

# Sexual Reproduction in Flowering Plants

## 2.2 Pre-Fertilisation : Structures and Events

1. The plant parts which consist of two generations-one within the other
  - (1) pollen grains inside the anther
  - (2) germinated pollen grain with two male gametes
  - (3) seed inside the fruit
  - (4) embryo sac inside the ovule
    - (a) (1) only
    - (b) (1), (2), and (3)
    - (c) (3) and (4)
    - (d) (1) and (4).

(NEET 2020)
2. In water hyacinth and water lily, pollination takes place by
  - (a) insects or wind
  - (b) water currents only
  - (c) wind and water
  - (d) insects and water.

(NEET 2020)
3. Which is the most common type of embryo sac in angiosperms ?
  - (a) Tetrasporic with one mitotic stage of divisions
  - (b) Monosporic with three sequential mitotic divisions
  - (c) Monosporic with two sequential mitotic divisions
  - (d) Bisporic with two sequential mitotic divisions

(Odisha NEET 2019)
4. What type of pollination takes place in *Vallisneria*?
  - (a) Pollination occurs in submerged condition by water.
  - (b) Flowers emerge above surface of water, and pollination occurs by insects.
  - (c) Flowers emerge above water surface, and pollen is carried by wind.
  - (d) Male flowers are carried by water currents to female flowers at surface of water.

(Odisha NEET 2019)
5. In which one of the following, both autogamy and geitonogamy are prevented?
  - (a) Wheat
  - (b) Papaya
  - (c) Castor
  - (d) Maize

(Odisha NEET 2019)

6. Pollen grains can be stored for several years in liquid nitrogen having a temperature of
  - (a) -120°C
  - (b) -80°C
  - (c) -196°C
  - (d) -160°C. (NEET 2018)
7. Which of the following has proved helpful in preserving pollen as fossils?
  - (a) Pollenkitt
  - (b) Cellulosic intine
  - (c) Oil content
  - (d) Sporopollenin

(NEET 2018)
8. Winged pollen grains are present in
  - (a) mustard
  - (b) *Cycas*
  - (c) mango
  - (d) *Pinus*. (NEET 2018)
9. Functional megasporangium in an angiosperm develops into an
  - (a) endosperm
  - (b) embryo sac
  - (c) embryo
  - (d) ovule. (NEET 2017)
10. Attractants and rewards are required for
  - (a) entomophily
  - (b) hydrophily
  - (c) cleistogamy
  - (d) anemophily.

(NEET 2017)
11. Flowers which have single ovule in the ovary and are packed into inflorescence are usually pollinated by
  - (a) bee
  - (b) wind
  - (c) bat
  - (d) water. (NEET 2017)
12. A dioecious flowering plant prevents both
  - (a) autogamy and geitonogamy
  - (b) geitonogamy and xenogamy
  - (c) cleistogamy and xenogamy
  - (d) autogamy and xenogamy.

(NEET 2017)
13. In majority of angiosperms,
  - (a) egg has a filiform apparatus
  - (b) there are numerous antipodal cells
  - (c) reduction division occurs in the megasporangium mother cells
  - (d) a small central cell is present in that embryo sac.

(NEET-II 2016)

