

CLASS XII Biology

QUESTION BANK

SET A

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)**

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.**

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**

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.**

- 5. In which one of the following, both autogamy and geitonogamy are prevented?**
(a) Wheat (b) Papaya (c) Castor (d) Maize
- 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.
- 7. Which of the following has proved helpful in preserving pollen as fossils?**
(a) Pollenkitt (b) Cellulosic intine (c) Oil content (d) Sporopollenin
- 8. Winged pollen grains are present in**
(a) mustard (b) Cycas (c) mango (d) Pinus.
- 9. Functional megaspore in an angiosperm develops into a**
(a) Endosperm (b) embryo sac (c) embryo (d) ovule
- 10. Attractants and rewards are required for**
(a) entomophily (b) hydrophily (c) cleistogamy (d) anemophily.
- 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.
- 12 A dioecious flowering plant prevents both**
(a) Autogamy and geitonogamy (b) geitonogamy and xenogamy
(c) cleistogamy and xenogamy (d) autogamy and xenogam
- 13. In majority of angiosperms,**
(a) Egg has a filiform apparatus (b) There are numerous antipodal cells
(c) Reduction division occurs in the megaspore mother cells
(d) A small central cell is present in that embryo sac.
- 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.

15. The ovule of an angiosperm is technically equivalent to

(a) megasporangium (b) megasporophyll (c) megaspore mother cell (d) megaspore.

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.

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.

18. Proximal end of the filament of stamen is attached to the

(a) placenta (b) thalamus or petal

(c) anther (d) connective.

19. Filiform apparatus is characteristic feature of

(a) aleurone cell (b) synergids (c) generative cell (d) nucellar embryo.

20. In angiosperms, microsporogenesis and megasporogenesis

(a) Involve meiosis (b) Occur in ovule

(c) Occur in anther (d) Form gametes without further divisions.

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.

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

23. Which one of the following may require pollinators, but is genetically similar to autogamy?

- (a) Apogamy (b) Cleistogamy (c) Geitonogamy (d) Xenogamy

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.

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.

26. Transmission tissue is characteristic feature of

- (a) dry stigma (b) wet stigma (c) hollow style (d) solid style.

27. Geitonogamy involves

- (a) Fertilization of a flower by the pollen from another flower of the same plant
(b) Fertilization of a flower by the pollen from the same flower
(c) Fertilization of a flower by the pollen from a flower of another plant in the same population
(d) Fertilization of a flower by the pollen from a flower of another plant belonging to a distant population.

28. Pollen tablets are available in the market for

(a) in vitro fertilization (b) breeding programmes (c) supplementing food (d) ex situ conservation.

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.**

30. Advantage of cleistogamy is

**(a) No dependence on pollinators (b) Vivipary
(c) Higher genetic variability (d) More vigorous offspring.**

31. Megasporangium is equivalent to

(a) nucellus (b) ovule (c) embryo sac (d) fruit.

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.**

33. Animal vectors are required for pollination in

(a) Vallisneria (b) mulberry (c) cucumber (d) maize.

34. Megaspores are produced from the megaspore mother cells after

**(a) Mitotic division (b) formation of thick wall
(c) Differentiation (d) meiotic division.**

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.

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.

37. Both, autogamy and geitonogamy are prevented in

(a) papaya (b) cucumber (c) castor (d) maize.

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.

39. Even in absence of pollinating agents seed-setting is assured in

(a) Commelina (b) Zostera

(c) Salvia

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

41. The shared terminal duct of the reproductive and urinary system in the human male is

(a) Urethra (b) ureter

(c) vas deferens (d) vasa efferentia.

42. The Leydig's cells as found in the human body are the secretory source of

(a) Progesterone (b) Intestinal mucus

(c) Glucagon (d) Androgens.

43. If for some reason, the vasa efferentia in the human reproductive system get blocked, the gametes will not be transported from

(a) testes to epididymis (b) epididymis to vas deferens

(c) ovary to uterus (d) vagina to uterus.

44. The testes in humans are situated outside the abdominal cavity inside a pouch called scrotum.

The purpose served is for

(a) maintaining the scrotal temperature lower than the internal body temperature

(b) escaping any possible compression by the visceral organs

(c) providing more space for the growth of epididymis

(d) providing a secondary sexual feature for exhibiting the male sex.

45. Sertoli cells are found in

(a) ovaries and secrete progesterone

(b) adrenal cortex and secrete adrenaline

(c) seminiferous tubules and provide nutrition to germ cells

(d) pancreas and secrete cholecystokinin.

46. Vasa efferentia are the ductules leading from

(a) testicular lobules to rete testis

(b) rete testis to vas deferens

(c) vas deferens to epididymis

(d) epididymis to urethra.

47. Seminal plasma in human males is rich in

(a) fructose and calcium (b) glucose and calcium

(c) DNA and testosterone (d) ribose and potassium.

