Objective
Biology
for
NEET

CLASS XII

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Chapter 1

Sexual reproduction in flowering plants

GENERAL FEATURES

01. Which of the following statements are *correct*?

A. Biology is essentially the study of life on Earth.

B. Each individual of a species leaves its progeny by asexual or sexual reproduction.

C. Reproduction is vital for the long-term survival of species on Earth.

D. Sexual reproduction creates new variants that enhance the survival advantage of progeny.

1. A and B
2. A, B and D
3. C and D
4. A, B, C and D

02. Which of the following statements about Panchanan Maheshwari are *correct*?

A. He was a distinguished botanist and a Fellow of the Royal Society and the Indian National Science Academy.

B. He made significant contributions to embryology and promoted the use of embryological characters in taxonomy.

C. One of his major achievements was the artificial culture of immature embryos.

D. During his leadership, first NCERT Biology textbooks for higher secondary schools were published in 1964.

1. A and B
2. A, B and D
3. C and D
4. A, B, C and D

03. Which of the following statements *correctly* describe *sexual reproduction*?

A. Sexual reproduction may occur in a single individual in some organisms.

B. Sexual reproduction typically involves the fusion of gametes.

C. Meiosis does not occur during sexual reproduction.

D. Sexual reproduction always involves external fertilization.

1. A and B
2. A, B and D
3. C and D
4. A, B, C and D

FLOWER

04. Choose the *incorrect* statement about *flowers*:

1. Flowers are the sites of sexual reproduction.
2. Flowers are modified reproductive shoots.

3. Flowers are features of angiosperms.
4. Flowers are features of both angiosperms and gymnosperms.

05. Monoecious plants are those in which:
1. Only male flowers are present on the plant.
2. Only female flowers are present on the plant.
3. Flowers are bisexual in nature.
4. Separate male and female flowers occur on the same plant.

06. Choose the *correct* statements about *flower*:
A. A flower having both stamens and carpels is called perfect or bisexual flower.
B. Most flowers are bisexual flowers.
C. Imperfect or unisexual flower, having only stamens or carpels.
D. Presence of bisexual flower is the primitive character in angiosperms.
1. A and B only
2. A, B and D only
3. C and D only
4. A, B, C and D

07. Match the type of plant in *column* I with its description in *column* II.

Column I (Type of plant and flower)	**Column II** (Description)
A. Hermaphroditic plant	1. Bears both staminate and pistillate flowers on the same plant.
B. Monoecious plant	2. Bears only bisexual (perfect) flowers.
C. Dioecious plant	3. Bears staminate or pistillate flowers on separate plants.
D. Staminate flower	4. Flower bears only stamens.

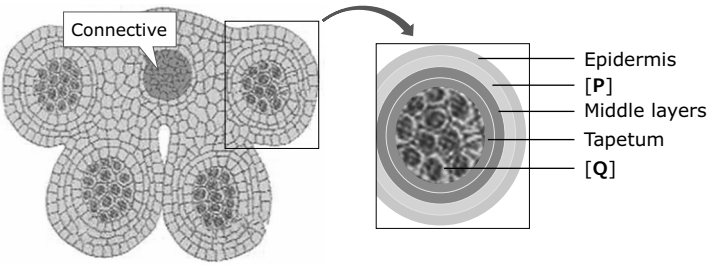
1. A-2, B-1, C-3, D-4
2. A-1, B-2, C-3, D-4
3. A-2, B-1, C-4, D-3
4. A-2, B-3, C-1, D-4

PRE-FERTILIZATION : STRUCTURES AND EVENTS

08. Choose the *incorrect* statement *about flower*:
1. Androecium represents the male reproductive organ.
2. Gynoecium represents the female reproductive organ.
3. Androecium and gynoecium represent the vegetative parts of a flower.
4. Floral primordium is the early stage of flower development arising from the floral meristem.

