DR. ARVIND'S BIOLOGY CLASSES

(A Unit of Med-Xel Tutorials)

Awake, Arise and Stop not

till the Goal is reached.

CONTENTS

REPRODUCTION

REPRODUCTION IN ORGANISMS

CBSE PRELIMS – 2009

1. Vegetative propagation in mint occurs by:
   a) Rhizome b) Sucker
   c) Runner d) Offset

Ans. (b)

CBSE MAINS – 2010

2. Vegetative propagation is *Pistia* occurs by
   a) Stolen b) Offset
   c) Runner d) Sucker

Ans. (b)

NEET – 2013

3. Meiosis takes place in:
   a) Gemmule b) Megaspore
   c) Meiocyte d) Conidia

Ans. (c)

4. Monoecious plant of Chara shows occurrence of:
   a) Upper antheridium and lower oogonium on the same plant
   b) Upper oogonium and lower antheridium on the same plant
   c) Antheridiophore and archegoniophore on the same plant
   d) Stamen and carpel on the same plant

Ans. (b)

AIPMT – 2014

5. Which one of the following is wrong about *Chara*?
   a) Globule is male reproductive structure
   b) Upper oogonium and lower round antheridium
   c) Globule and nucule present on the same plant
   d) Upper antheridium and lower oogonium

Ans. (d)

AIPMT – 2015

6. In ginger vegetative propagation occurs through:
   a) Offsets b) Bulbils
   c) Runners d) Rhizome

Ans. (d)

AIPMT RETEST – 2015

7. Which of the following pairs is not correctly matched?

	Mode of reproduction	**Example**
a)	Offset	Water hyacinth
b)	Rhizome	Banana
c)	Binary fission	*Sargassum*
d)	Conidia	*Penicillium*

Ans. (c)

NEET – 2018

8. Offsets are produced by
   a) Meiotic divisions b) Mitotic divisions
   c) Parthenocarpy d) Parthenogenesis

Ans. (b)

9. Which of the following flowers only once in its life-time?
   a) Bamboo species b) Jackfruit
   c) Mango d) Papaya

Ans. (a)

NEET – 2019

8. In some plants, the female gamete develops into embryo without fertilization. This phenomenon is known as
   a) Autogamy b) Parthenocarpy
   c) Syngamy d) Parthenogenesis

Ans. (d)

SEXUAL REPRODUCTION IN FLOWERING PLANTS

CBSE PRELIMS – 2009

1. Vegetative propagation in mint occurs by:
   a) Rhizome b) Sucker
   c) Runner d) Offset

Ans. (b)

CBSE PRELIMS – 2010

2. Apomictic embryos in *Citrus* arise from:
   a) Diploid egg
   b) Synergids
   c) Maternal sporophytic tissue in ovule
   d) Antipodal cells

Ans. (c)

3. Wind pollinated flowers are:
   a) Small, producing nectar and dry pollen
   b) Small, brightly coloured, producing large number of pollen grains
   c) Small, producing large number of dry pollen grains
   d) Large, producing abundant nectar and pollen

Ans. (c)

4. Transfer of pollen grains from the anther to the stigma of another flower of the same plant is called:
   a) Autogamy b) Xenogamy
   c) Geitonogamy d) Karyogamy

Ans. (c)

CBSE PRELIMS – 2011

5. Filiform apparatus is a characteristic feature of:
   a) Suspensor b) Egg
   c) Synergid d) Zygote

Ans. (c)

6. Nucellar polyembryony is reported in species of:
   a) *Citrus* b) *Gossypium*
   c) *Triticum* d) *Brassica*

Ans. (a)

7. In which one of the following pollination is autogamous?
   a) Geitonogamy b) Xenogamy
   c) Chasmogamy d) Cleistogamy

Ans. (d)

8. What would be the number of chromosomes of the aleurone cells of a plant with 42 chromosomes in its root tip cells?
   a) 42 b) 63 c) 84 d) 21

Ans. (b)

9. Wind pollination is common in:
   a) Legumes b) Lilies
   c) Grasses d) Orchids

Ans. (c)

Hint: Wind pollination - Grasses; corn
Most of the land plants use insects or wind for pollination.
The wind and water pollinated flowers are not very colourful and do not produce nectar. Lilies and orchids are colourful flowers, so are mostly insect pollinated. Legumes are self pollinated usually.

CBSE PRELIMS – 2012

10. Even in absence of pollinating agents seed-setting is assured in
    a) *Zostera* b) *Salvia*
    c) Fig d) *Commellina*

Ans. (d)

11. An organic substance that can withstand environmental extremes and cannot be degraded by any enzyme is
    a) Sporopollenin b) Lignin
    c) Cellulose d) Cuticle

Ans. (a)

12. Both autogamy and geitonogamy are prevented in:
    a) Cucumber b) Castor
    c) Maize d) Papaya

Ans. (d)

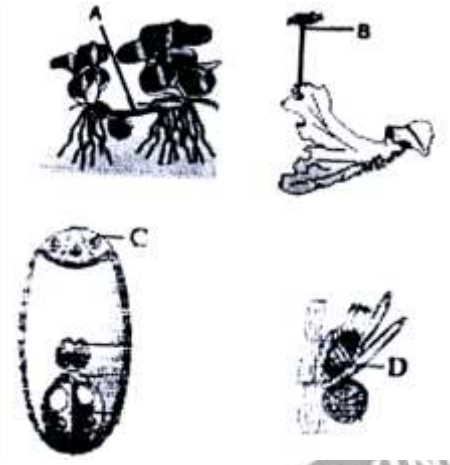
Hint:

- **Cucumber has male and female flowers both on the same plant.**
- **Castor has male and female flowers separate but on same plant**
- **Maize has male and female inflorescences (spikelets) borne separately but on same plant**
- **Papaya is dioecious plant. So both autogamy and geitonogamy are prevented in it.**

CBSE MAINS – 2010

13. Examine the figures (A – D) given below and select the right option out of 1 – 4, in which all the four structures A, B, C and D are identified correctly

Structures



	A	B	C	D
a)	Rhizome	Sporangiophore	Polar cell	Globule
b)	Runner	Archegoniophore	Synergid	Antheridium
c)	Offset	Antheridiophore	Antipodals	Oogonium
d)	Sucker	Seta	Megaspore mother cell	Gemma cup

Ans. (c)

14. Vegetative propagation is *Pistia* occurs by
    a) Stolen b) Offset
    c) Runner d) Sucker

Ans. (b)

CBSE MAINS – 2011

15. In angiosperms, functional megaspore develops into:
    a) Embryo sac b) Ovule
    c) Endosperm d) Pollen sac

Ans. (a)

16. What is common between vegetative reproduction and Apomixis?
    a) Both are applicable to only dicot plants
    b) Both bypass the flowering phase
    c) Both occur round the year
    d) Both produces progeny identical to the parent

Ans. (d)

CBSE MAINS – 2012

17. Plants with ovaries having only one or a few ovules, are generally pollinated by:
    a) Birds b) Wind
    c) Bees d) Butterflies

Ans. (b)

18. Which one of the following statements is wrong?
    a) Pollen grains in some plants remain viable for months
    b) Intine is made up of cellulose and pectin
    c) When pollen is shed at two-celled state, double fertilization does not take place
    d) Vegetative cell is larger than generative cell

Ans. (c)

19. What is the function of germ pore?
    a) Initiation of pollen tube
    b) Release of male gametes
    c) Emergence of radicle
    d) Absorption of water for seed germination

Ans. (a)

NEET – 2013

20. Meiosis takes place in:
    a) Gemmule b) Megaspore
    c) Meiocyte d) Conidia

Ans. (c)

21. 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

Ans. (a)

22. Monoecious plant of Chara shows occurrence of:
    a) Upper antheridium and lower oogonium on the same plant
    b) Upper oogonium and lower antheridium on the same plant
    c) Antheridiophore and archegoniophore on the same plant
    d) Stamen and carpel on the same plant

Ans. (b)

23. 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

Ans. (b)

AIPMT – 2014

24. Geitonogamy involves:
    a) Fertilization of a flower by the pollen from a flower of another plant belonging to a distant population.
    b) Fertilization of a flower by the pollen from another flower of the same plant.
    c) Fertilization of a flower by the pollen from the same flower.
    d) Fertilization of a flower by the pollen from a flower of another plant in the same population

Ans. (b)

25. Function of filiform apparatus is to
    a) Guide the entry of pollen tube
    b) Recognize the suitable pollen at stigma
    c) Stimulate division of generative cell
    d) Produce nectar

Ans. (a)

26. Pollen tablets are available in the market for:
    a) *Ex situ* conservation
    b) In vitro fertilization
    c) Breeding programmes
    d) Supplementing food

Ans. (d)

27. Which one of the following is wrong about *Chara*?
    e) Globule is male reproductive structure
    f) Upper oogonium and lower round antheridium
    g) Globule and nucule present on the same plant
    h) Upper antheridium and lower oogonium

Ans. (d)

AIPMT – 2015

28. Transmission tissue is characteristic feature of:
    a) Solid style b) Dry stigma
    c) Wet stigma d) Hollow style

Ans. (a)

29. Which one of the following may require pollinators, but is genetically similar to autogamy?
    a) Xenogamy b) Apogamy
    c) Cleistogamy d) Geitonogamy

Ans. (d)

Hint: Xenogamy - Cross pollination between two flowers of genetically different flowers.

- **Apogamy – Formation of sporophyte from gametophyte without involving the formation and fusion of gametes.**
- **Cleistogamy – the flowers are intersexual and remain closed causing self-pollination, they do not need pollinators.**
- **Geitonogamy – the pollen grains of one flower are transferred to stigma of another flower belonging to either same**
- **plant or genetically similar plant. This is similar genetically to autogamy which is self-pollination.**

30. In ginger vegetative propagation occurs through:
    a) Offsets b) Bulbils
    c) Runners d) Rhizome

Ans. (d)

31. Which one of the following statements is not true?
    a) Pollen grains of some plants cause severe allergies and bronchial afflictions in some people
    b) The flowers pollinated by flies and bats secrete foul odour to attract them
    c) Honey is made by bees by digesting pollen collected from flowers
    d) Pollen grains are rich in nutrients and they are used in the form of tablets and syrups

Ans. (c)

Hint: Option (c) is totally wrong as honey is made by bees from nectar collected from flowers.

Option (b) is to be taken as correct as some authors say that flowers pollinated by bats have fruity odour and some others say they may have a disagreeable odour like that of sour milk.

32. The hilum is a scar on the
    a) Fruit, where it was attached to pedicel
    b) Fruit, where style was present
    c) Seed, where micropyle was present
    d) Seed, where funicle was attached

Ans. (d)

33. Which of the following are the important floral rewards to the animal pollinators?
    a) Nectar and pollen grains
    b) Floral fragrance and calcium crystals
    c) Protein pellicle and stigmatic exudates
    d) Colour and large size of flower

Ans. (a)

AIPMT RETEST – 2015

34. The wheat grain has an embryo with one large, shield-shaped cotyledon known as:
    a) Epiblast b) Coleorrhiza
    c) Scutellum d) Coleoptile

Ans. (c)

35. Filiform apparatus is characteristic feature of:
    a) Generative cell b) Nucellar embryo
    c) Aleurone cell d) Synergids

Ans. (d)

36. In angiosperms, microsporogenesis and megasporogenesis:
    a) Occur in anther
    b) Form gametes without further divisions
    c) Involve meiosis
    d) Occur in ovule

Ans. (c)

37. Which of the following pairs is not correctly matched?

	Mode of reproduction	Example
a)	Offset	Water hyacinth
b)	Rhizome	Banana
c)	Binary fission	*Sargassum*
d)	Conidia	*Penicillium*

Ans. (c)

38. Coconut water from a tender coconut is:
    a) Immature embryo
    b) Free nuclear endosperm
    c) Innermost layers of the seed coat
    d) Degenerated nucellus

Ans. (b)

39. Male gametophyte in angiosperms produces:
    a) Two sperms and a vegetative cell
    b) Single sperm and a vegetative cell
    c) Single sperm and two vegetative cells
    d) Three sperms

Ans. (a)

AIPMT – 2016

40. The coconut water from tender coconut represents:
    a) Fleshy mesocarp
    b) Free nuclear proembryo
    c) Free nuclear endosperm
    d) Endocarp

Ans. (c)

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

Ans. (d)

42. Seed formation without fertilization in flowering plants involves the process of:
    a) Budding
    b) Somatic hybridisation
    c) Apomixis
    d) Sporulation

Ans. (c)

43. Which one of the following statements is not true?
    a) Exine of pollen grains is made up of sporopollenin
    b) Pollen grains of many species cause severe allergies
    c) Stored pollen in liquid nitrogen can be used in the crop breeding programmes
    d) Tapetum helps in the dehiscence of anther

Ans. (d)

NEET-2; 2016

44. 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 the embryo sac

Ans. (c)

Hint: In angiosperms the synergids have filiform apparatus, but in some even the egg cell has filiform apparatus. There are 3 antipodal cells. The central cell is large in size which has two polar nucleii.

45. Pollination in water hyacinth and water lily is brought about by the agency of
    a) Water b) Insects or wind
    c) Birds d) Bats

Ans. (b)

46. The ovule of an angiosperm is technically equivalent to
    a) Megasporangium
    b) Megasporophyll
    c) Megaspore mother cell
    d) Megaspore

Ans. (a)

47. Study the four statements (A-D) given below and select the two correct ones out of them:
    (i) Definition of biological species was given by Ernst Mayr.
    (ii) Photoperiod does not affect reproduction in plants.
    (iii) Binomial nomenclature system was given by R.H. Whittaker
    (iv) In unicellular organisms, reproduction is synonymous with growth.
    The two correct statements are
    a) (ii) and (iii) b) (iii) and (iv)
    c) (i) and (iv) d) (i) and (ii)

Ans. (c)

NEET- 2017

50. Flowers which have single ovule in the ovary and are packed into inflorescence are usually pollinated by:
    a) Water b) Bee
    c) Wind d) Bat

Ans. (c)

51. Functional megaspore in an angiosperm develops into:
    a) Ovule b) Endosperm
    c) Embryo sac d) Embryo

Ans. (c)

52. Double fertilization is exhibited by:
    a) Gymnosperms b) Algae
    c) Fungi d) Angiosperms

Ans. (d)

53. A dioecious flowering plant prevents both:
    a) Autogamy and xenogamy
    b) Autogamy and geitonogamy
    c) Geitonogamy and xenogamy
    d) Cleistogamy and xenogamy

Ans. (b)

54. Attractants and rewards are required for
    a) Anemophily b) Entomophily
    c) Hydrophily d) Cleistogamy

Ans. (b)

NEET - 2018

55. Which of the following has proved helpful in preserving pollen as fossils?
    a) Pollenkitt b) Cellulosic intine
    c) Oil content d) Sporopollenin

Ans. (d)

56. 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

Ans. (c)

57. Double fertilization 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

Ans. (d)

58. 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?
    a) *Hydrilla* b) *Yucca*
    c) Banana d) *Viola*

Ans. (b)

NEET - 2019

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

Ans. (d)

60. Persistent nucellus in the seed is known as
    a) Chalaza b) Perisperm
    c) Hilum d) Tegmen

Ans. (b)

61. What is the fate of the male gametes discharged in the synergid?
    a) One fuses with egg other(s) degenerate (s) in the synergid.
    b) All fuse with the egg.
    c) One fuses with the egg, other(s) fuse(s) with synergid nucleus.
    d) One fuses with the egg and other fuses with central cell nuclei.

Ans. (d)

NEET ODISHA - 2019

62. 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

Ans. (b)

63. 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

Ans. (d)

64. In which one of the following, both autogamy and geitonogamy are prevented?
    a) Wheat b) Papaya
    c) Castor d) Maize

Ans. (b)

Hint: Papaya is a diecious plant & thus it shows cross-pollination (xenogamy).

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HUMAN REPRODUCTION

CBSE PRELIMS – 2009

1. Which one of the following is the correct matching of the events occurring during menstrual cycle?

(a) Development of corpus luteum	Secretory phase and increased secretion of progesterone.
(b) Menstruation	Breakdown of myometrium and ovum not fertilized.
(c) Ovulation	LH and FSH attain peak level and sharp fall in the secretion of progesterone.
(d) Proliferative phase	Rapid regeneration of myometrium and maturation of Graafian follicle.

Ans. (a)

2. The correct sequence of spermatogenetic stages leading to the formation of sperms in a mature human testis is:
   a) Spermatid-spermatocyte-spermatogonia-sperms
   b) Spermatogonia-spermatid-spermatocyte-sperms
   c) Spermatocyte-spermatogonia-spermatid-sperms
   d) Spermatogonia-spermatocyte-spermatid-sperms

Ans. (d)

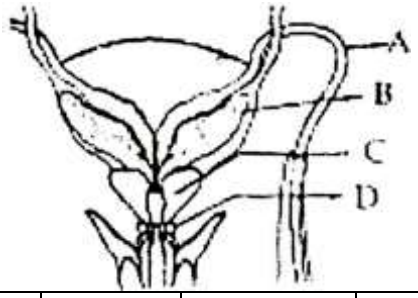
3. Foetal ejection reflex in human female is induced by:
   a) Fully developed foetus and placenta
   b) Differentiation of mammary glands
   c) Pressure exerted by amniotic fluid
   d) Release of oxytocin from pituitary

Ans. (a)

4. Which one of the following is the most likely root cause why menstruation is not taking place in regularly cycling human female?
   a) Maintenance of high concentration of sex-hormones in the blood stream
   b) Retention of well-developed corpus luteum
   c) Fertilisation of the ovum
   d) Maintenance of the hypertrophical endometrial lining

Ans. (c)

5. Given below is a diagrammatic sketch of a portion of human male reproductive system. Select the correct set of the names of the parts labelled A, B, C, D:



A	B	C	D
a) Vas deferens	Seminal vesicle	Bulboure-thrall gland	Prostate
b) Ureter	Seminal vesicle	Prostate	Bulboure-thral gland
c) Ureter	Prostate	Seminal vesicle	Bulboure-thral gland
d) Vas deferens	Seminal vesicle	Prostate	Bulboure-thrall gland

Ans. (d)

6. A change in the amount of yolk and its distribution in the egg will affect:
   a) Number of blastomeres produced
   b) Fertilization
   c) Formation of zygote
   d) Pattern of cleavage

Ans. (d)

7. Seminal plasma in humans is rich in:
   a) Glucose and certain enzymes but has no calcium
   b) Fructose and certain enzymes but poor in calcium
   c) Fructose, calcium and certain enzymes
   d) Fructose and calcium but has no enzymes

Ans. (c)

Hint: Seminal plasma is the term used for semen. Calcium is present in prostatic secretion.

CBSE PRELIMS – 2010

8. Vasa efferentia are the ductules leading from:
   a) Epididymis to urethra
   b) Testicular lobules to rete testis
   c) Rete testis to vas deferens
   d) Vas deferens to epididymis

Ans. (c)

Hint: The path followed by sperms is seminiferous tubules → tubuli recti → rete testis → Vasa efferentia → epididmis → vas deferens → ejaculatory duct → urethra. None of the above options is correct. The best option seems to be (c).

