Toppersnotes®
Unleash the topper in you

CBSE – XIIth

Biology

Central Board of Secondary Education (CBSE)

Most Probable Questions Topic Wise

SIERRA INNOVATIONS

INDEX

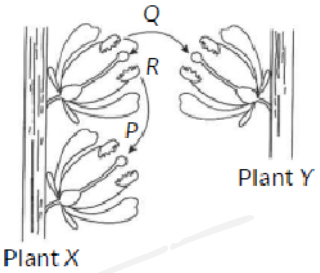
Self Evaluation

Case Based Questions (4/5 marks)

1. Read the passage given below and answer the following questions.

In angiosperms, the pollen grains are being transferred from the anther to the stigma and this phenomena is termed as pollination. It was first discovered by Camerarius in the end of seventeenth century. Pollen grains are immobile. They cannot reach the stigma by themselves. An external agent is required for this. The pollination is mainly of two types-self pollination and cross pollination.

The diagram given below shows two plants of the same species showing different types of pollination.



(i) What is transferred between the flowers of plant X in the process indicated by arrow P?

(ii) Which process represents a type of pollination that would result in greater adaptability of the particular species to potential environmental changes?

(iii) Differentiate between process P and Q.

OR

(iii) Why process P is genetically similar to process R?

2. Read the passage given below and answer the following questions.

The P is a four-sided structure consisting of four microsporangia located at the corners two in each lobe. The microsporangia develop further and become pollen sacs. In a transverse section, a typical microsporangium appears near circular in outline.

It is generally surrounded by four wall layers-the epidermis, endothecium, middle layers and the tapetum.

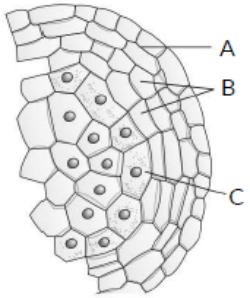
(i) A dithecous P consists of

(A) microsporangia, (B) in each lobe.

Select the option that correctly fills the blanks.

A	B
(a) four two	(b) two one
(c) two two	(d) four one

(ii) The given diagram shows microsporangium of a mature P. Identify A, B and C.



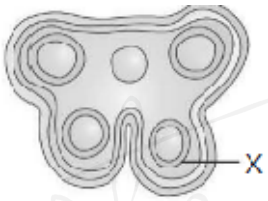
(a) A-Middle layer, B-Endothecium, C-Tapetum

(b) A-Endothecium, B-Tapetum, C- Middle layer

(c) A-Endothecium, B-Middle layer, C-Tapetum

(d) A-Tapetum, B-Middle layer, C-Endothecium

(iii) The function of labelled part X of P is



(a) dehiscence (b) mechanical

(c) nutritive (d) protective

(iv) Select the incorrect statement regarding P.

(a) Microsporangium is generally surrounded by four wall layers-epidermis, endothecium, middle layers and tapetum.

(b) Outer three layers perform functions of protection and dehiscence of anthers.

(c) Cells of tapetum possess dense cytoplasm and generally have more than one nucleus.

(d) Cells of tapetum undergo meiosis and produce microspore tetrads.

(v) Which function of innermost layer of P is correct?

(a) Helps in pollen wall formation

(b) Transportation of nutrients to inner side of anther

(c) Synthesis of callase enzyme for separation of microspore tetrads

(d) All of these

A & R Questions ***(1 mark)***

In the following questions a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following.

(a) Assertion and reason both are correct statements and reason is correct explanation for assertion.
(b) Assertion and reason both are correct statements but reason is not correct explanation for assertion.
(c) Assertion is correct statement but reason is wrong statement.
(d) Assertion is wrong statement but reason is correct statement.

3. ***Assertion :*** Perisperm is protective covering of seed and helps in dispersal and nutrition.
Reason : Pericarp is protecting covering of fruit.

4. ***Assertion :*** One pollen mother cell forms four microspores.
Reason : Microspores are formed due to reduction division.

Multiple Choice Questions ***(1 mark)***

5. Which one of the following statements is wrong?
(a) When pollen is shed at two-celled stage, double fertilisation does not take place.
(b) Vegetative cell is larger than generative cell.
(c) Pollen grains in some plants remain viable for months.
(d) Intine is made up of cellulose and pectin.

6. If the number of chromosomes in root cell is 14, then what will be the chromosome number in synergids?
(a) 14 (b) 21 (c) 7 (d) 28

7. The type of pollination in which genetically different pollen grains are brought to stigma is
(a) geitonogamy (b) cleistogamy
(c) xenogamy (d) chasmogamy.

8. Study the following statements and select the correct option.
(A) Tapetum nourishes the developing pollen grains.
(B) Hilum represents the junction between ovule and funicle.
(C) In aquatic plants such as water hyacinth and water lily, pollination is by water.
(D) The primary endosperm nucleus is triploid.
(a) A and B are correct but C and D are incorrect.
(b) A, B and D are correct but C is incorrect.
(c) B, C and D are correct but A is incorrect.
(d) A and D are correct but B and C are incorrect.

9. Which one of the following events takes place after double fertilisation?
(a) The pollen grain germinates on the stigma.
(b) The pollen tubes enter the embryo sac.
(c) Two male gametes are discharged into the embryo sac.
(d) The PEN (Primary Endosperm Nucleus) develops into endosperm.

VSA Type Questions ***(1 mark)***

10. All papaya plants bear flowers but fruits are seen in some. Explain.

OR

What is pericarp? Mention its function.

11. Normally one embryo develops in one seed but when an orange seed is squeezed many embryos of different shapes and sizes are seen. Mention how it has happened?

12. How many meiotic divisions are required for the formation of 400 pollen grains?

SA I Type Questions ***(2 marks)***

13. Differentiate between autogamy, geitonogamy and xenogamy.

14. Where is sporopollenin present in plants? State its significance with reference to its chemical nature.

OR

Explain the processes of emasculation and bagging of flowers. State their importance in breeding experiments.

