleus (3n).

Answer:

Process	Event	Nature of Nuclear Structure
(i) Male gamete (n) + Egg (n) = Zygote (2n)	Fertilization	Haploid
(ii) Male gamete (n) + Secondary Nucleus (2n) = Endosperm nucleus(3n)	Triple Fusion	Triploid

26. Differentiate dehiscent fruits and indehiscent fruits with suitable examples.

Answer:

No.	Dry Dehiscent Fruits	Dry Indehiscent Fruits
1.	Dehiscent fruits split open at maturity to disperse the seeds.	Indehiscent fruits do not split open at maturity and the seeds are liberated by the decaying of pericarp.
2.	Legume – Peas Follicle – Calotropis Capsule (a) Loculicidal capsule – Cotton (b) Septicidal capsule -Lady's finger	Achene - Clematis, Mirabilis Caryopsis – Paddy Cypsela – Tridax Nut - Cashew nut

27. What are monocotyledons and dicotyledons? Give examples.

Answer:

1. **Dicotyledons:** Seeds with **two cotyledons** e.g. Pea, Bean and Castor.

2. **Monocotyledons:** Seeds with **one cotyledon** e.g. Maize, Rice, Wheat and Onion.

28. Give suitable terms for the following methods of seed / fruit dispersal, with one example each:

(i) By wind (ii) By water (iii) By animals.

Answer:

No.	Methods of seed / fruit dispersal	Term	Examples
1.	By wind	Anemochory	1. Calotropis (Erukkum) 2. Moringa (drumsticks) and 3. Tridax
2.	By water	Hydrochory	1. Coconut and 2. Lotus
3.	By animals	Zoochory	1. Xanthium and 2. Achyranthus

29. Give any two examples for each of the following cases where dispersal of fruits and seeds take place :

(i) by birds (through excreta) (ii) by human beings

Answer:

(i) By birds (through excreta) - Tomato and Guava

(ii) by human beings - Cinchona, Rubber and Eucalyptus

30. What is double fertilization?

Answer: The process of fusion of a male gamete with an egg and the other gamete with a secondary nucleus is known as double fertilization. As the result of double fertilization zygote and endosperm nucleus are formed.

First sperm + Egg = Zygote

Second sperm + Secondary Nucleus = endosperm Nucleus.

31. What is triple fusion?

Answer: The fusion of this nucleus with the second male gamete is known as triple fusion. As the result of Endosperm nucleus is formed.

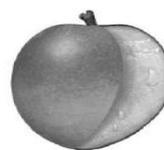
Second Male Gamete (n) + Secondary Nucleus (2n) = Endosperm Nucleus (3n)

32. a. Identify Fig. A and B.

b. Which part of A is modified into B.



A



B

Answer:

a. A – GYNOECIUM B – FRUIT

b. Ovary of Gynoecium (A) is modified into **Fruit** (B)

33. The methods of reproduction and the organisms are given below. Match the type of reproduction with the suitable organism.

<i>Fission</i>	<i>Spirogyra</i>	<i>Yeast</i>
<i>Budding</i>	<i>Protozoans</i>	<i>Flatworms</i>
<i>Fragmentation</i>	<i>Bryophyllum</i>	<i>Bacteria</i>

Answer:

Fission	Protozoan	Bacteria
Budding	Bryophyllum	Yeast
Fragmentation	Spirogyra	Flatworms

34. i) Composite fruits are formed by all the flowers of _____,

ii) _____ fruit is developed from a single flower with a multicarpellary apocarpous superior ovary.

Answer:

i) Composite fruits are formed by all the flowers of **whole inflorescence**.