9. The first movements of the foetus and appearance of hair on its head are usually observed during which month of pregnancy?
   a) Third month b) Fourth month
   c) Fifth month d) Sixth month

Ans. (c)

10. Which one of the following statements about human sperm is correct?
    a) Acrosome serves no particular function
    b) Acrosome has a conical pointed structure used for piercing and penetrating the egg resulting in fertilization
    c) The sperm lysins in the acrosome dissolve the egg envelope facilitating fertilization
    d) Acrosome serves as a sensory structure leading the sperm towards the ovum

Ans. (c)

11. Seminal plasma in human males is rich in:
    a) Ribose and potassium
    b) Fructose and calcium
    c) Glucose and calcium
    d) DNA and testosterone

Ans. (b)

Hint: Fructose is mainly present in secretions of seminal vesicles and calcium in prostatic secretions.

12. Sertoli cells are found in:
    a) Pancreas and secrete cholecystokinin
    b) Ovaries and secrete progesterone
    c) Adrenal cortex and secrete adrenaline
    d) Seminiferous tubules and provide nutrition to germ cells

Ans. (d)

13. The part of Fallopian tube closest to the ovary is:
    a) Ampulla b) Isthmus
    c) Infundibulum d) Cervix

Ans. (c)

14. The signals for parturition originate from:
    a) Fully developed foetus only
    b) Placenta only
    c) Placenta as well as fully developed foetus
    d) Oxytocin released from maternal pituitary

Ans. (c)

15. The second maturation division of the mammalian ovum occurs:
    a) In the Graafian follicle following the first maturation division
    b) Shortly after ovulation before the ovum makes entry into the Fallopian tube
    c) Until after the ovum has been penetrated by a sperm
    d) Until the nucleus of the sperm has fused with that of the ovum

Ans. (c)

16. Which one of the following statements about morula in humans is correct?
    a) It has more cytoplasm and more DNA than an uncleaved zygote
    b) It has almost equal quantity of cytoplasm as an uncleaved zygote but much more DNA
    c) It has far less cytoplasm as well as less DNA than in an uncleaved zygote
    d) It has more or less equal quantity of cytoplasm and DNA as in uncleaved zygote

Ans. (b)

CBSE PRELIMS – 2011

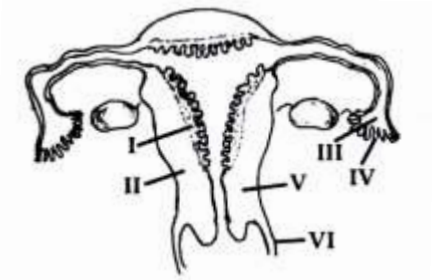
17. If for some reason, the vasa efferentia in the human reproductive system get blocked, the gametes will not be transported from:
    a) Testes to epididymis
    b) Epididymis to vas deferens
    c) Ovary to uterus
    d) Vagina to uterus

Ans. (a)

18. 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

Ans. (a)

19. The figure given below depicts a diagrammatic sectional view of the female reproductive system of humans. Which one set of three parts out of I-VI have been correctly identified?



a) (II) Endometrium, (III) Infundibulum, (IV) Fimbriae
b) (III) Infundibulum, (IV) Fimbriae, (V) Cervix
c) (IV) Oviducal funnel, (V) Uterus, (VI) Cervix
d) (I) Perimetrium, (II) Myometrium, (III) Fallopian tube

Ans. (b)

CBSE PRELIMS – 2012

20. In a normal pregnant woman, the amount of total gonadotropin activity was assessed. The result expected was:
    a) High level of circulating HCG to stimulate endometrial thickening
    b) High levels of FSH and LH in uterus to stimulate endometrial thickening
    c) High level of circulating HCG to stimulate estrogen and progesterone synthesis
    d) High level of circulating FSH and LH in the uterus to stimulate implantation of the embryo

Ans. (c)

21. Signals for parturition originate from
    a) Oxytocin released from maternal pituitary
    b) Placenta only
    c) Fully developed foetus only
    d) Both placenta as well as fully developed foetus

Ans. (d)

22. The Leydig cells as found in the human body are the secretory source of:
    a) Intestinal mucus b) Glucagon
    c) Androgens d) Progesterone

Ans. (c)

23. Which one of the following statements is false in respect of viability of mammalian sperm?
    a) Survival of sperm depends on the pH of the medium and is more active in alkaline medium
    b) Viability of sperm is determined by its motility
    c) Sperms must be concentrated in a thick suspension
    d) Sperm is viable for only up to 24 hours

Ans. (d)

CBSE MAINS – 2010

24. Signals from fully developed foetus and placenta ultimately lead to parturition which requires the release of
    a) Estrogen from placenta
    b) Oxytocin from maternal pituitary
    c) Oxytocin from foetal pituitary
    d) Relaxin from placenta

Ans. (b)

25. In human female the *blastocyst*
    a) Forms placenta even before implantation
    b) Gets implanted into uterus 3 days after ovulation
    c) Gets nutrition from uterine endometrial secretion only after implantation
    d) Gets implanted in endometrium by the trophoblast cells

Ans. (d)

26. 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

Ans. (a)

CBSE MAINS – 2011

27. What happens during fertilisation in humans after many sperms reach close to the ovum?
    a) Secretions of acrosome helps one sperm enter cytoplasm of ovum through zona pellucida
    b) All sperms except the one nearest to the ovum lose their tails
    c) Cells of corona radiata trap all the sperms except one
    d) Only two sperms nearest the ovum penetrate zona pellucida

Ans. (a)

28. About which day in a normal human menstrual cycle does rapid secretion of LH (popularly called LH-surge) normally occurs?
    a) 14^{th} day b) 20^{th} day
    c) 5^{th} day d) 11^{th} day

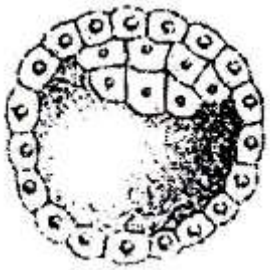
Ans. (a)

CBSE MAINS – 2012

29. The secretory phase in the human menstrual cycle is also called:
    a) Luteal phase and lasts for about 13 days
    b) Follicular phase and lasts for about 13 days
    c) Luteal phase and lasts for about 6 days
    d) Follicular phase and lasting for about 6 days

Ans. (a)

30. Identify the human development stage shown below as well as the related right place of its occurrence in a normal pregnant woman, and select the right option for the two together.



Options:

	Developmental stage	Site of occurrence
a)	Blastocyst	Uterine wall
b)	8-celled morula	Starting point of Fallopian tube
c)	Late morula	Middle part of Fallopian tube
d)	Blastula	End part of Fallopian tube

Ans. (a)

Hint: The embryo with 8-16 blastomeres is called a morula, and is present in the end part of fallopian tube. Morula forms the blastocyst as it reaches the uterine cavity and then blastocyst implants in the endometrium. Thus, the options (b), (c), (d) are all wrong.

NEET – 2013

31. What is the correct sequence of sperm formation?
    a) Spermatogonia, spermatozoa, spermatocyte, spermatid
    b) Spermatogonia, spermatocyte, spermatid, spermatozoa
    c) Spermatid, spermatocyte, spermatogonia. spermatozoa
    d) Spermatogonia, spermatocyte, spermatozoa, spermatid

Ans. (b)

32. Which one of the following is not the function of placenta? It:
    a) Facilitates removal of carbon dioxide and waste material from embryo.
    b) Secretes oxytocin during parturition.
    c) Facilitates supply of oxygen and nutrients to embryo.
    d) Secretes estrogen.

Ans. (b)

33. Product of sexual reproduction generally generates:
    a) New genetic combination leading to variation
    b) Large biomass
    c) Longer viability of seeds
    d) Prolonged dormancy

Ans. (a)

34. Menstrual flow occurs due to lack of:
    a) Oxytocin b) Vasopressin
    c) Progesterone d) FSH

Ans. (c)

AIPMT – 2014

35. The shared terminal duct of the reproductive and urinary system in the human male is:
    a) Vasa efferentia b) Urethra
    c) Ureter d) Vas deferens

Ans. (b)

36. The main function of mammalian corpus luteum is to produce:
    a) relaxin only
    b) estrogen only
    c) progesterone
    d) human chorionic gonadotropin

Ans. (c)

37. Select the correct option describing gonadotropin activity in a normal pregnant female
    a) High level of hCG stimulates the thickening of endometrium
    b) High level of FSH and LH stimulates the thickening of endometrium
    c) High level of FSH and LH facilitate implantation of the embryo
    d) High level of hCG stimulates the synthesis of estrogen and progesterone

Ans. (d)

Hint: In a normal pregnancy –

- **hCG from the placenta maintains the corpus luteum and the secretion of estrogen and progesterone by it.**
- **The FSH and LH levels are suppressed during pregnancy thus both option (b) and (c) are incorrect.**

AIPMT – 2015

38. Which of these is **not** an important component of initiation of parturition in humans?
    a) Synthesis of prostaglandins
    b) Release of oxytocin
    c) Release of prolactin
    d) Increase in estrogen and progesterone ratio

Ans. (c)

39. Capacitation refers to changes in the:
    a) Ovum before fertilization
    b) Ovum after fertilization
    c) Sperm after fertilization
    d) Sperm before fertilization

Ans. (d)

40. Hysterectomy is surgical removal of:
    a) Prostate gland b) Vas-deference
    c) Mammary glands d) Uterus

Ans. (d)

41. Which of the following cells during gametogenesis is normally diploid?
    a) Spermatid
    b) Spermatogonia
    c) Secondary polar body
    d) Primary polar body

Ans. (b)

AIPMT RETEST – 2015

42. Ectopic pregnancies are referred to as:
    a) Pregnancies with genetic abnormality
    b) Implantation of embryo at site other than uterus
    c) Implantation of defective embryo in the uterus
    d) Pregnancies terminated due to hormonal imbalance

Ans. (b)

43. Which of the following events is not associated with ovulation in human female?
    a) Decrease in estradiol
    b) Full development of Graafian follicle
    c) Release of secondary oocyte
    d) LH surge

Ans. (a)

44. Which of the following layers in an antral follicle is acellular?
    a) Granulosa b) Theca interna
    c) Stroma d) Zona pellucida

Ans. (d)

45. In human females, meiosis-II is not completed until?
    a) puberty b) fertilization
    c) uterine implantation d) birth

Ans. (b)

AIPMT – 2016

46. Fertilization in humans is practically feasible only if:
    a) the ovum and sperms are transported simultaneously to Ampullary – isthmic junction of the fallopian tube
    b) the ovum and sperms are transported simultaneously to ampullary –isthmic junction of the cervix
    c) the sperms are transported into cervix within 48 hrs of release of ovum in uterus

d) the sperms are transported into vagina just after the release of ovum in fallopian tube

Ans. (a)

Hint: Fertilization in humans is possible in both the case of option (a) and (d). But, in the question statement the word 'only' is written so (a) becomes the better answer.

47. Changes in GnRH pulse frequency in females is controlled by circulating levels of:
    a) Estrogen and inhibin
    b) Progesterone only
    c) Progesterone and inhibin
    d) Estrogen and progesterone

Ans. (d)

48. Identify the correct statement on 'inhibin':
    a) Is produced by granulose cells in ovary and inhibits the secretion of FSH.
    b) Is produced by granulose cells in ovary and inhibits the secretion of LH.
    c) Is produced by nurse cells in testes and inhibits the secretion of LH.
    d) Inhibits the secretion of LH, FSH and Prolactin.

Ans. (a)

Hint: Inhibin (hormone) is secreted by granulosa cells of the ovaries in female and Sertoli cells of testes in males. It acts primarily to inhibit the secretion of FSH from the anterior pituitary gland.

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

Ans. (b)

NEET 2; 2016

50. Which of the following depicts the correct pathway of transport of sperms?
    a) Rete testis → Efferent ductules → Epididymis → Vas deferens.
    b) Rete testis → Epididymis → Efferent ductules → Vas deferens
    c) Rete testis → Vas deferens → Efferent ductules → Epididymis
    d) Efferent ductules → Rete testis → Vas deferens → Epididymis

Ans. (a)

51. Match Column – I with Column – II and select the correct option using the codes given below:

Column – I	Column – II
1. Mons pubis	(i) Embryo formation
2. Antrum	(ii) Sperm
3. Trophectoderm	(iii) Female external genitalia
4. Nebenkern	(iv) Graafian follicle

Codes

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

Ans. (b)

Hint: Nebenkern is a helical structure of the proximal tail region of spermatozoaqn of some insects derived from mitochondria.

52. Several hormones like hCG, hPL, estrogen, progesterone are produced by
    a) Ovary b) Placenta
    c) Fallopian tube d) Pituitary

Ans. (b)

NEET – 2017

53. Select the correct route for the passage of sperms in male frogs:
    a) Testes → Bidder's canal → Kidney → Vasa efferentia → Urinogenital duct → Cloaca
    b) Testes → Vasa efferentia → Kidney → Seminal Vesicle → Urinogenital duct → Cloaca
    c) Testes → Vasa efferentia → Bidder's canal → Ureter → Cloaca
    d) Testes → Vasa efferentia → Kidney → Bidder's canal → Urinogenital duct → Cloaca

Ans. (d)

54. A temporary endocrine gland in the human body is:
    a) Pineal gland b) Corpus cardiacum
    c) Corpus luteum d) Corpus allatum

Ans. (c)

55. GnRH, a hypothalamic hormone, needed in reproduction, acts on:
    a) anterior pituitary gland and stimulates secretion of LH and oxytocin.
    b) anterior pituitary gland and stimulates secretion of LH and FSH
    c) posterior pituitary gland and stimulates secretion of oxytocin and FSH
    d) posterior pituitary gland and stimulates secretion of LH and relaxin.

Ans. (b)

56. Capacitation occurs in:
    a) Rete testis
    b) Epididymis
    c) Vas deferens
    d) Female Reproductive tract

Ans. (d)

NEET – 2018

57. Hormones secreted by the placenta to maintain pregnancy are
    a) hCG, hPL, progestogens, prolactin
    b) hCG, hPL, estrogens, relaxin, oxytocin
    c) hCG, hPL, progestogens, estrogens
    d) hCG, progestogens, estrogens, glucocorticoids

Ans. (c)

58. The difference between Spermiogenesis and spermiation 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.

Ans. (d)

59. The amnion of mammalian embryo is derived from
    a) Ectoderm and mesoderm
    b) Endoderm and mesoderm
    c) Mesoderm and trophoblast
    d) Ectoderm and endoderm

Ans. (a)

Hint: The amnion is derived from the Trophoblast. So, none of the given options is fully correct. If we follow the recent concept given by Gray's Anatomy that Amnion is derived from the Epiblast even then the question should be cancelled as Epiblast is not mentioned in the given options.

Reference:

(i) Human Embryology by Inderbir Singh.
(ii) Textbook of Obstetrics by DC Dutta.

60. Match the items given in Column I with those in Column II and select the correct option given below:

Column I	***Column II***
A) Proliferative Phase	i) Breakdown of endometrial lining
B) Secretory Phase	ii) Follicular Phase
C) Menstruation	iii) Luteal Phase

	A	**B**	**C**
a)	iii	ii	i
b)	i	iii	ii
c)	ii	iii	i
d)	iii	i	ii

Ans. (c)

NEET – 2019

61. Colostrum the yellowish fluid, secreted by mother during the initial days of lactation is very essential to impart immunity to the new born infants because it contains
    a) Natural killer cells
    b) Monocytes
    c) Macrophages
    d) Immunoglobulin A

Ans. (d)

62. Select the correct sequence for transport of sperm cells in male reproductive system.
    a) Testis → Epididymis → Vasa efferentia → Rete testis → Inguinal canal → Urethra
    b) Seminiferous tubules → Rete testis → Vasa efferentia → Epididymis → Vas deferens → Ejaculatory duct → Urethra → Urethral meatus
    c) Seminiferous tubules → Vasa efferentia → Epididymis → Inguinal canal → Urethra
    d) Testis → Epididymis →Vasa efferentia → Vas deferens → Ejaculatory duct → Inguinal canal → Urethra → Urethral meatus

Ans. (b)

63. Extrusion of second polar body from egg nucleus occurs:
    a) after entry of sperm but before fertilization
    b) after fertilization
    c) before entry of sperm into ovum
    d) simultaneously with first cleavage

Ans. (a)

NEET ODISHA – 2019

64. Select the correct sequence of events:
    a) Gametogenesis → Gamete transfer → Syngamy → Zygote → Cell division (Cleavage) → Cell differentiation → Organogenesis
    b) Gametogenesis →Gamete transfer → Syngamy→ Zygote →Cell division (Cleavage) → Organogenesis → Cell differentiation
    c) Gametogenesis → Syngamy → Gamete transfer → Zygote → Cell division (Cleavage) → Cell differentiation → Organogenesis
    d) Gametogenesis → Gamete transfer → Syngamy → Zygote → Cell differentiation → Cell division (Cleavage) → Organogenesis

Ans. (a)

65. Which of the following hormones is responsible for both the milk ejection reflex and the foetal ejection reflex?
    a) Estrogen b) Prolactin
    c) Oxytocin d) Relaxin

Ans. (c)

66. 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

Ans. (d)

REPRODUCTIVE HEALTH

CBSE PRELIMS – 2010

1. Cu ions released from copper-releasing Intra Uterine Devices (IUDs):
   a) Prevent ovulation
   b) Make uterus unsuitable for implantation
   c) Increase phagocytosis of sperms
   d) Suppress sperm motility

Ans. (d)

2. In *vitro* fertilization is a technique that involves transfer of which one of the following into the fallopian tube?
   a) Zygote only
   b) Embryo only, upto 8 cell stage
   c) Either zygote or early embryo upto 8 cell stage
   d) Embryo of 32 cell stage

Ans. (c)

3. The permissible use of the technique amniocentesis is for:
   a) Detecting any genetic abnormality
   b) Detecting sex of the unborn foetus
   c) Artificial insemination
   d) Transfer of embryo into the uterus of a surrogate mother

Ans. (a)

CBSE PRELIMS – 2011

4. Which one of the following is the most widely accepted method of contraception in India, as at present?
   a) Cervical caps
   b) Tubectomy
   c) Diaphragms
   d) IUDs' (Intra uterine devices)

Ans. (d)

5. 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

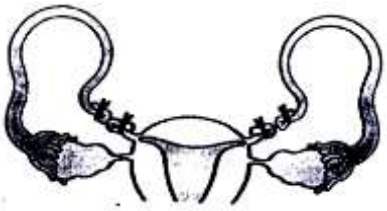
Ans. (b)

CBSE PRELIMS – 2012

6. The Test-tube Baby Programme employs which one of the following techniques?
   a) Intra uterine insemination (IUI)
   b) Gamete intra fallopian transfer (GIFT)
   c) Zygote intra fallopian transfer (ZIFT)
   d) Intra cytoplasmic sperm injection (ICSI)

Ans. (c)

7. What is the figure given below showing in particular?



   a) Uterine cancer b) Tubectomy
   c) Vasectomy d) Ovarian cancer

Ans. (b)

CBSE MAINS – 2011

8. The technique called *gamete intrafallopian transfer* (GIFT) is recommended for those females:
   a) Who cannot produce an ovum
   b) Who cannot retain the foetus inside uterus
   c) Whose cervical canal is too narrow to allow passage for the sperms
   d) Who cannot provide suitable environment for fertilisation

Ans. (a)

NEET – 2013

9. 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

Ans. (a)

10. Which of the following cannot be detected in a developing foetus by amniocentesis?
    a) Down syndrome
    b) Jaundice
    c) Klinefelter syndrome
    d) Sex of the foetus

Ans. (b)

11. 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

Ans. (d)

Hint: Both the options (c) and (d) are correct. If it was asked which is the method for prevention of pregnancy / conception then abstinence would have been the only correct option.

