

- Q1.** Select correct statement regarding structure of anther
- Each anther is usually bilobed.
  - Each lobe typically has two thecae (dithecaous).
  - Microsporangia are also called pollen-sacs.
  - Tapetum is the outermost layer of the microsporangium.
  - Epidermis is the outermost layer of an anther wall.
- A and C are true only
  - B, C, D are true only
  - A, C, E are true only
  - A, B, C, E are true only
- Q2.** Choose correct statement wrt microsporogenesis
- Microspore mother cells (MMCs) are diploid (2n).
  - Each MMC undergoes meiosis producing a tetrad of four haploid microspores.
  - Few cells of sporogenous tissue is capable of giving rise to a microspore tetrad
  - Tapetum directly forms the microspore tetrads.
  - Each microspore can develop into a pollen grain.
- A and B are true only
  - A, B, E are true only
  - B and E are true only
  - A, D, E are true only
- Q3.** Which of the following related to tapetum is/are true
- Tapetum provides nutrition to developing pollen.
  - Tapetal cells remain uninucleated throughout their lifespan
  - Tapetum is haploid.
  - Tapetum helps in formation of pollen wall (exine).
  - Tapetum is innermost layer of embryosac
- A, B, D are true only
  - A and D are true only
  - B and E are true only
  - C and D are true only
- Q4.** Select correct statement for pollen wall
- Pollen wall has two layers — exine and intine.
  - Exine is mainly made of sporopollenin and is highly resistant.
  - Intine contains cellulose and pectins.
  - Exine can withstand high temperature but can easily destroyed by strong acids and alkali.
  - Germ pores are present in intine and they are the place from where pollentube germinate
- C, D, E are true only
  - A, B, D are true only
  - B, C, D are true only
  - A, B, C are true only
- Q5.** Select incorrect statement regarding pollen maturation
- Mature pollen may be bicellular (vegetative + generative) or tricellular (vegetative + two sperm).
  - Generative cell divides mitotically to give two male gametes either in pollen grain or in pollen tube.
  - Small vegetative cell formed during this maturation process
  - Symmetrical spindle formation finally lead to formation of vegetative and generative cell during maturation process
  - Centrally palced nucleus is shifted to periphery due to vacuolation during maturation of pollen grain
- A, B, C only
  - A, B, D only
  - C and D only
  - B, C, D only
- Q6.** Select correct one regarding types of pollination
- Autogamy = pollination within the same flower.
  - Geitonogamy = pollination between flowers of different plants.
  - Xenogamy = pollination between flowers of different plants.
  - Cleistogamy = flowers do not open and self-pollination occurs.
  - Chasmogamy = flowers do not open.
- A, C, D are true only
  - A, B, C are true only
  - B and E are true only
  - A, D, E are true only

- Q7.** Five statements are given choose correct wrt wind vs insect pollination features
- Wind-pollinated flowers produce abundant, light pollen
  - Insect-pollinated flowers are usually inconspicuous and lack nectar.
  - Wind-pollinated flowers often have feathery stigmas and exposed stamens.
  - Insect-pollinated flowers are often brightly coloured and possess nectaries.
  - Wind-pollinated pollen is sticky and scented.
- A and D are true only
  - A, C, D are true only
  - B, D, E are true only
  - A, C, E are true only
- Q8.** Select correct statements regarding pollen tube germination and fertilization pathway
- Pollen germinates on stigma and pollen tube grows through style toward ovule.
  - Pollen tube commonly enters ovule through micropyle and usually penetrates a synergid.
  - Synergids help guide and accept pollen tube; one degenerates on tube entry.
  - Filliform apparatus present at micropylar part of synergids guides the entry of pollen tube
  - Pollen tube releases hydrolytic enzymes to help digest tissues along its path.
- A and C only
  - A and B only
  - All A, B, C, D, E are true
  - B and D only
- Q9.** Statements from A to E are given for ovule. Choose correct one
- Ovule consists of funiculus, chalaza and nucellus.
  - It is also known as megasporangium
  - Most common type of ovule found in most of angiosperm are anatropous ovule
  - Ovule is attached to placenta by means of stalk called hilum.
  - Bitegmic ovules have two integuments.
- A, B, C, E are true
  - A, C, D are true
  - B, D, E are true
  - A, B, D are true
- Q10.** Choose correct statement regarding megasporogenesis
- Megaspore mother cell (MMC) is diploid.
  - MMC undergoes meiosis to form four megaspores
  - The functional megaspore forms embryo sac by mitotic divisions.
  - Commonly chalazal megaspore remain functional and other three degenerates
  - Embryosac development is usually monosporic(formed from single functional usually chalazal megaspore)
- A and C are true only
  - All statements are true
  - A and D are true only
  - A, C, E are true only
- Q11.** Following are the features of embryosac
- Embryo sac contains one egg cell and two synergids at the micropylar end.
  - Three antipodals are located at chalazal end.
  - Central cell contains two polar nuclei (usually).
  - Two mitotic division in functional megaspore form 8- nucleated, 7-celled embryosac
  - Embryo sac develops from all four megaspores.
- A, B, C are true only
  - A, B, D are true only
  - C, D, E are true only
  - A, B, E are true only
- Q12.** Choose incorrect statements from the following wrt double fertilization
- One male gamete fuses with egg cell (syngamy) and the other fuses with the two polar nuclei (triple fusion).
  - Syngamy produces a diploid zygote; triple fusion produces a triploid primary endosperm nucleus (PEN).
  - Primary endosperm nucleus gives rise to the embryo.
  - Double fertilization is a characteristic feature of gymnosperms
  - Both male gametes are involved in fertilization events.
- A, B, D, E only
  - A and D only
  - C and D only
  - A, B, E only

