## AIPMT 2006

**1.** What would be the number of chromosomes in the cells of the aleurone layer in a plant species with 8 chromosomes in its synergids?
(1) 16 (2) 24 (3) 32 (4) 8

**2.** The arrangement of the nuclei in a normal embryosac in the dicot plants is:-
(1) 2 + 4 + 2 (2) 3 + 2 + 3
(3) 2 + 3 + 3 (4) 3 + 3 + 2

**3.** In a Cereal grain the single cotyledon of embryo is represented by:-
(1) Coleorrhiza (2) Scutellum
(3) Prophyll (4) Coleoptile

**4.** Long filamentous threads protruding at the end of a young cob of maize are :-
(1) Hairs (2) Anthers
(3) Styles (4) Ovaries

**5.** In which of the following fruits is the edible part the aril ?
(1) Litchi (2) Custard apple
(3) Pomegranate (4) Orange

## AIPMT 2007

**6.** Male gametes in angiosperms are formed by the division of :-
(1) Microspore mother cell
(2) Microspore
(3) Generative cell
(4) Vegetative cell

**7.** Which one of the following is surrounded by a callose wall ?
(1) Pollen grain
(2) Microspore mother cell
(3) Male gamete
(4) Egg

## AIPMT 2008

**8.** Unisexuality of flowers prevents :-
(1) Geitonogamy, but not xenogamy
(2) Autogamy and geitonogamy
(3) Autogamy, but not geitonogamy
(4) Both geitonogamy and xenogamy

**9.** Endosperm is consumed by developing embryo in the seed of :-
(1) Pea (2) Maize
(3) Coconut (4) Castor

**10.** Which one of the following is resistant to enzyme action?
(1) Pollen exine (2) Leaf cuticle
(3) Cork (4) Wood fibre

**11.** What does the filiform apparatus do at the entrance into ovule?
(1) It brings about opening of the pollen tube
(2) It guides pollen tube from a synergid to egg
(3) It helps in the entry of pollen tube into a synergid
(4) It prevents entry of more than one pollen tube into the embryo sac

**12.** Which one of the following pairs of plant structures has haploid number of chromosomes?
(1) Nucellus and antipodal cells
(2) Egg nucleus and secondary nucleus
(3) Megaspore mother cell and antipodal cells
(4) Egg cell and antipodal cells

## AIPMT 2009

**13.** An example of a seed with endosperm, perisperm, and caruncle is :-
(1) Castor (2) Cotton
(3) Coffee (4) Lily

## AIPMT Pre. 2010

**14.** The scutellum observed in a grain of wheat or maize is comparable to which part of the seed in other monocotyledons ?
(1) Plumule (2) Cotyledon
(3) Endosperm (4) Aleurone layer

**15.** Apomictic embryos in *citrus* arise from :-
(1) Diploid egg,
(2) Synergids
(3) Maternal sporophytic tissue in ovule
(4) Antipodal cells

**16.** Wind pollinated flowers are :-
(1) Small, producing nectar and dry pollen
(2) Small, brightly coloured, producing large number of pollen grains
(3) Small, producing large number of dry pollen grains
(4) Large, producing abundant nectar and pollen

**17.** Transfer of pollen grains from the anther to the stigma of another flower of the same plant is called :-
(1) Autogamy (2) Xenogamy
(3) Geitonogamy (4) Karyogamy

**AIPMT Mains 2011**

**18.** What is common between vegetative reproduction and Apomixis ?
(1) Both produces progeny identical to the parent.
(2) Both are applicable to only dicot plants.
(3) Both bypass the flowering phase.
(4) Both occur round the year.

**19.** In angiosperms, functional megaspore develops into :-
(1) Pollen sac (2) Embryo sac
(3) Ovule (4) Endosperm

**AIPMT Pre. 2011**

**20.** Filiform apparatus is a characteristic feature of :
(1) Suspensor (2) Egg
(3) Synergid (4) Zygote

**21.** Nucellar polyembryony is reported in species of :
(1) *Citrus* (2) *Gossypium*
(3) *Triticum* (4) *Brassica*

**22.** In which one of the following pollination is autogamous ?
(1) Geitonogamy (2) Xenogamy
(3) Chasmogamy (4) Cleistogamy

**23.** What would be the number of chromosomes of the aleurone cells of a plant with 42 chromosomes in its *root tip* cells ?
(1) 42 (2) 63 (3) 84 (4) 21

**AIPMT Pre. 2012**

**24.** The coconut water and the edible part of coconut are equivalent to :-
(1) Mesocarp (2) Embryo
(3) Endosperm (4) Endocarp

**25.** The gynoecium consists of many free pistils in flowers of :-
(1) *Papaver* (2) *Michelia*
(3) *Aloe* (4) *Tomato*

**26.** Both, autogamy and geitonogamy are prevented in:-
(1) Castor (2) Maize
(3) Papaya (4) Cucumber

**27.** Even in absence of pollinating agents seed-setting is assured in :-
(1) *Salvia* (2) Fig
(3) *Commellina* (4) *Zostera*

**AIPMT Mains 2012**

**28.** Plants with ovaries having only one or a few ovules, are generally pollinated by :-
(1) Birds (2) Wind
(3) Bees (4) Butterflies

**29.** Which one of the following statements is wrong ?
(1) Pollen grains in some plants remain viable for months.
(2) Intine is made up of cellulose and pectin.
(3) When pollen is shed at two - celled stage, double fertilization does not take place.
(4) Vegetative cell is larger than generative cell.