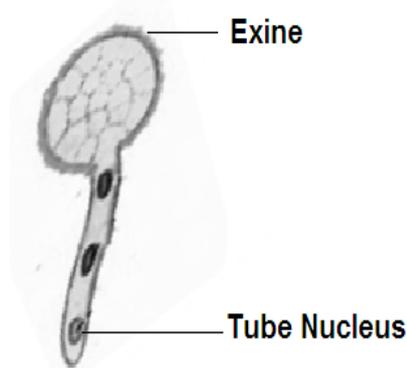
ii) **Aggregate** fruit is developed from a single flower with a multicarpellary apocarpous superior ovary.

35. Draw the given diagram and label the following parts:

i) Exine ii) Tube nucleus.



Answer:



36. Match the following with respect to dispersal of fruits / seeds:

a) Autochory	I) Lotus
b) Anemochory	II) Xanthium
c) Hydrochory	III) Tridax
d) Zoochory	IV) Balsam

Answer:

a) Autochory	Balsam
b) Anemochory	Tridax
c) Hydrochory	Lotus
d) Zoochory	Xanthiun

37. Use words from the given list to complete the following paragraph. (The words may be used once / more than once / not at all).

(seed, fruit, pollination, dispersal, germination, fertilization, flower, reproduction)

Ramu went to the field along with his father. He sowed mustard seeds in the soil. After a few days he observed the process of _____. The seeds grew into plants and produced _____. On maturity, these flowers produced pollen grains that were transferred to the stigma by _____. The male gametes fused with the female gametes during the process of _____.

Answer: Ramu went to the field along with his father. He sowed mustard seeds in the soil. After a few days he observed the process of **germination**. The seeds grew into plants and produced **flower**. On maturity, these flowers produced pollen grains that were transferred to the stigma by **pollination**. The male gametes fused with the female gametes during the process of **fertilization**.

38. Coconut seeds are dispersed by Hydrochory (dispersal by water). Mention the part of the fruit whose modification help in this mechanism.

Answer: The **fibrous mesocarp** of coconut fruit is the modification to help in **Hydrochory**.

PART - C

39. i) Name the process by which a fruit is developed.

ii) Explain the development process in brief.

iii) Draw a neat, labelled diagram of that process.

Answer i) A fruit is developed by the process **Fertilization**.

ii) **Process of Fertilization**

1. Germination of pollen grain : If a pollen grain falls on a suitable stigma, it starts germinating. A mature pollen consists of two cells. The larger one is **vegetative cell** and the smaller one is **generative cell**. The vegetative cell starts growing and emerges through the germination pore. It develops through the style as a long tube known as **pollen tube**. The generative cell gets into the tube and divides into **two male gametes (sperms)**.

2. Fertilization : The pollen tube enters into the embryo sac through micropyle. At this time, the pollen tube bursts open, gametes are released from the pollen tube and enter into the embryo sac. One of the gametes fuses with the egg and the other fuses with the secondary nucleus. The fusion of a **male gamete (Sperm)** with a **female gamete (egg)** is known as **fertilization**. The fertilized egg is known as **zygote** which develops into an **embryo**.

3. Triple fusion : The other male gamete fuses with the secondary nucleus. The secondary nucleus is diploid in nature. The fusion of secondary nucleus with the second male gamete is known as **triple fusion**. The triple fusion nucleus is called primary endosperm nucleus because it develops into an endosperm. Endosperm is a nutritive tissue meant for the development of the embryo.

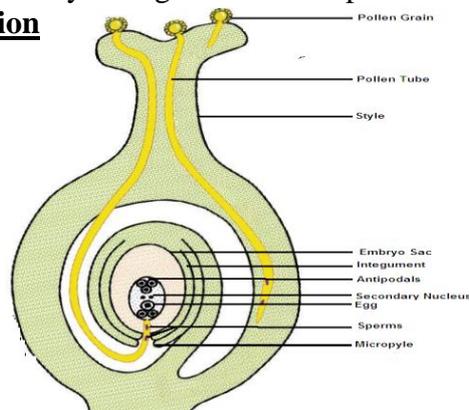
4. Double fertilization : The process of fusion of a male gamete with an egg and the other gamete with a secondary nucleus is known as **double fertilization**.