15. What is the importance of apomixis?

16. Why is fertilisation in an angiosperm referred to as double fertilisation? Mention the ploidy of the cells involved.

17. Write a short note on water pollination.

SA II Type Questions ***(3 marks)***

18. (a) Why is tender coconut considered healthy source of nutrition?
(b) How are pea seeds different from castor seeds with respect to endosperm?

19. Draw a diagram of a mature pollen grain of an angiosperm. Label any four parts. Why is sporopollenin considered the most resistant organic material?

20. Describe the characteristic features of an insect pollinated flower.

21. Differentiate between albuminous and nonalbuminous seeds, giving one example of each.

OR

(a) Mention the exact location or the site in a flowering plant where the following developments take place.
(i) Deposition of sporopollenin
(ii) Megasporogenesis
(b) Draw a well labelled diagram of structure of maize seed.

LA Type Questions ***(5 marks)***

22. How does the megaspore mother cell develop into 7-celled, 8 nucleate embryo sac in an angiosperm? Draw a labelled diagram of a mature embryo sac.

23. Give reasons why
(a) most zygotes in angiosperms divide only after certain amount of endosperm is formed
(b) groundnut seeds are exalbuminous 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
(e) apple and cashew are not called true fruits.

24. (a) Draw a diagram of a multicarpellary syncarpus pistil and multicarpellary apocarpous gynoecium.
(b) Mention the function of different wall layers of an anther.

25. (a) Draw a diagram of an enlarged view of T.S. of one microsporangium of an angiosperm and label the following parts:
(i) Tapetum
(ii) Middle layer
(iii) Endothecium
(iv) Microspore mother cells
(b) How many number of nuclei are present in a fully developed male gametophyte of angiospermic plants?
(c) Explain the following giving reasons:
(i) Pollen grains are well preserved as fossils.
(ii) Pollen tablets are in use by people these days.

OR

(a) Draw a labelled diagram of (i) castor seed (ii) onion seed.
(b) Explain the events that occur during pollenpistil interaction.

Toppersnotes unleash the topper in you

1 Topic Wise Questions

Flower–A Fascinating Organ of Anglosperms

1. What do we call the part of the plant that encloses a developing bud?
(a) Petals (B) Carpels
(C) Sepals (D) Leaves

2. Flower is a highly modified and condensed reproductive shoot specially meant for
(A) Vegetative reproduction
(B) Sexual reproduction
(C) Asexual reproduction
(D) Parthenocarpic reproduction

3. Flowers are:
(A) Embryological marvels (B) Morphological marvels
(C) Both (A) and (B) (D) None of these

4. In angiosperms, the site of sexual reproduction is
(A) Seed (B) Fruit (C) Flower (D) Embryo

5. The study of growing and marketing flowers and foliage plants is called
(A) Agriculture (B) Floriculture
(C) Sericulture (D) All of the above

6. Which of the following are female and male reproductive structures of the angiosperms?
(A) Carpel and pistil respectively
(B) Stamen and pistil respectively
(C) Androecium and gynoecium respectively
(D) Gynoecium and androecium respectively

Pre–Fertilisation : Structure and Events

7. If the female parent produces unisexual flower
(A) Emasculation must be done before maturity
(B) Emasculation must be done after maturity
(C) Emasculation must be done before pollination
(D) Emasculation is not needed

8. The only type of pollination that brings genetically different types of pollen grains to the stigma is
(A) Chasmogamy (B) Cleistogamy
(C) Geitonogamy (D) Xenogamy

9. Continued self-pollination result in
(A) Inbreeding depression
(B) Self incompatibility
(C) Formation of unisexual flowers
(D) Loss of vigour

10. Choose the correct statements regarding cross-pollination in angiosperms?
(A) It requires the production of a large number of pollen grains.
(B) It can fail to occur due to distance barriers.
(C) It takes place mostly in unisexual flowers.
(D) It produces high yielding plants.

11. Select the correct statement regarding tapetum?
(A) It is the innermost layer of anther wall.
(B) Cells of tapetum are quite large in size and consist of more than one nucleus.
(C) It contributes to the formation of sporopollenin.
(D) All of these

12. By which of the following division male gametes or sperms are developed from generative cell?
(A) Meiotic division (B) Mitotic division
(C) Amitotic division (D) None of the above

13. The proximal end of filament is attached to
(A) Thalamus (B) Stamen (C) Stigma (D) Anther

14. Exine of pollen grain is formed of
(A) Callose (B) Pecto-cellulose
(C) Ligno-cellulose (D) Sporopollenin

15. Which of the following is characteristic of angiosperm anther?
(A) Trilobed and monothecous
(B) Bilobed and monothecous
(C) Bilobed and dithecous
(D) Monolobed and dithecous

16. Parthenium (carrot grass) has become wide spread and develops pollen allergy. Parthenium came into India as a contaminant with imported
(A) Wheat (B) Rice (C) Carrot (D) Grain

17. Which of the following is an advantage of cross-fertilisation?
(A) Increased genetic recombination
(B) Meiosis can occur
(C) Greater efficiency of pollination
(D) No flowering is needed

18. The bilobed character of an anther is very distinct in the
(A) Transverse section (B) Longitudinal section
(C) Latitudinal section (D) All of these

19. The theca of anthers are separated by
(A) Horizontal groves (B) Longitudinal groves
(C) Diagonal groves (D) None of the above

20. Which of the following is a correct arrangement of four wall layers in microsporangium from inside to outside
(A) Epidermis, endothecium, tapetum and middle layers
(B) Epidermis, middle layers, endothecium and tapetum
(C) Endothecium, epidermis, middle layers and tapetum
(D) Tapetum, middle layers, endothecium and epidermis

21. The microspores, as they are formed, are arranged in a cluster of four cells—the microspore tetrad. As the anthers mature and dehydrate, the microspores dissociate from each other and develop into
(A) Pollen grains (B) Female gametophyte
(C) Male gametophyte (D) Both (A) and (C)