**30.** What is the function of germ pore?
(1) Initiation of pollen tube
(2) Release of male gametes
(3) Emergence of radicle
(4) Absorption of water for seed germination

**NEET-UG 2013**

**31.** Perisperm differs from endosperm in:-
(1) Its formation by fusion of secondary nucleus with several sperms
(2) Being a haploid tissue
(3) Having no reserve food
(4) Being a diploid tissue

**32.** Megasporangium is equivalent to :-
(1) Ovule (2) Embryo sac
(3) Fruit (4) Nucellus

**33.** Advantage of cleistogamy is :-
(1) Vivipary
(2) Higher genetic variability
(3) More vigorous offspring
(4) No dependence on pollinators

**34.** Seed coat is **not** thin, membranous in :-
(1) Gram (2) Maize
(3) Coconut (4) Groundnut

**35.** Which one of the following statements is correct?
(1) Tapetum nourishes the developing pollen
(2) Hard outer layer of pollen is called intine
(3) Sporogenous tissue is haploid
(4) Endothecium produces the micorspores

## AIPMT 2014

**36.** Geitonogamy involves :-
(1) fertilization of a flower by the pollen from another flower of the same plant.
(2) fertilization of a flower by the pollen from the same flower.
(3) fertilization of a flower by the pollen from a flower of another plant in the same population.
(4) fertilization of a flower by the pollen from a flower of another plant belonging to a distant population.

**37.** Male gametophyte with least number of cell is present in :-
(1) *Pteris* (2) *Funaria*
(3) *Lilium* (4) *Pinus*

**38.** Pollen tablets are available in the market for:-
(1) In vitro fertilization
(2) Breeding programmes
(3) Supplementing food
(4) Ex situ conservation

**39.** Function of filiform apparatus is to :-
(1) Recognize the suitable pollen at stigma
(2) Stimulate division of generative cell
(3) Produce nectar
(4) Guide the entry of pollen tube

**40.** Non-albuminous seed is produced in :-
(1) Maize (2) Castor
(3) Wheat (4) Pea

## AIPMT 2015

**41.** Transmission tissue is characteristic feature of :-
(1) Solid style (2) Dry stigma
(3) Wet stigma (4) Hollow style

**42.** Which one of the following may require pollinators, but is genetically similar to autogamy?
(1) Xenogamy (2) Apogamy
(3) Cleistogamy (4) Geitonogamy

**43.** Which one of the following statements is not true?
(1) Pollen grains of some plants cause severe allergies and bronchial afflictions in some people
(2) The flowers pollinated by flies and bats secrete foul odour to attract them
(3) Honey is made by bees by digesting - pollen collected from flowers
(4) Pollen grains are rich in nutrients, and they are used in the form of tablets and syrups

**44.** The hilum is a scar on the :-
(1) Fruit, where it was attached to pedicel
(2) Fruit, where style was present
(3) Seed, where micropyle was present
(4) Seed, where funicle was attached

**45.** Which of the following are the important floral rewards to the animal pollinators?
(1) Nectar and pollen grains
(2) Floral fragrance and calcium crystals
(3) Protein pellicle and stigmatic exudates
(4) Colour and large size flower

## RE-AIPMT 2015

**46.** Male gametophyte in angiosperms produces:-
(1) Three sperms
(2) Two sperms and a vegetative cell
(3) Single sperm and a vegetative cell
(4) Single sperm and two vegetative cells

**47.** Coconut water from a tender coconut is :-
(1) Degenerated nucellus
(2) Immature embryo
(3) Free nuclear endosperm
(4) Innermost layers of the seed coat

**48.** Filiform apparatus is characteristic feature of:
(1) Synergids (2) Generative cell
(3) Nucellar embryo (4) Aleurone cell

**49.** The wheat grain has an embryo with one large, shield-shaped cotyledon known as:-
(1) Coleoptile (2) Epiblast
(3) Coleorrhiza (4) Scutellum

**50.** Which one of the following fruits is parthenocarpic?
(1) Banana (2) Brinjal
(3) Apple (4) Jackfruit

**51.** In angiosperms, microsporogenesis and megasporogenesis :-
(1) occur in ovule
(2) occur in anther
(3) form gametes without further divisions
(4) involve meiosis

**52.** Flowers are unisexual in :-
(1) Onion (2) Pea
(3) Cucumber (4) China rose

## NEET-I 2016

**53.** The coconut water from tender coconut represents:-
(1) Endocarp
(2) Fleshy mesocarp
(3) Free nuclear proembryo
(4) Free nuclear endosperm

**54.** Proximal end of the filament of stamen is attached to the:-
(1) Anther
(2) Connective
(3) Placenta
(4) Thalamus or petal

**55.** Which one of the following statements is **not** true?
(1) Tapetum helps in the dehiscence of anther
(2) Exine of pollen grains is made up of sporopollenin
(3) Pollen grains of many species cause severe allergies
(4) Stored pollen in liquid nitrogen can be used in the crop breeding programmes

**56.** Cotyledon of maize grain is called :-
(1) plumule (2) coleorhiza
(3) coleoptile (4) scutellum

**57.** Seed formation without fertilization in flowering plants involves the process of :-
(1) Sporulation
(2) Budding
(3) Somatic hybridization
(4) Apomixis

**58.** Which of the following statements is **not** correct?
(1) 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.
(2) Insects that consume pollen or nectar without bringing about pollination are called pollen/nectar robbers.
(3) Pollen germination and pollen tube growth are regulated by chemical components of pollen interacting with those of the pistil.
(4) Some reptiles have also been reported as pollinators in some plant species.