5. Post fertilization changes : 1. The ovule develops into a seed.

2. The integuments of the ovule develop into seed coats.

3. The ovary enlarges and develops into a fruit.

iii) **Diagram – Process of fertilization**



40. Write the two events involved in the sexual reproduction of a flowering plant.

- i) Discuss the first event and write the types.
- ii) Mention the advantages and the disadvantages of that event.

Answer: The two events involved in the sexual reproduction of a flowering plant are

1. Pollination
2. Fertilization

i) The first event is **Pollination**.

Pollination: The transfer of pollen grains from the anther to stigma of a flower is called pollination.

Types of Pollination : Pollination is of two types. They are:

1. Self pollination
2. Cross pollination

1. Self Pollination (Autogamy) Self pollination is also known as **autogamy**. The transfer of pollen grains from the anther of a flower to the stigma of the same flower or another flower of the same plant is known as self pollination.

2. Cross Pollination (Allogamy) The transfer of pollen grains of a flower to the stigma of another flower of a different plant of the same species is called cross pollination or **allogamy**.

ii) **Advantages of self pollination**

1. Self pollination is certain in bisexual flowers.
2. Flowers do not depend on agents for pollination.
3. There is no wastage of pollen grains.

Disadvantages of self pollination

1. The seeds are less in number.
2. The endosperm is minute. Therefore, the seeds produce weak plants.
3. New varieties of plants cannot be produced, resulting in the degradation of the plant.

Advantages of cross pollination

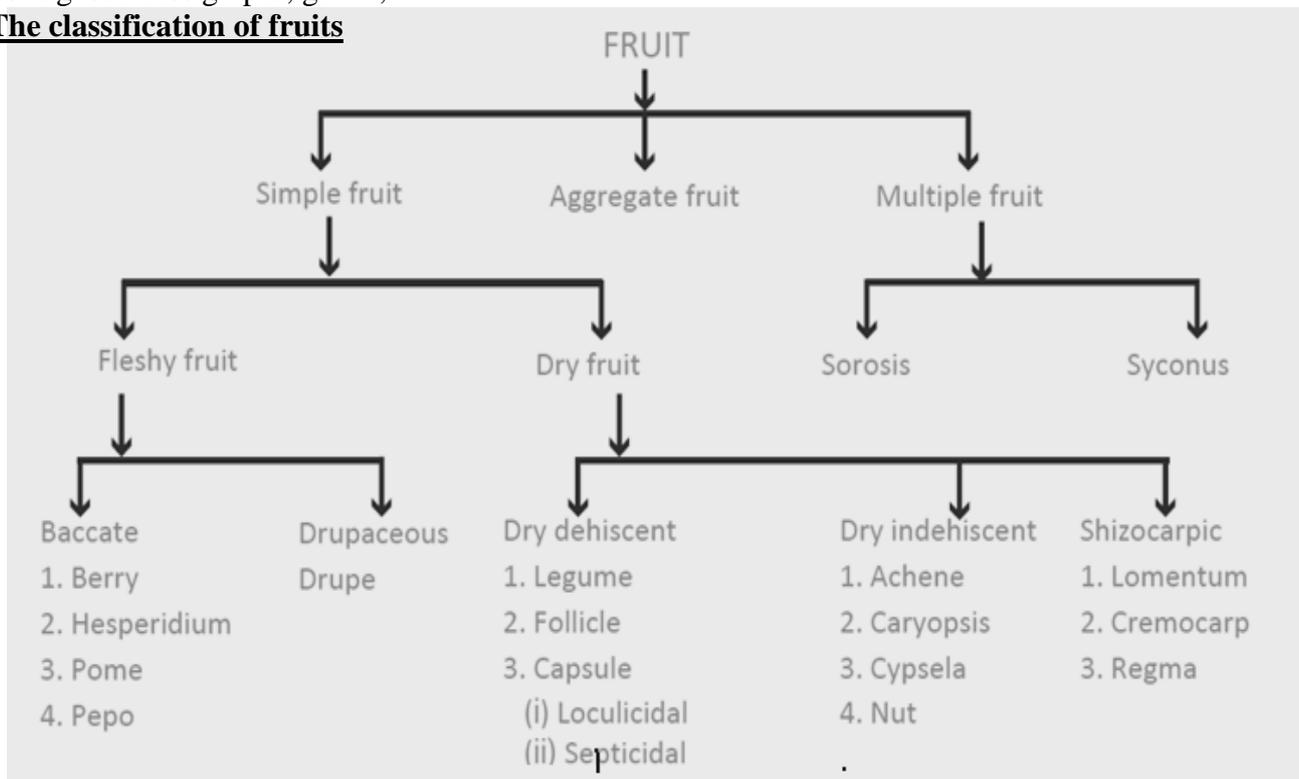
1. The seeds produced as a result of cross pollination, develop and germinate properly and grow into better plants, i.e. cross pollination leads to the production of new varieties.
2. More viable seeds are produced.