48. Secretions from which one of the following are rich in fructose, calcium and some enzymes?

(a) Male accessory glands

(b) Liver

(c) Pancreas

(d) Salivary glands

49. Seminal plasma in humans is rich in

(a) Fructose and calcium but has no enzymes

(b) Glucose and certain enzymes but has no calcium

(c) Fructose and certain enzymes but poor in calcium

(d) Fructose, calcium and certain enzymes.

50. Male hormone is produced in the testis by cells of

(a) Sertoli

(b) epithelial

(c) spermatocytes

(d) Leydig.

SET-B

1. Hysterectomy is surgical removal of

- (a) vas deferens (b) mammary glands
(c) uterus (d) prostate gland.

2. The part of Fallopian tube closest to the ovary is

- (a) isthmus (b) infundibulum
(c) cervix (d) ampulla.

3. Bartholin's glands are situated

- (a) on the sides of the head of some amphibians (b) at the reduced tail end of birds
(c) on either side of vagina in humans (d) on either side of vas deferens in humans.
(2003)

4. Meiotic division of the secondary oocyte is completed

- (a) prior to ovulation (b) at the time of copulation
(c) after zygote formation (d) at the time of fusion of a sperm with an ovum.

5. The difference between spermiation and spermiogenesis is

- (a) in spermiogenesis spermatids are formed, while in spermiation spermatozoa are formed
(b) in spermiogenesis spermatozoa are formed, while in spermiation spermatids are formed
(c) in spermiogenesis spermatozoa from Sertoli cells are released into the cavity of seminiferous tubules, while in spermiation spermatozoa are formed
(d) in spermiogenesis spermatozoa are formed, while in spermiation spermatozoa are released from Sertoli cells into the cavity of seminiferous tubules.

6. Which of the following layers in an antral follicle is acellular?

- (a) Stroma (b) Zona pellucida

(c) Granulosa (d) Theca interna (2015)

7. Which of the following cells during gametogenesis is normally diploid ?

- (a) Spermatogonia**
- (b) Secondary polar body**
- (c) Primary polar body**
- (d) Spermatid**

8. What is the correct sequence of sperm formation?

- (a) Spermatogonia, spermatozoa, spermatocytes, spermatids**
- (b) Spermatogonia, spermatocytes, spermatids, spermatozoa**
- (c) Spermatids, spermatocytes, spermatogonia, spermatozoa**
- (d) Spermatogonia, spermatocytes, spermatozoa, Spermatids**

9. Which one of the following statements is false in respect of viability of mammalian sperm?

- (a) Sperm is viable for only up to 24 hours.**
- (b) Survival of sperm depends on the pH of the medium and is more active in alkaline medium.**
- (c) Viability of sperm is determined by its motility.**
- (d) Sperms must be concentrated in a thick suspension.**

10. Which one of the following statements about human sperm is correct?

- (a) Acrosome has a conical pointed structure used for piercing and penetrating the egg, resulting in fertilisation.**
- (b) The sperm lysins in the acrosome dissolve the egg envelope facilitating fertilisation.**
- (c) Acrosome serves as a sensory structure leading the sperm towards the ovum.**
- (d) Acrosome serves no particular function.**

11. The correct sequence of spermatogenetic stages leading to the formation of sperms in a mature human testis is

- (a) spermatogonia - spermatocyte - spermatid - sperms**
- (b) spermatid - spermatocyte - spermatogonia - sperms**

(c) spermatogonia - spermatid - spermatocyte -sperms

(d) spermatocyte - spermatogonia - spermatid - sperms.

12. In humans, at the end of the first meiotic division, the male germ cells differentiate into the

(a) spermatids

(b) spermatogonia

(c) primary spermatocytes

(d) secondary spermatocytes.

13. Sertoli cells are regulated by the pituitary hormone known as

(a) LH

(b) FSH

(c) GH

(d) prolactin.

14. The middle piece of the sperm contains

(a) proteins (b) mitochondria (c) centriole (d) nucleus.

15. How many sperms are formed from a secondary spermatocyte?

(a) 4

(b) 8

(c) 2

(d) 1 (1990)

16. Egg is liberated from ovary in

(a) secondary oocyte stage (b) primary oocyte stage

(c) oogonial stage (d) mature ovum stage.

17. Which of the following hormone levels will cause release of ovum (ovulation) from the Graffian

follicle?

(a) High concentration of Estrogen

(b) High concentration of Progesterone

(c) Low concentration of LH

(d) Low concentration of FSH

18. No new follicles develop in the luteal phase of the menstrual cycle because

(a) follicles do not remain in the ovary after ovulation

(b) FSH levels are high in the luteal phase

- (c) LH levels are high in the luteal phase
- (d) both FSH and LH levels are low in the luteal phase.

19. Changes in GnRH pulse frequency in females is controlled by circulating levels of

- (a) progesterone only
- (b) progesterone and inhibin
- (c) estrogen and progesterone
- (d) estrogen and inhibin.

20. Select the incorrect statement.

- (a) LH and FSH decrease gradually during the follicular phase.
- (b) LH triggers secretion of androgens from the Leydig cells.
- (c) FSH stimulates the Sertoli cells which help in spermiogenesis.
- (d) LH triggers ovulation in ovary.