- 14.** Pollination in water hyacinth and water lily is brought about by the agency of  
(a) water (b) insects or wind  
(c) birds (d) bats. (NEET-II 2016)
- 15.** The ovule of an angiosperm is technically equivalent to  
(a) megasporangium  
(b) megasporophyll  
(c) megasporangium  
(d) megaspore. (NEET-II 2016)
- 16.** Which one of the following statements is not true?  
(a) Pollen grains of many species cause severe allergies.  
(b) Stored pollen in liquid nitrogen can be used in the crop breeding programmes.  
(c) Tapetum helps in the dehiscence of anther.  
(d) Exine of pollen grains is made up of sporopollenin. (NEET-I 2016)
- 17.** Which of the following statements is not correct?  
(a) Pollen germination and pollen tube growth are regulated by chemical components of pollen interacting with those of the pistil.  
(b) Some reptiles have also been reported as pollinators in some plant species.  
(c) Pollen grains of many species can germinate on the stigma of a flower, but only one pollen tube of the same species grows into the style.  
(d) Insects that consume pollen or nectar without bringing about pollination are called pollen/ nectar robbers. (NEET-I 2016)
- 18.** Proximal end of the filament of stamen is attached to the  
(a) placenta (b) thalamus or petal  
(c) anther (d) connective. (NEET-I 2016)
- 19.** Filiform apparatus is characteristic feature of  
(a) aleurone cell (b) synergids  
(c) generative cell (d) nucellar embryo. (2015)
- 20.** In angiosperms, microsporogenesis and megasporogenesis  
(a) involve meiosis  
(b) occur in ovule  
(c) occur in anther  
(d) form gametes without further divisions. (2015)
- 21.** Male gametophyte in angiosperms produces  
(a) single sperm and two vegetative cells  
(b) three sperms  
(c) two sperms and a vegetative cell  
(d) single sperm and a vegetative cell. (2015)
- 22.** Which of the following are the important floral rewards to the animal pollinators ?  
(a) Floral fragrance and calcium crystals  
(b) Protein pellicle and stigmatic exudates  
(c) Colour and large size of flower  
(d) Nectar and pollen grains (2015 Cancelled)
- 23.** Which one of the following may require pollinators, but is genetically similar to autogamy?  
(a) Apogamy (b) Cleistogamy  
(c) Geitonogamy (d) Xenogamy (2015 Cancelled)
- 24.** Which one of the following statements is not true?  
(a) The flowers pollinated by flies and bats secrete foul odour to attract them.  
(b) Honey is made by bees by digesting pollen collected from flowers.  
(c) Pollen grains are rich in nutrients and they are used in the form of tablets and syrups.  
(d) Pollen grains of some plants cause severe allergies and bronchial afflictions in some people. (2015 Cancelled)
- 25.** The hilum is a scar on the  
(a) fruit, where style was present  
(b) seed, where micropyle was present  
(c) seed, where funicle was attached  
(d) fruit, where it was attached to pedicel. (2015 Cancelled)
- 26.** Transmission tissue is characteristic feature of  
(a) dry stigma (b) wet stigma  
(c) hollow style (d) solid style. (2015 Cancelled)
- 27.** Geitonogamy involves  
(a) fertilisation of a flower by the pollen from another flower of the same plant  
(b) fertilisation of a flower by the pollen from the same flower  
(c) fertilisation of a flower by the pollen from a flower of another plant in the same population  
(d) fertilisation of a flower by the pollen from a flower of another plant belonging to a distant population. (2014)
- 28.** Pollen tablets are available in the market for  
(a) *in vitro* fertilisation (b) breeding programmes  
(c) supplementing food (d) *ex situ* conservation. (2014)
- 29.** Function of filiform apparatus is to  
(a) recognise the suitable pollen at stigma  
(b) stimulate division of generative cell  
(c) produce nectar  
(d) guide the entry of pollen tube. (2014)