AIPMT – 2014

12. Assisted reproductive technology, IVF involves transfer of:
    a) Embryo with 16 blastomeres into the fallopian tube
    b) Ovum into the fallopian tube.
    c) Zygote into the fallopian tube
    d) Zygote into the uterus.

Ans. (c)

Hint: In IVF and embryo transfer; the zygote or early embryo (upto 8 blastomeres) could be transferred into fallopian tube (ZIFT) and embryos with more than 8 blastomeres into the uterus (IUT).

13. Tubectomy is a method of sterilization in which
    a) Uterus is removed surgically
    b) Small part of the fallopian tube is removed or tied up.
    c) Ovaries are removed surgically
    d) Small part of vas deferens is removed or tied up

Ans. (b)

14. Which of the following is a hormone releasing intra Uterine Device (IUD)?
    a) Vault b) Multiload 375
    c) LNG-20 d) Cervical cap

Ans. (c)

AIPMT RETEST – 2015

15. A childless couple can be assisted to have a child through a technique called GIFT. The full form of this technique is:
    a) Gamete inseminated fallopian transfer
    b) Gamete intra fallopian transfer
    c) Gamete internal fertilization and transfer
    d) Germ cell internal fallopian transfer

Ans. (b)

AIPMT – 2016

16. Which of the following approaches does not give the defined action of contraceptive?

a)	Intra uterine devices	Increase phagocytosis of sperms, suppress sperm motility and fertilizing capacity of sperms
b)	Hormonal contraceptives	Prevent/retard entry of sperms, prevent ovulation & fertilization
c)	Vasectomy	Prevents spermatogenesis
d)	Barrier methods	Prevent fertilization

Ans. (c)

17. In context of Amniocentesis, which of the following statement is incorrect?
    a) It is used for prenatal sex determination
    b) It can be used for detection of Down syndrome
    c) It can be used for detection of Cleft palate
    d) It is usually done when a woman is between 14-16 weeks pregnant

Ans. (c)

NEET 2; 2016

18. Which of the following is hormone releasing IUD?
    a) LNG-20 b) Multiload 375
    c) Lippes loop d) Cu7

Ans. (a)

19. 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
    d) Irreversible sterility

Ans. (b)

20. Embryo with more than 16 blastomeres formed due to *in vitro* fertilization is transferred into
    a) Uterus b) Fallopian tube
    c) Fimbriae d) Cervix

Ans. (a)

NEET – 2017

21. Match the following sexually transmitted diseases (Column – I) with their causative agent (Column – II) and select the correct option.

Column – I	Column – II
A. Gonorrhea	(i) HIV
B. Syphilis	(ii) *Neisseria*
C. Genital Warts	(iii) *Treponema*
D. AIDS	(iv) Human Papilloma - Virus

Options:

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

Ans. (a)

22. The function of copper ions in copper releasing IUD's is:
    a) They suppress sperm motility and fertilising capacity of sperms.
    b) They inhibit gametogenesis
    c) They make uterus unsuitable for implantation
    d) They inhibit ovulation

Ans. (a) as per CBSE key.

Hint: Both options (a) and (c) are correct.

Copper ions supress the sperm motility and fertilizing capacity of sperms and are spermicidal in nature. However, in addition it increases the inflammatory reaction in the uterus and makes the uterus unsuitable for implantation, the reason why it is also useful as an emergency contraceptive.

23. In case of a couple where the male is having a very low sperm count, which technique will be suitable for fertilization?
    a) Intrauterine transfer
    b) Gamete intracytoplasmic fallopian transfer
    c) Artificial Insemination
    d) Intracytoplasmic sperm injection

Ans. (c) as per CBSE key.

Hint: In this question it is mentioned"Very low sperm count", which is a qualitative criteria. No numerical value to define degree of oligospermia has been mentioned. For low sperm count both Artificial insemination and ICSI can be used depending on the degree of oligospermia. For 'very low sperm count' ICSI seems to be the better option.

NEET – 2018

24. 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.

Ans. (a)

Hint: The contraceptive "SAHELI" has a role as a Post-coital emergency contraceptive also. Thus, in this question two of the given options (a) and (d) are correct.

Reference:

(i) Shaw's Textbook of Gynaecology.

(ii) DC Dutta's Textbook of Gynaecology.

NEET – 2019

25. Select the hormone-releasing Intra-Uterine Devices.
    a) Vaults, LNG-20
    b) Multiload 375, Progestasert
    c) Progestasert, LNG-20
    d) Lippes Loop, Multiload 375

Ans. (c)

26. Which of the following sexually transmitted diseases is not completely curable?
    a) Gonorrhoea b) Genital warts
    c) Genital herpes d) Chlamydiasis

Ans. (c)

27. Which of the following contraceptive methods do involve a role of hormone?
    a) Lactational amenorrhea, Pills Emergency contraceptives.
    b) Barrier method, Lactational amenorrhea, Pills.
    c) CuT, Pills, Emergency contraceptives.
    d) Pills, Emergency contraceptives, Barrier methods.

Ans. (a)

Hint: In lactational amenorrhoea, due to high prolactin level, gonadotropin level decreases.

➔ **Oral pills are either progestogens or progestogen-estrogen combinations used by the females.**

➔ **Emergency contraceptives includes the administration of progestogens or progestogen-estrogen combination or IUDs within 72 hours of coitus.**
So, lactational amenorrhoea, oral pills and emergency contraceptives involve a role of hormone.

NEET ODISHA – 2019

28. Which of the following sexually transmitted diseases do not specifically affect reproductive organs?
    a) Genital warts and Hepatitis-B
    b) Syphilis and Genital herpes
    c) AIDS and Hepatitis B
    d) Chlamydiasis and AIDS

Ans. (c)

29. 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

Ans. (c)

DR. ARVIND'S BIOLOGY CLASSES
(A Unit of Med-Xel Tutorials)

GENETICS & EVOLUTION

PRINCIPLES OF INHERITANCE AND VARIATIONS

CBSE PRELIMS – 2009

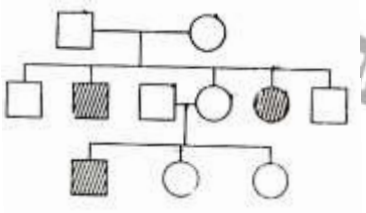
1. Sickle cell anaemia is:
   a) Caused by a change in a single base pair of DNA
   b) Characterized by elongated sickle like RBCs with a nucleus
   c) An autosomal linked dominant trait
   d) Caused by substitution of valine by glutamic acid in the beta globin chain of haemoglobin

Ans. (a)

2. The most popularly known blood grouping is the ABO grouping. It is named ABO and not ABC, because "O" in it refers to having:
   a) One antibody only – either anti-A or anti-B on the RBCs
   b) No antigens A and B on RBCs
   c) Other antigens besides A and B on RBCs
   d) Overdominance of this type on the genes for A and B types

Ans. (b)

3. Study the pedigree chart given below:



What does it show?
   a) The pedigree chart is wrong as this is not possible.
   b) Inheritance of a recessive sex-linked disease like haemophilia
   c) Inheritance of a sex-linked inborn error of metabolism like phenylketonuria
   d) Inheritance of a condition like phenylketonuria as an autosomal recessive trait

Ans. (d)

4. Select the incorrect statement from the following:
   a) Small population size results in random genetic drift in a population
   b) Baldness is a sex-limited trait
   c) Linkage is an exception to the principle of independent assortment in heredity
   d) Galactosemia is an inborn error of metabolism

Ans. (b)

Hint: Baldness is a sex-influenced trait. It behaves as autosomal dominant in males and autosomal recessive in females.

5. Alzhimer disease in humans is associated with the deficiency of:
   a) Acetylcholine
   b) Gamma aminobutyric acid (GABA)
   c) Dopamine
   d) Glutamic acid

Ans. (a)

CBSE PRELIMS – 2010

6. Which one of the following cannot be explained on the basis of Mendel's Law of Dominance?
   a) Factors occur in pairs
   b) The discrete unit controlling a particular character is called a factor
   c) Out of one pair of factors one is dominant, and the other is recessive.
   d) Alleles do not show any blending and both the characters recover as such in F_2 generation

Ans. (d)

7. The genotype of a plant showing the dominant phenotype can be determined by:
   a) Back cross b) Test cross
   c) Dihybrid cross d) Pedigree analysis

Ans. (b)

8. ABO blood groups in humans are controlled by the gene *I*. It has three alleles – I^A, I^B and *i*. Since there are three different alleles, six different genotypes are possible. How many phenotypes can occur?
   a) Two b) Three c) One d) Four

Ans. (d)

9. Select the correct statement from the ones given below with respect to dihybrid cross
   a) Tightly linked genes on the same chromo-some show very few recom-binations.
   b) Tightly linked genes on the same chromosome show higher recombinations
   c) Genes far apart on the same chromosome show very few recombinations
   d) Genes loosely linked on the same chromosome show similar recom-binations as the tightly linked ones

Ans. (a)

10. Which one of the following symbols and its representation, used in human pedigree analysis is correct?
    a) ◆ = male affected
    b) □——○ = mating between relatives
    c) ○ = unaffected male
    d) □ = unaffected female

Ans. (b)

CBSE PRELIMS – 2011

11. Which one of the following conditions correctly describes the manner of determining the sex in the given example?
    a) Homozygous sex chromosomes (ZZ) determine female sex in Birds
    b) XO type of sex chromosomes determine male sex in grasshopper
    c) XO condition in humans as found in Turner Syndrome, determines female sex
    d) Homozygous sex chromosomes (XX) produce male in *Drosophila*

Ans. (b)

12. What are those structures that appear as 'beads' – on – string' in the chromosomes when viewed under electron microscope?
    a) Genes b) Nucleotides
    c) Nucleosomes d) Base pairs

Ans. (c)

13. When two unrelated individuals or lines are crossed, the performance of F_1 hybrid is often superior to both its parents. This phenomenon is called:
    a) Heterosis b) Transformation
    c) Splicing d) Metamorphosis

Ans. (a)

CBSE PRELIMS – 2012

14. A normal-visioned man whose father was colour-blind, marries a woman whose father was also colour-blind. They have their first child as a daughter. What are the chances that this child would be colour-blind?
    a) zero percent b) 25%
    c) 50% d) 100%

Ans. (a)

15. F_2 generation in a Mendelian cross showed that both genotypic and phenotypic ratios are same as 1 : 2 : 1. It represents a case of:
    a) Dihybrid cross
    b) Monohybrid cross with complete dominance
    c) Monohybrid cross with incomplete dominance
    d) Co-dominance

Ans. (c)

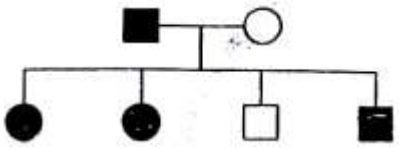
Hint: In both incomplete dominance and co-dominance, the genotypic and phenotypic ratios are 1:2:1. Probably option (c) is a better answer, since monohybrid cross is mentioned with it.

CBSE MAINS – 2010

16. Which one of the following statements about the particular entity is true?
    a) Centromere is found in animal cells, which produces aster during cell division
    b) The gene for producing insulin is present in every body cell
    c) Nucleosome is formed of nucleotides
    d) DNA consists of a core of eight histones

Ans. (b)

17. Study the pedigree chart of a certain family given below and select the **correct** conclusion which can be drawn for the character



    a) The female parent is heterozygous
    b) The parents could not have had a normal daughter for this character
    c) The trait under study could not be colour blindness
    d) The male parent is homozygous dominant

Ans. (a)

Hint: The option (c) is also correct *i.e.,* the trait under study could not be color blindness. As per pedigree mother does not seem to be a carrier of sex linked recessive disorder as the symbol for carrier of sex linked recessive disorder [⊙] has not been used. If mother is not a carrier of sex linked recessive disorder, then none of the daughters can be a sufferer. But still (a) is a better choice.

18. In *Antirrhinum* two plants with pink flowers were hybridized. The F_1 plants produced red, pink and white flowers in the proportion of 1 red, 2 pink and 1 white. What could be the genotype of the two plants used for hybridization? Red flower colour is determined by *RR*, and white by *rr* genes.
    a) *rrrr* b) *RR* c) *Rr* d) *rr*

Ans. (c)

19. A cross in which an organism showing a dominant phenotype in crossed with the recessive parent in order to know its genotype is called:
    a) Monohybrid cross b) Back cross
    c) Test cross d) Dihybrid cross

Ans. (c)

20. ABO blood grouping is controlled by gene I which has three alleles and show co-dominance. There are six genotypes. How many phenotypes in all are possible?
    a) Six b) Three c) Four d) Five

Ans. (c)

21. The fruit fly *Drosophila melanogaster* was found to be very suitable for experimental verification of chromosomal theory of inheritance by Morgan and his colleagues because:
    a) It reproduces parthenogenetically
    b) A single mating produces two young flies
    c) Smaller female is easily recognizable from larger male
    d) It completes life cycle in about two weeks

Ans. (d)

CBSE MAINS – 2011

22. Test cross in plants or in *Drosophila* involves crossing:
    a) Between two genotypes with recessive trait
    b) Between two F_1 hybrids
    c) The F_1 hybrid with a double recessive genotype
    d) Between two genotypes with dominant trait

Ans. (c)

23. Which one of the following conditions of the zygotic cell would lead to the birth of a normal human female child?
    a) two X chromosomes
    b) Only one Y chromosome
    c) Only one X chromosome
    d) One X and one Y chromosome

Ans. (a)

24. Represented below is the inheritance pattern of a certain type of traits in humans. Which one of the following conditions could be an example of this pattern?

    a) Haemophilia b) Thalassemia
    c) Phenylketonuria d) Sickle cell anaemia

Ans. (a)

25. A test cross is carried out to:
    a) Assess the number of alleles of a gene
    b) Determine whether two species or varieties will breed successfully
    c) Determine the genotype of a plant at F_2
    d) Predict whether two traits are linked

Ans. (c)

NEET – 2013

26. If both parents are carriers for thalessemia, which is an autosomal recessive disorder, what are the chances of pregnancy resulting in an affected child?
    a) 25% b) 100%
    c) no chance d) 50%

Ans. (a)

27. Which Mendelian idea is depicted by a cross in which the F_1 generation resembles both the parents?
    a) inheritance of one gene
    b) co-dominance
    c) incomplete dominance
    d) law of dominance

Ans. (b)

28. The incorrect statement with regard to Haemophilia is:
    a) It is a dominant disease
    b) A single protein involved in the clotting of blood is affected
    c) It is a sex-linked disease
    d) It is a recessive disease

Ans. (a)

29. Which of the following statements is **not** true of two genes that show 50% recombination frequency?
    a) The genes show independent assortment
    b) If the genes are present on the same chromosome, they undergo more than one crossovers in every meiosis
    c) The genes may be on different chromosomes
    d) The genes are tightly linked

Ans. (d)

Hint: If two genes show a 50% recombination frequency it means that they are not linked and show independent assortment. They may be on the same chromosome or are more likely to be on different chromosomes.
If they are on the same chromosome then the distance between then is large *i.e.,* nearly 50cm. We know that larger the distance between genes on the same chromosome greater are the chances of more than one cross overs in meiosis.

AIPMT – 2014

30. A man whose father was colour blind married a woman who had a colour blind mother and normal father. What percentage of male children of the couple will be colour blind?
    a) 75% b) 25% c) 0% d) 50%

Ans. (d)

31. In a population of 1000 individuals 360 belong to genotype AA 480 to Aa and the remaining 160 to aa. Based on this data, the frequency of allele A in the population is:
    a) 0.7 b) 0.4 c) 0.5 d) 0.6

Ans. (d)

32. A human female with Turner's syndrome:
    a) Is able to produce children with normal husband
    b) Has 45 chromosomes with XO
    c) Has one additional X chromosome
    d) Exhibits male characters

Ans. (b)

33. Fruit colour in squash is an example of:
    a) Inhibitory genes
    b) Recessive epistasis
    c) Dominant epistasis
    d) Complementary genes

Ans. (c)

AIPMT – 2015

34. How many pairs of contrasting characters in pea plants were studied by Mendel in his experiments?
    a) Six b) Eight
    c) Seven d) Five

Ans. (c)

35. The movement of a gene from one linkage group to another is called:
    a) Duplication b) Translocation
    c) Crossing over d) Inversion

Ans. (b)

36. Multiple alleles are present:
    a) At different loci on the same chromosome
    b) At the same locus of the chromosome
    c) On non-sister chromatids
    d) On different chromosomes

Ans. (b)

37. Alleles are:
    a) True breeding homozygotes
    b) Different molecular forms of a gene
    c) Heterozygotes
    d) Different phenotype

Ans. (b)

38. An abnormal human baby with 'XXX' sex chromosomes was born due to:
    a) Formation of abnormal ova in the mother
    b) Fusion of two ova and one sperm
    c) Fusion of two sperms and one ovum
    d) Formation of abnormal sperms in the father

Ans. As per CBSE website the Ans. is (a).

Hint: (a and d) In this question both option (a) and (d) are correct. XXX condition in humans can originate due to Maternal defect in meiosis I or meiosis II or due to paternal defect in meiosis II. These defects can give rise to abnormal egg with XX or abnormal sperm with XX which if fuses with normal gamete of opposite sex will give rise to an abnormal zygote with XXX.

Reference – Harrison's Principles of Internal Medicine.

AIPMT RETEST – 2015

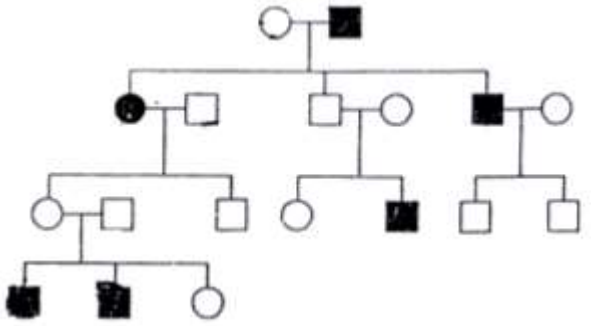
39. A gene showing codominance has:
    a) One allele dominant on the other
    b) Alleles tightly linked on the same chromosome
    c) Alleles that are recessive to each other
    d) Both alleles independently expressed in the *heterozygote*

Ans. (d)

40. The term "linkage" was coined by:
    a) T.H. Morgan b) T. Boveri
    c) G. Mendel d) W. Sutton

Ans. (a)

41. In the following human pedigree, the filled symbols, represent the affected individuals. Identify the type of given pedigree.



    a) Autosomal dominant
    b) X-linked recessive
    c) Autosomal recessive
    d) X-linked dominant

Ans. (c)

42. A colour blind man marries a woman with normal sight who has no history of colour blindness in her family. What is the probability of their grandson being colour blind?
    a) 0.5 b) 1 c) Nil d) 0.25

Ans. (d)

Hint: Here it is not specified whether grandsons are through daughter or son and thus we have to consider all the grandsons *i.e.,* both through the son and the daughter. In such a case the answer comes out to be one out of four (0.25).
If we consider the grandsons only through the son then the answer will be Nil.
If we consider the grandsons only through the daughter then the answer will be 0.5.