21. Identify the correct statement on 'inhibin:

- (a) Is produced by granulosa cells in ovary and inhibits the secretion of LH
- (b) Is produced by nurse cells in testes and inhibits the secretion of LH
- (c) Inhibits the secretion of LH, FSH and prolactin
- (d) Is produced by granulosa cells in ovary and inhibits the secretion of FSH

22. Which of the following events is not associated with ovulation in human female?

- (a) Release of secondary oocyte
- (b) LH surge
- (c) Decrease in estradiol
- (d) Full development of Graafian follicle (2015)

23. The main function of mammalian corpus luteum is to produce

- (a) estrogen only
- (b) progesterone
- (c) human chorionic gonadotropin
- (d) relaxin only.

24. Menstrual flow occurs due to lack of

- (a) oxytocin
- (b) vasopressin
- (c) progesterone
- (d) FSH.

25. The secretory phase in the human menstrual cycle is also called

- (a) luteal phase and lasts for about 6 days (b) follicular phase and lasts for about 6 days**
- (c) luteal phase and lasts for about 13 days (d) follicular phase and lasts for about 13 days.**

26. About which day in a normal human menstrual cycle does rapid secretion of LH (popularly called LH surge) normally occurs?

- (a) 14" day (b) 20 day**
- (c) 5" day (d) 11" day**

27. In context of amniocentesis, which of the following statements is incorrect?

- (a) It can be used for detection of Down's syndrome.**
- (b) It can be used for detection of cleft palate.**
- (c) It is usually done when a woman is between 14-16 weeks pregnant.**
- (d) It is used for prenatal sex determination.**

28. Which of the following cannot be detected in a developing fetus by amniocentesis?

- (a) Down's syndrome (b) Jaundice**
- (c) Klinefelter's syndrome (d) Sex of the fetus**

29. The permissible use of the technique amniocentesis is for

- (a) detecting sex of the unborn fetus**
- (b) artificial insemination**
- (c) transfer of embryo into the uterus of a surrogate mother**
- (d) detecting any genetic abnormality. (2010)**

30. Fetal sex can be determined by examining cells from the amniotic fluid by looking for

- (a) chiasmata (b) kinetochores**
- (c) barr bodies (d) autosomes.**

31. Which of the following contraceptive methods involve a role of hormone ?

- (a) Pills, Emergency contraceptives, Barrier methods**
- (b) Lactational amenorrhea, Pills, Emergency contraceptives**
- (c) Barrier method, Lactational amenorrhea, Pills**
- (d) CuT, Pills, Emergency contraceptive**

32. Select the hormone-releasing Intra-Uterine Devices.

- (a) Lippes Loop, Multiload 375** **(b) Vaults, LNG-20**
- (c) Multiload 375, Progestasert** **(d) Progestasert, LNG-20**

33. Which of the following is a correct statement?

- (a) IUDs once inserted need not be replaced.**
- (b) IUDs are generally inserted by the user herself.**
- (c) IUDs increase phagocytosis of sperms in the uterus.**
- (d) IUDs suppress gametogenesis.**

34. The contraceptive 'Saheli'

- (a) Blocks estrogen receptors in the uterus, preventing eggs from getting implanted**
- (b) Increases the concentration of estrogen and prevents ovulation in females**
- (c) Is an IUD**
- (d) Is a post-coital contraceptive.**

35. The function of copper ions in copper releasing IUDs is

- (a) They inhibit gametogenesis**
- (b) They make uterus unsuitable for implantation**
- (c) They inhibit ovulation**
- (d) They suppress sperm motility and fertilizing capacity of sperms.**

36. Which of the following is hormone-releasing IUD?

- (a) LNG-20** **(b) Multiload 375**
- (c) Lippes Loop** **(d) Cu7**

37. Which of the following is incorrect regarding vasectomy?

- (a) No sperm occurs in seminal fluid
- (b) No sperm occurs in epididymis
- (c) Vasa deferentia is cut and tied

38. Tubectomy is a method of sterilisation in which

- (a) Small part of the fallopian tube is removed or tied up
- (b) Ovaries are removed surgically
- (c) Small part of vas deferens is removed or tied up
- (d) Uterus is removed surgically.

39. Which of the following is a hormone releasing Intra Uterine Device (IUD)?

- (a) Multiload 375
- (b) LNG – 20
- (c) Cervical cap
- (d) Vault (2014)

40. Which One of the following is not a method of contraception?

- (a) Condoms (b) Pills of a combination of oxytocin and vasopressin
- (c) Lippes Loop (d) Tubectomy

41. Which one of the following is the most widely accepted method of contraception in India at present?

- (a) Cervical caps (b) Tubectomy
- (c) Diaphragms (d) IUDs (Intra uterine devices)

42. Cu ions released from copper-releasing intra uterine devices (IUDs)

- (a) make uterus unsuitable for implantation (b) increase phagocytosis of sperms
- (c) suppress sperm motility (d) prevent ovulation.