## NEET-II 2016

**59.** Which one of the following generates new genetic combinations leading to variation ?
(1) Sexual reproduction
(2) Nucellar polyembryony
(3) Vegetative reproduction
(4) Parthenogenesis

**60.** In majority of angiosperms: -
(1) Reduction division occurs in the megaspore mother cells
(2) A small central cell is present in the embryo sac
(3) Egg has a filiform apparatus
(4) There are numerous antipodal cells

**61.** Pollination in water hyacinth and water lily is brought about by the agency of :-
(1) Birds (2) Bats
(3) Water (4) Insects or wind

**62.** The ovule of an angiosperm is technically equivalent to :-
(1) Megaspore mother cell
(2) Megaspore
(3) Megasporangium
(4) Megasporophyll

**63.** Match **column-I** with **column-II** and select the correct option using the codes given below :-

| Column-I | | Column-II | |
|---|---|---|---|
| (a) | Pistils fused together | (i) | Gametogenesis |
| (b) | Formation of gametes | (ii) | Pistillate |
| (c) | Hyphae of higher Ascomycetes | (iii) | Syncarpous |
| (d) | Unisexual female flower | (iv) | Dikaryotic |

| | a | b | c | d |
|---|---|---|---|---|
| (1) | i | ii | iv | iii |
| (2) | iii | i | iv | ii |
| (3) | iv | iii | i | ii |
| (4) | ii | i | iv | iii |

## NEET(UG) 2017

**64.** Functional megaspore in an angiosperm develops into ?
(1) Endosperm (2) Embryo sac
(3) Embryo (4) Ovule

**65.** Attractants and rewards are required for :-
(1) Entomophily (2) Hydrophily
(3) Cleistogamy (4) Anemophily

**66.** Plants which produce characteristic pneumatophores and show vivipary belong to:
(1) Halophytes (2) Psammophytes
(3) Hydrophytes (4) Mesophytes

**67.** Flowers which have single ovule in the ovary and are packed into inflorescence are usually pollinated by:-
(1) Bee (2) Wind (3) Bat (4) Water

**68.** A dioecious flowering plant prevents both :-
(1) Autogamy and geitonogamy
(2) Geitonogamy and xenogamy
(3) Cleistogamy and xenogamy
(4) Autogamy and xenogamy

**69.** Double fertilization is exhibited by :-
(1) Algae (2) Fungi
(3) Angiosperms (4) Gymnosperms

## NEET(UG) 2018

**70.** Which of the following flowers only once in its life-time ?
(1) Bamboo species (2) Jackfruit
(3) Mango (4) Papaya

**71.** Pollen grains can be stored for several years in liquid nitrogen having a temperature of:-
(1) –120°C (2) –80°C
(3) –196°C (4) –160°C

**72.** Double fertilization is :-
(1) Fusion of two male gametes of a pollen tube with two different eggs
(2) Fusion of one male gamete with two polar nuclei
(3) Fusion of two male gametes with one egg
(4) Syngamy and triple fusion

(5)

**73.** Which one of the following plants shows a very close relationship with a species of moth, where none of the two can complete its life cycle without the other?
(1) *Hydrilla* (2) *Yucca*
(3) Banana (4) *Viola*

## NEET(UG) 2019

**74.** Is some plants, the female gamete develops into embryo without fertilization. This phenomenon is known as :-
(1) Autogamy (2) Parthenocarpy
(3) Syngamy (4) Parthenogenesis

**75.** Which one of the following statements regarding post-fertilization development in flowering plants is **incorrect** ?
(1) Ovary develops into fruit
(2) Zygote develops into embryo
(3) Central cell develops into endosperm
(4) Ovules develop into embryo sac

**76.** Persistent nucellus in the seed is known as :-
(1) Chalaza (2) Perisperm
(3) Hilum (4) Tegmen

**77.** What is the fate of the male gametes discharged in the synergid?
(1) One fuses with the egg, other(s) degenerate(s) in the synergid.
(2) All fuse with the egg.
(3) One fuses with the egg, other(s) fuse(s) with synergid nucleus.
(4) One fuses with the egg and other fuses with central cell nuclei.

## NEET(UG) 2019 (Odisha)

**78.** 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

**79.** What type of pollination takes place in *Vallisneria*?
(1) Pollination occurs in submerged condition by water
(2) Flowers emerge above surface of water, and pollination occurs by insects.
(3) Flowers emerge above water surface, and pollen is carried by wind.
(4) Male flowers are carried by water currents to female flowers at surface of water

**80.** In which one of the following, both autogamy and geitonogamy are prevented?
(1) Wheat (2) Papaya
(3) Castor (4) Maize

## NEET(UG) 2020

**81.** In water hyacinth and water lily, pollination takes place by :-
(1) insects and water (2) insects or wind
(3) water currents only (4) wind and water