22. Pollen grain consists of double layered walls. The inner wall
(A) Is made up of cellulose and pectin
(B) Is thin and continuous
(C) Is made up of fat-like Sporopollenin
(D) Both (A) and (B) are correct

23. Which of the following functions of the filiform apparatus?
(A) To guiding the pollen tubes into the synergid
(B) Fertilise with extra male gametes and form an endosperm
(C) Produce additional embryos
(D) Protect eggs from pathogens

24. Which of the following is the function of the funicle?
(A) Provide support to the body of ovule
(B) Supplying nutrition to the body from the placenta
(C) Both (A) and (B) are correct
(D) None of the above

25. When the pollen grain is mature it consists of two cells, the generative cell and vegetative cell. The vegetative cell
A. Is bigger
B. Spindle shaped
C. Has abundant food reserve
D. Has a large irregularly shaped nucleus.
(A) A, B and C (B) A, C and D
(C) A, B, C and D (D) B, C and D

26. The number of microsporangia in one lobe of anther is/ are
(A) 2 (B) 4 (C) 1 (D) 3

27. A microspore mother cell undergoes_____ during formation of mature male gametophyte.
(A) One meiotic division
(B) Two mitotic division only
(C) One meiotic and one mitotic divisions
(D) One meiotic and two mitotic divisions

28. How many pollen grains are produced by an anther having four microsporocytes?
(A) 24 (B) 14 (C) 8 (D) 16

29. In pollen grain, the generative cell is:
(A) Small and floats in the cytoplasm of vegetative cell
(B) Spindle-shaped
(C) Having a dense cytoplasm and a nucleus.
(D) All of these

30. Syngamy is defined as
(A) Fusion of a sperm with a secondary nucleus.
(B) Fusion of a sperm with egg
(C) Fusion of one sperm with egg and other with secondary nucleus
(D) Fusion of sperm with primary endosperm nucleus

31. The anther is usually
(A) Tetragonal (B) Trigonal
(C) Both (A) and (B) (D) None of these

32. In angiosperm embryo sac is
(A) 8 - nucleate, 7 - celled (B) 7 - nucleate, 7 - celled
(C) 7 - nucleate, 8 - celled (D) 9 - nucleate, 6 - celled

33. Which layer of microsporangium provides nutrition to the pollen grains?
(A) Epidermis (B) Endothecium
(C) Tapetum (D) Both (A) and (C)

34. Mark the incorrect statements regarding sporopollenin?
(A) Sporopollenin help in the formation of exine
(B) Sporopollenin is not degraded by any known enzyme
(C) Sporopollenin occurs in the area of germ pores only
(D) Sporopollenin is most resistant organic material

35. In flowering plants, meiosis takes place during
(A) Pollen grain formation (B) Seed formation
(C) Fruit formation (D) Seed germination

36. Which of the following agents is most commonly used by grasses?
(A) Wind (B) Water (C) Birds (D) Soil

37. Pollen grains are able to tolerate extremes of temperatures and desiccation because their exine consists of
(A) Cutin (B) Suberin
(C) Sporopollenin (D) Callose

38. Certain rewards to pollinators include
(A) Nectar and pollen grains as foods
(B) Provide safe place for laying eggs
(C) Formation of embryos
(D) Both (A) and (B)

39. Which of the following is an estimated size of pollen grains?
(A) 75-80 micrometers (B) 5-15 micrometers
(C) 25-50 micrometers (D) 30-90 micrometers

40. In angiosperm, megasporangium is equivalent to
(A) Ovule (B) Embryo sac
(C) Ovary (D) Egg apparatus

41. Tissue present in the centre of each microsporangium is called
(A) Sporogenous tissue (B) Sporophytic tissue
(C) Connective layer (D) Endothecium

42. What would be the ploidy of the cells of the tetrad in a diploid plants.
(A) Triploid (B) Diploid (C) Haploid (D) Tetraploid

43. An ovule consist of a single embryo sac formed from a megaspore through
(A) Reduction divisions
(B) Mitotic divisions
(C) Mitotic division followed by reductional division
(D) Reductional divisions followed by mitotic division

44. Which of the following is a characteristic of insect pollinated flowers?
(A) Light coloured scented pollen covered with nectar
(B) Dry pollens with smooth surface
(C) Sticky pollen and rich in nectar
(D) Brightly coloured pollens in large quantity

45. Which of the following correctly describes the function of germ pore?
(A) It helps in the formation of pollen tube
(B) It help in the formation of microspore tetrad
(C) It provides nourishment to the developing embryo
(D) It helps in withstanding high temperature and strong acids

46. Pollination carried out through water is
(A) Anemochory (B) Hydrophily
(C) Hydrochory (D) Anemophily

47. Which of the following divisions help in formation of mature male gametophyte from pollen mother cell?
(A) One meiotic division
(B) Two Meiotic division
(C) One meiotic and two mitotic division
(D) Three reductional divisions

48. Embryo sac is monosporic when it develops from
(A) One of the four megaspores of a megaspore mother cell
(B) Three megaspores of megaspore tetrad
(C) Two functional megaspores
(D) The megaspore mother cell where meiosis has occurred but cytokinesis does not take place

49. A typical embryo sac consist of
(A) Egg, synergids and secondary cell
(B) Synergids, egg, central cell and secondary wall
(C) Egg, synergids, polar nuclei and antipodals
(D) Egg, synergids and secondary wall

50. What type of division takes place when PMC forms microspores?
(A) Meiotic division (B) Reductional division
(C) Equational division (D) Both (A) and (B)

51. Pollen grain is related to embryo sac as
(A) Sperm is to the endosperm
(B) Sperm is to the egg
(C) Male gametophyte is to the antipodals
(D) Male gametophyte is to megaspore mother cell

52. Which one produces an embryo sac?
(A) Megaspore mother cell
(B) Megaspore
(C) Microspore
(D) Embryo cell

53. Based on the source of pollen, pollination can be categorised into
(A) Two types (B) Three types
(C) Four types (D) Various types

54. What do we call the yellowish powdery substance on the anthers of a Hibiscus flower?
(A) Microsporangium (B) Exine
(C) Male gametophyte (D) Female gametophyte

55. Which of the following is an advantage of cleistogamy?
(A) It leads to greater genetic diversity
(B) Seed dispersal is more widespread and efficient.
(C) Each visit of the pollinator brings hundreds of pollen grains.
(D) Seed set is not dependent upon pollinators.