43. What is the work of copper-T?

- (a) To inhibit ovulation
- (b) To inhibit fertilization
- (c) To inhibit spermatogenesis
- (d) To inhibit gametogenesis

44. What is the work of progesterone which is present in oral contraceptive pills?

- (a) To inhibit ovulation
- (b) To check oogenesis

(c) To check entry of sperms into cervix and to make them inactive

(d) To check sexual behaviour

45. Tablets to prevent male contraception contain

(a) progesterone (b) LH (c) FSH (d) both (b) and (c).

46. The most important component of the oral contraceptive pills is

(a) Thyroxine (b) Luteinising hormone

(c) Progesterone (d) Growth hormone.

47. The present population of the world is about

(a) 15 trillion (b) 6 billion

(c) 500 million (d) 100 million.

48. One of the legal methods of birth control is

(a) By having coitus at the time of day break

(b) By a premature ejaculation during coitus

(c) Abortion by taking an appropriate medicine

(d) By abstaining from coitus from day 10 to 17 of the menstrual cycle.

49. Medical Termination of Pregnancy (MTP) is considered safe up to how many weeks of pregnancy?

(a) Eight weeks (b) Twelve weeks

(c) Eighteen weeks (d) Six weeks

50. Consider the statements given below regarding contraception and answer as directed thereafter.

(1) Medical termination of pregnancy (MTP) during first trimester is generally safe.

(2) Generally chances of conception are nil until mother breast-feeds the infant upto two years.

(3) Intrauterine devices like copper-T are effective contraceptives.

(4) Contraception pills may be taken upto one week after coitus to prevent conception.

62. Artificial Insemination means

- (a) artificial introduction of sperms of a healthy donor into the vagina**
- (b) introduction of sperms of a healthy donor directly into the ovary**
- (c) transfer of sperms of a healthy donor to a test tube containing ova**
- (d) transfer of sperms of husband to a test tube containing ova.**

63. The stage transferred into the uterus after induced fertilisation of ovum in the laboratory is

- (a) embryo at 4 blastomeres stage (b) embryo at 2 blastomeric stage**
- (c) morula (d) zygote.**

64. The test-tube baby programme employs which one of the following techniques?

- (a) Intra Cytoplasmic Sperm Injection (ICSI) (b) Intra Uterine Insemination (IUI)**
- (c) Gamete Intra Fallopian Transfer (GIFT) (d) Zygote Intra Fallopian Transfer (ZIFT)**

65. Location and secretion of Leydig's cells are

- (a) liver-cholesterol (b) ovary-estrogen**
- (c) testis-testosterone (d) pancreas-glucagon.**

SET-C

1. What is the function of filiform apparatus in an angiospermic embryo sac?
 - (a) Brings about opening of the pollen tube
 - (b) Guides the pollen tube into a synergid
 - (c) Prevents entry of more than one pollen tube into a synergid
 - (d) None of these

2. The female gametophyte of a typical dicot at the time of fertilisation is
 - (a) 8 – celled
 - (b) 7 – celled
 - (c) 6 – celled
 - (d) 5 – celled

3. Male and female flowers are present on different plants (dioecious) to ensure xenogamy, in
 - (a) papaya
 - (b) bottle gourd
 - (c) maize
 - (d) all of these.

4. Feathery stigma occurs in
 - (a) pea
 - (b) wheat
 - (c) Datura
 - (d) Caesalpinia

5. Plants with ovaries having only one or a few ovules are generally pollinated by
 - (a) bees
 - (b) butterflies
 - (c) birds
 - (d) wind

6. Which of the following is not a water pollinated plant ?
 - (a) Zostera
 - (b) Vallisneria
 - (c) Hydrilla
 - (d) Cannabis

7. Spiny or sticky pollen grains and large, attractively coloured flowers are associated with
 - (a) hydrophily
 - (b) entomophily
 - (c) ornithophily
 - (d) anemophily

8. Endospermic seeds are found in
- castor
 - barley
 - coconut
 - all of these
9. In albuminous seeds, food is stored in _____ and in non albuminous seeds, it is stored in _____.
- endosperm, cotyledons
 - cotyledons, endosperm
 - nucellus, cotyledons
 - endosperm, radicle
10. Persistent nucellus is called as _____ and is found in _____.
- perisperm, black pepper
 - perisperm, groundnut
 - endosperm, black pepper
 - endosperm groundnut
11. Identify the wrong statement regarding post-fertilisation development.
- The ovary wall develops into pericarp.
 - The outer integument of ovule develops into tegmen.
 - The fusion nucleus (triple nucleus) develops into endosperm.
 - The ovule develops into seed.
12. An embryo may sometimes develop from any cell of embryo sac other than egg. It is termed as
- apospory
 - apogamy
 - parthenogenesis
 - parthenocarpy
13. Embryo sac is to ovule as _____ is to an anther.
- Stamen
 - filament
 - pollen grain
 - androecium
14. The outermost and innermost wall layers of microsporangium in an anther are respectively
- endothecium and tapetum
 - epidermis and endodermis
 - epidermis and middle layer
 - epidermis and tapetum.
15. During microsporogenesis, meiosis occurs in
- endothecium