09. Which statements are *correct* about *flower development*?
A. Differentiation of floral organs occurs before pollination.
B. Floral primordium is the meristematic tissue from which all floral organs arise.
C. An inflorescence is a cluster of floral buds or flowers borne on a common floral axis.
D. Hormonal changes occur only after androecium and gynoecium are fully formed.
1. A and B only
2. A and D only
3. A, B and C only
4. A, C and D only

30. The given diagram shows the transverse section of a young anther with different wall layers and internal tissues.



Choose the *correct* statements about *young anther*:

A. Anther is of tetrasporangiate type.
B. [**P**] represents the endothecium.
C. [**Q**] represents the sporogenous tissue.
D. Stamen is of monothecous type.

1. A, B and C only
2. A, C and D only
3. B and D only
4. A, B, C and D

PISTIL, MEGASPORANGIUM AND EMBRYO SAC

31. The gynoecium

A. represents the female reproductive part of the flower.
B. may be monocarpellary or multicarpellary.
C. has three parts – stigma, style and ovary.
D. serves as a site for microsporogenesis.

1. A and B only
2. B, C and D only
3. A, B and C only
4. A, B, C and D

32. Functional megaspore in an angiosperm develops into

1. Endosperm
2. Embryo sac (or female gametophyte)
3. Embryo
4. Ovule

33. Which of the following statements *correctly* describe the *ovary* in a flower?

A. It represents the basal, swollen part of the pistil.
B. It encloses the ovarian cavity (locule).
C. Placenta located inside the ovarian cavity, bears the ovules.
D. Number of ovules in an ovary may vary from one (as in wheat) to many (as in papaya).

1. A and B only
2. A, B and C only
3. B, C and D only
4. A, B, C and D

34. Which of the following statements are *correct* about the *ovule*?

A. It is a megasporangium.
B. Its number in an ovary is always one.
C. Attached to the placenta by means of a stalk called the funicle.
D. It has one or two protective envelopes called integuments.

1. A and B only
2. A, C and D only
3. B, C and D only
4. A, B, C and D

35. In angiosperms, the male and female gametes are, respectively:
    1. Motile and non-motile
    2. Non-motile and motile
    3. Motile and motile
    4. Non-motile and non-motile

36. Monosporic development of the female gametophyte in angiosperms refers to:
    1. Development of the embryo sac from a single functional megaspore.
    2. Formation of only one megaspore mother cell in the ovule.
    3. Presence of a single ovule within the ovary.
    4. Development of the female gametophyte without meiosis.

37. Which of the following statements are *correct* about *megasporogenesis*?
    A. Process of formation of megaspores from the MMC is called megasporogenesis.
    B. Megaspore mother cell (MMC) undergoes meiotic division.
    C. Megaspore develops into the female gametophyte (embryo sac).
    D. Embryo sac formation from a single megaspore is called monosporic development.
    1. B and C only
    2. A and B only
    3. A, C and D only
    4. A, B, C and D

38. Which of the following statements are *incorrect* about *embryo sac* formation?
    A. A mature monosporic embryo sac contains 7 nuclei and 8 cells.
    B. Nucleus of the megaspore undergoes free nuclear mitotic divisions.
    C. Polar nuclei are present in the large central cell.
    D. Three cells are grouped together at the chalazal end and constitute the egg apparatus.
    1. A and C only
    2. B and D only
    3. A and D only
    4. B, C and D only

39. Choose the *correct* option regarding the ploidy of different structures of an angiospermic ovule:
    1. Nucellus – n MMC – 2n Megaspore – 2n
    2. Nucellus – 2n MMC – n Megaspore – n
    3. Nucellus – 2n MMC – 2n Megaspore – n
    4. Nucellus – n MMC – 2n Megaspore – n

40. Given below are two statements:
    Statement I: In an angiospermic ovule, integuments surround the nucellus, leaving an opening called micropyle.
    Statement II: Mostly embryo sac develops from a single functional megaspore formed after meiosis of the MMC.
    In the light of the above statements, choose the most *appropriate* answer:
    1. Both statement I and statement II are correct.
    2. Both statement I and statement II are incorrect.
    3. Statement I is correct but statement II is incorrect.
    4. Statement I is incorrect but statement II is correct.

41. Given below are two statements regarding the structure of a typical angiosperm *ovule*:
    Statement I: The hilum is the region where the ovule is attached to the funicle.
    Statement II: Opposite the micropylar end, there is a chalazal end.
    In the light of the above statements, choose the most appropriate answer:
    1. Both statement I and statement II are correct.
    2. Both statement I and statement II are incorrect.
    3. Statement I is correct but statement II is incorrect.
    4. Statement I is incorrect but statement II is correct.