56. For which of the following flowers, complete autogamy is rather rare?
(A) Cleistogamous
(B) Chasmogamous
(C) That does not open at all
(D) Both (A) and (C)

57. Which of the following conditions is required for the autogamy?
(A) Bisexuality
(B) Synchrony in pollen release and stigma receptivity
(C) Stigma and anther should be close to each other
(D) All of these

58. In the corn cob the tassels which wave in the wind to trap the pollen grains represents
(A) Stigma and style (B) Style and ovary
(C) Stigma (D) Style

59. The shape of generative cell is
(A) Circular (B) Spindle (C) Spherical (D) Linear

60. In angiosperm the endosperm develops from
(A) Zygote
(B) Secondary nucleus
(C) Chalazal polar nucleus
(D) Micropylar polar nucleus

61. Genetic fertilisation involves the fusion of male gamete with
(A) A synergid (B) Oosphere
(C) Central cell (D) Antipodal cell

62. Tallest flower of the world is
(A) Rafflesia (B) Amorphophallus
(C) Yucca (D) Fig

63. Species that provide floral rewards in the form of providing a safe area to lay eggs?
(A) Amorphophallus (B) Fig
(C) Yucca (D) All of these

64. The diploid nucleus formed by the fusion of two polar nuclei is called
(A) Secondary nucleus
(B) Vegetative nucleus
(C) Generative nucleus
(D) Secondary endosperm nucleus

65. Chasmogamous and cleistogamous type of flower are found in
(A) Primrose (B) Ficus
(C) Commelina (D) Calotropis

66. Pollen grains are stored for years in liquid nitrogen at _____°C.
(A) –196 (B) 37 (C) 0 (D) 100

67. Which of the following are common abiotic pollinators?
(A) Wind (B) Water
(C) Both (A) and (B) (D) Insects

68. Many insects may consume pollen or the nectar without bringing about pollination. Such floral visitors are referred to as
(A) Pollen robbers (B) Nectar robbers
(C) Pseudocopulators (D) Both (A) and (B)

69. Dioecious plants such as date palm, papaya prevent
(A) Autogamy but not geitonogamy
(B) Geitonogamy but not autogamy
(C) Both geitonogamy and autogamy
(D) Neither geitonogamy nor autogamy

70. Which one is the female gamete in embryo sac?
(A) Synergid (B) Antipodal cell
(C) Oosphere (D) Central cell

71. In what percentage angiosperms the male gametophyte is shed at the three-celled stage.
(A) 60% (B) 70% (C) 40% (D) 30%

72. All the stages from pollen deposition on the stigma till pollen tubes enter the ovules are together called as
(A) Fertilisation (B) Complete division
(C) Pollen-pistil interaction (D) Pollination

73. Which of the following diseases are caused by pollen grains?
(A) Asthma (B) Bronchitis
(C) Allergies (D) All of the above

74. One of the major approaches of crop improvement programmes is artificial hybridisation. For the bisexual flower it includes the following steps in correct order.
(A) Bagging, pollination, rebagging
(B) Emasculation, pollination, bagging, rebagging
(C) Emasculation, bagging, pollination, rebagging
(D) Bagging, emasculation, pollination, rebagging

75. If the pollen is of incompatible type, then the pistil rejects the pollen by preventing
(A) Pollen germination on the stigma
(B) Pollen tube growth in the style
(C) Double fertilisation
(D) Both (A) and (B) are correct

76. Pollen grains are well-preserved as fossils because of the presence of
(A) Lignocellulose (B) Sporopollenin
(C) Pectocellulose (D) Pectin

77. The region of ovule fuses with the funicle is called
(A) Micropyle (B) Hilum
(C) Embryo sac (D) Nucellus

78. Tapetum present in the microsporangia wall occurs between
(A) Epidermis and endothecium
(B) Endothecium and middle layers
(C) Epidermis and middle layers
(D) Middle layers and sporogenous tissue

79. Element that is essential for the germination of the pollen tube is:
(A) Calcium (B) Boron (C) Magnesium (D) Sulphur

80. Xenogamy is
(A) Pollination between two flowers of two different plants
(B) Pollination between two different flowers of same plant
and same branch
(C) Pollination between anther and stigma of the same flower
(D) A mechanism of parthenocarpy

81. Cleistogamous flowers are
(A) Wind pollinated (B) Insect pollinated
(C) Bird pollinated (D) Self-pollinated

82. The placenta is located in
(A) Stigma (B) Thalamus
(C) Locule (D) All of the above

83. In plants, generative cell divides and form the two male gametes during the
(A) Entry of pollen tube in the ovule
(B) Fusion of pollen grain in the ubisch bodies
(C) Growth of pollen tube in the stigma
(D) Growth of pollen tube in the style

84. More than one ovule is found in
(A) Papaya (B) Mango
(C) Orchids (D) Both (A) and (C)

85. Which of the following events is important for fertilisation after pollination?
(A) Sperm swim to the egg and the polar nuclei.
(B) Petals close around the reproductive parts.
(C) The process of cell division (meiosis) takes place within the pollen grain.
(D) A pollen tube grows from the stigma to the ovule

86. Select the odd one out with respect to single ovule found inside the ovary
(A) Watermelon (B) Paddy
(C) Mango (D) Wheat