- (b) microspore mother cells
- (c) microspore tetrads
- (d) pollen grains

16. From among the sets of terms given below, identify those that are associated with the gynoecium.

- (a) Stigma, ovule, embryo sac, placenta
- (b) Thalamus, pistil, style, ovule
- (c) Ovule, ovary, embryo sac, tapetum
- (d) Ovule, stamen, ovary, embryo sac

17. Science of cultivation, breeding, marketing and arrangement of flowers is called

- (a) arboriculture
- (b) floriculture
- (c) horticulture
- (d) anthology

18. Nonessential floral organs in a flower are

- (a) sepals and petals
- (b) anther and ovary
- (c) stigma and filament
- (d) petals only.

19. The stamens represent

- (a) microsporangia
- (b) male gametophyte
- (c) male gametes
- (d) microsporophylls.

20. Anther is generally

- (a) monosporangiate
- (b) bisporangiate
- (c) Tetrasporangiate
- (d) trisporangiate.

21. The anther wall consists of four wall layers where

- (a) tapetum lies just inner to endothecium
- (b) middle layers lie between endothecium and tapetum
- (c) endothecium lies inner to middle layers
- (d) tapetum lies next to epidermis.

22. The innermost layer of anther is tapetum whose function is

- (a) dehiscence
- (b) mechanical
- (c) nutrition
- (d) protection.

23. Study of pollen grains is called
- (a) micrology
 - (b) anthology
 - (c) palynology
 - (d) pomology
24. Double fertilisation was first discovered in 1898 by _____ in *Fritillaria* and *Lilium*.
- (a) Nawaschin
 - (b) Strasburger
 - (c) Amici
 - (d) Focke
25. Ovulation in the human female normally takes place during the menstrual cycle
- (a) at the mid secretory phase
 - (b) just before the end of the secretory phase
 - (c) at the beginning of the proliferative phase
 - (d) at the end of the proliferative phase.
26. After ovulation Graafian follicle regresses into
- (a) corpus atresia
 - (b) corpus callosum
 - (c) corpus luteum
 - (d) corpus albicans
27. Immediately after ovulation, the mammalian egg is covered by a membrane known as
- (a) chorion
 - (b) zona pellucida
 - (c) corona radiata
 - (d) vitelline membrane.
28. Which one of the following events is correctly matched with the time period in a normal menstrual cycle ?
- (a) Release of egg : 5 th day
 - (b) Endometrium regenerates : 5 – 10 days
 - (c) Endometrium secretes nutrients for implantation: 11 – 18 days
 - (d) Rise in progesterone level : 1 – 15 days
29. If mammalian ovum fails to get fertilised, which one of the following is unlikely ?
- (a) Corpus luteum will disintegrate.
 - (b) Progesterone secretion rapidly declines.
 - (c) Estrogen secretion increases.
 - (d) Primary follicle starts developing.
30. A human female reaches menopause around the age of
- (a) 50 years

- (b) 15 years
- (c) 70 years
- (d) 25 years.

31. A reaction of granules content which harden the zona pellucida and ensures sure block to polyspermy is

- (a) acrosomal reaction
- (b) cortical reaction
- (c) acrosin reaction
- (d) binding reaction.

32. Which part of the sperm plays an important role in penetrating the egg membrane ?

- (a) Allosome
- (b) Tail
- (c) Autosome
- (d) Acrosome

33. In oocyte secondary maturation occurs in

- (a) ovary
- (b) abdominal cavity
- (c) Fallopian tube
- (d) uterus.

34. Besides activating the egg another role of a sperm is to carry to egg

- (a) RNA
- (b) mitochondria
- (c) DNA
- (d) ribosomes.

35. Preparation of sperm before penetration of ovum is

- (a) spermiation
- (b) cortical reaction
- (c) spermiogenesis
- (d) capacitation.

36. Spermiation is the process of the release of sperms from

- (a) seminiferous
- (b) vas deferens
- (c) epididymis
- (d) prostate gland

37. Mature Graafian follicle is generally present in the ovary of a healthy human female around

- (a) 5-8 day of menstrual cycle
- (b) 11-17 day of menstrual cycle
- (c) 18-23 day of menstrual cycle

(d) 24-28 day of menstrual cycle.

38. Acrosomal reaction of the sperm occurs due to

- (a) it's contact with zona pellucida of the ova
- (b) reactions within the uterine environment of the female
- (c) reactions within the epididymal environment of the male
- (d) androgens produced in the uterus.

39. Which one of the following is not a male accessory gland ?

- (a) Seminal vesicle
- (b) Ampulla
- (c) Prostate
- (d) Bulbourethral gland

40. Which among the following has 23 chromosomes ?

- (a) Spermatogonia
- (b) Zygote
- (c) Secondary oocyte
- (d) Oogonia

41. Which of the following hormones is not secreted by human placenta ?

- (a) hCG
- (b) Estrogens
- (c) Progesterone
- (d) LH

42. The vas deferens receives duct from the seminal vesicle and opens into urethra as

- (a) epididymis
- (b) ejaculatory duct
- (c) efferent ductule
- (d) ureter

43. Urethral meatus refers to the

- (a) urinogenital duct
- (b) opening of vas deferens into urethra
- (c) external opening of the urinogenital duct
- (d) muscles surrounding the urinogenital duct.