- 30.** Advantage of cleistogamy is  
 (a) no dependence on pollinators  
 (b) vivipary  
 (c) higher genetic variability  
 (d) more vigorous offspring. *(NEET 2013)*
- 31.** Megasporangium is equivalent to  
 (a) nucellus (b) ovule  
 (c) embryo sac (d) fruit. *(NEET 2013)*
- 32.** Which one of the following statements is correct?  
 (a) Endothecium produces the microspores.  
 (b) Tapetum nourishes the developing pollen.  
 (c) Hard outer layer of pollen is called intine.  
 (d) Sporogenous tissue is haploid. *(NEET 2013)*
- 33.** Animal vectors are required for pollination in  
 (a) *Vallisneria* (b) mulberry  
 (c) cucumber (d) maize.  
*(Karnataka NEET 2013)*
- 34.** Megaspores are produced from the megasporangium mother cells after  
 (a) mitotic division  
 (b) formation of thick wall  
 (c) differentiation  
 (d) meiotic division. *(Karnataka NEET 2013)*
- 35.** Which one of the following statements is correct?  
 (a) Cleistogamous flowers are always autogamous.  
 (b) Xenogamy occurs only by wind pollination.  
 (c) Chasmogamous flowers do not open at all.  
 (d) Geitonogamy involves the pollen and stigma of flowers of different plants.  
*(Karnataka NEET 2013)*
- 36.** Which of the following statements is correct?  
 (a) Sporopollenin can be degraded by enzymes.  
 (b) Sporopollenin is made up of inorganic materials.  
 (c) Sporopollenin can withstand high temperatures as well as strong acids and alkalis.  
 (d) Sporopollenin can withstand high temperatures but not strong acids. *(Karnataka NEET 2013)*
- 37.** Both, autogamy and geitonogamy are prevented in  
 (a) papaya (b) cucumber  
 (c) castor (d) maize. *(2012)*
- 38.** An organic substance that can withstand environmental extremes and cannot be degraded by any enzyme is  
 (a) cuticle (b) sporopollenin  
 (c) lignin (d) cellulose. *(2012)*
- 39.** Even in absence of pollinating agents seed-setting is assured in  
 (a) *Commelina* (b) *Zostera*  
 (c) *Salvia* (d) fig. *(2012)*
- 40.** What is the function of germ pore?  
 (a) Emergence of radicle  
 (b) Absorption of water for seed germination  
 (c) Initiation of pollen tube  
 (d) Release of male gametes *(Mains 2012)*
- 41.** Plants with ovaries having only one or a few ovules, are generally pollinated by  
 (a) bees (b) butterflies  
 (c) birds (d) wind. *(Mains 2012)*
- 42.** Filiform apparatus is a characteristic feature of  
 (a) suspensor (b) egg  
 (c) synergid (d) zygote. *(2011)*
- 43.** Which one of the following pollinations is autogamous?  
 (a) Geitonogamy (b) Xenogamy  
 (c) Chasmogamy (d) Cleistogamy *(2011)*
- 44.** Wind pollination is common in  
 (a) legumes (b) lilies  
 (c) grasses (d) orchids. *(2011)*
- 45.** In angiosperms, functional megasporangium develops into  
 (a) embryo sac (b) ovule  
 (c) endosperm (d) pollen sac.  
*(Mains 2011)*
- 46.** Transfer of pollen grains from the anther to the stigma of another flower of the same plant is called  
 (a) xenogamy (b) geitonogamy  
 (c) karyogamy (d) autogamy. *(2010)*
- 47.** Wind pollinated flowers are  
 (a) small, brightly coloured, producing large number of pollen grains  
 (b) small, producing large number of dry pollen grains  
 (c) large producing abundant nectar and pollen  
 (d) small, producing nectar and dry pollen. *(2010)*
- 48.** Examine the figures (A-D) given below and select the right option out of (a - d), in which all the four structures A, B, C and D are identified correctly.
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- A: A diagram showing a plant with several flowers. One flower is magnified to show its internal structure, including the anthers and stamens.
  - B: A diagram showing a single flower with a magnified view of the stamens and anthers.
  - C: A diagram showing a magnified view of a pollen grain with internal cellular structures.
  - D: A diagram showing a magnified view of a seed or ovule.

A	B	C	D
(a) Rhizome	Sporangio-phore	Polar cell	Globule
(b) Runner	Archegonio-phore	Synergid	Antheridium
(c) Offset	Antheridio-phore	Antipodalas	Oogonium
(d) Sucker	Seta	Megaspore mother cell	Gemma cup

(Mains 2010)

- 49.** Which one of the following pairs of plant structures has haploid number of chromosomes?
- (a) Nucellus and antipodal cells
  - (b) Egg nucleus and secondary nucleus
  - (c) Megaspore mother cell and antipodal cells
  - (d) Egg cell and antipodal cells
- (2008)
- 50.** What does the filiform apparatus do at the entrance into ovule?
- (a) It brings about opening of the pollen tube.
  - (b) It guides pollen tube from a synergid to egg.
  - (c) It helps in the entry of pollen tube into a synergid.
  - (d) It prevents entry of more than one pollen tube into the embryo sac.
- (2008)
- 51.** Unisexuality of flowers prevents
- (a) geitonogamy, but not xenogamy
  - (b) autogamy and geitonogamy
  - (c) autogamy, but not geitonogamy
  - (d) both geitonogamy and xenogamy.
- (2008)
- 52.** Which one of the following is resistant to enzyme action?
- (a) Pollen exine
  - (b) Leaf cuticle
  - (c) Cork
  - (d) Wood fibre
- (Mains 2008)
- 53.** Male gametes in angiosperms are formed by the division of
- (a) generative cell
  - (b) vegetative cell
  - (c) microspore mother cell
  - (d) microspore.
- (2007)
- 54.** Which one of the following is surrounded by a callose wall?
- (a) Male gamete
  - (b) Egg
  - (c) Pollen grain
  - (d) Microspore mother cell
- (2007)
- 55.** The arrangement of the nuclei in a normal embryo sac in the dicot plants is
- (a)  $3 + 3 + 2$
  - (b)  $2 + 4 + 2$
  - (c)  $3 + 2 + 3$
  - (d)  $2 + 3 + 3$ .
- (2006)