**Q13.** Choose incorrect statement about endosperm in angiosperm

- A. White kernel in coconut is nuclear endosperm
- B. In nuclear endosperm formation, free nuclei form first and cell walls form later
- C. Endosperm provides nourishment for developing embryo/seedling.
- D. Endosperm always persists in mature seed in all plants.
- E. Poidy of endosperm is  $3n$

- (1) A, B, C only      (2) A, B, D only  
 (3) A and D only      (4) D and E only

**Q14.** Choose correct statement regarding embryo

- A. Embryo development commonly goes through proembryo → globular → heart → Mature stages (dicots).
- B. Portion of embryonal axis above the level of cotyledon is the hypocotyl that terminates at its lower end in the radicle and root tip.
- C. Cotyledons arise from the radicle.
- D. Monocots embryos typically have a single cotyledon.
- E. In monocot embryo epicotyl has a shoot apex and a leaf primordia enclosed in a hollow foliar structure, the coleoptile.

- (1) A, B, D are true only  
 (2) A, D, E are true only  
 (3) B, C, D are true only  
 (4) A, B, C are true only

**Q15.** Choose incorrect statements from the following

- A. Occurrence of more than one embryo in a seed is referred as polyembryony
- B. In many citrus and mango varieties nucellar cells use to form embryo
- C. Embryo enter into state of dormancy because of reduced water content of seed
- D. In angiosperm seed is the final product of sexual reproduction
- E. In monocot embryo root cap is enclosed by differentiated sheath called coleorrhiza

- (1) All except A  
 (2) All except E  
 (3) All except B  
 (4) All except C

**Q16.** Choose correct statements related to Fruit

- A. Pericarp (fruit wall) develop from ovary wall
- B. Fruits formation in strawberry and cashew is also contributed by thalamus therefore they are called false fruits.
- C. Fruits are fleshy in mustard and groundnut
- D. Banana is the best example of parthenocarpic fruit.
- E. Fruit can be formed only by process of fertilization in all angiosperm

- (1) A, B, D are true only  
 (2) A, C, D are true only  
 (3) B, C, D are true only  
 (4) A, B, C are true only

**Q17.** Select correct statement wrt apomixis

- A. Apomixis is formation of seeds without fertilization (agamospermy).
- B. It is seen in some species of *Asteraceae* and grasses
- C. It is a form of asexual reproduction that mimics sexual reproduction
- D. There will be no segregation of characters in hybrid progeny if hybrids are made into apomictics

- (1) A and B only  
 (2) D only  
 (3) All A,B,C,D are true  
 (4) C and D only

**Q18.** Select correct statement regarding mechanisms preventing selfing (out breeding devices)

- A. Dichogamy refers to temporal separation of male and female functions (protandry/protogyny) i.e. pollen release and stigma receptivity is not synchronised
- B. Herkogamy refers to spatial separation of stamens and pistil to reduce selfing i.e. anther and stigma are placed at different position
- C. Self-incompatibility is a genetic mechanism preventing self-fertilization.
- D. Homogamy increases prevention of selfing.
- E. Production of unisexual flowers in dioecious plant

- (1) A, B, C and E only      (2) A and D only  
 (3) B and D only      (4) A, B and D only

**Q19.** Statements A to E are given. Choose incorrect only

- A. *Orobanche* and *Striga* are parasitic plant species
- B. *Lupine*, *Lupinus arcticus* seed shows the dormancy for 10,000 years
- C. 2000 months old viable seed of date palm, *Phoenix dactylifera* discovered from King Herod's palace
- D. Persistent nucellus are found in beet root
- E. Maize and castor seeds are albuminous

- (1) A and B only
- (2) A, B and E only
- (3) B and C only
- (4) C and D only

**Q20.** Statements A to D are given. Choose correct only

- A. Syngamy is fusion of male and female gametes producing zygote.
- B. Triple fusion produces a diploid endosperm.
- C. Primary endosperm nucleus is formed by fusion of two male gametes.
- D. Embryo sac (female gametophyte) is haploid in nuclear constitution before fertilization.

- (1) A and D only
- (2) C and D only
- (3) B and C only
- (4) A and C only

**ANSWERS - KEY**

Q	1	2	3	4	5	6	7	8	9	10
Ans.	(4)	(2)	(1)	(4)	(3)	(1)	(2)	(3)	(1)	(2)
Q	11	12	13	14	15	16	17	18	19	20
Ans.	(1)	(3)	(3)	(2)	(2)	(1)	(3)	(1)	(4)	(1)

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