

Total Marks : 160

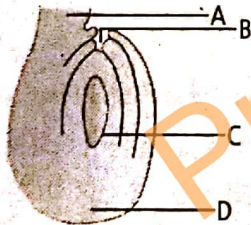
## Series 1: Reproduction in Organisms Sexual Reproduction in Flowering Plants

Time Taken : 40 Min.

1. Read the following statements and select the option containing only correct ones.
- (i) Megasporogenesis involves formation of pollen grains from a pollen mother cell through meiosis.
  - (ii) Female gametophyte remains permanently embedded in the megasporangium or nucellus.
  - (iii) Megasporophyll represents the gametophytic phase.
  - (iv) Pollen tube is glandular, secretory and absorptive.
- (a) (i) and (iii) only      (b) (i) and (iv) only  
(c) (ii) and (iv) only      (d) (ii) only

2. The rudimentary second cotyledon in monocot embryo is called
- (a) suspensor      (b) scutellum  
(c) epiblast      (d) epicotyl.

3. In the given figure, parts labelled as A, B, C and D are respectively identified as



- (a) Hilum, Micropyle, Filiform apparatus, Chalazal pole  
(b) Funicle, Micropyle, Embryo sac, Chalazal pole  
(c) Hilum, Funicle, Embryo sac, Filiform apparatus  
(d) Funicle, Micropyle, Integument, Chalazal pole.

4. At the time of pollination, pollen grain is either
- (a) 2-celled or 3-celled      (b) 2-celled or 4-celled  
(c) 3-celled or 4-celled      (d) 1-celled or 3-celled.
5. The polycarpic plant that flowers throughout the year is
- (a) apple      (b) mango  
(c) orange      (d) China rose.

6. The organism, whose chromosome number in meiocytes (2n) and gamete (n) is 48 and 24 respectively, is
- (a) potato      (b) maize  
(c) rice      (d) onion.

7. Transverse binary fission is evident in
- (a) *Paramecium*, *Planaria*      (b) *Amoeba*, Diatoms  
(c) *Sycon*, *Plasmodium*      (d) *Planaria*, *Plasmodium*.

8. Select the correct option to fill up the blanks in the following statements.

- (i) In \_\_\_\_\_ animals, females give birth to young ones and the chance of survival is more.  
(ii) \_\_\_\_\_ is pollination between two flowers of different plants.

- (iii) Tapetum is of two types \_\_\_\_\_ and secretory.

- |     | (i)        | (ii)        | (iii)     |
|-----|------------|-------------|-----------|
| (a) | viviparous | Geitonogamy | glandular |
| (b) | viviparous | Xenogamy    | amoeboid  |
| (c) | oviparous  | Geitonogamy | glandular |
| (d) | oviparous  | Syngamy     | parietal  |

9. Select the mismatched pair.

- (a) Neoteny – *Ambystoma*      (b) Isogamy – *Microcystis*  
(c) Homogamy – *Mirabilis*      (d) Zoophily – *Vallisneria*

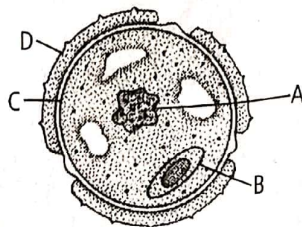
10. In nuclear endosperm, the primary endosperm nucleus
- (a) is followed by cytokinesis and the endosperm becomes cellular from the very beginning  
(b) divides repeatedly without wall formation to produce a large number of free nuclei  
(c) is followed by transverse cytokinesis to form two unequal cells  
(d) produces an outer layer of protoderm.

11. Consider the following table for differences between chasmogamous and cleistogamous flowers.

	Chasmogamous flowers	Cleistogamous flowers
(i)	The flowers open, exposing anthers and stigmas.	The flowers remain closed so that anthers and stigmas are never exposed.
(ii)	The flowers undergo only self pollination.	The flowers may undergo self pollination or cross pollination.
(iii)	A pollinating agency is often required.	No external pollinating agency is required.
(iv)	The flowers are often prominent.	The flowers are not much distinguishable.

How many of the above differences is/are correct?