87. Wall of a pollen sac comprises of
(A) Endothecium and tapetum only
(B) Tapetum and middle layers only
(C) Endothecium, middle layers and tapetum
(D) Epidermis, ectodermis, tapetum

88. What is the importance of MMC undergoing reductional division?
(A) It is necessary to maintain the ploidy of gametes
(B) It results in the formation of diploid gametes
(C) It helps in the formation of microsporangia
(D) It helps in monosporic development of embryo sac

89. One of the most resistant biological materials is
(A) Lignin (B) Hemicellulose
(C) Lignocellulose (D) Sporopollenin

90. How many nuclei of the embryo sac are surrounded by a cell wall?
(A) 6 (B) 8 (C) 4 (D) 5

91. Exine of pollen is formed by activity of
(A) Tapetum (B) Endothelium
(C) Middle layers (D) Endothecium

92. A pair that has haploid structures is:
(A) Nucellus and stamen
(B) Antipodal cells and egg cell
(C) Antipodal cells and megaspore mother cell
(D) Nucellus and primary endosperm nucleus

93. What happened to the seven cells of the embryo sac?
(A) All but one fertilised; the others disintegrate
(B) Two become fertilised; the others disintegrate.
(C) Two become fertilised; the others fuse to form an endosperm.
(D) All the seven cells of the embryo sac are involved in double fertilisation.

94. The constant feature of embryo sac is
(A) Synergids (B) Antipodals
(C) Egg (D) Polar nuclei

95. Chasmogamy refers to a condition where
(A) Flowers remain closed
(B) Flowers are absent
(C) Flowers are open
(D) Flowers are gamopetalous

96. Megasporangium along with its protective integument is called
(A) Ovary (B) Ovule (C) Funicle (D) Chalaza

97. Which of the following is known as common pansy?
(A) Commelina (B) Viola
(C) Pisum (D) Vallisneria

98. In flowering plants, Sporogenesis involves
(A) Microsporogenesis and megasporogenesis
(B) Formation of diploid spores
(C) Formation of haploid spores
(D) Formation of nucellus

99. Egg apparatus comprises of
(A) Egg cell and antipodal cells
(B) Antipodal cell and central cell
(C) Egg cell and two synergids
(D) Egg cell and one synergid

100. In a flower, if the megaspore mother cell forms megaspores without undergoing meiosis and if one of the megaspores develops into an embryo sac, its nuclei would be
(A) Haploid
(B) Diploid
(C) A few haploid and a few diploid
(D) With varying ploidy

101. Cross-pollination is preferred over self-pollination because
(A) It results in better offspring
(B) The new varieties are formed
(C) It is easy
(D) Parthenogenesis can be induced

102. Which of the following is a characteristic of wind pollinated flowers?
(A) Feathery exserted stigma
(B) Feathery inserted stigma
(C) Narrow exserted stigma
(D) Flattened outward stigma

103. The distribution of bryophytes and pteridophytes is limited because of the need of
(A) Soil (B) Land
(C) Water (D) Both (A) and (C)

104. In insect pollinated pollen grain, tapetum helps in the development of
(A) Sporopollenin (B) Cellulose
(C) Pectin (D) Pollen kit

105. In cross self fertilised plants, the flowers are first emasculated. Which organ of the plant is removed in this process?
(A) Ovary (B) Ovules
(C) Stigmas (D) Stamens or anthers

106. Which one is surrounded by callose walls?
(A) Male gamete (B) Pollen grain
(C) Egg (D) Microspore mother cell

107. In a fertilised ovule n, 2n and 3n conditions occur respectively in
(A) Antipodal, egg and endosperm
(B) Egg, Nucellus and endosperm
(C) Nucellus, endosperm and egg
(D) Synergids, antipodals and integuments

108. Dioecious condition can prevent
(A) Autogamy (B) Xenogamy
(C) Geitonogamy (D) Both (A) and (C)

Double Fertilisation

109. Fertilisation is synonymous with
(A) Autogamy (B) Syngamy
(C) Homogamy (D) Apogamy

110. Which of the following is a fusion product of polar nuclei and male gamete?
(A) Nucellus
(B) Primary endosperm nucleus
(C) Egg
(D) Secondary nucleus

111. Triple fusion in angiosperms produces
(A) Polar nucleus
(B) Primary endosperm cell
(C) Primary endosperm nucleus
(D) Zygotic nucleus

112. Select the incorrect statement from the following.
(A) PEC develops into endosperm
(B) Radicle leads the formation of shoot
(C) Plumule gives rise to shoot after the germination of seed
(D) Dicots possess two cotyledons

113. In embryo sac, central cell consist of
(A) A single haploid nucleus.
(B) Two polar nuclei.
(C) One diploid secondary nucleus.
(D) (B) and (C) can be correct

114. After triple fusion the central cell becomes the
(A) PEC (primary endosperm cell)
(B) PEN (primary endosperm nucleus)
(C) Triploid
(D) PEC and develops into embryo

115. Following double fertilisation, events of endosperm and embryo development, maturation of ovules into seeds and ovary into fruit, are collectively termed as
(A) Pollen—pistil interaction
(B) Artificial hybridisation
(C) Embryogenesis
(D) Post- fertilisation events

116. What is the ploidy of PEN?
(A) 2n (B) n (C) 3n (D) 4n

117. In double fertilisation fusion of _____ occurs.
(A) Two eggs
(B) One egg and onepolar nuclei with pollen nuclei
(C) One male gamete with egg and other with synergid
(D) One male gamete with egg and other with secondary nucleus

118. In angiosperm a unique phenomenon observed in the embryo sac is
(A) Fusion of gametes (B) Vegetative fertilisation
(C) Triple fusion (D) Double fertilisation

119. During the development of dicot embryo the suspensor cells are present towards the
(A) Radicle (B) Plumule
(C) Cotyledon (D) None of the above