41. i) Fruit is the product of fertilization. Is there any fruit which is formed without the act of fertilization?

ii) Represent the classification of fruits in a diagrammatic sketch.

Answer: i) Yes, some fruits develop without the act of fertilization. Such fruits are called Parthenocarpic fruits. e.g. seedless grapes, guava, etc.

ii) **The classification of fruits**



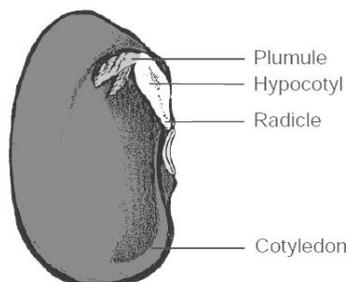
42. Compare aggregate fruits with multiple fruits and give suitable examples.

Answer:

No.	Aggregate fruit	Multiple fruit
1.	Single flower gives many fruits	Many flowers give one fruit .
2.	It develops from multicarpellary apocarpous superior ovary.	It develops from all the flowers of a whole inflorescence .
3.	Fruitlets are attached to a common stalk known as peduncle .	The stalk of the inflorescence form a common axis called rachis .
4.	Each free carpel becomes fruitlet.	Each fertilized flower becomes the fleshy part of the fruit.
5.	Example : 1. Polyalthia (Ashoka tree) 2. Annona squamosa (Custard apple)	Example : 1. Sorosis – Jackfruit 2. Syconus – Banyan and fig

43. Describe the structure of a dicot seed.

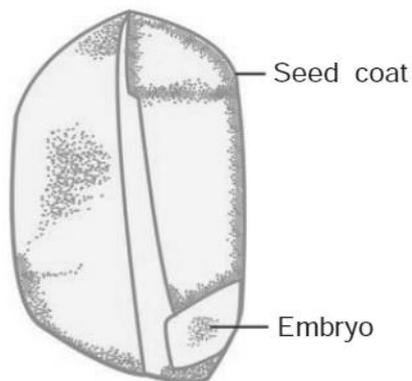
Answer: Structure of Dicot seed (Bean)



1. The seed is bulky, oval and slightly indented on one side.
2. On this side, there is a short longitudinal, whitish ridge called the raphae.
3. At one end of the raphae, there is a minute opening known as germ pore or micropyle.
4. If a water-soaked seed is pressed gently, a small drop of water along with air bubbles will come out through the micropyle.
5. The embryo is enclosed by the seed coat.
6. It consists of cotyledons attached to the primary axis which has a rudimentary root portion called the radicle and a rudimentary stem portion known as plumule.
7. The tip of the radicle projects outside, and is nearer to the micropyle.
8. The plumule is placed between the two cotyledons and consists of a shoot axis and a small bud having two tiny folded leaves.