43. Balbiani rings are sites of:
    a) Lipid synthesis
    b) Nucleotide synthesis
    c) Polysaccharide synthesis
    d) RNA and protein synthesis

Ans. (d)

Hint: According to Textbooks," Genetics by Strickberger and "Genetics by PK Gupta", Balbiani rings are sites of RNA synthesis. This RNA then goes to cytoplasm and makes proteins at the ribosomes. Balbiani rings being a part of chromosomes cannot be a site of protein synthesis. Thus, even the option (d) "RNA and protein synthesis" is not completely correct.

44. In his classic experiments on pea plants, Mendel did not use:
    a) Seed colour b) Pod length
    c) Seed shape d) Flower position

Ans. (b)

45. A pleiotropic gene:
    a) is expressed only in primitive plants
    b) is a gene evolved during Pliocene
    c) controls a trait only in combination with another gene
    d) controls multiple traits in an individual

Ans. (d)

AIPMT – 2016

46. In a testcross involving F_1 dihybrid flies, more parental-type offspring were produced than the recombinant-type offspring. This indicates:
    a) Chromosomes failed to separate during meiosis
    b) The two genes are linked and present on the same chromosome
    c) Both of the characters are controlled by more than one gene
    d) The two genes are located on two different chromosomes

Ans. (b)

47. Match the terms in Column I with their description in Column II and choose the correct option:

Column I	Column II
A) Dominance	(i) Many genes govern a single character
b) Codominance	(ii) In a heterozygoes organism only one allele expresses itself
c) Pleiotropy	(iii) In a heterozygous organism both alleles express themselves fully.
d) Polygenic inheritance	(iv) A single gene influences many characters

Code: **(A)** **(B)** **(C)** **(D)**
a) (ii) (iii) (iv) (i)
b) (iv) (i) (ii) (iii)
c) (iv) (iii) (i) (ii)
d) (ii) (i) (iv) (iii)

Ans. (a)

48. A cell at telophase stage is observed by a student in a plant brought from the field. He tells his teacher that this cell is not like other cells at telophase stage. There is no formation of cell plate and thus the cell is containing more number of chromosomes as compared to other dividing cells. This would result in:
a) Polyploidy
b) Somaclonal variation
c) Polyteny
d) Aneuploidy

Ans. (a)

49. Which of the following most appropriately describes haemophilia?
a) X-linked recessive gene disorder
b) Chromosomal disorder
c) Dominant gene disorder
d) Recessive gene disorder

Ans. (a)

50. A tall true breeding garden pea plant is crossed with a dwarf true breeding garden pea plant. When the F_1 plants were selfed the resulting genotypes were in the ratio of:
a) 1 : 2 : 1 :: Tall heterozygous : Tall homozygous : dwarf
b) 3 : 1 :: Tall : Dwarf
c) 3 : 1 :: Dwarf : Tall
d) 1 : 2 : 1 :: Tall homozygous : Tall heterozygous : Dwarf

Ans. (d)

51. Pick out the correct statements:
(i) Haemophilia is a sex-linked recessive disease.
(ii) Down's syndrome is due to aneuploidy.
(iii) Phenylketonuria is an autosomal recessive gene disorder
(iv) Sickle cell anaemia is an X-linked recessive gene disorder
a) (ii) & (iv) are correct
b) (i), (iii) and (iv) are correct
c) (i), (ii) and (iii) are correct
d) (i) and (iv) are correct

Ans. (c)

NEET 2; 2016

52. Which one of the following generates new genetic combinations leading to variation?
a) Vegetative reproduction
b) Parthenogenesis
c) Sexual reproduction
d) Nucellar polyembryony

Ans. (c)

53. The mechanism that causes a gene to move from one linkage group to another is called
a) Inversion b) Duplication
c) Translocation d) Crossing over

Ans. (c)

54. A true breeding plant is
a) One that is able to breed on its own
b) Produced due to cross-pollination among unrelated plants
c) Near homozygous and produces offspring of its own kind
d) Always homozygous recessive in its genetic constitution

Ans. (c)

55. If a colour-blind man marries a woman who is homozygous for normal colour vision, the probability of their son being colour blind is
a) 0 b) 0.5 c) 0.75 d) 1

Ans. (a)

56. In Hardy-Weinberg equation, the frequency of heterozygous individual is represented by
a) p^2 b) 2 pq c) pq d) q^2

Ans. (b)

NEET - 2017

57. Which one from those given below is the period for Mendel's hybridization experiments?
    a) 1856 – 1863 b) 1840 – 1850
    c) 1857 – 1869 d) 1870 – 1877

Ans. (a)

58. Among the following characters, which one was not considered by Mendel in his experiments on pea?
    a) Stem – Tall or Dwarf
    b) Trichomes – Glandular or non-glandular
    c) Seed – Green or Yellow
    d) Pod – Inflated or Constricted

Ans. (b)

59. The genotypes of a Husband and Wife are I^AI^B and I^Ai.
    Among the blood types of their children, how many different genotypes and phenotypes are possible?
    a) 3 genotypes ; 3 phenotypes
    b) 3 genotypes ; 4 phenotypes
    c) 4 genotypes ; 3 phenotypes
    d) 4 genotypes ; 4 phenotypes

Ans. (c)

60. The association of histone H1 with a nucleosome indicates:
    a) Transcription is occurring.
    b) DNA replication is occurring
    c) The DNA is condensed into a Chromatin Fibre.
    d) The DNA double helix is exposed

Ans. (c)

61. Thalassemia and sickle cell anemia are caused due to a problem in globin molecule synthesis. Select the correct statement.
    a) Both are due to a qualitative defect in globin chain synthesis.
    b) Both are due to a quantitative defect in globin chain synthesis.
    c) Thalassemia is due to less synthesis of globin molecules
    d) Sickle cell anemia is due to a quantitative problem of globin molecules.

Ans. (c)

62. A disease caused by an autosomal primary non-disjunction is;
    a) Down's Syndome
    b) Klinefelter's Syndrome
    c) Turner's Syndrome
    d) Sickle Cell Anemia

Ans. (a)

NEET – 2018

63. Which of the following pairs is wrongly matched?
    a) Starch synthesis in pea : Multiple alleles
    b) ABO blood grouping : Co-dominance
    c) XO type sex determination: Grasshopper
    d) T.H. Morgan : Linkage

Ans. (a)

Hint: The trait of starch grain size (starch synthesis) in pea shows incomplete dominance.

64. Select the incorrect match:
    a) Lampbrush chromosomes – Diplotene bivalents
    b) Allosomes – Sex chromosomes
    c) Submetacentric chromosomes – L-Shaped chromosomes
    d) Polytene chromosomes – Oocytes of amphibians

Ans. (d)

Hint: Polytene chromosomes are found in interphase of salivary gland cells of Drosophila.

65. Which of the following characteristics represent 'Inheritance of blood groups' in humans?
    A) Dominance
    B) Co-dominance
    C) Multiple alleles
    D) Incomplete dominance
    E) Polygenic inheritance
    a) B, C and E b) A, B and C
    c) B, D and E d) A, C and E

Ans. (b)

66. A woman has an X-linked condition on one of her X chromosomes. This chromosome can be inherited by:
    a) Only daughters
    b) Only sons
    c) Only grandchildren
    d) Both sons and daughters

Ans. (d)

NEET – 2019

67. What map unit (Centimorgan) is adopted in the construction of genetic maps?
    a) A unit of distance between two expressed genes representing 10% cross over.
    b) A unit of distance between two expressed genes representing 100% cross over.
    c) A unit of distance between genes on chromosomes, representing 1% cross over
    d) A unit of distance between genes on chromosomes, representing 50% cross over

Ans. (c)

Hint: 1 map unit represent 1% cross over. Some authors like Strickberger consider 1 Morgan to be equal to 1% recombination while some authors like P.K. Gupta consider 1 centimorgan to be equal to 1% recombination.

68. A gene locus has two alleles A, a. If the frequency of dominant allele A is 0.4, Then what will be the frequency of homozygous dominant, heterozygous and homozygous recessive individuals in the population?
    a) 0.36(AA); 0.48(Aa); 0.16(aa)
    b) 0.16(AA); 0.24(Aa); 0.36(aa)
    c) 0.16(AA); 0.48(Aa); 0.36(aa)
    d) 0.16(AA); 0.36(Aa); 0.48(aa)

Ans. (c)

Hint: Frequency of dominant allele (say p) = 0.4
Frequency of recessive allele (say q)
= 1-0.4 = 0.6
∴ Frequency of homozygous dominant individuals (AA)
$=p^2 = (0.4)^2 = 0.16$
Frequency of heterozygous individuals (Aa)
$=2pq = 2(0.4)(0.6) = 0.48$
Frequency of homozygous recessive individuals (aa)
$=q^2 = (0.6)^2 = 0.36$

69. The shorter and longer arms of a Submetacentric chromosome are referred to as
    a) s-arm and l-arm respectively
    b) p-arm and q-arm respectively
    c) q-arm and p-arm respectively
    d) m-arm and n-arm respectively

Ans. (b)

70. What is the genetic disorder in which an individual has an overall masculine development, gynaecomastia and is sterile?
    a) Turner's syndrome
    b) Klinefelter's syndrome
    c) Edward syndrome
    d) Down's syndrome

Ans. (b)

Hint: Individuals with Klinefelter's syndrome have trisomy of sex chromosome as 44 + XXY (47).

71. The frequency of recombination between gene pairs on the same chromosome as a measure of the distance between genes was explained by:
    a) T.H. Morgan b) Gregor J. Mendel
    c) Alfred Sturtevant d) Sutton Boveri

Ans. (c)

Hint: Alfred Sturtevant explained chromosomal mapping on the basis of recombination frequency which is directly proportional to distance between two genes on same chromosome.

72. In *Antirrhinum* (Snapdragon), a red flower was crossed with a white flower and in F_1 generation pink flowers were obtained. When pink flowers were selfed, the F_2 generation showed white, red and pink

flowers. Choose the incorrect statement from the following:

a) This experiment does not follow the Principle of Dominance.
b) Pink colour in F_1 is due to incomplete dominance
c) Ratio of F_2 is $\frac{1}{4}$ (Red) : $\frac{2}{4}$ (Pink) : $\frac{1}{4}$ (White)
d) Law of Segregation does not apply in this experiment

Ans. (d)

Hint: Genes for flower colour in snapdragon show incomplete dominance which is an exception to Law of dominance.
Law of segregation is universally applicable.

73. Select the incorrect statement
a) Male fruit fly is heterogametic
b) In male grasshoppers 50% of sperms have no sex-chromosome
c) In domesticated fowls, sex of progeny depends on the type of sperm rather than egg
d) Human males have one of their sex-chromosome much shorter than the other

Ans. (c)

Hint: In birds female heterogamety is found. Thus sex of progeny depends on the types of egg.

NEET ODISHA – 2019

74. Match the items of column I with column II

Column I	Column II
A) XX-XO method of sex determinatio	i) Turner's syndrome
B) XX-XY method of sex determination	ii) Female heterogametic
C) Karyotype-45	iii) Grasshopper
D) ZW-ZZ method of sex determination	iv) Female homogametic

Select the correct option from the following:
a) A-ii, B-iv, C-i, D-iii
b) A-i, B-iv, C-ii, D-iii
c) A-iii, B-iv, C-i, D-ii
d) A-iv, B-ii, C-i, D-iii

Ans. (c)

75. In a marriage between male with blood group A and female with blood group B, the progeny had either blood group AB or B. What could be the possible genotype of parents?
a) I^Ai (Male) : I^BI^B (Female)
b) I^AI^A (Male) : I^BI^B (Female)
c) I^AI^A (Male) : I^Bi (Female)
d) I^Ai (Male) : I^Bi (Female)

Ans. (a)

76. In which genetic condition, each cell in the affected person, has three sex chromosomes XXY?
a) Thalassemia
b) Kleinfelter's Syndrome
c) Phenylketonuria
d) Turner's Syndrome

Ans. (b)

77. The production of gametes by the parents, the formation of zygotes, the F_1 and F_2 plants, can be understood using
a) Pie diagram
b) A pyramid diagram
c) Punnet square
d) Wenn diagram

Ans. (c)

MOLECULAR BASIS OF INHERITANCE

CBSE PRELIMS – 2009

1. What is not true for genetic code?
   a) It is degenerate
   b) It is unambiguous
   c) A codon in mRNA is read in a non-contiguous fashion
   d) It is nearly universal

Ans. (c)

2. Point mutation involves:
   a) Duplication
   b) Deletion
   c) Insertion
   d) Change in single base pair

Ans. (d)

3. Semiconservative replication of DNA was first demonstrated in:
   a) *Streptococcus pneumoniae*
   b) *Salmonella typhimurium*
   c) *Drosophila melanogaster*
   d) Escherichia coli

Ans. (d)

4. T.O. Diener discovered a:
   a) Infectious protein
   b) Bacteriophage
   c) Free infectious RNA
   d) Free infectious DNA

Ans. (c)

Hint: These are viriods which are smallest known agents of infection

5. Removal of introns and joining the exons in a defined order in a transcription unit is called:
   a) Transformation b) Capping
   c) Splicing d) Tailing

Ans. (c)

6. Whose experiments cracked the DNA and discovered unequivocally that a genetic code is a "triplet"?
   a) Morgan and Sturtevant
   b) Beadle and Tatum
   c) Nirenberg and Mathaei
   d) Hershey and Chase

Ans. (c)

CBSE PRELIMS – 2010

7. Virus envelope is known as
   a) Core b) Capsid
   c) Virion d) Nucleoprotein

Ans. (b)

8. Infectious proteins are present in:
   a) Satellite viruses b) Gemini viruses
   c) Prions d) Viroids

Ans. (c)

9. The one aspect which is not a salient feature of genetic code, is its being:
   a) Specific b) Degenerate
   c) Ambiguous d) Universal

Ans. (c)

10. Satellite DNA is useful tool in
    a) Genetic engineering
    b) Organ transplantation
    c) Sex determination
    d) Forensic science

Ans. (d)

11. Which one of the following does not follow the central dogma of molecular biology?
    a) HIV b) Pea
    c) *Mucor* d) *Chlamydomonas*

Ans. (a)

12. Select the two correct statements out of the four given below about lac operon.
    (i) Glucose or galactose may bind with the repressor and inactivate it.
    (ii) In the absence of lactose the repressor binds with the operator region
    (iii) The z-gene codes for permease
    (iv) This was elucidated by Francois Jacob and Jacque Monod

    The correct statements are:
    a) (i) and (ii) b) (ii) and (iii)
    c) (i) and (iii) d) (ii) and (iv)

Ans. (d)

Hint: z-gene codes for beta galactosidase, y-gene codes for permease and a-gene codes for transacetylase. Lactose binds with repressor and inactivates it.

CBSE PRELIMS – 2011

13. Which one of the following also acts as a catalyst in a bacterial cell?
    a) 5 sr RNA b) sn RNA
    c) hn RNA d) 23 sr RNA

Ans. (d)

Hint: In prokaryotes 23S rRNA and in eukaryotes 28S rRNA acts as peptidyl transferase enzyme.

CBSE PRELIMS – 2012

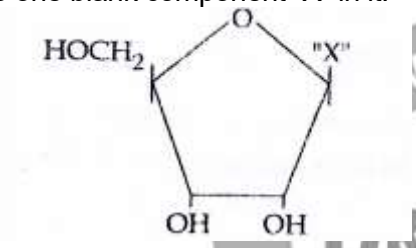
14. If one strand of DNA has the nitrogenous base sequence as ATCTG, what would be the complementary RNA strand sequence?
    a) UAGAC b) AACTG
    c) ATCGU d) TTAGU

Ans. (a)

15. PCR and Restriction Fragment Length Polymorphism are the methods for:
    a) Genetic transformation
    b) DNA sequencing
    c) Genetic Fingerprinting
    d) Study of enzymes

Ans. (c)

16. Given below is the diagrammatic representation of one of the categories of small molecular weight organic compounds in the living tissues. Identify the category shown and the one blank component "X" in it.



	Category	Component
a)	Amino acid	NH_2
b)	Nucleotide	Adenine
c)	Nucleoside	Uracil
d)	Cholesterol	Guanin

Ans. (c)

17. Removal of RNA polymerase III from nucleoplasm will affect the synthesis of:
    a) hn RNA b) m RNA
    c) r RNA d) t RNA

Ans. (d)

18. A single strand of nucleic acid tagged with a radioactive molecule is called:
    a) Selectable marker b) Plasmid
    c) Probe d) Vector

Ans. (c)

19. Which one of the following is not a part of a transcription unit in DNA?
    A terminator b) A promoter
    c) The structural gene d) The inducer

Ans. (d)

20. Ribosomal RNA is actively synthesized in:
    a) Nucleolus b) Nucleoplasm
    c) Ribosomes d) Lysosomes

Ans. (a)

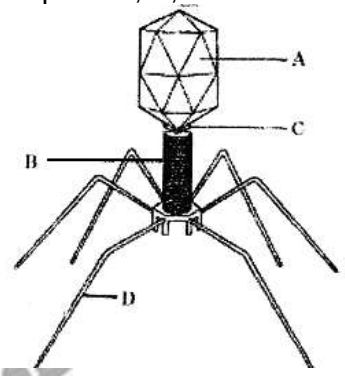
21. Removal of introns and joining of exons in a defined order during transcription is called:
    a) Inducing b) Slicing
    c) Splicing d) Looping

Ans. (c)

22. Which statement is wrong for viruses?
    a) All of them have helical symmetry
    b) They have ability to synthesize nucleic acids and proteins
    c) Antibiotics have no effect on them
    d) All are parasites

Ans. (a)

23. Given below is the diagram of a bacteriophage. In which one of the options all the four parts A, B, C and D are correct?



	A	B	C	D
a)	Tail fibres	Head	Sheath	Collar
b)	Sheath	Collar	Head	Tail fibres
c)	Head	Sheath	Collar	Tail fibres
d)	Collar	Tail fibres	Head	Sheath

Ans. (c)

24. The lac operon consists of
    a. Four regulatory genes only
    b. One regulatory gene and three structural genes
    c. Two regulatory genes & two structural genes
    d. Three regulatory genes and three structural genes

Ans. (b)

25. In eukaryotic cell transcription, RNA splicing and RNA capping take place inside the
    a) Ribosomes b) Nucleus
    c) Dictyosomes d) ER

Ans. (b)

26. The 3'-5' phosphodiester linkages inside a polynucleotide chain serve to join
    a) One DNA strand with the other DNA strand
    b) One nucleoside with another nucleoside
    c) One nucleotide with another nucleotide
    d) One nitrogenous base with pentose sugar

Ans. (c)

CBSE MAINS – 2011

27. The unequivocal proof of DNA as the genetic material came from the studies on a:
    a) Bacterium b) Fungus
    c) Viroid d) Bacterial virus

Ans. (d)

Hint: The unequivocal proof came from experiment of Hershey and Chase on bacteriophages.