44. Morula is a developmental stage

- (a) between the zygote and blastocyst
- (b) between the blastocyst and gastrula
- (c) after the implantation
- (d) between implantation and parturition.

45. The membranous cover of the ovum at ovulation is

- (a) corona radiata

- (b) zona radiata
- (c) zona pellucida
- (d) chorion.

46. Temperature of the scrotum which is necessary for the functioning of testis is always _____ around below body temperature.

- (a) 2°C
- (b) 4°C
- (c) 6°C
- (d) 8°C

47. Which of the following is correct about mammalian testes ?

- (a) Graafian follicles, Sertoli cells, Leydig's cells
- (b) Graafian follicles, Sertoli cells, Seminiferous tubules
- (c) Sertoli cells, Seminiferous tubules, Leydig's cells
- (d) Graafian follicle, Leydig's cells, Seminiferous tubule

48. The nutritive cells found in seminiferous tubules are

- (a) Leydig's cells
- (b) atretic follicular cells
- (c) Sertoli cells
- (d) chromaffin cells.

49. Rapid decline in a population due to high mortality rate is called:

- (a) Population density
- (b) Population crash
- (c) Population explosion
- (d) All of these

50. Amniocentesis is a process to:

- (a) Determine any disease in the heart
- (b) Know about diseases of brain
- (c) Determine any hereditary disease in the embryo
- (d) All of these

51. 'Saheli' a female antifertility pill, is used:

- (a) Daily
- (b) Weekly
- (c) Quarterly
- (d) Monthly

52. Drug Ru-486 is used as :

- (a) Contraceptive
- (b) Abortive agent
- (c) Amniocentesis
- (d) Mutagen

53. The most effective method for birth control is:

- (a) Abortion
- (b) Oral pills

- (c) Abstinence
- (d) Sterilization

54. Central drug Research Institute (CDRI), Lucknow has developed a contraceptive named?
- (a) Mala-D
 - (b) Combined pills
 - (c) Saheli
 - (d) Condoms
55. Which among these is not a natural method of birth control?
- (a) Coitus interruptus
 - (b) Periodic abstinence
 - (c) Vasectomy
 - (d) Lactational amenorrhoea
56. Which of these is cause by a retrovirus
- (a) Gonorrhoea
 - (b) AIDS
 - (c) Trichomoniasis
 - (d) Syphillis
57. Essay on Population was published by :
- (a) Darwin
 - (b) Lamarck
 - (c) Malthus
 - (d) Hugo de Vries
58. Surgical removed of testis of male of control the human population is:
- (a) Castration
 - (b) Tubectomy
 - (c) Laparoscopy
 - (d) Vasectomy
59. What is correct about the test-tube baby :
- (a) Fertilization in female's genital tract and growth in test tube
 - (b) Rearing of premature born baby in an incubator
 - (c) Fertilization outside and gestation inside mother's womb or uterus
 - (d) Both fertilization and development are done outside the female genital tract
60. The birth control device not used by women is?
- (a) Diaphrame
 - (b) Oral pill
 - (c) Nirodh
 - (d) Copper-T
61. The pre-natal technique to determine the gem. tic disorders in a foetus in called :
- (a) Laprosocopy
 - (b) Amniocentesis
 - (c) Abstinence
 - (d) Coitus interrupts
62. Test-tube baby is a technique where :
- (a) Zygote is taken from the oviduct cultured and then implanted
 - (b) Ovum is taken out, then fertilized and implanted
 - (c) Sperms and ovum are fused and zygote grown in a test tube)
 - (d) All the above
63. Progesteron in the contraceptive pill:
- (a) Prevents ovulation
 - (b) Inhibits estrogen

- (c) Checks attachment of zygote to endometrium
 - (d) All the above
64. A method of both control is:
- (a) GIFT
 - (b) HJF
 - (c) IVF-T
 - (d) IUDs
65. Which is related to makes?
- (a) Oral pill
 - (b) Tubectomy
 - (c) Vasectomy
 - (d) None of these
66. Copper-T prevents:
- (a) Fertilization
 - (b) Ovulation
 - (c) Formation of embryo on the wall of Uterus
 - (d) Interrupt reproductive duct
67. Lactational Amenorrhoea is related to :
- (a) Temporary method of contraception
 - (b) Absence of menstruation
 - (c) Permanent method of contraception
 - (d) ASTD name
68. Which of the following is ART?
- (a) IUDs
 - (b) GIFT
 - (c) ZIFT
 - (d) Both (b) & (c)
69. The technique called Gamete Intra Fallopian Transfer (GIFT) is recommended for those females
- (a) who cannot produce an ovum
 - (b) who cannot retain the foetus inside uterus
 - (c) who cannot provide suitable environment for fertilisation
 - (d) all of these
70. Which method can be used for women that cannot produce ovum but can provide suitable environment ?
- (a) IUD
 - (b) GIFT
 - (c) IUI
 - (d) ICSI
71. Which of these can be used to cure infertility in couples where male partner has very low sperm count ?
- (a) IUD
 - (b) GIFT
 - (c) IUI
 - (d) None of these