**82.** The body of the ovule is fused within the funicle at:-
(1) Chalaza (2) Hilum
(3) Micropyle (4) Nucellus

**83.** The plant parts which consist of *two generations* one within the other :-
(a) Pollen grains inside the anther
(b) Germinated pollen grain with two male gametes
(c) Seed inside the fruit
(d) Embryo sac inside the ovule
(1) (a) and (d) (2) (a) only
(3) (a), (b) and (c) (4) (c) and (d)

## NEET(UG) 2020 (COVID-19)

**84.** Which of the following is **incorrect** for wind - pollinated plants ?
(1) Well exposed stamens and stigma
(2) Many ovules in each ovary
(3) Flowers are small and not brightly coloured
(4) Pollen grains are light and non-sticky

**85.** Vegetative propagules in Agave is termed as :-
(1) Rhizome (2) Bulbil
(3) Offset (4) Eye

**86.** Male and female gametophytes do not have an independent free living existence in :-
(1) Pteridophytes (2) Algae
(3) Angiosperms (4) Bryophytes

## NEET(UG) 2021

**87.** The term used for transfer of pollen grains from anthers of one plant to stigma of a different plant which, during pollination, brings genetically different types of pollen grains to stigma, is :-
(1) Xenogamy (2) Geitonogamy
(3) Chasmogamy (4) Cleistogamy

**88.** A typical angiosperm embryo sac at maturity is :-
(1) 8-nucleate and 7-celled
(2) 7-nucleate and 8-celled
(3) 7-nucleate and 7-celled
(4) 8-nucleate and 8-celled

**89.** In some members of which of the following pairs of families, pollen grains retain their viability for months after release ?
(1) Poaceae ; Rosaceae
(2) Poaceae; Leguminosae
(3) Poaceae; Solanaceae
(4) Rosaceae ; Leguminosae

## NEET-(UG) 2022

**90.** Identify the incorrect statement related to Pollination:-
(1) Pollination by wind is more common amongst abiotic pollination
(2) Flowers produce foul odours to attract flies and beetles to get pollinated
(3) Moths and butterflies are the most dominant pollinating agents among insects
(4) Pollination by water is quite rare in flowering plants

**91.** Given below are two statements:-
**Statement I :**
Cleistogamous flowers are invariably autogamous
**Statement II :**
Cleistogamy is disadvantageous as there is no chance for cross pollination.
In the light of the above statements, choose the correct answer from the options given below:
(1) Both Statement I and Statement II are incorrect
(2) Statement I is correct but Statement II is incorrect
(3) Statement I is incorrect but Statement II is correct
(4) Both Statement I and Statement II are correct

**Re-NEET-(UG) 2022**

**92.** The residual persistent part which forms the perisperm in the seeds of beet is :-
(1) Calyx (2) Endosperm
(3) Nucellus (4) Integument

**93.** Which of the following can be expected if scientists succeed in introducing apomictic gene into hybrid varieties of crops ?
(1) Polyembryony will be seen and each seed will produce many plantlets
(2) Seeds of hybrid plants will show longer dormancy
(3) Farmers can keep on using the seeds produced by the hybrids to raise new crop year after year
(4) There will be segregation of the desired characters only in the progeny

**94.** To ensure that only the desired pollens fall on the stigma in artificial hybridization process:-
(a) the female flower buds of plant producing unisexual flower need not be bagged.
(b) there is no need to emasculate unisexual flowers of selected female parent
(c) emasculated flowers are to be bagged immediately after cross pollination
(d) emasculated flowers are to be bagged after removal of anthers
(e) bisexual flowers, showing protogyny are never selected for cross
Choose the correct answer from the options given below :
(1) (a), (b) and (c) only
(2) (b), (c) and (d) only
(3) (b), (c) and (e) only
(4) (a), (d) and (e) only



**EXERCISE-II (Previous Year Questions) ANSWER KEY**

| Question | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Answer | 2 | 2 | 2 | 3 | 1 | 3 | 2 | 3 | 1 | 1 | 3 | 4 | 1 | 2 | 3 |
| Question | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| Answer | 3 | 3 | 1 | 2 | 3 | 1 | 4 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 1 |
| Question | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 |
| Answer | 4 | 1 | 4 | 3 | 1 | 1 | 3 | 3 | 4 | 4 | 1 | 4 | 3 | 4 | 1 |
| Question | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| Answer | 2 | 3 | 1 | 4 | 1 | 4 | 3 | 4 | 4 | 1 | 4 | 4 | 1 | 1 | 1 |
| Question | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 |
| Answer | 4 | 3 | 2 | 2 | 1 | 1 | 2 | 1 | 3 | 1 | 3 | 4 | 2 | 4 | 4 |
| Question | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| Answer | 2 | 4 | 2 | 4 | 2 | 2 | 2 | 1 | 2 | 2 | 3 | 1 | 1 | 4 | 3 |
| Question | 91 | 92 | 93 | 94 | | | | | | | | | | | |
| Answer | 4 | 3 | 3 | 2 | | | | | | | | | | | |

## EXERCISE-III(A) (NCERT BASED QUESTIONS)

**1.** Each cell of sporogenous tissue is potential pollen or microspore mother cell; Division taking place in sporogenous cell is :-
(1) Meiosis (2) Mitosis
(3) Endomitosis (4) Amitosis

**2.** In over 60% of angiosperms pollen grains are shed at :-
(1) One celled stage
(2) Three nuclei stage
(3) Two celled stage
(4) Three celled stage