CBSE MAINS – 2012

28. Which one of the following represents a palindromic sequence in DNA?
    a) 5'–CATTAG–3' b) 5'–GATACC–3'
    3'–GATAAC–5' 3'–CCTAAG–5'
    c) 5'–GAATTC–3' d) 5'–CCAATG–3'
    3'–CTTAAG–5' 3'–GAATCC–5'

Ans. (c)

29. What is it that forms the basis of DNA Fingerprinting?
    a) The relative amount of DNA in the ridges and grooves of the fingerprints
    b) Satellite DNA occurring as highly repeated short DNA segments
    c) The relative proportions of purines and pyrimidines in DNA
    d) The relative difference in the DNA occurrence in blood, skin and saliva

Ans. (b)

30. Read the following four statements (A-D):
    (A) In transcription, adenosine pairs with uracil
    (B) Regulation of lac operon by repressor is referred to as positive regulation
    (C) The human genome has approximately 50,000 genes
    (D) Haemophilia is a sex-linked recessive disease

    How many of the above statements are right?
    a) Four b) One c) Two d) Three

Ans. (c)

Hint: (A) and (D) are true

- **(A) mentioned in NCERT as a statement. Ideally it should have been Adenine or Deoxyadenosine.**
- **(B) False; Regulation of lac operon by repressor is a negative regulation.**
- **(C) False; Human genome has 30,000 genes.**

31. Which one of the following is a wrong statement regarding mutations?
    a) UV and Gamma rays are mutagens
    b) Change in a single base pair of DNA does not cause mutation
    c) Deletion and insertion of base pairs cause frame-shift mutation
    d) Cancer cells commonly show chromosomal aberrations

Ans. (b)

32. In which of the following reproduction of bacteria phage is essential?
    a) Conjugation b) Transformation
    c) Transduction d) All above

Ans. (c)

NEET – 2013

33. Which enzyme/s will be produced in a cell in which there is a nonsense mutation in the lac Y gene?
    a) Transacetylase
    b) Lactose permease and transacetylase
    c) β - galactosidase
    d) Lactose permease

Ans. (c)

Hint: In the lac – operon; there are three structural genes – Z; 'y' and 'a'. They are translated in sequence (*i.e.,* first Z then y then a). If there is a non sense mutation in the 'y' gene, then only Z will get translated and y and a will not get translated. Therefore only the enzyme coded by Z (*i.e.,* β galactosidase) will be produced. The other two enzymes (*i.e.,* 'y' coding for) Permease and ('a' coding for) transacetylase will not be produced.

34. The diagram shows an important concept in the genetic implication of DNA. Fill in the blanks A to C.

$$\text{DNA} \xrightarrow{A} \text{mRNA} \xrightarrow{B} \text{Protein} \xrightarrow[C]{\text{Proposed by}}$$

a) A – transcription B – translation C – Francis Crick
b) A – translation B – extension C – Rosalind Franklin
c) A – transcription B – replication C – James Watson
d) A- translation B – transcription C – Erevin Chargaff

Ans. (a)

AIPMT – 2014

35. Select the correct option:

	Direction of RNA synthesis	Direction of reading of the template DNA strand
a)	3' ---- 5'	3' ---- 5'
b)	5' ---- 3'	3' ---- 5'
c)	3' ---- 5'	5' ---- 3'
d)	5' ---- 3'	5' ---- 3'

Ans. (b)

36. Which of the following shows coiled RNA strand and capsomeres?
a) Retrovirus b) Polio virus
c) Tobacco mosaic virus d) Measles virus

Ans. (c)

Hint: TMV and Measles virus both have coiled RNA strand and capsomeres. Thus options (c) and (d) are both correct.

Ref.; Ananthanarayan TB of Microbiology and Harrison's Principles of Internal Medicine.

37. Which one of the following is wrongly matched?
a) Operon – Structural genes, operator and promoter
b) Transcription – Writing information from DNA to t-RNA
c) Translation – Using information in m-RNA to make protein
d) Repressor protein – Binds to operator to stop enzyme synthesis.

Ans. (b)

None of these is wrongly matched.

Hint: Biology by Campbell and Reece –

- **There is a single DNA-dependent RNA polymerase that catalyses transcription of all types of RNA in bacteria.**
- **The RNA polymerase 1 <u>transcribes</u> rRNAs and the RNA polymerase III is responsible for <u>transcription of</u> tRNA, 5 srRNA and sn RNA**

Thus, none of the given options is wrongly matched.

38. An analysis of chromosomal DNA using Southern hybridization technique does not use
a) PCR b) Electrophoresis
c) Blotting d) Autoradiography

Ans. (a)

39. Transformation was discovered by:
a) Watson and Crick
b) Meselson and Stahl
c) Hershey and Chase
d) Griffith

Ans. (d)

40. Commonly used vectors for human genome sequencing are:
a) T / A Cloning Vectors
b) T – DNA
c) BAC and YAC
d) Expression Vectors

Ans. (c)

41. Viruses have
a) Both DNA and RNA
b) DNA enclosed in a protein coat
c) Prokaryotic nucleus
d) Single chromosome

Ans. (b)

AIPMT – 2015

42. In sea urchin DNA, which is double stranded, 17% of the bases were shown to be cytosine. The percentages of the other three bases expected to be present in this DNA are:
a) G17%, A 16.5%, T 32.5%
b) G 17%, A 33%, T 33%
c) G 8.5%, A 50%, T 24.5%
d) G 34%, A 24.5%, T 24.5%

Ans. (b)

43. Gene regulation governing lactose operon of E. coli that involves the lac I gene product is:
    a) negative and inducible because repressor protein prevents transcription
    b) negative and repressible because repressor protein prevents transcription
    c) feedback inhibition because excess of β-galactosidase can switch off transcription
    d) positive and inducible because it can be induced by lactose

Ans. (a)

Hint: In lactose operon of E. coli, the lac I gene product is the repressor which blocks the operator gene so that the structural genes are unable to form mRNAs. Thus, regulation of lac operon by repressor is referred to as negative regulation. Due to the repressor the lac operon remains in inactive state and is thus inducible.

AIPMT RETEST – 2015

44. Select the wrong statement:
    a) The viroids were discovered by D.J. Ivanowski
    b) W.M. Stanley showed that viruses could be crystallized
    c) The term '*contagium vivum fluidum'* was coined by M.W. Beijerinek
    d) Mosaic disease in tobacco and AIDS in human being are caused by viruses

Ans. (a)

Hint: Viroids were discovered by T.O. Diener.

45. Which one of the following is not applicable to RNA?
    a) Complementary base pairing
    b) 5' phosphoryl and 3' hydroxyl ends
    c) Heterocyclic nitrogenous bases
    d) Chargaff's rule

Ans. (d)

46. Identify the correct order of organisation of genetic material from largest to smallest:
    a) Chromosome, gene, genome, nucleotide
    b) Genome, chromosome, nucleotide, gene
    c) Genome, chromosome, gene, nucleotide
    d) Chromosome, genome, nucleotide, gene

Ans. (c)

47. Satellite DNA is important because it:
    a) codes for proteins needed in cell cycle
    b) shows high degree of polymorphism in population and also the same degree of polymorphism in an individual, which is heritable from parents to children
    c) does not code for proteins and is same in all members of the population
    d) codes for enzymes needed for DNA replication

Ans. (b)

AIPMT – 2016

48. Which of the following statements is wrong for viroids?
    a) They are smaller than viruses
    b) They cause infections
    c) Their RNA is of high molecular weight
    d) They lack a protein coat

Ans. (c)

49. Which of the following statements is not true for cancer cells in relation to mutations?
    a) Mutations destroy telomerase inhibitor
    b) Mutation inactivate the cell control
    c) Mutations inhibit production of telomerase
    d) Mutations in proto-oncogenes accelerate the cell cycle

Ans. (c)

Hint: Telomerase replaces short bits of DNA (telomeres) which are shortened when cell undergoes mitosis. Telomerase enzyme is high in cells which divide repeatedly e.g., stem cells. The enzyme is at a very low level or absent in somatic cells. Persistent high telomerase level in the cells will allow them to undergo unbounded growth as is the feature of cancerous cells.

50. Which one of the following is the starter codon?
    a) UGA b) UAA
    c) UAG d) AUG

Ans. (d)

51. Which of the following is required as inducer(s) for the expression of Lac operon?
    a) galactose b) lactose
    c) lactose and galactose d) glucose

Ans. (b)

52. Which of the following is not required for any of the techniques of DNA fingerprinting available at present?
    a) Zinc finger analysis
    b) Restriction enzymes
    c) DNA-DNA hybridization
    d) Polymerase chain reaction

Ans. (a)

Hint: Zinc finger proteins have many functions like DNA recognition, RNA packaging, targeting specific genomic sites, transcriptional studies; but is a recent discovery and under research. Not yet widely used.

NEET 2; 2016

53. A non-proteinaceous enzyme is
    a) Lysozyme b) Ribozyme
    c) Ligase d) Deoxyribonuclease

Ans. (b)

54. Taylor conducted the experiments to prove semiconservative mode of chromosome replication on
    a) *Vinca rosea*
    b) *Vicia faba*
    c) *Drosophila melanogaster*
    d) *E. coli*

Ans. (b)

55. The equivalent of a structural gene is
    a) Muton b) Cistron
    c) Operon d) Recon

Ans. (b)

56. Which of the following rRNAs acts as structural RNA as well as ribozyme in bacteria?
    a) 5 S rRNA b) 18 S rRNA
    c) 23 S rRNA d) 5.8 S rRNA

Ans. (c)

57. A molecule that can act as a genetic material must fulfill the traits given below, except
    a) It should be able to express itself in the form of 'Mendelian characters'
    b) It should be able to generate its replica
    c) It should be unstable structurally and chemically
    d) It should provide the scope for slow changes that are required for evolution

Ans. (c)

58. DNA-dependent RNA polymerase catalyzes transcription on one strand of the DNA which is called the
    a) Template strand b) Coding strand
    c) Alpha strand d) Antistrand

Ans. (a)

NEET – 2017

59. If there are 999 bases in an RNA that codes for a protein with 333 amino acids, and the base at position 901 is deleted such that the length of the RNA becomes 998 bases, how many codons will be altered?
    a) 1 b) 11 c) 33 d) 333

Ans. (c)

60. DNA fragments are:
    a) Positively charged
    b) Negatively charged
    c) Neutral
    d) Either positively or negatively charged depending on their size

Ans. (b)

61. Viroids differ from viruses in having:
    a) DNA molecules with protein coat
    b) DNA molecules without protein coat
    c) RNA molecules with protein coat
    d) RNA molecules without protein coat

Ans. (d)

62. During DNA replication, Okazaki fragments are used to elongate:
    a) The leading strand towards replication fork.
    b) The lagging strand towards replication fork.
    c) The leading strand away from replication fork.
    d) The lagging strand away from the replication fork.

Ans. (d)

63. Spliceosomes are not found in cells of:
    a) Plants b) Fungi
    c) Animals d) Bacteria

Ans. (d)

64. The final proof for DNA as the genetic material came from the experiments of:
    a) Griffith
    b) Hershey and Chase
    c) Avery, Mcleod and McCarty
    d) Hargobind Khorana

Ans. (b)

NEET - 2018

65. The experimental proof for semiconservative replication of DNA was first shown in a
    a) Fungus b) Bacterium
    c) Plant d) Virus

Ans. (b)

66. Select the correct statement:
    a) Franklin Stahl coined the term "linkage".
    b) Punnett square was developed by a British scientist.
    c) Spliceosomes take part in translation.
    d) Transduction was discovered by S. Altman

Ans. (b)

Hint:

(a) Franklin Stahl and Mathew Meselson worked on E. coli and proved semi-conservative nature of DNA replication. The term linkage was coined by Morgan.

(c) Splicosomes take part in post-transcriptional processing and remove the introns.

(d) Transduction was discovered by Zinder and Lederberg. S. Altman is associated with discovery of catalytic properties of RNA (Ribozyme).

67. Select the correct match:
    a) Alec Jeffreys - *Streptococcus pneumoniae*
    b) Alfred Hershey and Martha Chase - TMV
    c) Matthew Meselson and F. Stahl - *Pisum sativum*
    d) Francois Jacob and Jacques Monod - *Lac operon*

Ans. (d)

Hint:

a) Alec Jeffreys discovered DNA fingerprinting technique. Griffith worked on Streptococcus pneumoniae and discovered transformation.

b) Alfred Hershey and Martha Chase worked on T_2 bacteriophage and E. coli. Their experiment showed that DNA is the genetic material.

c) Mathew Meselson and Franklin Stahl worked on E. coli and proved semi-conservative nature of DNA replication. Mendel worked on Pisum sativum.

68. Select the correct Match:
    a) Ribozyme - Nucleic acid
    b) F_2 x Recessive parent - Dihybrid cross
    c) T.H. Morgan - Transduction
    d) G. Mendel - Transformation

Ans. (a)

Hint:

b) F_2 x Recessive parent means a test-cross.

c) T.H. Morgan, also called father of experimental genetics, discovered criss-cross inheritance, linkage, crossing over etc. Transduction was discovered by Zinder and Lederberg.

d) Transformation was discovered by Griffith.

69. AGGTATCGCAT is a sequence from the coding strand of a gene. What will be the corresponding sequence of the transcribed mRNA?
    a) AGGUAUCGCAU b) UGGTUTCGCAT
    c) ACCUAUGCGAU d) UCCAUAGCGUA

Ans. (a)

70. All of the following are part of an operon except:
    a) an operator b) structural genes
    c) an enhancer d) a promoter

Ans. (c)

NEET - 2019

71. Which of the following statements is incorrect?
    a) Viroids lack a protein coat
    b) Viruses are obligate parasites
    c) Infective constituent in viruses is the protein coat.
    d) Prions consist of abnormally folded proteins.

Ans. (c)

Hint: Infective constituent in viruses is either DNA or RNA, not protein.

72. Under which of the following conditions will there be no change in the reading frame of following mRNA?
5'AACAGCGGUGCUAUU3'
a) Insertion of G at 5th position
b) Deletion of G from 5th position
c) Insertion of A and G at 4th and 5th positions respectively
d) Deletion of GGU from 7th, 8th and 9th positions

Ans. (d)

73. Expressed Sequence Tags (ESTs) refers to:
a) Genes expressed as RNA
b) Polypeptide expression
c) DNA polymorphism
d) Novel DNA sequences

Ans. (a)

Hint: Expressed Sequence Tags (ESTs) are DNA sequences (genes) that are expressed as mRNA for protein synthesis. These are used in human Genome Project.

74. Match the following genes of the Lac operon with their respective products:

(A) i gene	(i) β-galactosidase
(B) z gene	(ii) Permease
(C) a gene	(iii) Repressor
(D) y gene	(iv) Transacetylase

Select the correct option.

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

Ans. (c)

NEET ODISHA - 2019

75. Which of the following nucleic acids is present in an organism having 70S ribosomes only?
a) Single stranded DNA with protein coat
b) Double stranded circular naked DNA
c) Double stranded DNA enclosed in nuclear membrane
d) Double stranded circular DNA with histone proteins

Ans. (b)

76. What will be the sequence of mRNA produced by the following stretch of DNA?
3'ATGCATGCATGCATG5'
TEMPLATE STRAND
5' TACGTACGTACGTAC3' CODING STRAND
a) 3'AUGCAUGCAUGCAUG5'
b) 5'UACGUACGUACGUAC 3'
c) 3'UACGUACGUACGUAC 5'
d) 5' AUGCAUGCAUGCAUG 3'

Ans. (b)

77. Match the following RNA polymerase with their transcribed products:
A) RNA polymerase I i) tRNA
B) RNA polymerase II ii) rRNA
C) RNA polymerase III iii) hnRNA
Select the correct option from the following:
a) A-i, B-iii, C-ii
b) A-i, B-ii, C-iii
c) A-ii, B-iii, C-i
d) A-iii, B-ii, C-i

Ans. (c)

78. From the following, identify the correct combination of salient features of Genetic Code:
a) Universal, Non-ambiguous, Overlapping
b) Degenerate, Overlapping, Commaless
c) Universal, Ambiguous, Degenerate
d) Degenerate, Non-overlapping, Non-ambiguous

Ans. (d)

79. Which scientist experimentally proved that DNA is the sole genetic material in bacteriophage?
a) Beadle and Tautum
b) Messelson and Stahl
c) Hershey and Chase
d) Jacob and Monod

Ans. (c)

80. In the process of transcription in Eukaryotes, the RNA polymerase I transcribes:-
a) mRNA with additional processing, capping and tailing
b) tRNA , 5 SrRNA and snRNAs
c) rRNAs -28 S, 18 S and 5.8S
d) Precursor of mRNA, hnRNA

Ans. (c)

81. An enzyme catalyzing the removal of nucleotides from ends of DNA is:
    a) DNA ligase b) Endonuclease
    c) Exonuclease d) Protease

Ans. (c)

82. What initiation and termination factors are involved in transcription in Eukaryotes?
    a) σ and ρ, respectively
    b) α and β, respectively
    c) β and γ, respectively
    d) α and σ, respectively

Ans. None is correct.

Hint: Initiation factor sigma (σ) and termination factor rho (ρ) are not present in eukaryotes. If the question was in context of prokaryotes, then answer would have been sigma and rho factors.

EVOLUTION

CBSE PRELIMS – 2009

1. In the case of peppered moth (*Biston betularia*) the black-coloured form became dominant over the light-coloured form in England during industrial revolution. This is an example of:
   a) Protective mimicry
   b) Inheritance of darker colour character acquired due to the darker environment
   c) Natural selection whereby the darker forms were selected
   d) Appearance of the darker coloured individuals due to very poor sunlight

Ans. (c)

CBSE PRELIMS – 2010

2. Darwin's finches are a good example of:
   a) Convergent evolution
   b) Industrial melanism
   c) Connecting link
   d) Adaptive radiation

Ans. (d)

CBSE PRELIMS – 2011

3. What was the most significant trend in the evolution of modern man (*Homo sapiens*) from his ancestors?
   a) Upright posture
   b) Shortening of jaws
   c) Binocular vision
   d) Increasing brain capacity

Ans. (d)

CBSE PRELIMS – 2012

4. What was the most significant trend in the evolution of modern man (Homo sapiens) from his ancestors?
   a) Binocular vision
   b) Increasing cranial capacity
   c) Upright posture
   d) Shortening of jaws

Ans. (b)

5. Which one of the following options gives one correct example each of convergent evolution and divergent evolution?

	Convergent evolution	Divergent evolution
a)	Thorns of Bougainvillia and tendrils of *Cucurbita*	Wings of butterflies and birds
b)	Bones of forelimbs of vertebrates	Wings of butterfly and birds
c)	Thorns of Bougainvillia and tendrils of *Cucurbita*	Eyes of Octopus and mammals
d)	Eyes of octopus and mammals	Bones of forelimbs of vertebrates

Ans. (d)

6. The extinct human who lived 1,00,000 to 40,000 years ago, in Europe, Asia and parts of Africa, with short stature, heavy eye brows, retreating foreheads, large jaws with heavy teeth, stocky bodies, a lumbering gait and stooped posture was:
   a) Neanderthal human
   b) Cro-magnan humans
   c) *Ramapithecus*
   d) *Homo habilis*

Ans. (a)

7. Evolution of different species in a given area starting from a point and spreading to other geographical areas is known as:
   a) Natural selection
   b) Migration
   c) Divergent evolution
   d) Adaptive radiation

Ans. (d)

CBSE MAINS – 2010

8. Given below are four statements (A-D) each with one or two blanks. Select the option which **correctly** fill up the blanks in two statements

Statements:

(A) Wings of butterfly and birds look alike and are the results of __(i)__, evolution.