- (a) One (b) Two  
(c) Three (d) All of these
12. Three chalazal cells of the embryo sac are called  
(a) polar nuclei (b) antipodal cells  
(c) nucellar cells (d) synergid cells.
13. Turions, the swollen buds which function as vegetative propagules are found in  
(a) *Potamogeton*, *Utricularia*  
(b) *Clerodendron*, *Utricularia*  
(c) *Croton*, *Potamogeton*  
(d) *Tapioca*, *Clerodendron*.
14. Asexual reproductive structures found in some lower fungi and many algae are  
(a) zoospores (b) sucker  
(c) runner (d) tuber.
15. Water hyacinth propagates vegetatively through  
(a) bulbs (b) offsets  
(c) tubers (d) rhizomes.
16. Refer to the given figure and match the labelled parts with their characteristics and select the correct option.



- (i) It is made of a highly resistant fatty substance called sporopollenin.  
(ii) It is spindle shaped to spherical in outline with thin dense cytoplasm surrounding a prominent nucleus.  
(iii) It has a vacuolate cytoplasm which is rich in food reserve and cell organelles.  
(iv) It is pecto-cellulosic in nature.



- (a) (i) - B, (ii) - D, (iii) - A, (iv) - C
- (b) (i) - D, (ii) - A, (iii) - C, (iv) - B
- (c) (i) - D, (ii) - B, (iii) - A, (iv) - C
- (d) (i) - B, (ii) - A, (iii) - D, (iv) - C

17. In (i) germination, (ii) elongates so that the cotyledons come out of soil, while in (iii) germination, (iv) elongates, so that cotyledons remain in the soil.

- (a) (i) - epigeal, (iv) - hypocotyl
- (b) (ii) - epicotyl, (iii) - hypogeal
- (c) (i) - hypogeal, (iii) - epigeal
- (d) (iii) - hypogeal, (iv) - epicotyl

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

<b>Column I</b>	<b>Column II</b>
A. Conidia	(i) <i>Bryophyllum</i>
B. Leaf buds	(ii) Sponge
C. Rhizome	(iii) <i>Penicillium</i>
D. Gemmules	(iv) Ginger
(a) A - (ii), B - (iii), C - (i), D - (iv)	
(b) A - (iii), B - (i), C - (iv), D - (ii)	
(c) A - (iv), B - (ii), C - (iii), D - (i)	
(d) A - (ii), B - (iv), C - (i), D - (iii)	

19. Which of the following states only the parts of an ovule?

- (a) Funicle, Hilum, Placenta, Raphe, Integuments
- (b) Stigma, Hilum, Polar nuclei, Synergids
- (c) Funicle, Polar nuclei, Style, Central cell, Hilum
- (d) Funicle, Raphe, Integuments, Thalamus, Hilum

20. Read the following statements and select the incorrect one.
- Grafting is not successful in monocots as they do not have cambium.
  - In trench layering, the branch is pegged in a horizontal position in a trench.
  - Cross fertilisation occurs in many hermaphrodite animals like *Taenia* and earthworm.
  - Root cuttings are used in propagation of lemon, orange and raspberry.
21. Which of the following events takes place after fertilisation in some organisms?
- Zygospore undergoes meiosis to produce haploid individuals.
  - Germinal cells undergo meiosis to produce haploid gametes.
  - Haploid spores produce haploid bodies called gametophytes.
  - Meiosis occurs in the zygote producing diploid organisms.
22. The period of growth between the birth of an individual upto reproductive maturity is called
- reproductive phase
  - maturity phase
  - juvenile phase
  - senescent phase.
23. Select the correct match.
- Seasonal breeders - Honey bee queen
  - Continuous breeders - Birds
  - Homothallic - *Rhizopus stolonifer*
  - Monoecious - Maize
24. Which among the following is not true for oestrus cycle?
- It consists of a short period of heat followed by passive period.
  - Female permits copulation only during heat period.
  - Sex urge is not increased during the cycle.
  - It occurs in non-primates such as cows, dogs, etc.
25. Select the correct combination for dioecious plants.
- Maize and coconut
  - Cucurbits and *Chara*
  - Maize and *Marchantia*
  - Data palm and papaya
26. The type of parthenogenesis in which parthenogenetic egg may develop into individual of any sex is
- amphitoky
  - complete
  - arrhenotoky
  - thelytoky.
27. The anther is a bilobed structure consisting of \_\_\_\_\_ microsporangia.
- 1
  - 2
  - 3
  - 4
28. The events in pollen-pistil interaction are given below.
- Pollen grain germinates to form pollen tube.
  - Pollen tube enters the ovule through micropyle.
  - Pollen grain reaches the stigma.
  - Pollen tube grows through the tissues of stigma and style and reaches the ovary.