**3.** Pollen grains of many species cause severe allergies & bronchial afflictions in some people often leading to chronic respiratory disorder such as :-
(1) Asthma (2) Bronchitis
(3) Both 1 & 2 (4) Emphysema

**4.** In a pollen grain the small cell is spindle shaped with dense cytoplasm is :-
(1) Vegetative cell (2) Generative cell
(3) Tube cell (4) All

**5.** The innermost wall layer of anther is tapetum; the main function of tapetum is :-
(1) Divison (2) Support
(3) Nutrition (4) Protection

**6.** Two non motile male gametes in angiosperms are produced by :-
(1) Generative cell
(2) Microspore mother cell
(3) Vegetative cell
(4) Tube cell

**7.** Which of the following haploid structure is present in male plant of papaya?
(1) Antipodal cell
(2) Microspore mother cell
(3) Generative cell
(4) 1 & 3 both

**8.** Pollen grain represents:-
(1) Female gametophyte
(2) Megasporangium
(3) Male gametophyte
(4) Sporophyte

**9.** A typical angiosperm embryo sac at maturity is:
(1) 7 celled - 8 nucleated
(2) 9 celled - 7 nucleated
(3) 3 celled - 3 nucleated
(4) 2 celled - 2 nucleated

**10.** Arising from placenta is megasporangium which is commonly known as :-
(1) Ovule (2) Ovary
(3) Ovarian cavity (4) Stamen

**11.** Transfer of pollen grains from the anther to the stigma of another flower of same plant is called :-
(1) Xenogamy (2) Autogamy
(3) Geitonogamy (4) Allogamy

**12.** The part of pistil which acts as landing platform for pollen grain is :-
(1) Stigma (2) Style
(3) Ovule (4) Ovary

**13.** In angiosperms functional megaspore is generally situated at :-
(1) Micropylar end (2) Chalazal end
(3) Both (4) None

**14.** Micropyle **in seed** helps in the entry of:-
(1) Male gamete (2) Pollen tube
(3) Water & air (4) All

**15.** The type of cells under going meiosis in the flowers are:-
(1) Microspore mother cells & megaspore mother cell
(2) Epidermal cells
(3) Tapetal cells
(4) Placental cells

**16.** Synergids help in:-
(1) Pollen tube entry into embryo sac
(2) Endosperm formation
(3) Embryosac nutrition
(4) Both 1 & 3

**17.** Chasmocleistogamous flowers are present in:-
(1) *Viola* (common pansy)
(2) *Oxalis*
(3) *Commelina*
(4) All of the above

**18.** Although in most of species fruits are result of fertilisation, there are a few species in which fruit develops without fertilisation - process is known as:-
(1) Parthenocarpy (2) Parthenogenesis
(3) Amphimixis (4) Apomixis

**19.** One of the male gamete moves towards the egg cell & fuses with it, the process is known as:
(1) Syngamy (2) Triple fusion
(3) Double fertilization (4) Autogamy

**20.** Nucellar polyembryony is reported in species of:-
(1) *Citrus* (2) Mango
(3) Both 1 & 2 (4) *Capsella*

**21.** When embryo develops from a haploid cell of embryosac, other than egg cell, the process is known as:-
(1) Apogamy
(2) Apospory
(3) Adventive embryony
(4) Diplospory

## EXERCISE-III (B) (ANALYTICAL QUESTIONS)

**22.** Which of the following are crucial for the storage of seeds ?
(1) Rehydration (2) Dehydration
(3) Seed dormancy (4) Both 2 and 3

**23.** The function of suspensor is:-
(1) To provide water
(2) To provide oxygen
(3) To push the embryo towards endosperm to provide more food
(4) To store food

**24.** Single shield shaped cotyledon of grass is known as:-
(1) Tigellum (2) Scutellum
(3) Coleoptile (4) Coleorrhiza

**25.** Epicotyl has a shoot apex and few leaf primordia enclosed in a hollow foliar structure known as :-
(1) Coleoptile (2) Coleorrhiza
(3) Scutellum (4) Tigellum

**26.** Non albuminous seeds are present in :-
(1) *Pisum* (Pea)
(2) *Arachis* (Ground nut)
(3) Both
(4) Maize

**27.** The coconut water from tender coconut that you are familiar with is :-
(1) Nuclear endosperm
(2) Cellular endosperm
(3) Helobial endosperm
(4) All of the above

**28.** Endosperm development precedes embryo development, the endosperm of angiospermic plant is: -
(1) Triploid (2) Diploid
(3) Haploid (4) Tetraploid

**29.** Which of the following structure is not present in embryo of gram?
(1) Radicle (2) Hypocotyl
(3) Epicotyl (4) Coleoptile

**30.** The portion of embryonal axis below the level of cotyledon is known as: -
(1) Coleoptile (2) Hypocotyl
(3) Epicotyl (4) Coleorrhiza

**31.** Double fertilization is essential for the formation of:-
(1) Perisperm (2) Seed coat
(3) Endosperm (4) Nucellus

**32.** Remnant of nucellus is known as :-
(1) Scutellum (2) Pericarp
(3) Tigellum (4) Perisperm

**33.** Perisperm is present in :-
(1) Beet (2) Black pepper
(3) Both 1 and 2 (4) All angiosperms

**34.** Apomixis term was coined by:-
(1) Leeuwenhoek
(2) Winkler
(3) Juel and Murbeck
(4) Nawaschin and Guignard

**35.** Seeds are produced without fertilization in some members of :-
(1) Grasses and pulses (2) Asteraceae
(3) Fabaceae (4) Orchidaceae