(B) Miller showed that CH_4, H_2, NH_3 and __(i)__,when exposed to electric discharge in a flask resulted in formation of __(ii)__.

(C) Vermiform appendix is a __(i)__ organ and an __(ii)__ evidence of evolution.

(D) According to Darwin evolution took place due to ___(i)___ and __(ii)__ of the fittest.

Options:

a) (D) – (i) Small variations, (ii) Survival,
(A) – (i) Convergent

b) (A) – (i) Convergent,
(B) – (i) Oxygen, (ii) Nucleosides

c) (B) – (i) Water vapour, (ii) Amino acids
(C) – (i) Rudimentary, (ii) Anatomical

d) (C) – (i) Vestigial, (ii) Anatomical
(D) – (i) Mutations, (ii) Multiplication

Ans. (a)

Hint: Rudimentary means at an early stage of development (Collins) or a body part that is not fully developed.

9. The most apparent change during the evolutionary history of *Homo sapiens* is traced in
   a) Loss of body hair
   b) Walking upright
   c) Shortening of the jaws
   d) Remarkable increase in the brain size

Ans. (d)

CBSE MAINS – 2011 (NIL)

CBSE MAINS – 2012

10. The idea of mutations was brought forth by:-
    a) Hardy Weinberg, who worked on allele frequencies in a population
    b) Charles Darwin, who observed a wide variety of organisms during sea voyage
    c) Hugo de Vries, who worked on evening primrose
    d) Gregor Mendel, who worked on *Pisum sativum*

Ans. (c)

NEET – 2013

11. According to Darwin, the organic evolution is due to:
    a) Competition within closely related species.
    b) Reduced feeding efficiency in one species due to the presence of interfering species.
    c) Intraspecific competition
    d) Interspecific competition.

Ans. (a), (c) & (d)

Hint: According to Darwin Organic evolution is due to both interspecific and intraspecific competition.

Moreover Competition between closely related species, means Interspecific competition. Thus options (a), (c) and (d) are all correct. CBSE has also taken all these three options as correct options.

12. The tendency of population to remain in genetic equilibrium may be disturbed by:
    a) lack of mutations
    b) lack of random mating
    c) random mating
    d) lack of migration

Ans. (b)

13. Variation in gene frequencies within populations can occur by chance rather than by natural selection.
    This is referred to as:
    a) Random mating b) Genetic load
    c) Genetic flow d) Genetic drift

Ans. (d)

14. The process by which organisms with different evolutionary history evolve similar phenotypic adaptations in response to a common environmental challenge, is called:
    a) Non-random evolution
    b) Adaptive radiation
    c) Natural selection
    d) Convergent evolution

Ans. (d)

15. The eye of octopus and eye of cat show different patterns of structure, yet they perform similar function. This is an example of:
    a) Analogous organs that have evolved due to convergent evolution.
    b) Analogous organs that have evolved due to divergent evolution.
    c) Homologous organs that have evolved due to convergent evolution.

d) Homologous organs that have evolved due to divergent evolution.

Ans. (a)

AIPMT – 2014

16. Which one of the following are analogous structures?
    a) Flippers of Dolphin and Legs of Horse
    b) Wings of Bat and Wings of Pigeon.
    c) Gills of Prawn and Lungs of Man.
    d) Thorns of *Bougainvillea* & Tendrils of *Cucurbita*

Ans. (c)

Hint: Both (b) and (c) are correct.

Evolution by PK Gupta and Evolution by Ridley – Wings of insects, reptiles, birds and bats are believed to have developed independently and are analogous since they perform same function.

As for Gills of Prawn and Lungs of Man, they are structurally different and functionally serve the same function, thus are analogous.

17. Forelimbs of cat, lizard used in walking, forelimbs of whale used in swimming and forelimbs of bats used in flying are an example of:
    a) Convergent evolution
    b) Analogous organs
    c) Adaptive radiation
    d) Homologous organs

Ans. (d)

AIPMT - 2015

18. Which of the following had the smallest brain capacity?
    a) *Homo sapiens*
    b) *Homo neanderthalensis*
    c) *Homo habilis*
    d) *Homo erectus*

Ans. (c)

Hint: Brain capacities

- ***Homo habilis* – 650 to 800 cc**
- ***Homo erectus* – 900 cc**
- ***Homo neanderthalensis* – 1400 cc**
- ***Homo sapiens* – 1200 – 1600 cc**

19. Which is the most common mechanism of genetic variation in the population of a sexually reproducing organism?
    a) Chromosomal aberrations
    b) Genetic drift
    c) Recombination
    d) Transduction

Ans. (c)

20. A population will not exist in Hardy-Weinberg equilibrium if:
    a) There are no mutations
    b) There is no migration
    c) The population is large
    d) Individuals mate selectively

Ans. (d)

AIPMT RETEST – 2015

21. The wings of a bird and the wings of an insect are:
    a) Homologous structures and represent divergent evolution
    b) Analogous structures and represent convergent evolution
    c) Phylogenetic structures and represent divergent evolution
    d) Homologous structures and represent convergent evolution

Ans. (b)

22. Industrial melanism is an example of:
    a) Neo Darwinism b) Natural selection
    c) Mutation d) Neo Lamarckism

Ans. (b)

AIPMT – 2016

23. Which of the following structures is homologus to the wing of a bird?
    a) Wing of a Moth
    b) Hind limb of Rabbit
    c) Flipper of Whale
    d) Dorsal fin of a Shark

Ans. (c)

24. Following are the two statements regarding the origin of life:

(i) The earliest organisms that appeared on the earth were non-green and presumably anaerobes
(ii) The first autotrophic organisms were the chemoautotrophs that never released oxygen

Of the above statements which one of the following options is correct?

a) (ii) is correct but (i) is false
b) Both (i) and (ii) are correct
c) Both (i) and (ii) are false
d) (i) is correct but (ii) is false

Ans. (b)

25. Analogous structures are a result of:
    a) Convergent evolution
    b) Shared ancestry
    c) Stabilizing selection
    d) Divergent evolution

Ans. (a)

NEET-2; 2016

26. Genetic drift operates in
    a) Small isolated population
    b) Large isolated population
    c) Non-reproductive population
    d) Slow reproductive population

Ans. (a)

27. The chronological order of human evolution from early to the recent is
    a) *Australopithecus → Ramapithecus → Homo habilis → Homo erectus*
    b) *Ramapithecus → Australopithecus → Homo habilis → Homo erectus*
    c) *Ramapithecus → Homo habilis → Australopithecus → Homo erectus*
    d) *Australopithecus → Homo habilis → Ramapithecus → Homo erectus*

Ans. (b)

28. Which of the following is the correct sequence of events in the origin of life?
    I. Formation of protobionts
    II. Synthesis of organic monomers
    III. Synthesis of organic polymers
    IV. Formation of DNA-based genetic systems

    a) I, II, III, IV
    b) I, III, II, IV
    c) II, III, I, IV
    d) II, III, IV, I

Ans. (c)

NEET – 2017

30. Artificial selection to obtain cows yielding high milk output represents:
    a) Stabilizing selection as it stabilizes a character in the population.
    b) Directional as it pushes the mean of a character in one direction
    c) Disruptive as it splits the population into the one yielding higher output and the other lower output
    d) Stabilizing followed by disruptive as stabilizes the population to produce high yielding cows.

Ans. (b)

NEET – 2018

31. The similarity of bone structure in the forelimbs of many vertebrates is an example of
    a) Homology
    b) Analogy
    c) Convergent evolution
    d) Adaptive radiation

Ans. (a)

32. Among the following sets of examples for divergent evolution: select the incorrect option:
    a) Forelimbs of man, bat and cheetah
    b) Heart of bat, man and cheetah
    c) Brain of bat, man and cheetah
    d) Eye of octopus, bat and man

Ans. (d)

33. According to Hugo de Vries, the mechanism of evolution is:
    a) Multiple step mutations
    b) Saltation
    c) Phenotypic variations
    d) Minor mutations

Ans. (b)

NEET – 2019

34. Variations caused by mutation, as proposed by Hugo de Vries are
    a) Random and directional
    b) random and directionless
    c) small and directional
    d) small and directionless

Ans. (b)

35. In a species, the weight of newborn ranges from 2 to 5 kg. 97% of the newborn with an average weight between 3 to 3.3 kg survive whereas 99% of the infants born with weight from 2 to 2.5 kg or 4.5 to 5 kg die. Which type of selection process is taking place?
    a) Directional Selection
    b) Stabilizing Selection
    c) Disruptive Selection
    d) Cyclical Selection

Ans. (b)

Hint: The given data shows stabilizing selection as most of the newborn having average weight between 3 to 3.3 kg survive and babies with less and more weight have low survival rate.

36. Match the hominids with their correct brain size:

(A) *Homo habilis*	(i) 900 cc
(B) *Homo neanderthalensis*	(ii) 1350 cc
(C) *Homo erectus*	(iii) 650-800 cc
(D) *Homo sapiens*	(iv) 1400 cc

Select the correct option

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

Ans. (c)

NEET ODISHA – 2019

37. In Australia, marsupials and placental mammals have evolved to share many similar characteristics. This type of evolution may be referred to as:
    a) Adaptive Radiation
    b) Divergent Evolution
    c) Cyclical Evolution
    d) Convergent Evolution

Ans. (d)

38. A population of a species invades a new area. Which of the following condition will lead to Adaptive Radiation?
    a) Area with large number of habitats having very low food supply
    b) Area with a single type of vacant habitat
    c) Area with many types of vacant habitats
    d) Area with many habitats occupied by a large number of species

Ans. (c)

39. Which of the following statements is correct about the origin and evolution of men?
    a) Agriculture came around 50,000 years back.
    b) The Dryopithecus and Ramapithecus primates existing 15 million years ago, walked like men.
    c) Homo habilis probably ate meat
    d) Neanderthal men lived in Asia between 1,00,000 and 40,000 years back.

Ans. (d)

Hint: Agriculture came around 10,000 years back. About 15mya, primates called Dryopithecus and Ramapithecus were existing and they walked like gorillas and chimpanzees.

BIOLOGY IN HUMAN WELFARE

HUMAN HEALTH AND DISEASES

CBSE PRELIMS – 2009

1. The letter T in T-lymphocyte refers to:
   a) Tonsil b) Thymus
   c) Thyroid d) Thalamus

Ans. (b)

2. Which of the following is a pair of viral diseases?
   a) Dysentery, Common Cold
   b) Typhoid, Tuberculosis
   c) Ringworm, AIDS
   d) Common Cold, AIDS

Ans. (d)

3. A person likely to develop tetanus is immunized by administering:
   a) Wide spectrum antibiotics
   b) Weakened germs
   c) Dead germs
   d) Preformed antibodies

Ans. (d)

4. Which one of the following statements is correct?
   a) Heroin accelerates body functions.
   b) Malignant tumours may exhibit metastasis
   c) Patients who have undergone surgery are given cannabinoid to relieve pain.
   d) Benign tumours show the property of metastasis.

Ans. (b)

5. Globulins contained in human blood plasma are primarily involved in:
   a) Oxygen transport in the blood
   b) Clotting of blood
   c) Defence mechanisms of body
   d) Oxmotic balance of body fluids

Ans. (c)

6. Use of anti-histamines and steroids give a quick relief from:
   a) Cough b) headache
   c) Allergy d) Nausea

Ans. (c)

CBSE PRELIMS – 2010

7. Consider the following four statements regarding kindney transplant and select the *two correct* ones out of these.
   (i) Even if a kidney transplant is proper the recipient may need to take immuno-suppresants for a long time.
   (ii) The cell-mediated immune response is responsible for the graft rejection
   (iii) The B-lymphocytes are responsible for rejection of the graft.
   (iv) The acceptance or rejection of a kidney transplant depends on specific interferons

   The two *correct* statements are:
   a) (i) and (ii) b) (ii) and (iii)
   c) (iii) and (iv) d) (i) and (iii)

Ans. (a)

8. Widal test is used for the diagnosis of:
   a) Typhoid b) Malaria
   c) Pneumonia d) Tuberculosis

Ans. (a)

9. Ringworm in humans is caused by:
   a) Viruses b) Bacteria
   c) Fungi d) Nematodes

Ans. (c)

10. Which one of the following statements is correct with respect to AIDS?
    a) The causative HIV retrovirus enters helper T-lymphocytes thus reducing their numbers
    b) The HIV can be transmitted through eating food together with an infected person
    c) Drug addicts are least susceptible to HIV infection
    d) AIDS patients are being fully cured cent per cent with proper care and nutrition

Ans. (a)

11. Select the correct statement from the ones given below:
    a) Cocaine is given to patients after surgery as it stimulates recovery
    b) Barbiturates when given to criminals make them tell the truth
    c) Morphine is often given to persons who have undergone surgery as a pain killer
    d) Chewing tobacco lowers blood pressure and heart rate

Ans. (c)

CBSE PRELIMS – 2011

12. At which stage of HIV infection does one usually show symptoms of AIDS?

a) When the infecting retrovirus enters host cells
b) When viral DNA is produced by reverse transcriptase
c) When HIV replicates rapidly in helper T-lymphocytes and damages large number of these
d) Within 15 days of sexual contact with an infected person

Ans. (c)

13. Which one of the following acts as a physiological barrier to the entry of microorganisms in human body?
    a) Epithelium of Urogenital tract
    b) Tears
    c) Monocytes
    d) Skin

Ans. (b)

Hint: Epithelium of urogenital tract and skin are physical barriers.
Monocytes are cellular barrier.
Tear, saliva and acid in stomach are physiological barriers.

14. A certain patient is suspected to be suffering from Acquired Immuno Deficiency Syndrome. Which diagnostic technique will you recommend for its detection?
    a) ELISA b) MRI
    c) Ultra sound d) WIDAL

Ans. (a)

CBSE PRELIMS – 2012

15. Which one of the following is not a property of cancerous cells whereas the remaining three are?
    a) They do not remain confined in the area of formation
    b) They divide in an uncontrolled manner
    c) They show contact inhibition
    d) They compete with normal cells for vital nutrients

Ans. (c)

16. Common cold differs from pneumonia in, that:
    a) Pneumonia can be prevented by a live attenuated bacterial vaccine whereas the common cold has no effective vaccine.
    b) Pneumonia is caused by a virus while the common cold is caused by the bacterium *Haemophilus influenzae*
    c) Pneumonia pathogen infects alveoli whereas the common cold affects nose and respiratory passage but not the lungs
    d) Pneumonia is a communicable disease whereas the common cold is a nutritional deficiency disease

Ans. (c)

17. In which one of the following options the two examples are correctly matched with their particular type of immunity?

	Examples	Type of immunity
a)	Anti-tetanus and anti-snake bite injections	Active immunity
b)	Saliva in mouth and Tears in eyes	Physical barriers
c)	Mucus coating of epithelium lining the urinogenital tract and the HCl in stomach	Physiological barriers
d)	Polymorphonuclear leukocytes and monocytes	Cellular barriers

Ans. (d)

Hint: Anti tetanus and anti-snake bite injections – passive immunity. Saliva & tears – physiological barriers. Mucus coating – physical barrier.

18. Cirrhosis of liver is caused by the chronic intake of:
    a) Alcohol b) Tobacco (Chewing)
    c) Cocaine d) Opium

Ans. (a)

19. Widal Test is carried out to test:
    a) Diabetes mellitus b) HIV/AIDS
    c) Typhoid fever d) Malaria

Ans. (c)

CBSE MAINS – 2010

20. Which one of the following techniques is safest for the detection of cancers?

a) Magnetic resonance imaging (MRI)
b) Radiography (X- ray)
c) Computed tomography (CT)
d) Histopathological studies

Ans. (a)

Hint: This question seems to be controversial. The most definitive and confirmatory technique for diagnosis of cancers is histopathological examination. MRI cannot diagnose and differentiate all cancers. Since in the question word safest has been mentioned, the examiner wants option (a) as the correct answer.

21. Which one of the following can not be used for preparation of vaccines against plague?
a) Formalin – inactivated suspensions of virulent bacteria
b) Avirulent live bacteria
c) Synthetic capsular polysaccharide material
d) Heat-killed suspensions of virulent bacteria

Ans. (c)

Hint: (This is a tough question and is out of syllabus. Even the books of Microbiology, SPM and Medicine have not clearly mentioned these options. Such questions should better be left unattempted).

- **The earliest plague vaccine was killed whole cell vaccine but had severe side effects so was discontinued.**
- **Live plague vaccine was tried experimentally but failed due to severe reactions.**
- **Killed preparation of virulent strains are used as vaccination now. It can be killed by heat or formalin.**
- **Now a days formalin killed preparation of highly virulent strain 195/P is used for vaccination**

Capsular polysaccharide vaccines are used in:
(i) Meningococcus vaccine
(ii) Pneumococcus vaccine
(iii) Parenteral Typhoid vaccine
Thus, the best option is (c).

CBSE MAINS – 2011

22. The pathogen *Microsporum* responsible for ringworm disease in humans belongs to the same Kingdom of organisms as that of:
a) *Taenia*, a tapeworm
b) *Wuchereria*, a filarial worm
c) *Rhizopus*, a mould
d) *Ascaris*, a round worm

Ans. (c)

23. Which one of the following options gives the correct matching of a disease with its causative organism and mode of infection?

	Disease	**Causative organisms**	**Mode of Infection**
a)	Typhoid	*Salmonella typhi*	With inspired air
b)	Pneumonia	*Streptococcus pneumoniae*	Droplet infection
c)	Elephantiasis	*Wuchereria bancrofti*	With infected water and food
d)	Malaria	*Plasmodium vivax*	Bite of male *Anopheles* mosquito

Ans. (b)

24. Common cold is not cured by antibiotics because it is:
a) Caused by a virus
b) Caused by a Gram-positive bacterium
c) Caused by a Gram-negative bacterium
d) Not an infectious disease

Ans. (a)

25. Select the correct statement with respect to diseases and immunisation:
a) If due to some reason B-and T-lymphocytes are damaged, the body will not produce antibodies against a pathogen.
b) Injection of dead/inactivated pathogens causes passive immunity
c) Certain protozoans have been used to mass produce hepatitis B vaccine
d) Injection of snake antivenom against snake bite is an example of active immunisation

Ans. (a)

Hint: Using recombinant DNA technology. Hepatitis B vaccine has been produced from yeast. Injection of snake antivenom which contains preformed antibodies, is an example of passive immunisation. Injection of dead/inactivated pathogens leads to development of active immunity.

CBSE MAINS – 2012

26. Read the following four statements (A – D):

(A) Colostrum is recommended for the new born because it is rich in antigens
(B) Chikungunya is caused by a Gram negative bacterium
(C) Tissue culture has proved useful in obtaining virus free plants
(D) Beer is manufactured by distillation of fermented grape juice.

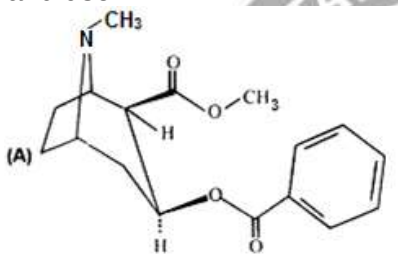
How many of the above statements are wrong?
a) Four b) One c) Two d) Three

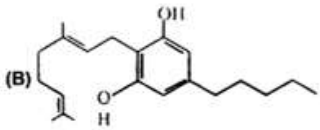
Ans. (d)

- **Colostrum is rich in antibodies.**
- **Chikungunya is caused by Alphavirus and transmitted to humans by Aedes mosquito.**
- **Beer and wine are produced without distillation; whereas whisky, brandy and rum are produced by distillation.**

Thus three statements are wrong.