42. Given below are two statements: One is labelled as **Assertion** (**A**) and the other is labelled as **Reason** (**R**).
Assertion (**A**): In most flowering plants, MMC undergoes meiosis to produce four haploid megaspores.
Reason (**R**): All four megaspores develop into functional female gametophytes.
In the light of the above statements, choose the *correct* answer from the options given below:
1. Both A and R are true, and R is the correct explanation of A.
2. Both A and R are true, but R is not the correct explanation of A.
3. A is true, R is false.
4. A is false, R is true.

43. Match the parts or terms in *column* I with their correct descriptions in *column* II.

Column I (Structure or term)	**Column II** (Description)
A. Monocarpellary	1. Pistil made up of a single carpel
B. Syncarpous	2. Pistils fused together
C. Apocarpous	3. Pistils free from each other
D. Stigma	4. Serves as the landing platform for pollen grains

1. A-2, B-1, C-4, D-3
2. A-1, B-2, C-3, D-4
3. A-1, B-4, C-3, D-2
4. A-4, B-3, C-2, D-1

44. Match the components of polygonum-type embryo sac in *column* I with their correct descriptions in *column* II.

Column I	**Column II**
A. Egg apparatus	1. Structure that guides the pollen tube.
B. Synergids	2. Female gamete.
C. Filiform apparatus	3. Composed of one egg cell and two synergids.
D. Egg cell	4. Two cells located at the micropylar end.

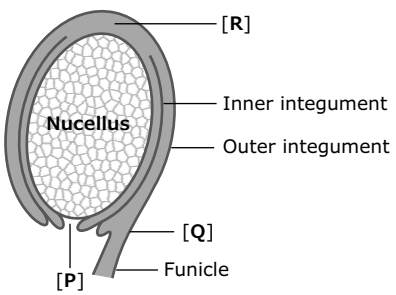
Choose the *correct* option:
1. A–3, B–4, C–1, D–2
2. A–4, B–3, C–1, D–2
3. A–3, B–1, C–4, D–2
4. A–2, B–4, C–1, D–3

45. Match the parts of a typical angiosperm ovule (*column* I) with their respective descriptions or functions (*column* II):

Column I	**Column II**
A. Hilum	1. Junction between the ovule and the funicle.
B. Micropyle	2. Small opening of the ovule through which pollen tube enters.
C. Chalaza	3. Basal region of ovule, situated opposite the micropyle.
D. Nucellus	4. Central mass of cells containing the embryo sac and nutritive tissue.

1. A–1, B–3, C–2, D–4
2. A–2, B–1, C–4, D–3
3. A–1, B–2, C–3, D–4
4. A–3, B–2, C–1, D–4

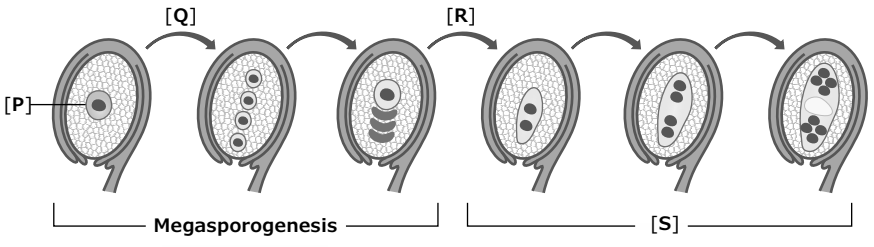
46. The given diagram shows the transverse section of ovule. Choose the *correct* statements:



A. [**P**] represents the micropyle end.
B. [**Q**] represents the hilum.
C. [**R**] represents the chalazal end.
D. Ovule shown in the diagram is anatropous.

1. A and B only
2. B and C only
3. A, B and D only
4. A, B, C and D

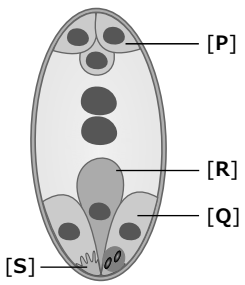
47. The given diagram shows gamete formation in an ovule. Choose the *correct* statements.