**36.** Parthenogenesis occurs when :-
(1) Embryo is formed without the fusion of egg and sperm
(2) Embryo is formed by the fusion of egg and sperm
(3) Embryo is formed from nucellar cell
(4) Sperm produces the embryo directly

**37.** In a type of apomixis which is known as adventive embryony, embryos develop directly from the :-
(1) Nucellus or integuments
(2) Synergids or antipodals of an embryosac
(3) Accessory embryosacs in the ovule
(4) Zygote

**38.** Development of male gametophyte is :-
(1) In-vivo (2) In-situ
(3) Both (4) In-vitro

**39.** Proliferation of integumentary cells at the micropylar region of the ovule in castor develops:-
(1) Aril (2) Funicle
(3) Caruncle (4) Apophysis

**40.** Just before fertilization the diploid structure in the ovule of *Capsella* is: -
(1) Pollen tube
(2) Nucellus/ Sec. nucleus
(3) Synergids (4) Antipodals

**41.** Free nuclear division in an angiosperm takes place during:-
(1) Pollen formation
(2) Endosperm formation
(3) Embryo formation
(4) Flower formation

**42.** Protandry is the situation when :-
(1) Anther matures later than the stigma of flower
(2) Anther matures earlier than the stigma of flower
(3) Anther and stigma mature at the same time
(4) All of the above

**43.** The anterior end of pollen tube burst by the process of ____ in embryo sac:-
(1) Imbibition (2) Exosmosis
(3) Enzymatic action (4) Endosomosis

**44.** In angiosperms Haploid, diploid and triploid conditions respectively can be traced in :-
(1) Egg, Nucellus, Endosperm
(2) Antipodal, Egg, Endosperm
(3) Endosperm, Nucellus, Synergids
(4) Antipodal, Synergids & Integuments

**45.** If the leaf of *Capsella* has 46 number of chromosomes then how many chromosomes number will be there in endosperm :-
(1) 46 (2) 23 (3) 69 (4) 138

**46.** If the nucellus cell of an Angiosperm contains 24 chromosomes the number of chromosomes present in pollen grain, endosperm & embryo will be:-
(1) 24, 36, 24 (2) 12, 36, 24
(3) 12, 24, 36 (4) 24, 12, 12

**47.** In Angiosperm, if haploid number of chromosome is 12 then what will be the no. of chromosomes in integuments and synergids:-
(1) 12, 12 (2) 24, 12
(3) 24, 24 (4) 12, 24

**48.** In Angiosperm, if number of chromosomes in endosperm is 30, what will be the no. of chromosomes in nucellus :-
(1) 15 (2) 30 (3) 20 (4) 40

**49.** How many meiotic divisions are necessary for the formation of 100 functional megaspores:-
(1) 25 (2) 50 (3) 100 (4) 200

**50.** The seeds of which type of plant have no dormancy:-
(1) Xerophytes
(2) Mesophytes
(3) Halophytes and hydrophyte
(4) Mangroves

**51.** Ornithophily takes place in :-
(1) Yellow flower having nectaries
(2) Scented flower
(3) Flower with charming colour only
(4) Modified corolla

**52.** Anemophily type of pollination is found in :-
(1) *Salvia* (2) Bottle brush
(3) *Vallisneria* (4) Coconut

**53.** In grass what happens in microspore mother cell for the formation of mature pollen grain:-
(1) One meiotic and two mitotic divisions
(2) One meiotic and one mitotic division
(3) One meiotic division only
(4) One mitotic division only

**54.** In a Flowering plant, archesporium (archesporial cell) gives rise to:-
(1) Only the wall of the sporangium
(2) Both wall and the sporogenous cell
(3) Wall and the tapetum
(4) Only tapetum and sporogenous cells

**55.** When a diploid female plant is crossed with a tetraploid male plant, the ploidy of endosperm cells in the resulting seed will be:-
(1) Pentaploid (2) Diploid
(3) Triploid (4) Tetraploid

**56.** If diploid female plant is crossed with tetra ploid male plant. What would be ploidy level of seed coat: -
(1) 3n (2) n (3) 2n (4) 4n

**57.** Perispermic and endospermic seeds are found in :-
(1) Castor (2) Maize (3) Wheat (4) Rice

**58.** Double fertilization involves: -
(1) Fertilization of the egg by two male gametes
(2) Fertilization of two eggs in the same embryosac by two sperms brought by one pollen tube
(3) Fertilization of the egg and the central cell by two sperms (male gametes) brought by different pollen tubes
(4) Fertilization of the egg and the central cell by two sperms (male gametes) brought by the same pollen tube

**59.** How many times flowering takes place in biennial plants:-
(1) One (2) Twice
(3) Many (4) Three

**60.** Which part of the reproductive structure produces both enzyme & hormone :-
(1) Archesporium (2) Middle layer
(3) Tapetum (4) Endothecium

**61.** Ubisch bodies are produced in :-
(1) Embryosac (2) Endothecium
(3) Pollen grain (4) Tapetum

**62.** Tapetum is :-
(1) Parietal in origin and is the inner most layer of anther wall.
(2) Modified endothecium of anther wall
(3) Outer most layer of sporogenous tissue modification
(4) Parietal in origin and is the inner most layer of ovule wall