- 56.** Which one of the following represents an ovule, where the embryo sac becomes horse-shoe shaped and the funiculus and micropyle are close to each other?
- (a) Amphitropous
  - (b) Circinotropous
  - (c) Atropous
  - (d) Anatropous
- (2005)
- 57.** An ovule which becomes curved so that the nucellus and embryo sac lie at right angles to the funicle is
- (a) hemitropous
  - (b) campylotropous
  - (c) anatropous
  - (d) orthotropous.
- (2004)
- 58.** Anthesis is a phenomenon which refers to
- (a) reception of pollen by stigma
  - (b) formation of pollen
  - (c) development of anther
  - (d) opening of flower bud.
- (2004)
- 59.** In a flowering plant, archesporium gives rise to
- (a) only the wall of the sporangium
  - (b) both wall and the sporogenous cells
  - (c) wall and the tapetum
  - (d) only tapetum and sporogenous cells.
- (2003)
- 60.** In angiosperm, all the four microspores of tetrad are covered by a layer which is formed by
- (a) pectocellulose
  - (b) callose
  - (c) cellulose
  - (d) sporopollenin.
- (2002)
- 61.** What is the direction of micropyle in anatropous ovule?
- (a) Upward
  - (b) Downward
  - (c) Right
  - (d) Left
- (2002)
- 62.** In grasses what happens in microspore mother cell for the formation of mature pollen grains?
- (a) One meiotic and two mitotic divisions
  - (b) One meiotic and one mitotic divisions
  - (c) One meiotic division
  - (d) One mitotic division
- (2001)
- 63.** Anemophily type of pollination is found in
- (a) *Salvia*
  - (b) bottlebrush
  - (c) *Vallisneria*
  - (d) coconut.
- (2001)
- 64.** Eight nucleated embryo sac is
- (a) only monosporic
  - (b) only bisporic
  - (c) only tetrasporic
  - (d) any of these.
- (2000)
- 65.** If there are 4 cells in anthers, what will be the number of pollen grains?
- (a) 16
  - (b) 12
  - (c) 8
  - (d) 4
- (1996)
- 66.** The anthesis is a phenomenon, which refers to
- (a) development of anthers
  - (b) opening of flower bud
  - (c) stigma receptors
  - (d) all of these.
- (1995)
- 67.** In an angiosperm, how many microspore mother cells are required to produce 100 pollen grains?
- (a) 75
  - (b) 100
  - (c) 25
  - (d) 50
- (1995)