44. Describe the structure of a monocot seed.

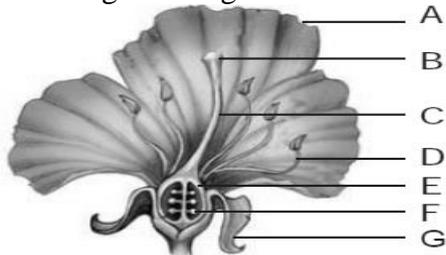
Answer: Structure of Monocot seed (Paddy)



1. In paddy, the so - called seed is actually a fruit.
2. It is a simple indehiscent one – seeded fruit known as caryopsis (you have already studied about this in the lesson on fruits).
3. The seed coat is very thin.
4. The fruit wall (pericarp) is thin and fused with the seed coat.
5. The fruit is generally covered with yellowish bract and bracteoles which are commonly known as chaff.
6. The embryo consists of a single cotyledon called scutellum and a shoot axis.
7. The lower part of the axis is the radicle, covered by a sheath called coleorhiza (root sheath).

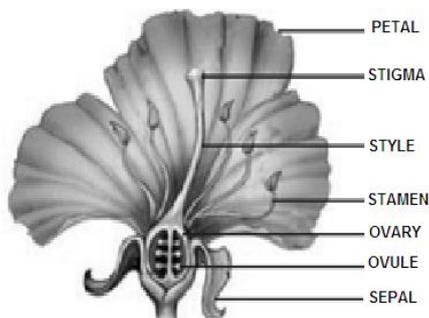
8. The upper part is known as plumule which is covered by a sheath called coleoptile.
9. In a day or two, after the seed is placed in moist soil, the coleorhiza pierces the base of the seed.
10. The radicle comes out next after splitting the coleorhiza.
11. The radicle does not form the root system.
12. Meanwhile, roots are formed from the lower most nodes of the stem.
13. These roots are called adventitious roots.
14. These adventitious roots form the fibrous root system of the matured plant.

45. Observe the given diagram:



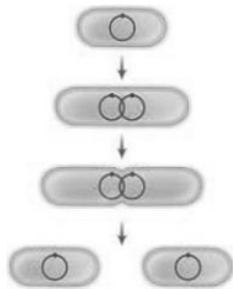
- i) Draw the diagram and label the parts.
- ii) What happens to the parts labelled 'E' and 'F', after the process of fertilization?

Answer: i) **PARTS OF A FLOWER**



- ii) After the process of fertilization,
 Parts **E** – **Ovary** develops into **Fruit** and
 Parts **F** – **Ovule** develops into **Seed**.

46. Look at the diagram given below:



Answer the following:

- i) Name the method of reproduction depicted here.
- ii) Name an organism in which you find this method of reproduction.
- iii) Does this method of reproduction favour variation?

Answer:

- i) The method of reproduction depicted here is **Binary Fission**.
- ii) This method of reproduction is found in **Bacteria**.
- iii) No, this method of reproduction does not favour variation. Because asexually reproduced organisms have the same characters as their parents as there is no fusion of gametes and a single parent is involved.

47. Imagine you have a garden with the plants listed below. A swarm of bees visit your garden. Do you think the bees will visit all the flowers? Name the flowers which you think the bees will be attracted to. Give reasons to substantiate your answer.

(Jasmine, Nerium, Gulmohar, Rose, Lotus, Corn, Sugarcane, Bamboo, Chrysanthemum, Dahlia, Grass, Coconut and Peas)

Answer: Swarm of bees will visit the following flowers

1. Jasmine
2. Nerium
3. Gulmohar
4. Rose
5. Lotus
6. Chrysanthemum
7. Dahlia and
8. Peas

Reason : These flowers have the following adaptations for pollination by insects (**Entamophily**)

1. They have **bright petals**.
2. These flowers are **large** in size
3. They have a **sweet smell** and
4. These flowers produce **nectar**.