120. Which of the following plants show double fertilisation?
(A) Liverworts (B) Pteridophytes
(C) Gymnosperms (D) Angiosperms

121. Fusion of one male gamete with egg and other of the same pollen tube with polar nuclei is
(A) Triple fusion (B) Vegetative fertilisation
(C) Double fertilisation (D) Parthenogenesis

122. Embryo is developed from
(A) Antipodal cells (B) PEN
(C) Zygote (D) PEC

123. Which of the following processes are required to produce egg cells from megasporocytes?
(A) Meiosis followed by mitosis
(B) Mitosis followed by meiosis
(C) Several meiotic divisions only
(D) Various reductional division

Post–Fertilisation : Structures & Events

124. In dicot seed, the correct order of embryogeny is
(A) Zygote → Proembryo → Globular → Heart-shaped → Mature embryo
(B) Zygote → Globular → Proembryo → Heart-shaped → Mature embryo
(C) Proembryo → Zygote → Globular→ Heart-shaped → Mature embryo
(D) Zygote → Globular → Heart-shaped → Proembryo →Mature embryo

125. In _____ endosperm is completely consumed by the developing embryo.
(A) Pea and groundnut (B) Castor and maize
(C) Castor and groundnut (D) Pea and maize

126. Coleorhiza is present at
(A) Radical end enclosed in an undifferential sheath
(B) Shoot end enclosed in an undifferential sheath
(C) Root cap enclosed in a differential sheath
(D) Shoot end enclosed in a differential sheath

127. Endosperm is not completely consumed by developing embryo in
(A) Gram (B) Bean (C) Castor (D) Pea

128. A dicotyledonous embryo comprises of
(A) Radicle only
(B) Embryonal axis and cotyledons
(C) Cotyledons only
(D) Nucellus only

129. Perisperm is
(A) Degenerate part of synergids.
(B) Peripheral part of endosperm
(C) Degenerate part of secondary nucleus.
(D) Remnants of nucellus.

130. Which of the following floral parts forms pericarp after fertilisation?
(A) Nucellus (B) Outer integument
(C) Ovary wall (D) Inner integument

131. Embryonal axis present above the cotyledon is referred to as
(A) Hypocotyl (B) Funicle
(C) Epicotyl (D) Radicle

132. How many chromosomes are present in the aleurone layer if the megaspore mother cell consists of 10 chromosomes?
(A) 10 (B) 20 (C) 15 (D) 30

133. The aleurone layer is present in the peripheral area of
(A) Endosperm (B) Coleoptile
(C) Cotyledon (D) Epicotyl

134. Non-albuminous seeds are present in
(A) Maize (B) Wheat
(C) Rice (D) Groundnut

135. Genetic self-incompatibility tends to increase
(A) Pollen dispersal (B) Inbreeding
(C) Pollination (D) Outcrossing

136. More than thousands of years old viable seed of Lupinus arcticus excavated from
(A) Arctic Tundra
(B) King Herod fs palace near the Death Sea
(C) Rohtang Pass near Manali
(D) Midway Islands

137. Free nuclear division occur in
(A) Flower (B) Gametes
(C) Endosperm (D) Fruit

138. In angiosperm, which of the following is the correct sequence of developmental stages in the life cycle?
(A) Cleavage → Fertilisation → Differentiation→ Fruit formation
(B) Pollination→ Fertilisation →Seed formation → Germination
(C) Double fertilisation → Germination → Seed dispersal → Endosperm formation
(D) Maturation → Mitosis → Differentiation → Fertilisation

139. The process of formation of embryos is called
(A) Parthenogenesis (B) Embryogenesis
(C) Apomixis (D) Gametogenesis

140. False fruits are found in
(A) Guava, pear and sapota
(B) Black pepper and beet
(C) Apple, strawberry and cashew
(D) Banana and apple

141. Diplospory is a condition in which a diploid embryo is formed from
(A) Nucellus (B) Integument
(C) Megaspore mother cell (D) Antipodal cell

142. Parthenogenesis is the development of a new individual from
(A) A single gamete without fertilisation.
(B) Fertilisation of female gamete with female gamete.
(C) Fertilisation of male gamete with male gamete.
(D) Vegetative structure

143. Albuminous seeds are found in
(A) Wheat, maize and barley
(B) Castor
(C) Orchid
(D) Both (A) and (B)

144. The record of oldest seed dormancy is of
(A) 2,000 years (B) 3,000 years
(C) 10,000 years (D) 15,000 years

145. Food is stored in albuminous seed in
(A) Testa (B) Cotyledon
(C) Endosperm (D) Plumule

146. In plants, seed dormancy allows to
(A) Overcome unfavourable climatic conditions
(B) Produce healthy seeds
(C) Reduce viability of seeds
(D) Prevent deterioration of seeds

147. Seed coat is derived from
(A) Pericarp (B) Epicarp
(C) Integuments of ovule (D) Nucellus

148. Development of the embryo is towards the _____ end of the embryo sac.
(A) Micropylar (B) Chalazal
(C) Radicle (D) Coleorhizal

149. When the seeds becomes dry, the percentage of moisture present by mass is
(A) 10-15% (B) 25-30% (C) 90-95% (D) 60-70%

150. In seed germination, seed coat ruptures because of the
(A) Differentiation of cotyledons
(B) Massive glycolysis in cotyledons and endosperm
(C) Massive imbibition of water
(D) Increase in cell division

151. Remnants of nucellus is seen in
(A) Black pepper (B) Beetroot
(C) Castor (D) Both (A) and (B)

152. Egg apparatus consists of
(A) Egg and antipodals (B) Polar nuclei
(C) Egg and synergids (D) Egg

153. If an angiospermic female plant is tetraploid and male plant is diploid, the ploidy level of an endosperm will be
(A) Haploid (B) Diploid
(C) Hexaploid (D) Pentaploid