- 68.** When pollen of a flower is transferred to the stigma of another flower of the same plant, the pollination is referred to as  
(a) autogamy                    (b) geitonogamy  
(c) xenogamy                    (d) allogamy.         (1994)
- 69.** Embryo sac represents  
(a) megasporangium            (b) megagametophyte  
(c) megasporophyll            (d) megagamete.         (1994)
- 70.** Number of meiotic divisions required to produce 200/400 seeds of pea would be  
(a) 200/400                    (b) 400/800  
(c) 300/600                    (d) 250/500.         (1993)
- 71.** Ovule is straight with funiculus, embryo sac, chalaza and micropyle lying on one straight line. It is  
(a) orthotropous                (b) anatropous  
(c) campylotropous            (d) amphitropous.         (1993)
- 72.** Meiosis is best observed in dividing  
(a) cells of apical meristem  
(b) cells of lateral meristem  
(c) microspores and anther wall  
(d) microsporocytes.         (1992)
- 73.** Point out the odd one.  
(a) Nucellus                    (b) Embryo sac  
(c) Micropyle                  (d) Pollen grain         (1991)
- 74.** Pollination occurs in  
(a) bryophytes and angiosperms  
(b) pteridophytes and angiosperms  
(c) angiosperms and gymnosperms  
(d) angiosperms and fungi.         (1991)
- 75.** Entry of pollen tube through micropyle is  
(a) chalazogamy                (b) mesogamy  
(c) porogamy                  (d) pseudogamy.         (1990)
- 76.** Female gametophyte of angiosperms is represented by  
(a) ovule  
(b) megasporangium  
(c) embryo sac  
(d) nucellus.         (1990)
- 77.** Male gametophyte of angiosperms/monocots is  
(a) microsporangium            (b) nucellus  
(c) microspore                  (d) stamen.         (1990)
- 78.** Which is correct?  
(a) Gametes are invariably haploid.  
(b) Spores are invariably haploid.  
(c) Gametes are generally haploid.  
(d) Both spores and gametes are invariably haploid.         (1989)
- 79.** Generative cell was destroyed by laser but a normal pollen tube was still formed because  
(a) vegetative cell is not damaged
- 80.** (b) contents of killed generative cell stimulate pollen growth  
(c) laser beam stimulates growth of pollen tube  
(d) the region of emergence of pollen tube is not harmed.         (1989)
- 81.** Total number of meiotic divisions required for forming 100 zygotes/100 grains of wheat is  
(a) 100                        (b) 75  
(c) 125                        (d) 50.         (1988)
- 82.** Male gametophyte of angiosperms is shed at  
(a) four celled pollen grain  
(b) three celled pollen grain  
(c) microspore mother cell  
(d) anther.         (1988)
- ### 2.3 Double Fertilisation
- 83.** What is the fate of the male gametes discharged in the synergid?  
(a) One fuses with the egg and other fuses with central cell nuclei.  
(b) One fuses with the egg, other(s) degenerates in the synergid.  
(c) All fuse with the egg.  
(d) One fuses with the egg, other(s) fuse(s) with synergid nucleus.         (NEET 2019)
- 84.** Double fertilisation is  
(a) fusion of two male gametes of a pollen tube with two different eggs  
(b) fusion of one male gamete with two polar nuclei  
(c) fusion of two male gametes with one egg  
(d) syngamy and triple fusion.         (NEET 2018)
- 85.** Double fertilisation is exhibited by  
(a) algae                      (b) fungi  
(c) angiosperms                (d) gymnosperms.         (NEET 2017)
- 86.** 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.         (Mains 2012)
- 87.** Through which cell of the embryo sac, does the pollen tube enter the embryo sac?  
(a) Egg cell  
(b) Persistent synergid  
(c) Degenerated synergids  
(d) Central cell         (2005)
- 88.** In angiosperms, pollen tube liberate their male gametes into the  
(a) central cell                (b) antipodal cells  
(c) egg cell                    (d) synergids.         (2002)

88. Endosperm is formed during the double fertilisation by  
(a) two polar nuclei and one male gamete  
(b) one polar nuclei and one male gamete  
(c) ovum and male gamete  
(d) two polar nuclei and two male gametes. (2000)

89. The role of double fertilisation in angiosperms is to produce  
(a) cotyledons                       (b) endocarp  
(c) endosperm                       (d) integuments. (1998, 1996)

90. Double fertilisation is characteristic of  
(a) angiosperms                       (b) anatropous  
(c) gymnosperms                      (d) bryophytes. (1993)

91. Double fertilisation is fusion of  
(a) two eggs  
(b) two eggs and polar 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. (1991)

92. Syngamy means  
(a) fusion of gametes  
(b) fusion of cytoplasms  
(c) fusion of two similar spores  
(d) fusion of two dissimilar spores. (1991)

93. Which of the following pair have haploid structures?  
(a) Nucellus and antipodal cells  
(b) Antipodal cells and egg cell  
(c) Antipodal cells and megasporangium  
(d) Nucellus and primary endosperm nucleus (1991)

94. Double fertilisation and triple fusion were discovered by  
(a) Hofmeister  
(b) Nawaschin and Guignard  
(c) Leeuwenhoek  
(d) Strasburger. (1988)

## 2.4 Post-Fertilisation : Structures and Events

95. Persistent nucellus in the seed is known as  
(a) tegmen                           (b) chalaza  
(c) perisperm                       (d) hilum. (NEET 2019)