**63.** Ubisch bodies are associated with the development of :-
(1) Embryo (2) Pollen grains
(3) Endosperm (4) Embryo sac

**64.** Endothecium, middle layer and tapetum in anther are derived from :-
(1) Primary sporogenous cells
(2) Primary parietal cells
(3) Both (1) and (2)
(4) None of the above

**65.** How many cells or nuclei are present in mature male gametophyte of Capsella :-
(1) One (2) Two
(3) Three (4) Many

**66.** The plant in which G.B. Amici discovered pollen tube is :-
(1) Capsella (2) Parthenium
(3) Portulaca (4) Pisum

**67.** Pollen tube develops from :-
(1) Generative cell
(2) Male gametes
(3) Vegetative cell
(4) Vegetative nucleus

**68.** 'Callase' enzyme which dissolve callose of tetrad of microspores to separate 4 microspores is provided by:-
(1) Pollen grains (2) Middle layer
(3) Tapetum (4) Endothecium

**69.** Pollen grains are able to withstand extremes of temperature and dessication because their exine is composed of :–
(1) Cutin (2) Suberin
(3) Sporopollenin (4) Callose

**70.** Go through the following statements:-
I. Flowers are small. They are often packed in inflorescence
II. Flowers are colourless, nectar less and odourless
III. Well exposed stamens
IV. Pollen grains are produced in large numbers which are light and non-sticky
V. Flower often have a single ovule in each ovary.
VI. Stigma is large and often feathery.
The above contrivances favour
(1) Cross pollination
(2) Anemophily (pollination by wind)
(3) Ornithophily (pollination by birds)
(4) Entomophily (pollination by insects)

**71.** Which of the following is the tallest flower?
(1) *Vallisneria* (2) *Rafflesia*
(3) *Amorphophallus* (4) *Zostera*

**72.** Endosperm is formed during the double fertilization by :-
(1) Two polar nuclei and one male gamete
(2) One polar nuclei and one male gamete
(3) Ovum and male gamete
(4) Two polar nuclei and two male gametes

**73.** In Angiosperms pollen tube liberate their male gametes into the :-
(1) Central cell (2) Antipodal cells
(3) Egg cell (4) Synergid

**74.** In which part of embryo maximum growth takes place in hypogeal germination: -
(1) Plumule (2) Radicle
(3) Epicotyl (4) Hypocotyl

**75.** In seeds, characterised by hypogeal germination, cotyledons generally do not becomes green because :-
(1) They lack mitochondria
(2) They developed very early
(3) They contain inhibitor
(4) They remain below the soil

**76.** Which of the following will lose its economic value if fruits are produced through parthenocarpy?
(1) Citrus (2) Banana
(3) Grapes (4) Pomegranate

**77.** In which method megaspore mother cell directly gives rise to an embryo sac without meiosis?
(1) Diplospory
(2) Adventive embryony
(3) Apospory
(4) Apogamy

**78.** Given below are two statements: -
Statement-I : When pollen grains are released from pollen sac and they land on stigma of pistil, it is called pollination.
Statement-II : Pollen tube enters into embryo sac where two male gametes fuse with female gamete.
In the light of the above statements, choose the most appropriate answer from the options given below:
(1) Both Statement-I and II are correct.
(2) Statement-I is correct but statement-II is incorrect.
(3) Statement-I is incorrect and Statement-II is correct.
(4) Both Statement-I and Statement-II are incorrect.

**79.** Given below are two statements: -
**Statement-I** : A typical anther is tetrasporangiate.
**Statement-II :** A typical anther is dithecous.
In the light of the above statements, choose the most appropriate answer from the options given below:
(1) Both Statement-I and II are correct.
(2) Statement-I is correct but statement-II is incorrect.
(3) Statement-I is incorrect and Statement-II is correct.
(4) Both Statement-I and Statement-II are incorrect.

**80.** Given below are two statements:-
**Statement-I :** Exine of pollen grain is made up of sporopollenin.
**Statement-II :** Intine helps in germination of pollen grain.

In the light of the above statements, choose the most appropriate answer from the options given below:

(1) Both Statement-I and Statement-II are correct.

(2) Statement-I is correct but statement-II is incorrect.

(3) Statement-I is incorrect and Statement-II is correct.

(4) Both Statement-I and II are incorrect.

**81.** Given below are two statements:-

**Statement-I :** To some extent viability of pollen grains depends upon prevailing temperature and humidity.

**Statement-II :** Viability is lost in few minutes only of the pollen grains of Solanaceae family.

In the light of the above statements, choose the most appropriate answer from the options given below:

(1) Both Statement-I and II are correct.

(2) Statement-I is correct but statement-II is incorrect.

(3) Statement-I is incorrect and Statement-II is correct.

(4) Both Statement-I and Statement-II are incorrect.

**82.** Given below are two statements (for angiosperm plants) :-

**Statement-I :** A mature male gametophyte possess two male gametes.

**Statement-II :** A mature female gametophyte is 7-celled and 8 nucleated in typical angiosperms.

In the light of the above statements, choose the most appropriate answer from the options given below:

(1) Both Statement-I and II are correct.

(2) Statement-I is correct but statement-II is incorrect.

(3) Statement-I is incorrect and Statement-II is correct.

(4) Both Statement-I and Statement-II are incorrect.