72. The method of directly injecting a sperm into ovum in assisted reproductive technology is called
- (a) GIFT
 - (b) ZIFT
 - (c) ICSI
 - (d) ET
73. Genotype is
- (a) Genetic composition of many organisms
 - (b) Genetic composition of plastids
 - (c) Genetic composition of germ cells
 - (d) Genetic composition of an individual
74. Mendelism is the genetics of
- (a) Haploids
 - (b) Diploids
 - (c) Prokaryotes
 - (d) All the above
75. Which technique is used by Mendel for hybridization?
- (a) Emasculation
 - (b) Bagging
 - (c) Protoplast fusion
 - (d) Both A & B
76. Phenotypic ratio 3:1 proves
- (a) Dominance
 - (b) Segregation
 - (c) Crossing over
 - (d) Independent Assortment
77. What is the ratio of homozygous plants for both dominant characters in F₂ of a dihybrid cross?
- (a) 1/16
 - (b) 3/16
 - (c) 4/16
 - (d) 9/16
78. Which of the following is the significance of dominance?
- (a) Organisms with dominant genes are more vital
 - (b) Harmful mutations are not expressed due to dominant gene
 - (c) Heterosis is due to the dominant gene
 - (d) All the above
79. From a single ear of corn, a farmer planted 200 kernels which produced 140 tall & 40 short plants. The genotypes of these offsprings are most likely
- (a) TT, tt
 - (b) TT, Tt, tt
 - (c) TT, Tt
 - (d) Tt, tt
80. A useful process for determining whether an individual is homozygous or heterozygous is
- (a) cross-breeding
 - (b) self-fertilization

- (c) Back-crossing
(d) Test cross
81. Heterozygous tall plants were crossed with dwarf plants what will be the ratio of dwarf plants in the following progeny?
(a) 50%
(b) 25 %
(c) 75%
(d) 100%
82. Genetic recombinations occur through
(a) Mitosis & fertilization
(b) Mitosis & Meiosis
(c) Meiosis & fertilization
(d) None
83. Which of the following is the unit of inheritance?
(a) Phenotype
(b) Genotype
(c) Gene
(d) Genome
84. Allele is the
(a) Alternate trait of gene pair
(b) Total number of genes for a trait
(c) Total number of chromosomes
(d) Total number of chromosomes of a haploid set.
85. Types of phenotypes of the F₂ generation of dihybrid cross?
(a) 4
(b) 16
(c) 8
(d) 9
86. Cross $XXYy$ and $xxYy$ yields $XxYY$: $XxYy$: $Xxyy$: $xyyy$ offspring in the ratio of
(a) 0 : 3 : 1 : 1
(b) 1 : 2 : 1 : 0
(c) 1 : 1 : 1 : 1
(d) 1 : 2 : 1 : 1
87. Genes do not occur in pairs in
(a) Zygote
(b) Somatic cell
(c) Endosperm cell
(d) Gametes
88. Genotype-Phenotype concept was first produced by
(a) Bateson
(b) Johannsen
(c) Sutton & Boveri
(d) Punnet
89. 1: 1: 1: 1 ratio shows
(a) Monohybrid cross
(b) Dihybrid cross
(c) Back cross
(d) Dihybrid test cross
90. Test cross is
(a) $Tt Tt$
(b) $Tt TT$
(c) $TT TT$
(d) $Tt tt$
91. In a plant, gene "T" is responsible for tallness and its recessive allele "t" for dwarfness and "R" is responsible for red colour flower and its recessive allele "r"

- of white flower colour. A tall and red-flowered plant with genotype TtRr crossed with dwarf and red-flowered ttRr. What is the percentage of dwarf white-flowered offspring of the above cross?
- (a) 50%
 - (b) 6.25%
 - (c) 12.5 %
 - (d) 50 %
92. In the *Mirabilis* plant the appearance of the pink hybrid (Rr) between a cross of a red (RR) and white (rr) flower parent indicates
- (a) Segregation
 - (b) Dominance
 - (c) Incomplete dominance
 - (d) Heterosis
93. If there were only parental combinations in F₂ of a dihybrid cross then Mendel might have discovered?
- (a) Independent assortment
 - (b) Atavism
 - (c) Linkage
 - (d) Repulsion
94. If the distance between the gene on the chromosome is more, then the gene shows
- (a) less linkage
 - (b) strong linkage
 - (c) weak linkage
 - (d) incomplete linkage
95. Which of the following conditions represent a case of co-dominant genes?
- (a) A gene expresses itself, suppressing the phenotypic effect of its alleles
 - (b) genes that are similar in phenotypic effect when present separately, but when together interact to produce a different trait
 - (c) Alleles, both of which interact to produce an effect in homozygous condition
 - (d) Alleles, both of which interact to produce an independent effect in heterozygous conditions
96. A gene located on y – chromosome and therefore, transmitted from father to son is known as
- (a) Supplementary gene
 - (b) Complementary gene
 - (c) Duplicate gene
 - (d) Holandric gene
97. In a DNA strand the nucleotides are linked together by
- (a) glycosidic bonds
 - (b) phosphodiester bonds
 - (c) peptide bonds
 - (d) hydrogen bonds.
98. The net electric charge on DNA and histones is
- (a) both positive
 - (b) both negative
 - (c) negative and positive, respectively
 - (d) zero.
99. Which of the following statements is the most appropriate for sickle cell anaemia ?
- (a) It cannot be treated with iron supplements.
 - (b) It is a molecular disease.
 - (c) It confers resistance to acquiring malaria.