A. [**P**] represents the megaspore mother cell (MMC).
B. [**Q**] represents meiosis.
C. [**R**] represents the first mitotic division.
D. [**S**] represents the process of megagametogenesis.

1. A, B and D only
2. A and C only
3. B, C and D only
4. A, B, C and D

48. Identify the parts labelled as P, Q, R and S in the given figure and select the *correct* option.



1. P-Synergid	Q-Antipodal cells	R-Egg	S-Filiform apparatus
2. P-Antipodal cells	Q-Synergid	R-Egg	S-Filiform apparatus
3. P-Antipodal cells	Q-Synergid	R-Filiform apparatus	S-Egg
4. P-Central cell	Q-Antipodal cells	R-Filiform apparatus	S-Egg

POLLINATION

49. Which of the following statements are *correct* about pollination?

A. It is the transfer of pollen grains from anther to the stigma of a pistil.
B. Transfer of pollen grains from the anther to the stigma of the same flower is called autogamy.
C. Cleistogamous flowers perform autogamy only.
D. Chasmogamous flowers perform autogamy only.

1. A and B only
2. B and C only
3. A, B and C only
4. B, C and D only

50. Which of the following statements about *agents of pollination* in flowering plants is *correct*?

1. Most plants depend on abiotic agents such as wind and water for pollination.
2. Biotic agents like animals are rarely used by plants for pollination.
3. Majority of flowering plants use biotic agents, while only a small proportion rely on wind and water.
4. In both wind and water pollination, pollen-stigma contact is highly efficient.

QUESTIONS FROM PREVIOUS YEAR'S PAPERS

01. Which one of the following generates new genetic combinations leading to variation?
    1. Nucellar polyembryony
    2. Vegetative reproduction
    3. Parthenogenesis
    4. Sexual reproduction **[NEET]**

02. Which one of the following statements is *correct*?
    1. Endothecium produces the microspores.
    2. Tapetum nourishes the developing pollen.
    3. Hard outer layer of pollen is called intine.
    4. Sporogenous tissue is haploid. **[NEET]**

03. The ovule of an angiosperm is technically equivalent to
    1. megaspore
    2. megasporangium
    3. megasporophyll
    4. megaspore mother cell **[NEET]**

04. Given below are two statements: One is labelled as **Assertion** (**A**) and the other is labelled as **Reason** (**R**).
    Assertion (**A**): Cells of the tapetum possess dense cytoplasm and generally have more than one nucleus.
    Reason (**R**): Presence of more than one nucleus in the tapetum increases the efficiency of nourishing the developing microspore mother cells (MMCs).
    In the light of the above statements, choose the most *appropriate* answer from the options given below:
    1. Both A and R are true and R is the correct explanation of A.
    2. Both A and R are true but R is not the correct explanation of A.
    3. A is true but R is false.
    4. A is false but R is true. **[NEET]**

05. How many meiotic and mitotic divisions need to occur for the development of a mature female gametophyte from the megaspore mother cell in an angiosperm plant?
    1. 2 Meiosis and 3 Mitosis
    2. 1 Meiosis and 2 Mitosis
    3. 1 Meiosis and 3 Mitosis
    4. No Meiosis and 2 Mitosis **[NEET]**

06. Ploidy of endothecium, microspore mother cell, tapetum and microspore is respectively,
    1. 2n, 2n, 2n, n
    2. n, n, n, 2n
    3. 2n, n, 2n, n
    4. n, 2n, 2n, n **[NEET]**

07. A typical angiosperm embryo sac at maturity is
    1. 8 nucleate and 8 celled
    2. 8 nucleate and 7 celled
    3. 7 nucleate and 8 celled
    4. 7 nucleate and 7 celled **[NEET]**

08. Which is the most common type of embryo sac in angiosperms?
    1. Tetrasporic with one mitotic stage of divisions.
    2. Monosporic with three sequential mitotic divisions.
    3. Monosporic with two sequential mitotic divisions.
    4. Bisporic with two sequential mitotic divisions. **[NEET]**