**83.** Given below are two statements; one is labelled as Assertion (A) and the other is labelled as Reason(R) :-

**Assertion (A) :** Geitonogamy is genetically same as autogamy.

**Reason (R) :** In Geitonogamy transfer of pollen grains occur from one plant to another plant.

In the light of the above statements, choose the most appropriate answer from the options given below :

(1) If (A) & (R) both are correct but (R) is not the correct explanation of (A).

(2) (A) is correct but (R) is incorrect.

(3) (A) is not correct but (R) is correct.

(4) If (A) & (R) both are correct and (R) is the correct explanation of (A).

**84.** Given below are two statements; one is labelled as Assertion (A) and the other is labelled as Reason(R) :-

**Assertion (A) :** Homogamy in receptivity by stigma and pollen release is essential for autogamy.

**Reason (R) :** Heterogamy increases the opportunities for successful allogamy.

In the light of the above statements, choose the most appropriate answer from the options given below :

(1) If (A) & (R) both are correct but (R) is not the correct explanation of (A).

(2) (A) is correct but (R) is incorrect.

(3) (A) is not correct but (R) is correct.

(4) If (A) & (R) both are correct and (R) is the correct explanation of (A).

**85.** Given below are two statements; one is labelled as Assertion (A) and the other is labelled as Reason(R) .

**Assertion (A) :** Loss of pollen grain occur maximum in anemophily.

**Reason (R) :** In this type of pollination, pollen grains move completely in non-directional form.

In the light of the above statements, choose the most appropriate answer from the options given below :

(1) If (A) & (R) both are correct but (R) is not the correct explanation of (A).
(2) (A) is correct but (R) is incorrect.
(3) (A) is not correct but (R) is correct.
(4) If (A) & (R) both are correct and (R) is the correct explanation of (A).

**86.** Given below are two statements; one is labelled as Assertion (A) and the other is labelled as Reason(R) :-

**Assertion (A) :** In angiosperm plants, nuclear endosperm is most common.

**Reason (R) :** When formation of endosperm occur due to free nuclear division, is called cellular endosperm.

In the light of the above statements, choose the most appropriate answer from the options given below :

(1) If (A) & (R) both are correct but (R) is not the correct explanation of (A).
(2) (A) is correct but (R) is incorrect.
(3) (A) is not correct but (R) is correct.
(4) If (A) & (R) both are correct and (R) is the correct explanation of (A).

**87.** Identify the correct set of statements :-

(a) Wolfia is a microscopic plant belongs to angiosperms.
(b) Double fertilization is an unique event seen in gymnosperms.
(c) Male sex organs in angiosperm are called stamens, present in flowers.
(d) Total three male gametes participate in double fertilization.

Choose the correct answer from the given option below.

(1) all a, b, c, d are correct
(2) b, c and d are correct
(3) a, c and d are correct
(4) only a and c are correct

**88.** Identify the correct set of statements :–

(a) In gymnosperms seeds are not enclosed by fruits.
(b) Angiosperm plant's possess diplontic life cycle.
(c) Flower is the structure in which sexual reproductive organs of angiosperm are present.
(d) Endosperm formation in angiosperm is not a pre-fertilization event.

Choose the correct answer from the given options below :

(1) only b, c & d are correct
(2) b and c are correct
(3) a, b, c and d all are correct
(4) only a and c are correct

**89.** Identify the correct set of statements with respect to angiosperms:-

(a) A microsporophyll contains stigma, style and ovary
(b) All megaspores produced from megaspore mother cell take part in embryo sac formation.
(c) Hilum is the place where ovule joins with funicle
(d) Basal part of an ovule is represented as micropylar end
(e) Perisperm is present in black pepper.

Choose the correct answer from the options given below

(1) only c and e are correct
(2) a, b, c and e are correct
(3) c, d and e are correct
(4) only c is correct

**90.** Identify the correct set of statements for angiosperms:-

(a) Development of angiosperm seed occur inside the ovary / fruit
(b) Typical embryo sac in angiosperms is seven celled and eight nucleated
(c) Free nuclear divisions occur during embryogenesis in angiosperms
(d) Filliform apparatus present in ovule secrets chemicals, which attract pollen tube toward synergids
(e) Development of female gametophyte in typical angiosperms is monosporic.

Choose the correct answer from the given options below.

(1) a, d and e (2) b, d and e
(3) a, b, d and e (4) b, c, d and e

## Exercise - III ANSWER KEY

| Question | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Answer | 1 | 3 | 3 | 2 | 3 | 1 | 3 | 3 | 1 | 1 | 3 | 1 | 2 | 3 | 1 |
| Question | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| Answer | 4 | 4 | 1 | 1 | 3 | 1 | 4 | 3 | 2 | 1 | 3 | 1 | 1 | 4 | 2 |
| Question | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 |
| Answer | 3 | 4 | 3 | 2 | 2 | 1 | 1 | 3 | 3 | 2 | 2 | 2 | 4 | 1 | 3 |
| Question | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| Answer | 2 | 2 | 3 | 3 | 4 | 1 | 4 | 2 | 2 | 4 | 3 | 1 | 4 | 1 | 3 |
| Question | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 |
| Answer | 4 | 1 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 1 | 4 | 3 | 4 |
| Question | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| Answer | 4 | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 4 | 2 | 4 | 3 | 1 | 3 |