154. Perisperm refers to persisting
(A) Nucellus (B) Funicle
(C) Seed coat (D) Integuments

155. Edible part of apple
(A) Seed (B) Mesocarp
(C) Thalamus (D) Endocarp

156. Which one of the following inhibits seed germination for a particular period?
(A) Light (B) Water
(C) Carbon dioxide (D) Dormancy

157. The main edible part of an apple is
(A) Mesocarp (B) Achene
(C) Thalamus (D) Pericarp

158. Epicotyl has a shoot apex and a few leaf primordial enclosed in a hollow foliar structure called
(A) Coleoptile (B) Coleorhiza
(C) Scutellum (D) Perisperm

159. An example of a naturally occurring parthenocarpic fruit is
(A) Guava (B) Mango (C) Banana (D) Apple

160. Coleoptile is present at
(A) Shoot apex & few leaf primordia enclosed in solid foliar structure
(B) Shoot apex & all leaf primordia enclosed in solid foliar structure
(C) Root apex & all leaf primordia enclosed in hollow foliar structure
(D) Shoot apex & few leaf primordia enclosed in hollow foliar structure

161. The cutting of rose plant is thoroughly waxed and planted in the soil, it will form
(A) Newly rose plant.
(B) A dead piece of rose stem after some time.
(C) Improved variety of rose plant.
(D) None of the options are correct

162. Oil reserve of Groundnut is present in
(A) Embryo (B) Cotyledons
(C) Endosperm (D) Underground tubers

163. The endosperm is completely consumed by the developing embryo in all of the following except
(A) Pea (B) Groundnut (C) Beans (D) Castor

164. Seeds are adaptively important because:
(A) They maintain dormancy
(B) They safe guard the young plants during vulnerable conditions
(C) They store food for young plants, and facilitate dispersal
(A) A and C (B) B and C (C) A and B (D) A, B and C

165. "x" is an example of a very old viable seed that was excavated from the Arctic Tundra. The seed of "x" is germinated and flowered after 10000 years of dormancy. Identify "x"
(A) Nymphaeaceae (B) Lupinus arcticus
(C) Phoenix dactylifera (D) Strobilanthes kunthiana

166. After removal of covering in pea, the seed consists of
(A) Cotyledons
(B) Embryo
(C) Cotyledons + Endosperm
(D) Cotyledons + Endosperm + Pericarp

167. In a seed of maize, scutellum is considered as cotyledon because it
(A) Protects the embryo
(B) Contains food for the embryo
(C) Absorbs food materials and supplies them to the embryo.
(D) Converts itself into a monocot leaf

168. Ovule integument gets transformed into
(A) Seed (B) Seed coat
(C) Fruit wall (D) Cotyledons

169. In pulses, proteins are stored in
(A) Endosperm (B) Cotyledons
(C) Pericarp (D) Seed coat

170. Perisperm differs from endosperm in
(A) Being a haploid tissue
(B) Having no reserve food
(C) Being a diploid tissue
(D) Its formation by fusion of secondary nucleus with several sperms

171. The endosperm found in angiospermic seed is different from that of gymnosperms in the sense that, in the former
(A) It is formed before fertilisation while in the latter it is formed after fertilisation.
(B) It is formed after fertilisation while in the latter it is formed before fertilisation.
(C) It is cellular while in the latter it is nuclear.
(D) It is nutritive while in the latter it is protective.

Apomixis and Polyembryony

172. Mark the odd one out with respect to multi seeded fruits.
(A) Striga (B) Orobanche
(C) Orchids (D) None of these

173. In which of the following conditions, gametophytes are formed directly from sporophytes without meiosis?
(A) Apospory (B) Apogamy
(C) Parthenogenesis (D) Agamospermy

174. Apomixis is formation of seeds
(A) By fusion of gametes
(B) Without syngamy and meiosis
(C) With syngamy but no meiosis
(D) None of these

175. A form of asexual reproduction that mimics sexual reproduction is:
(A) Polyembryony (B) Vegetative propagation
(C) Apospory (D) Apomixis

176. The best example of polyembryony is
(A) Mango (B) Citrus (C) Capsicum (D) Cocos

177. Apomictic embryos in Citrus arise from
(A) Maternal sporophytic tissue in ovule
(B) Antipodal cells
(C) Haploid cells
(D) Synergids

178. In adventive embryony (type of apomixis), embryos develop from
(A) Integument or nucellus
(B) Embryo
(C) Antipodals or synergids of embryo sac
(D) Accessory embryo sacs in the ovule

179. Production of fruits without fertilisation is called
(A) Parthenocarpy (B) Double fertilisation
(C) Polyembryony (D) All of the above

180. Apomixis is seen in
(A) Asteraceae (B) Grasses
(C) Both (A) and (B) (D) Neither (A) nor (B)

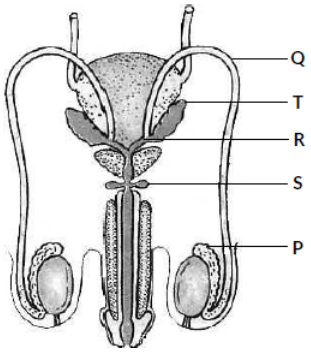
Toppersnotes
Unleash the topper in you

Self Evaluation

Case Based Questions

1. Read the passage given below and answer the following questions:

Human male reproductive system comprises of a pair of testes, primary sex organs associated with formation of gametes and production of sex hormone. Study the given figure of human male reproductive system.



(i) Identify Q, S and T in the above figure.

(ii) From where does Q arise?

(iii) Identify P and mention its function.

OR

(iii) Give a short note on part R.

2. **Read the passage given below and answer the following questions:**

Study the given table w.r.t. different hormone, their source of secretion and function.

	Hormone	**Source**	**Function**
(A)	Oxytocin	W	Ejection of milk
(B)	X	Anterior lobe of pituitary gland	Stimulates secretion of ABP from Sertoli cells
(C)	Y	Placenta	Maintains corpus luteum to secrete progesterone
(D)	Relaxin	Ovary	Z

(i) Identify the hormones X and Y respectively.