96. Which one of the following statements regarding post-fertilisation development in flowering plants is incorrect?  
(a) Ovules develop into embryo sac.  
(b) Ovary develops into fruit.  
(c) Zygote develops into embryo.  
(d) Central cell develops into endosperm. (NEET 2019)

97. The coconut water from tender coconut represents  
(a) free nuclear proembryo  
(b) free nuclear endosperm  
(c) endocarp  
(d) fleshy mesocarp. (NEET-I 2016)

98. Coconut water from a tender coconut is  
(a) innermost layers of the seed coat  
(b) degenerated nucellus  
(c) immature embryo  
(d) free nuclear endosperm. (2015)

99. Which one of the following fruits is parthenocarpic?  
(a) Jackfruit                       (b) Banana  
(c) Brinjal                          (d) Apple (2015)

100. Non-albuminous seed is produced in  
(a) maize                           (b) castor  
(c) wheat                           (d) pea. (2014)

101. Seed coat is not thin, membranous in  
(a) groundnut                   (b) gram  
(c) maize                           (d) coconut. (NEET 2013)

102. Perisperm differs from endosperm in  
(a) being a diploid tissue  
(b) its formation by fusion of secondary nucleus with several sperms  
(c) being a haploid tissue  
(d) having no reserve food. (NEET 2013)

103. Albuminous seeds store their reserve food mainly in  
(a) endosperm                      (b) cotyledons  
(c) hypocotyl                      (d) perisperm. (Karnataka NEET 2013)

104. The viability of seeds is tested by  
(a) 2, 6 dichlorophenol indophenol  
(b) 2, 3, 5 triphenyl tetrazolium chloride  
(c) DMSO  
(d) Safranine. (Karnataka NEET 2013)

105. Two plants can be conclusively said to belong to the same species if they  
(a) have more than 90 percent similar genes  
(b) look similar and possess identical secondary metabolites  
(c) have same number of chromosomes  
(d) can reproduce freely with each other and form seeds. (2007)

106. In a cereal grain the single cotyledon of embryo is represented by  
(a) coleoptile                      (b) coleorrhiza  
(c) scutellum                       (d) prophyll. (2006)

107. The embryo in sunflower has  
(a) two cotyledons                   (b) many cotyledons  
(c) no cotyledon                   (d) one cotyledon. (1998)

## 2.5 Apomixis and Polyembryony



ANSWER KEY

1. (d) 2. (a) 3. (b) 4. (d) 5. (b) 6. (c) 7. (d) 8. (d) 9. (b) 10. (a)  
11. (b) 12. (a) 13. (c) 14. (b) 15. (a) 16. (c) 17. (c) 18. (b) 19. (b) 20. (a)  
21. (c) 22. (d) 23. (c) 24. (b) 25. (c) 26. (d) 27. (a) 28. (c) 29. (d) 30. (a)  
31. (b) 32. (b) 33. (c) 34. (d) 35. (a) 36. (c) 37. (a) 38. (b) 39. (a) 40. (c)  
41. (d) 42. (c) 43. (d) 44. (c) 45. (a) 46. (b) 47. (b) 48. (c) 49. (d) 50. (b)  
51. (c) 52. (a) 53. (a) 54. (d) 55. (c) 56. (a) 57. (a) 58. (d) 59. (b) 60. (a)  
61. (b) 62. (b) 63. (d) 64. (d) 65. (a) 66. (b) 67. (c) 68. (b) 69. (b) 70. (d)  
71. (a) 72. (d) 73. (d) 74. (c) 75. (c) 76. (c) 77. (c) 78. (a) 79. (a) 80. (c)  
81. (b) 82. (a) 83. (d) 84. (c) 85. (a) 86. (c) 87. (d) 88. (a) 89. (c) 90. (a)  
91. (d) 92. (a) 93. (b) 94. (b) 95. (c) 96. (a) 97. (b) 98. (d) 99. (b) 100. (d)  
101. (d) 102. (a) 103. (a) 104. (b) 105. (d) 106. (c) 107. (a) 108. (c) 109. (b) 110. (c)  
111. (b) 112. (a) 113. (d) 114. (b) 115. (a) 116. (a) 117. (c) 118. (b) 119. (d) 120. (d)  
121. (a) 122. (b)