(d) All of the above.

100. The first genetic material could be

- (a) protein
- (b) carbohydrates
- (c) DNA
- (d) RNA.

101. The human chromosome with the highest and least number of genes in them are respectively

- (a) chromosome 21 and Y
- (b) chromosome 1 and X
- (c) chromosome 1 and Y
- (d) chromosome X and Y.

102. Who amongst the following scientist had no contribution in the development of the double helix model for the structure of DNA ?

- (a) Rosalind Franklin
- (b) Maurice Wilkins
- (c) Erwin Chargaff
- (d) Meselson and Stahl

103. Which of the following steps in transcription is catalysed by RNA polymerase ?

- (a) Initiation
- (b) Elongation
- (c) Termination
- (d) All of the above

104. Control of gene expression takes place at the level of

- (a) DNA-replication
- (b) transcription
- (c) translation
- (d) none of the above.

105. Which was the last human chromosome to be completely sequenced ?

- (a) Chromosome 1
- (b) Chromosome 11
- (c) Chromosome 21
- (d) Chromosome X

106. In some viruses, DNA is synthesised by using RNA as template. Such a DNA is called

- (a) A – DNA
- (b) B – DNA
- (c) cDNA
- (d) rDNA.

107. If the sequence of nitrogen bases of the coding strand of DNA in a transcription unit is: 5' – ATGAATG – 3', the sequence of bases in its RNA transcript would be

- (a) 5' – AUG A AUG – 3'
- (b) 5' – UACUU AC – 3'
- (c) 5' – CAUUCAU – 3'
- (d) 5' – GUAAGUA – 3'.

108. The RNA polymerase holoenzyme transcribes

- (a) the promoter, structural gene and the terminator region.
- (b) the promoter and the terminator region

- (c) the structural gene and the terminator region
- (d) the structural gene only.

109. If the base sequence of a codon in mRNA is 5' – AUG – 3' the sequence of tRNA pairing with it must be

- (a) 5' – UAC – 3'
- (b) 5' – CAU – 3'
- (c) 5'-AUG – 3'
- (d) 5' – GUA – 3'

110. The amino acid attaches to the tRNA at its

- (a) 5'- end
- (b) 3' – end
- (c) anticodon site
- (d) DHUloop.

111. To initiate translation, the mRNA first binds to

- (a) the smaller ribosomal sub-unit
- (b) the larger ribosomal sub-unit
- (c) the whole ribosome
- (d) no such specificity exists.

112. In *E. coli*, the lac operon gets switched on when

- (a) lactose is present and it binds to the repressor
- (b) repressor binds to operator
- (c) RNA polymerase binds to the operator
- (d) lactose is present and it binds to RNA polymerase.

113. In DNA strand, the nucleotides are linked together by

- (a) glycosidic bonds
- (b) phosphodiester bonds
- (c) peptide bonds
- (d) hydrogen bonds.

114. If a double stranded DNA has 20% of cytosine, what will be the percentage of adenine in it ?

- (a) 20%
- (b) 40%
- (c) 30%
- (d) 60%

115. If the sequence of bases in one strand of DNA is ATGCATGCA, what would be the sequence of bases on complementary strand ?

- (a) ATGCATGCA
- (b) AUGCAUGCA
- (c) TACTACGT
- (d) UACGUACGU

116. How far is each base pair from the next one in DNA double helix model ?

- (a) 2 nm
- (b) 3.4 nm
- (c) 34 nm
- (d) 0.34 nm

117. Synthesis of DNA from RNA is explained by

- (a) central dogma reverse
- (b) reverse transcription

- (c) feminism
- (d) all of these.

118. Histone proteins are

- (a) basic, negatively charged
- (b) basic, positively charged
- (c) acidic, positively charged
- (d) acidic, negatively charged

119. The structure in chromatin seen as 'beads-on string' when viewed under electron microscope are called

- (a) nucleotides
- (b) nucleosides
- (c) histone octamer
- (d) nucleosomes.

120. Find out the wrong statement about heterochromatin,

- (a) It is densely packed
- (b) It stains dark.
- (c) It is transcriptionally active.
- (d) It is late replicating.