(a) Testosterone, FSH (b) LH, hPL

(c) FSH, hCG (d) ICSH, hCG

(ii) W in the given table is

(a) hypothalamus

(b) posterior lobe of pituitary

(c) placenta

(d) ovary.

(iii) Which of the following is correct for Z?

(a) Dilation of uterine cervix during labour pains.

(b) Stimulates the growth of the mammary glands during pregnancy.

(c) Supports the fetal growth and prevents desiccation.

(d) Forms protective plug in cervix of uterus during pregnancy.

(iv) Which set of hormones is secreted only during pregnancy?

(a) Human chorionic gonadotropin, relaxin and human placental lactogen

(b) Human placental lactogen, estrogen and chorionic thyrotropin

(c) Human chorionic gonadotropin, human placental lactogen and progesterone

(d) Chorionic thyrotropin, chorionic gonadotropin and estrogen

(v) **Assertion :** X controls the maintenance and functions of male reproductive organs.

Reason : Y acts directly on spermatogonia to stimulate sperm production.

(a) Both assertion and reason are true and reason is the correct explanation of assertion.

(b) Both assertion and reason are true but reason is not the correct explanation of assertion.

(c) Assertion is true but reason is false.

(d) Both assertion and reason are false.

A & R Questions

In the following questions a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following.

(a) Assertion and reason both are correct statements and reason is correct explanation for assertion.

(b) Assertion and reason both are correct statements but reason is not correct explanation for assertion.

(c) Assertion is correct statement but reason is wrong statement.

(d) Assertion is wrong statement but reason is correct statement.

3. **Assertion :** Corpus luteum contains blood clot and fibrin.

Reason : Corpus luteum is formed by the germinal epithelium.

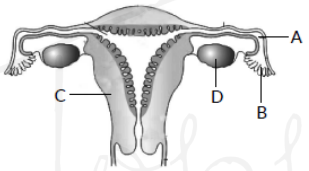
4. **Assertion :** All copulations do not lead to the fertilisation and pregnancy.
Reason : Fertilisation can occur only if the ovum and sperms are transported simultaneously to the ampullary – isthmic junction.

Multiple Choice Questions

5. The fetal ejection reflex in humans triggers the release of
(a) oxytocin from fetal pituitary
(b) human chorionic gonadotropin (hCG) from placenta
(c) human placental lactogen (hPL) from placenta
(d) oxytocin from maternal pituitary.

6. The shared terminal duct of the reproductive and urinary system in the human male is
(a) urethra (b) ureter
(c) vas deferens (d) vasa efferentia.

7. Refer to the given diagram and select the option that correctly identifies the labelled part along with its characteristic.



(a) A-Ampulla – Site of blastocyst implantation
(b) B-Fimbriae – Collect ova
(c) C-Myometrium – Shed during menstrual bleeding
(d) D-Ovary – Secrete hCG

8. Match the items given in column I with those in column II and select the correct option given below.

Column –I		Column –II	
A.	Proliferative phase	(i)	Breakdown of endometrial lining
B.	Secretory phase	(ii)	Follicular phase
C.	Menstruation	(iii)	Luteal phase

A	B	C
(a) (iii)	(ii)	(i)
(b) (i)	(iii)	(ii)
(c) (ii)	(iii)	(i)
(d) (iii)	(i)	(ii)

9. Several hormones like hCG, hPL, estrogen, progesterone are produced by
(a) ovary (b) placenta
(c) fallopian tube (d) pituitary.

VSA Type Questions

10. Write the function of the seminal vesicle.

11. List the changes the primary oocyte undergoes in the tertiary follicular stage in the human ovary.

12. How is the entry of only one sperm and not many ensured into an ovum during fertilisation in humans?
OR
Write the function of fimbriae.

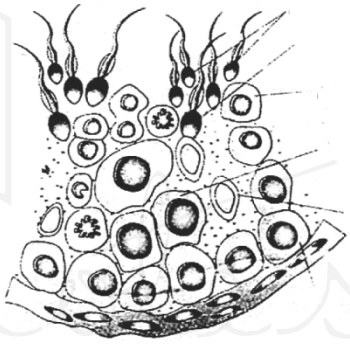
SA I Type Questions

13. Why is parturition called a neuro-endocrine mechanism?

14. (a) Explain the function of umbilical cord.
(b) What is colostrum?

15. Explain the functions of myometrium and endometrium in human females.

16. Name the labels a, b, c, d, e, f in the diagram of seminiferous tubule.



OR
Mention the number of cells in the following stages.

S.N.	Embryonic stage	No. of cells
(i)	Zygote	(a)
(ii)	Morula	(b)
(iii)	Blastocyst	(c)

17. Differentiate between menarche and menopause.

SA II Type Questions

18. Differentiate between morula and blastula of mammals.

19. In which organs are Leydig's cells and Sertoli cells located? Differentiate between these cells with reference to their location in the organ and their functions.

20. Mention the role of gonadotropins in menstrual cycle. On what day of the menstrual cycle do the gonadotropins reach a peak?

21. Why is the second half of menstrual cycle called secretory phase in human female? List the changes that occur in the uterus during this phase.

OR

What is meant by embryonic development? Write briefly about the last two stages in the unique succession of stages in this dynamic process.

LA Type Questions

22. Describe the hormonal control of menstrual cycle in humans.

23. Describe the post-zygotic events leading to implantation and placenta formation in humans. Mention any two functions of placenta.

24. (i) Draw an electron microscopic view of a mammalian sperm. Label any six internal structures of the sperm.

(ii) Mention the function of any one part in the head and middle piece of the sperm.

25. Draw a diagram of human female reproductive system and label any ten parts in it.

OR

(a) Explain with the help of schematic representation the process of formation of mature gamete in a human female.

(b) How is spermatogenesis different from the process mentioned above? Explain.

Toppersnotes Unleash the topper in you