48. A farmer has two fields A and B. He cultivates peas (*Pisum sativum*) in both the fields. Field A is covered with nets to keep out birds and insects. Field B is left uncovered.

- i) Name the type of pollination that would occur in field 'A' and field 'B'
- ii) Which of these fields will give a higher yield?
- iii) To raise the next crop, from which field should the seeds be chosen by the farmer.

Give reason to support your answer.

Answer: i) The type of pollination that would occur in field 'A' is **Self Pollination**.

The type of pollination that would occur in field 'B' is **Cross Pollination**.

- ii) Because of cross pollination, field 'B' will give a higher yield.
- iii) To raise the next crop, seeds should be chosen from the field 'B' by the farmer.

Reason : 1. The seeds produced as a result of cross pollination, **develop and germinate properly** and grow into **better plants**.

2. Cross pollination leads to the production of **new varieties**.
5. More **viable seeds** are produced.

49. Mango and Coconut are both drupes. The mesocarp of mango is edible, while it is not so in coconut.

Based on this fact, answer the following:

- i) Which part of the coconut is edible?
- ii) Why does the coconut have a fibrous mesocarp?
- iii) Can you mention any other use of the fibrous mesocarp?

Answer: i) **The endospermic tissue** (White part) of the coconut seed is the edible part.

ii) The mesocarp of coconut is fibrous and helps in dispersal of the fruit by water (**Hydrochory**) It helps the fruit to float in water and easily carried away by water currents.

iii) **Use of the fibrous mesocarp** 1. The fibrous mesocarp is used as a thick protective covering for coconut seed for a long time.

2. The fibrous mesocarp is used to get coir which is used in making ropes, mats, carpets etc

50. Group the following under the given heads: (a) fruit (b) seed (c) neither fruit nor seed.

tomato, cucumber, sprouted pulses, naked bean, grapes, celery, potato, sugarcane, apple, runner bean.

Answer:

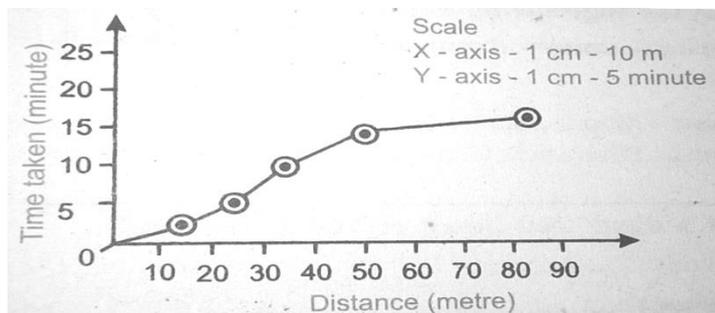
Fruit	1. Tomato, 2. Cucumber 3. Grapes and 4. Apple
Seed	1. Sprouted pulses 2. Naked bean and 3. Runner bean
Neither fruit nor seed	1. Celery 2. Potato and 3. Sugarcane

51. Ramu and Somu happened to observe Calotropis seeds floating in the air. They decided to follow a few of them till the seeds landed on the ground. They recorded their observations in a table as follows:

Distance traveled by seeds in metre	Time taken in minutes
25	6
50	15
37	10
87	17
17	2

- Draw a graph for the above data taking Distance on 'X' axis and Time on 'Y' axis.
- Is there any relationship between the distance travelled and the efficiency of dispersal?
- State the inference you draw from the graph.

Answer: i)



ii) Yes, there is a relationship between the distance travelled and the efficiency of dispersal.

iii) **Inference :**

The graph shows that the distance travelled by the seeds and time taken by them are directly proportional. The light weighted and feathery seeds are carried by wind for a long distance. Their efficiency of dispersal is higher.