27. Identify the molecules (A) and (B) shows below and select the right option giving their source and use





Options:

	Molecule	Source	Use
a)	(B) Cannabiniod	*Atropa belladonna*	Produces hallucinations
b)	(A) Morphine	*Papaver somniferum*	Sedative and pain killer
c)	(A) Cocaine	*Erythroxylum coca*	Accelerates the transport of dopamine
d)	(B) Heroin	*Cannabis sativa*	Depressant and slows down body functions

Ans. (b)
Hint:

(a) Is the chemical structure of Morphine which is an effective sedative and painkiller. It is extracted from Poppy plant (Papaver somniferum)
(b) Is the chemical structure of Cannabinoid molecule which is obtained from Cannabis sativa and known for their effects on the Cardiovascular system.

- **Atropa belladonna and Datura plants have hallucinogenic properties.**
- **Cocaine is obtained from Erythroxylum coca and it interferes with the transport of dopamine in the CNS.**
- **Heroin is a derivative of morphine and is a depressant and slows down body functions.**

28. Which one of the following statements is correct with respect to immunity?
a) Antibodies are protein molecules, each of which has four light chains
b) Rejection of a kidney graft is, the function of B-lymphocytes
c) Preformed antibodies need to be injected to treat the bite by a viper snake
d) The antibodies against small pox pathogen are produced by T-lymphocytes

Ans. (c)

NEET – 2013

29. Infection of *Ascaris* usually occurs by:
a) Tse-tse fly.
b) mosquito bite.
c) drinking water containing eggs of *Ascaris.*
d) eating imperfectly cooked pork.

Ans. (c)

30. The cell-mediated immunity inside the human body is carried out by:
a) Thrombocytes b) Erythrocytes
c) T-lymphocytes d) B-lymphocytes

Ans. (c)

AIPMT – 2014

31. Which is the particular type of drug that is obtained from the plant whose one flowering branch is shown below?

a) Pain-killer b) Hallucinogen
c) Depressant d) Stimulant

Ans. (b)

Hint: The shown branch is of plant – "Datura" which gives us hallucinogens.

32. At which stage of HIV infection does one usually show symptoms of AIDS?
    a) When the viral DNA is produced by transcriptase
    b) Within 15 days of sexual contact with an infected person
    c) When the infected retro virus enters host cells
    d) When HIV damages large number of helper T-lymphocytes.

Ans. (d)

AIPMT – 2015

33. Which of the following endoparasites of humans does show viviparity?
    a) *Enterobius vermicularis*
    b) *Trichinella spiralis*
    c) *Ascaris Lumbricoides*
    d) *Ancylostoma duodenale*

Ans. (b)

34. Which of the following is not a sexually transmitted disease?
    a) Acquired Immuno Deficiency Syndrome (AIDS)
    b) Trichomoniasis
    c) Encephalitis
    d) Syphilis

Ans. (c)

35. HIV that causes AIDS, first starts destroying:
    a) Leucocytes
    b) Helper T-Lymphocytes
    c) Thrombocytes
    d) B-Lymphocytes

Ans. (b)

36. The active form of *Entamoeba histolytica* feeds upon:
    a) mucosa and submucosa of colon only
    b) food in intestine
    c) blood only
    d) erythrocytes; mucosa and submucosa of colon

Ans. (d)

37. Which of the following viruses is not transferred through semen of an infected male?
    a) Human immunodeficiency virus
    b) Chikungunya virus
    c) Ebola virus
    d) Hepatitis B virus

Ans. (b)

Hint: Ebola virus, spreads by direct contact with body fluids of an infected human or other animals. Semen or breast milk of a person after recovery from Ebola viral disease may still carry the virus for several weeks to months. Fruit bats are believed to be the natural carrier of this virus.

Chikungunya virus is transmitted by Aedes, Culex and Mansonia mosquitoes.

38. Match each disease with its correct type of vaccine:

A) tuberculosis	(i) harmless virus
B) whooping cough	(ii) inactivated toxin
C) diphtheria	(iii) killed bacteria
D) polio	(iv) harmless bacteria

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

Ans. (b)

AIPMT RETEST – 2015

39. If you suspect major deficiency of antibodies in a person, to which of the following would you look for confirmatory evidence?
    a) Fibrinogin in plasma
    b) Serum albumins
    c) Haemocytes
    d) Serum globulins

Ans. (d)

40. Which of the following immunoglobulins does constitute the largest percentage in human milk?
    a) Ig D b) Ig M c) Ig A d) Ig G

Ans. (c)

41. Grafted kidney may be rejected in a patient due to:
    a) Humoral immune response
    b) Cell-mediated immune response
    c) Passive immune response
    d) Innate immune response

Ans. (b)

42. Which of the following disease is caused by a protozoan?
    a) Syphilis b) Influenza
    c) Babesiosis d) Blastomycosis

Ans. (c)

Hint:

- **Syphilis is caused by bacteria Treponema pallidum.**
- **Influenza is a viral disease.**
- **Babesiosis – It is a tick transmitted zoonotic disease caused by protozoa of genus babesia. The disease manifests like malaria with fever, hemolytic anemia & haemoglobinuria.**

Blastomycosis – A fungal disease caused by the fungus, Blastomyces dermatitidis a member of phylum Ascomycota. It can present in one of the following ways – flu like illness, arthralgia, pneumonia, ARDS, skin lesions.

AIPMT – 2016

43. In higher vertebrates, the immune system can distinguish self-cells and non-self. If this property is lost due to genetic abnormality and it attacks self-cells, then it leads to:
    a) Graft rejection
    b) Auto-immune disease
    c) Active immunity
    d) Allergic response

Ans. (b)

44. Antivenom injection contains preformed antibodies while polio drops that are administered into the body contain:
    a) Harvested antibodies
    b) Gamma globulin
    c) Attenuated pathogens
    d) Activated pathogens

Ans. (c)

45. Asthma may be attributed to:
    a) Allergic reaction of the mast cells in the lungs
    b) Inflammation of the trachea
    c) Accumulation of fluid in the lungs
    d) Bacterial infection of the lungs

Ans. (a)

NEET-2; 2016

46. Which of the following sets of diseases is caused by bacteria?
    a) Cholera and tetanus
    b) Typhoid and smallpox
    c) Tetanus and mumps
    d) Herpes and influenza

Ans. (a)

47. Which of the following is correct regarding AIDS causative agent HIV?
    a) HIV is enveloped virus containing one molecule of single-stranded RNA and one molecule of reverse transcriptase.
    b) HIV is enveloped virus that contains two identical molecules of single stranded RNA and two molecules of reverse transcriptase.
    c) HIV is unenveloped retrovirus.
    d) HIV does not escape but attacks the acquired immune response.

Ans. (b)

NEET – 2017

53. MALT constitutes about_____ percent of the lymphoid tissue in human body.
    a) 50% b) 20% c) 70% d) 10%

Ans. (a)

54. Transplantation of tissues/organs fails often due to non-acceptance by the patient's body. Which type of immune-response is responsible for such rejections?
    a) Autoimmune response
    b) Cell-mediated immune response
    c) Hormonal immune response
    d) Physiological immune response

Ans. (b)

NEET – 2018

55. Which part of poppy plant is used to obtain the drug "Smack"?
    a) Flowers b) Latex
    c) Roots d) Leaves

Ans. (b)

56. Which of the following is not an autoimmune disease?
    a) Psoriasis
    b) Rheumatoid arthritis
    c) Alzheimer's disease
    d) Vitiligo

Ans. (c)

57. In which disease does mosquito transmitted pathogen cause chronic inflammation of lymphatic vessels?
    a) Elephantiasis b) Ascariasis
    c) Ringworm disease d) Amoebiasis

Ans. (a)

NEET – 2019

58. Which of the following immune responses is responsible for rejection of kidney graft?
    a) Auto-immune response
    b) Humoral immune response
    c) Inflammatory immune response
    d) Cell-mediated immune response

Ans. (d)

59. Drug called 'Heroin' is synthesized by
    a) methylation of morphine
    b) acetylation of morphine
    c) glycosylation of morphine
    d) nitration of morphine

Ans. (b)

60. Identify the correct pair representing the causative agent of typhoid fever and the confirmatory test for typhoid.
    a) *Plasmodium vivax* / UTI test
    b) *Streptococcus pneumoniae* / Widal test
    c) *Salmonella typhi* / Anthrone test
    d) *Salmonella typhi* / Widal test

Ans. (d)

NEET ODISHA – 2019

61. Human have acquired immune system that produces antibodies to neutralize pathogens. Still innate immune system is present at the time of birth because it
    a) is very specific and uses different macrophages
    b) produces memory cells for mounting fast secondary response.
    c) has natural killer cells which can phagocytose and destroy microbes
    d) provides passive immunity

Ans. (c)

62. Coca alkaloid or cocaine is obtained from:
    a) Papaver somniferum
    b) Atropha belladona
    c) Erythroxylum coca
    d) Datura

Ans. (c)

STRATEGIES FOR ENHANCEMENT IN FOOD PRODUCTION

CBSE PRELIMS – 2009

1. Which one of the following has maximum genetic diversity in India?
   a) Wheat b) Tea
   c) Teak d) Mango

Ans. (d)

Hint: Wheat originated in South-Western Asia. Teak originated in Indonesia. The main origin of Mango was in India. The Origin of Tea is said to be mainly in China and Burma. A plant shows maximum genetic diversity in its place of origin.

2. Which of the following is not used as a biopesticide?
   a) Nuclear Polyhedrosis Virus (NPV)
   b) *Xanthomonas campestris*
   c) *Bacillus thuringiensis*
   d) *Trichoderma harzianum*

Ans. (b)

3. Somaclones are obtained by:
   a) Irradiation b) Genetic engineering
   c) Tissue culture d) Plant breeding

Ans. (c)

4. Polyethylene glycol method is used for:
   a) Seedless fruit production
   b) Energy production from sewage
   c) Gene transfer without a vector
   d) Biodiesel production

Ans. (c)

CBSE PRELIMS – 2010

5. Breeding of crops with high levels of minerals, vitamins and proteins is called:
   a) Micropropagation
   b) Somatic hybridization
   c) Biofortification
   d) Biomagnification

Ans. (c)

CBSE PRELIMS – 2011

6. ”Jaya” and “Ratna” developed for green revolution in India are the varieties of:
   a) Maize b) Rice
   c) Wheat d) Bajra

Ans. (b)

7. ‘Himgiri’ developed by hybridisation and selection for disease resistance against rust pathogens is a variety of:
   a) Chilli b) Maize
   c) Sugarcane d) Wheat

Ans. (d)

8. A collection of plants and seeds having diverse alleles of all the genes of a crop is called:
   a) Herbarium b) Germplasm
   c) Gene library d) Genome

Ans. (b)

9. Mutations can be induced with
   a) Infra Red radiations
   b) I A A
   c) Ethylene
   d) Gamma radiations

Ans. (d)

10. Which one of the following shows maximum genetic diversity in India?
    a) Groundnut b) Rice
    c) Maize d) Mango

Ans. (b)

CBSE PRELIMS – 2012

11. Which one of the following is a case of wrong matching?
    a) Vector DNA – Site for t-RNA synthesis
    b) Micropropagation – In vitro production of plants in large numbers
    c) Callus – Unorganised mass of cells produced in tissue culture
    d) Somatic hybridization – Fusion of two diverse cells

Ans. (a)

12. Which part would be most suitable for raising virus-free plants for micropropagation?
    a) Vascular tissue b) Meristem
    c) Node d) Bark

Ans. (b)

CBSE MAINS – 2012

13. Consider the following four statements (a–d) and select the option which includes all the correct ones only
    a) Single cell *Spirulina* can produce large quantities of food rich in protein, minerals, vitamins etc.
    b) Body weight-wise the microorganism *Methylophilus methylotrophus* may be able to produce several times more proteins than the cows per day
    c) Common button mushrooms are a very rich source of vitamin C.
    d) A rice variety has been developed which is very rich in calcium.

    Options
    a) Statements (b), (c) and (d)
    b) Statements (a), (b)
    c) Statements (c), (d)
    d) Statements (a), (c) and (d)

Ans. (b)

14. Green revolution in India occurred during:
    a) 1980's b) 1950's c) 1960's d) 1970's

Ans. (c)

Hint: The mid 1960's saw the development of many high yielding varieties of wheat & rice in India and this period is called the Green Revolution.

NEET – 2013

15. In plant breeding programmes, the entire collection (of plants/seeds) having all the diverse alleles for all genes in a given crop is called;
    a) evaluation and selection of parents
    b) germplasm collection.
    c) Selection of superior recombinants.
    d) Cross-hybridisation among the selected parents.

Ans. (b)

AIPMT – 2014

16. In vitro clonal propagation in plants is characterized by:
    a) Microscopy
    b) PCR and RAPD
    c) Northern blotting
    d) Electrophoresis and HPLC

Ans. (b)

Hint:

RAPD - Random amplification of polymorphic DNA; it is similar to PCR

HPLC - High performance liquid chromatography/ High pressure liquid chromatography.

17. To obtain virus – free healthy plants from a diseased one by tissue culture technique, which part/parts of the diseased plant will be taken?
    a) Epidermis only
    b) Apical meristem only
    c) Palisade parenchyma
    d) Both apical and axillary meristems

Ans. (d)

AIPMT – 2015

18. Which of the following enhances or induces fusion of protoplasts?
    a) Polyethylene glycol and sodium nitrate
    b) IAA and kinetin
    c) IAA and gibberellins
    d) Sodium chloride and potassium chloride

Ans. (a)

19. A technique of micropropagation is:
    a) Somatic embryogenesis
    b) Protoplast fusion
    c) Embryo rescue
    d) Somatic hybridization

Ans.(a)

Hint: Somatic embryogenesis is one step in Micropropagation for regeneration of plantlets. Here any cell of embryo sac or any other part of sporophyte may give rise to embryo. Embryo rescue, somatic hybridization (protoplast fusion) are advanced techniques which further may require the obtained plant to be induced to regenerate into whole plants.

AIPMT RETEST – 2015

20. Outbreeding is an important strategy of animal husbandry because it
    a) Helps in accumulation of superior genes.
    b) Is useful in producing purelines of animals
    c) Is useful in overcoming inbreeding depression
    d) Exposes harmful recessive genes that are eliminated by selection

Ans. (c)

NEET-2; 2016

21. Interspecific hybridization is the mating of
    a) Animals within same breed without having common ancestors
    b) Two different related species
    c) Superior males and females of different breeds
    d) More closely related individuals within same breed for 4 – 6 generations

Ans. (b)

22. Among the following edible fishes, which one is a marine fish having rich source of omega-3 fatty acids?
    a) Mystus b) Mangur
    c) Mrigala d) Mackerel

Ans. (d)

NEET – 2017

23. Homozygous purelines in cattle can be obtained by:
    a) Mating of related individuals of same breed.
    b) Mating of unrelated individuals of same breed.
    c) Mating of individuals of different breed.
    d) Mating of individuals of different species.

Ans. (a)

NEET – 2018 : NIL

NEET – 2019

24. Select the incorrect statement
    a) Inbreeding increases homozygosity
    b) Inbreeding is essential to evolve purelines in any animal
    c) Inbreeding selects harmful recessive genes that reduce fertility and productivity
    d) Inbreeding helps in accumulation of superior genes and elimination of undesirable genes

Ans. (c)

Hint: As per NCERT Textbook, none of the given options is correct. But NTA accepted the answer given here.

NEET ODISHA – 2019

25. Select the incorrect statement regarding inbreeding
    a) Inbreeding helps in elimination of deleterious alleles from the population
    b) Inbreeding is necessary to evolve a pureline in any animal
    c) Continued inbreeding reduces fertility and leads to inbreeding depression
    d) Inbreeding depression cannot be overcome by out-crossing

Ans. (d)

26. In mung bean, resistance to yellow mosaic, virus and powdery mildew were brought about by?
    a) Mutation breeding
    b) Biofortification
    c) Tissue culture
    d) Hybridization and selection

Ans. (a)

MICROBES IN HUMAN WELFARE

CBSE PRELIMS – 2009

1. Which one of the following pairs is wrongly matched?
   a) Fruit juice – pectinase
   b) Textile – amylase
   c) Detergents – lipase
   d) Alcohol – nitrogenase

Ans. (d)

2. Which of the following is a symbiotic nitrogen fixer?
   a) *Frankia* b) *Azolla*
   c) *Glomus* d) *Azotobacter*

Ans. (a)

Hint: *Frankia* is a nitrogen fixing bacterium associated with the root nodules of nonlegume plants. *Azolla* is a fern which shows symbiotic association with blue green alga Anabaena. *Azotobacter* is a free living nitrogen fixing bacterium. *Glomus* is the most common fungal partner of mycorrhiza.

CBSE PRELIMS – 2010

3. Select the correct statement from the following:
   a) Activated sludge-sediment in settlement tanks of sewage treatment plant is a rich source of aerobic bacteria
   b) Biogas is produced by the activity of aerobic bacteria on animal waste
   c) *Methanobacterium* is an aerobic bacterium found in rumen of cattle
   d) Biogas, commonly called gobar gas, is pure methane

Ans. (a)

4. Which one of the following is not used in organic farming?
   a) Snail b) *Glomus*
   c) Earthworm d) *Oscillatoria*

Ans. (a)

5. A common biocontrol agent for the control of plant diseases is:
   a) *Trichoderma* b) Baculovirus
   c) *Bacillus thuringiensis* d) *Glomus*

Ans. (a)

6. The common nitrogen-fixer in paddy fields is:
   a) *Frankia* b) *Rhizobium*
   c) *Azospirillum* d) *Oscillatoria*

Ans. (d)

CBSE PRELIMS – 2011

7. A prokaryotic autotrophic nitrogen fixing symbiont is found in:
   a) *Alnus* b) *Cycas*
   c) *Cicer* d) *Pisum*

Ans. (b)

Hint: *Cicer* and *Pisum* belong to family Leguminosae, where there is association of free living bacteria Rhizobium.

In *Alnus* there is association of free living bacteria Frankia.

In *Cycas* there is association of Cyanobacteria which are prokaryotic autotrophic nitrogen fixing organisms.