The sequential order of their occurrence is

- (a) (iii) → (i) → (iv) → (ii)
- (b) (ii) → (iv) → (iii) → (i)
- (c) (iii) → (iv) → (ii) → (i)
- (d) (ii) → (iii) → (i) → (iv).

29. The mode of entry of pollen tube in the ovule through the integuments or funicle is

- (a) porogamy (b) mesogamy
- (c) chalazogamy (d) isogamy.

30. Loss of viability of seeds is generally due to

- (a) damage to embryo
- (b) exhaustion of food around the embryo
- (c) denaturation of enzymes
- (d) all of these.

31. The production and development of seedless fruits without pollination and fertilisation is

- (a) apomixis (b) parthenocarpy
- (c) parthenogenesis (d) polyembryony.

32. In recurrent agamospermy, when the diploid embryo sac is formed directly from a nucellar cell, it is called

- (a) diplospory
- (b) diploid parthenogenesis
- (c) sporophytic budding
- (d) apospory.

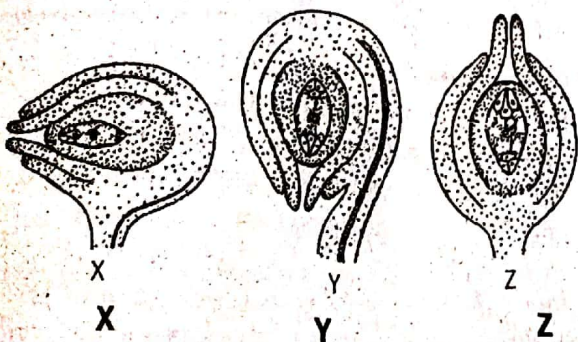
33. In monocot embryo, the portion of the embryonal axis above the level of attachment of the scutellum is called

- (a) hypocotyl (b) epicotyl
- (c) coleorrhiza (d) radicle.

34. The kidney-shaped brownish non-endospermic dicotyledonous seed is

- (a) maize seed (b) onion seed
- (c) castor seed (d) bean seed.

35. Identify the types of ovules in angiosperms X, Y and Z.



- |                  |              |              |
|------------------|--------------|--------------|
| (a) Orthotropous | Hemitropous  | Anatropous   |
| (b) Hemitropous  | Anatropous   | Orthotropous |
| (c) Orthotropous | Anatropous   | Hemitropous  |
| (d) Hemitropous  | Orthotropous | Anatropous   |

36. Entomophilous flowers

- (a) are inconspicuous lacking non-essential floral whorls
- (b) usually possess edible pollens
- (c) are odourless, colourless and nectarless
- (d) always possess exerted stigmas and anthers.

37. Select the correct option.

**Dioecious** **Monoecious**

- |                       |                   |
|-----------------------|-------------------|
| (a) Earthworm         | Cockroach         |
| (b) <i>Marchantia</i> | Leech             |
| (c) Leech             | Cockroach         |
| (d) Tapeworm          | <i>Marchantia</i> |

38. In a dicot embryo, the plumule

- (a) is terminal and lies in between two elongated cotyledons
- (b) appears lateral due to excessive growth of the single cotyledon
- (c) appears terminal due to excessive growth of single cotyledon
- (d) is lateral and lies in between two elongated cotyledons.

39. The covering of fruit that develops from ovary wall is

- (a) pericarp (b) perisperm
- (c) integument (d) coleoptile.

40. Read the following statements and select the option that correctly states true (T) and false (F) ones.

- (i) The mature embryo sac is 8-celled and 7-nucleate.
- (ii) Non-albuminous seed have no residual endosperm.
- (iii) Bisexual animals that possess both male and female reproductive organs are hermaphrodites.
- (iv) Testa is a pre-fertilised structure with living cells.

- |     |     |      |       |      |
|-----|-----|------|-------|------|
|     | (i) | (ii) | (iii) | (iv) |
| (a) | F   | T    | T     | F    |
| (b) | F   | F    | T     | F    |
| (c) | T   | T    | F     | T    |
| (d) | T   | F    | T     | F    |