52. Given below is a list of dry fruits. Assign the fruits to their relevant types.

(Cotton, Tridax, Paddy, Castor, Coriander, Beans, Peas, Calotropis, Mirabilis, Cashew, Acacia, Lady's finger)

- Achene
- Caryopsis
- Cypsela
- Nut
- Cremocarp
- Lomentum
- Regma
- Loculicidal capsule
- Septicidal capsule
- Follicle
- Legume

Answer:

- Achene -Mirabilis
- Caryopsis -Paddy
- Cypsela -Tridax
- Nut -Cashew
- Cremocarp -Coriander
- Lomentum -Acacia
- Regma -Castor
- Loculicidal capsule -Cotton
- Septicidal capsule -Lady's finger
- Follicle -Calotropis
- Legume -Beans and Peas

53. Monish enters the kitchen and happens to see his mother getting the ingredients ready to prepare kadamba sambar. He sees the ingredients laid out in the kitchen. Help him sort out the ingredients into the fruit types you have studied. (dhal, tamarind, brinjal, tomato, drumstick, coriander, mustard, lady's finger, mango)

Answer:

Ingredients	Types of Fruit	
Dhal	Dry Indehiscent Fruit	Legume
Tamarind	Dry Indehiscent Fruit	Legume
Brinjal and Tomato	Simple Fleshy Fruit	Berry
Drumstick	Dry Dehiscent fruit	Capsule
Coriander	Schizocarpic fruit	Cremocarp
Mustard	Schizocarpic fruit	Regma
Lady's finger	Dry Indehiscent fruit	Septicidal capsule
Mango	Simple fleshy Fruit	Drupe

54. Name the parts of a dicot seed based on the given clues:

- i) Rudimentary root _____.
- ii) Rudimentary shoot _____.
- iii) Fleshy structure storing food for the embryo _____.
- iv) The outer protective layer of a seed is _____.
- v) The minute opening seen in the seed coat is _____.

Answer:

- i) Rudimentary root **radicle** .
- ii) Rudimentary shoot **plumule** .
- iii) Fleshy structure storing food for the embryo **cotyledon**.
- iv) The outer protective layer of a seed is **seed coat**.
- v) The minute opening seen in the seed coat is **micropyle**

55. What are the types of pollination? Which among them is more advantageous? Why?

Answer: Pollination is of two types. They are:

1. Self pollination (Autogamy)

The transfer of pollen grains from the anther of a flower to the stigma of the same flower or another flower of the same plant is known as self pollination.

2. Cross pollination (Allogamy)

The transfer of pollen grains of a flower to the stigma of another flower of a different plant of the same species is called cross pollination.

Cross pollination (Allogamy) is more advantageous. Because

1. The seeds produced as a result of cross pollination, develop and germinate properly and grow into better plants, i.e. cross pollination leads to the production of new varieties.
2. More viable seeds are produced.

56. What is self-pollination? Mention its merits and demerits.

Answer: Self Pollination (Autogamy) : Self pollination is also known as **autogamy**. The transfer of pollen grains from the anther of a flower to the stigma of the same flower or another flower of the same plant is known as self pollination.

Advantages (Merits) of self pollination

1. Self pollination is certain in bisexual flowers.
2. Flowers do not depend on agents for pollination.
3. There is no wastage of pollen grains.

Disadvantages (Demerits) of self pollination

1. The seeds are less in number.
2. The endosperm is minute. Therefore, the seeds produce weak plants.
3. New varieties of plants cannot be produced, resulting in the degradation of the plant.

57. What is known as pollination? List out biotic and abiotic factors which are involved in pollination?

Answer: Pollination: The transfer of pollen grains from the anther to stigma of a flower is called **pollination**.

I. ABIOTIC FACTORS

1. By Wind (Anemophily)
2. By Water (Hydrophily)

II. BIOTIC FACTORS

1. By Insects (Entamophily)
2. By Birds (Ornithophily)
3. By Animals (Zoophily)

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