8. The most common substrate used in distilleries for the production of ethanol is:
   a) Corn meal b) Soya meal
   c) Ground gram d) Molasses

Ans. (d)

9. Which one of the following is not a biofertilizer?
   a) *Agrobacterium* b) *Rhizobium*
   c) *Nostoc* d) Mycorrhiza

Ans. (a)

10. Secondary sewage treatment is mainly a:
   a) Physical process
   b) Mechanical process
   c) Chemical process
   d) Biological process

Ans. (d)

11. Which of the following is mainly produced by the activity of anaerobic bacteria on sewage?
   a) Laughing gas b) Propane
   c) Mustard gas d) Marsh gas

Ans. (d)

12. Ethanol is commercially produced through a particular species of
   a) *Saccharomyces* b) *Clostridium*
   c) *Trichoderma* d) *Aspergillus*

Ans. (a)

13. Which one of the following helps in absorption of phosphorus from soil by plants?
   a) *Glomus* b) *Rhizobium*
   c) *Frankia* d) *Anabaena*

Ans. (a)

CBSE PRELIMS – 2012

14. Yeast is used in the production of
    a) Lipase and pectinase
    b) Bread and beer
    c) Cheese and butter
    d) Citric acid and lactic acid

Ans. (b)

15. Which one of the following is an example of carrying out biological control of pests/diseases using microbes?
    a) Nucleopolyhedrovirus against white rust in *Brassica*
    b) Bt-cotton to increase cotton yield
    c) Lady bird beetle against aphids in mustard
    d) *Trichoderma sp.* against certain plant pathogens

Ans. (d)

Hint: *Trichoderma sp*. are free-living fungi. Nucleopolyhedroviruses mainly attack insects and pathogens. Bt-cotton also seems to be a correct choice, but since the pest is not mentioned in the choice, this is probably not the best choice. Ladybirds are used to control aphids, but they are not microbes.

16. *Monascus purpureus* is a yeast used commercially in the production of:
    a) streptokinase for removing clots from the blood vessels
    b) citric acid
    c) blood cholesterol lowering statins
    d) ethanol

Ans. (c)

17. Which one of the following microbes forms symbiotic association with plants and helps them in their nutrition?
    a) *Aspergillus* b) *Glomus*
    c) *Trichoderma* d) *Azotobacter*

Ans. (b)

Hint: *Trichoderma* are free-living fungi and are effective biocontrol agents of several plant pathogens. *Azotobacter* is a free living nitrogen fixing bacteria. Many members of genus Glomus form mycorrhiza. *Aspergillus* is the common green mould belonging to the ascomycetes.

18. A patient brought to a hospital with myocardial infarction is normally immediately given:
    a) Streptokinase b) Cyclosporin-A
    c) Statins d) Penicillin

Ans. (a)

19. The most abundant prokaryotes helpful to humans in making curd from milk and in production of antibiotics are the ones categorised as:
    a) Archaebacteria
    b) Chemosynthetic autotrophs
    c) Heterotrophic bacteria
    d) Cyanobacteria

Ans. (c)

CBSE MAINS – 2010

20. An example of endomycorrhiza is
    a) *Nostoc* b) *Glomus*
    c) *Agaricus* d) *Rhizobium*

Ans. (b)

CBSE MAINS – 2011

21. Read the following statement having two blanks (A and B):
    "A drug used for ___(A)___ patients is obtained from a species of the organism ___(B)___."
    The one correct option for the two blanks is:

	Blank – A	**Blank – B**
a)	Heart	*Penicillium*
b)	Organ-transplant	*Trichoderma*
c)	Swine flu	*Monascus*
d)	AIDS	*Pseudomonas*

Ans. (b)

Hint: Cyclosporin A (immunosupressive agent) is produced by fungus Trichoderma polysporum.

22. Consider the following statements (A-D) about organic farming:
    (A) Utilizes genetically modified crops like Bt cotton
    (B) Uses only naturally produced inputs like compost
    (C) Does not use pesticides and urea
    (D) Produces vegetables rich in vitamins and minerals
    Which of the above statements are correct?
    a) (B), (C) and (D) b) (C) and (D) only
    c) (B) and (C) only d) (A) and (B) only

Ans. (c)

23. Which one of the following is a wrong matching of a microbe and its industrial product, while the remaining three are correct?
    a) Yeast – statins
    b) *Acetobacter aceti* – acetic acid
    c) *Clostridium butylicum* – lactic acid
    d) *Aspergillus niger* – citric acid

Ans. (c)

Hint: Clostridium butylicum yields butyric acid. Lactic acid is obtained from Lactobacillus. Statins are obtained from the yeast – Monascus purpureus.

CBSE MAINS – 2012

24. In gobar gas, the maximum amount is that of:
    a) Propane b) Carbon dioxide
    c) Butane d) Methane

Ans. (d)

NEET – 2013

25. A good producer of citric acid is:
    a) *Clostridium* b) *Saccharomyces*
    c) *Aspergillus* d) *Pseudomonas*

Ans. (c)

26. During sewage treatment, biogases are produced which include:
    a) hydrogensulphide, methane, sulphur dioxide
    b) hydrogensulphide, nitrogen, methane
    c) methane, hydrogensulphide, Carbon dioxide
    d) methane, oxygen, hydrogensulphide

Ans. (c)

AIPMT – 2014

27. What gases are produced in anaerobic sludge digesters?
    a) Hydrogen Sulphide and CO_2
    b) Methane and CO_2 only
    c) Methane, Hydrogen Sulphide and CO_2
    d) Methane, Hydrogen Sulphide and O_2

Ans. (c)

AIPMT RETEST – 2015

28. Match the following list of microbes and their importance:

(A)	*Sacharomyces cerevisiae*	(i)	Production of immunospuppressive agents
(B)	*Monascus purpureus*	(ii)	Ripening of Swiss cheese
(C)	*Trichoderma polysporum*	(iii)	Commercial production of ethanol
(D)	*Propionibacterium sharmanii*	(iv)	Production of blood-cholesterol lowering agents

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

Ans. (a)

AIPMT – 2016

29. Which of the following is wrongly matched in the given table?

	Microbe	**Product**	**Application**
a)	*Monascus purpureus*	Statins	Lowering of blood cholesterol
b)	*Streptococcus*	Streptokinase	Removal of clot from blood vessel
c)	*Clostridium butylicum*	Lipase	Removal of oil stains
d)	*Trichoderma polysporum*	Cyclosporin A	Immuno suppressive drug

Ans. (c)

NEET-2; 2016

30. Match Column – I with Column – II and select the correct option using the codes given below:

Column – I	**Column – II**
1. Citric acid	(i) *Trichoderma*
2. Cyclosporin A	(ii) *Clostridium*
3. Statins	(iii) *Aspergillus*
4. Butyric acid	(iv) *Monascus*

Codes

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

Ans. (b)

NEET – 2017

31. Which of the following in sewage treatment removes suspended solids?
    a) Tertiary treatment
    b) Secondary treatment
    c) Primary treatment
    d) Sludge treatment

Ans. (c)

32. Which of the following is correctly matched for the product produced by them?
    a) *Acetobacter aceti* : Antibiotics
    b) *Methanobacterium* : Lactic acid
    c) *Penicillium notatum* : Acetic acid
    d) *Sacchromyces cerevisiae* : Ethanol

Ans. (d)

NEET - 2018

33. Conversion of milk to curd improves its nutritional value by increasing the amount of
    a) Vitamin D b) Vitamin A
    c) Vitamin B_{12} d) Vitamin E

Ans. (c)

NEET - 2019

34. Which one of the following equipments is essentially required for growing microbes on a large scale, for industrial production of enzymes?
    a) BOD incubator b) Sludge digester
    c) Industrial oven d) Bioreactor

Ans. (d)

35. Match the following organisms with the products they produce

(A)	*Lactobacillus*	(i) Cheese
(B)	*Saccharomyces cerevisiae*	(ii) Curd
(C)	*Aspergillus niger*	(iii) Citric acid
(D)	*Acetobacter aceti*	(iv) Bread
		(v) Acetic acid

Select the correct option

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

Ans. (b)

36. Which of the following can be used as a biocontrol agent in the treatment of plant disease?
    a) *Trichoderma* b) *Chlorella*
    c) *Anabaena* d) *Lactobacillus*

Ans. (a)

37. Which of the following is a commercial blood cholesterol lowering agent?
    a) Cyclosporin A b) Statin
    c) Streptokinase d) Lipases

Ans. (b)

38. Select the correct group of biocontrol agents
    a) *Bacillus thuringiensis*, Tobacco mosaic virus, Aphids
    b) *Trichoderma, Baculovirus, Bacillus thuringiensis*
    c) *Oscillatoria, Rhizobium, Trichoderma*
    d) *Nostoc, Azospirillium, Nucleopolyhedro-virus*

Ans. (b)

Hint: *Rhizobium, Nostoc, Azospirillum* and *Oscillatoria* are used as biofertilisers, whereas TMV is a pathogen and aphids are pests that harm crop plants.

NEET ODISHA - 2019

39. A biocontrol agent to be a part of an integrated pest management should be
    a) Species-specific and symbiotic
    b) Free living and broad spectrum
    c) Narrow spectrum and symbiotic
    d) Species-specific and inactive on non-target organisms

Ans. (d)

40. Which of the following statements about methanogens is not correct?
    a) They can be used to produce biogas.
    b) They are found in the rumen of cattle and their excreta
    c) They grow aerobically and breakdown cellulose-rich food
    d) They produce methane gas.

Ans. (c)

41. Among the following pairs of microbes, which pair has both the microbes that can be used as biofertilizers?
    a) Aspergillus and Rhizopus
    b) Rhizobium and Rhizopus
    c) Cyanobacteria and Rhizobium
    d) Aspergillus and Cyanobacteria

Ans. (c)

BIOTECHNOLOGY

CBSE PRELIMS – 2009

1. The bacterium *Bacillus thuringiensis* is widely used in contemporary biology as:
   a) Agent for production of dairy products
   b) Source of industrial enzyme
   c) Indicator of water-pollution
   d) Insecticide

Ans. (d)

2. Which one of the following is commonly used in transfer of foreign DNA into crop plants?
   a) *Agrobacterium tumefaciens*
   b) *Penicillium expansum*
   c) *Trichoderma harzianum*
   d) *Meloillogyne incognita*

Ans. (a)

3. Transgenic plants are the ones:
   a) Produced after protoplast fusion in artificial medium.
   b) Grown in artificial medium after hybridization in the field
   c) Produced by a somatic embryo in artificial medium
   d) Generated by introducing foreign DNA into a cell and regenerating a plant from that cell.

Ans. (d)

4. The genetic defect-adenosine deaminase (ADA) deficiency may be cured *permanently* by
   a) Introducing bone marrow cells producing ADA into cells at early embryonic stages.
   b) Enzyme replacement therapy
   c) Periodic infusion of genetically engineered lymphocytes having functional ADA cDNA.
   d) Administering adenosine deaminase activator.

Ans. (a)

5. What is true about Bt toxin?
   a) The activated toxin enters the ovaries of the pest to sterilize it and thus prevent its multiplication.
   b) The concerned *Bacillus* has antitoxins
   c) The inactive protoxins gets converted into active form in the insect gut
   d) Bt protein exists as active toxin in the *Bacillus*.

Ans. (c)

CBSE PRELIMS – 2010

6. Stirred-tank bioreactors have been designed for:
   a) Availability of oxygen throughout the process
   b) Addition of preservatives to the product
   c) Purification of the product
   d) Ensuring anaerobic conditions in the culture vessel

Ans. (a)

7. Which one of the following is used as vector for cloning genes into higher organisms?
   a) Retrovirus
   b) Baculovirus
   c) *Salmonella typhimurium*
   d) *Rhizopus nigricans*

Ans. (a)

8. The genetically-modified (GM) brinjal in India has been developed for:
   a) Drought-resistance
   b) Insect-resistance
   c) Enhancing shelf life
   d) Enhancing mineral content

Ans. (b)

9. Genetic engineering has been successfully used for producing:
   a) Animals like bulls for farm work as they have super power
   b) Transgenic mice for testing safety of polio vaccine before use in humans
   c) Transgenic models for studying new treatments for certain cardiac diseases
   d) Transgenic Cow-Rosie which produces high fat milk for making ghee

Ans. (b)

10. Restriction endonucleases are enzymes which:
   a) Remove nucleotides from the ends of the DNA molecule
   b) Make cuts at specific positions within the DNA molecule
   c) Recognize a specific nucleotide sequence for binding of DNA ligase
   d) Restrict the action of the enzyme DNA polymerase

Ans. (b)

11. Some of the characteristics of Bt cotton are:
   a) High yield and resistance to bollworms
   b) Long fibre and resistance to aphids
   c) Medium yield, long fibre and resistance to beetle pests
   d) High yield and production of toxic protein crystals which kill dipteran pests

Ans. (a)

12. Which one of the following palindromic base sequences in DNA can be easily cut at about the middle by some particular restriction enzyme?
    a) 5' _____ CACGTA _____ 3'
       3' _____ CTCAGT _____ 5'
    b) 5' _____ CGTTCG _____ 3'
       3' _____ ATGGTA _____ 5'
    c) 5' _____ GATATG _____ 3'
       3' _____ CTACTA _____ 5'
    d) 5' _____ GAATTC _____ 3'
       3' _____ CTTAAG _____ 5'

Ans. (d)

13. An improved variety of transgenic basmati rice:
    a) Gives high yield but has no characteristic aroma
    b) Does not require chemical fertilizers and growth hormones
    c) Gives high yield and is rich in vitamin A
    d) Is completely resistant to all insect pests and diseases of paddy

Ans. (c)

CBSE PRELIMS – 2011

14. Given below is a sample of a portion of DNA strand giving the base sequence on the opposite strands. What is so special shown in it?
    5′ _____GAATTC_____3′
    3′_____CTTAAG_____5′
    a) Replication completed
    b) Deletion mutation
    c) Start codon at the 5′ end
    d) Palindromic sequence of base pairs

Ans. (d)

15. There is a restriction endonuclease called *Eco*RI. What does "*co*" part in it stand for?
    a) Colon b) Coelom
    c) Coenzyme d) Coli

Ans. (d)

16. Maximum number of existing transgenic animals is of:
    a) Fish b) Mice
    c) Cow d) Pig

Ans. (b)

17. Agarose extracted from sea weeds finds use in:
    a) Spectrophotometry
    b) Tissue Culture
    c) PCR
    d) Gel electrophoresis

Ans. (d)

18. The process of RNA interference has been used in the development of plants resistant to:
    a) Nematodes b) Fungi
    c) Viruses d) Insects

Ans. (a)

CBSE PRELIMS – 2012

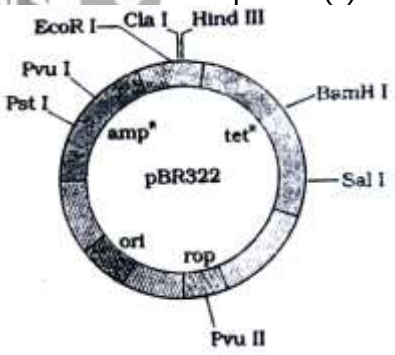
19. Which one is a true statement regarding DNA polymerase used in PCR?
    a) It serves as a selectable marker
    b) It is isolated from a virus
    c) It remains active at high temperature
    d) It is used to ligate introduced DNA in recipient cells

Ans. (c)

20. For transformation, micro-particles coated with DNA to be bombarded with gene gun are made up of:
    a) Platinum or Zinc b) Silicon or Platinum
    c) Gold or Tungsten d) Silver or Platinum

Ans. (c)

21. The figure below is the diagrammatic representation of the *E. Coli* vector pBR 322. Which one of the given options correctly identifies its certain component(s)?



    a) rop-reduced osmotic pressure
    b) Hind III, EcoRI-selectable markers
    c) amp^R, tet^R-antibiotic resistance genes
    d) ori-original restriction enzyme

Ans. (c)

22. Consumption of which one of the following foods can prevent the kind of blindness associated with vitamin 'A' deficiency?
    a) Canolla b) Golden rice
    c) Bt-Brinjal d) 'Flaver Savr' tomato

Ans. (b)

CBSE MAINS – 2010

23. Which one of the following is now being commercially produced by biotechnological procedures?
    a) Nicotine b) Morphine
    c) Quinine d) Insulin

Ans. (d)

24. In genetic engineering, a DNA segment (gene) of interest, is transferred to the host cell through a vector. Consider the following four agents (A – D) in this regard and select the correct option about which one or more of these can be used as a vector/vectors:
    (A) A bacterium (B) Plasmid
    (C) Plasmodium (D) Bacteriophage
    Options:
    a) (A), (B) and (D) only
    b) (A) only
    c) (A) and (C) only
    d) (B) and (D) only

Ans. (d)

25. Which of the following are used in gene cloning?
    a) Nucleoids b) Lomasomes
    c) Mesosomes d) Plasmids

Ans. (d)

CBSE MAINS – 2011

26. *Bacillus thuringiensis* forms protein crystals which contain insecticidal protein
    This protein:
    a) Binds with epithelial cells of midgut of the insect pest ultimately killing it.
    b) Is coded by several genes including the gene cry
    c) Is activated by acid pH of the foregut of the insect pest
    d) Does not kill the carrier bacterium which is itself resistant to this toxin

Ans. (a)

Hint: Bt toxin is activated by alkaline pH of the gut. In bacteria it exists as inactive protoxin and that is why it does not harm the bacteria.

27. Silencing of mRNA has been used in producing transgenic plants resistant to:
    a) Bollworms b) Nematodes
    c) White rusts d) Bacterial blights

Ans. (b)

28. In history of biology, human genome project led to the development of:
    a) Biotechnology b) Biomonitoring
    c) Bioinformatics d) Biosystematics

Ans. (c)

29. Which one of the following techniques made it possible to genetically engineer living organisms?
    a) Recombinant DNA techniques
    b) X-ray diffraction
    c) Heavier isotope labelling
    d) Hybridization

Ans. (a)

30. Read the following four statements (A-D) about certain mistakes in two of them.
    (A) The first transgenic buffalo, Rosie produced milk which was human alpha-lactalbumin enriched
    (B) Restriction enzymes are used in isolation of DNA from other macromolecules
    (C) Downstream processing is one of the steps of R-DNA technology
    (D) Disarmed pathogen vectors are also used in transfer of R-DNA into the host
    Which are the two statements having mistakes?
    a) Statements (B) and (C)
    b) Statements (C) and (D)
    c) Statements (A) and (C)
    d) Statements (A) and (B)

Ans. (d)

Hint: (A) Rosie was a transgenic cow.
(B) Restriction enzymes help in cutting the DNA itself.

CBSE MAINS – 2012

31. Tobacco plants resistant to a nematode have been developed by the introduction of DNA that produced (in the host cells):-
    a) An antifeedant
    b) A toxic protein
    c) Both sense and anti-sense RNA
    d) A particular hormone

Ans. (c)

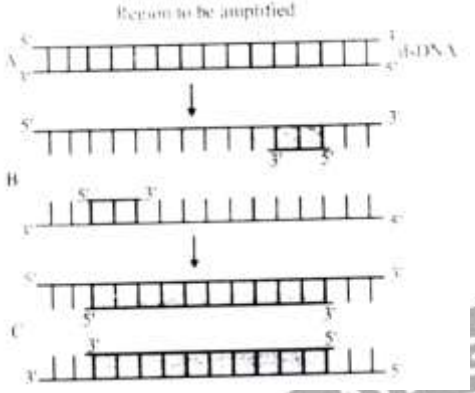
32. In genetic engineering, the antibiotics are used:
    a) As sequences from where replication starts
    b) To keep the cultures free of infection
    c) As selectable markers
    d) To select healthy vectors

Ans. (c)

33. The first clinical gene therapy was given for treating:
    a) Rheumatoid arthritis
    b) Adenosine deaminase deficiency
    c) Diabetes mellitus
    d) Chicken pox

Ans. (b)

34. The figure below shows three steps (A, B, C) of Polymerase Chain Reaction (PCR). Select the option giving correct identification together with what it represents?



Options:
    a) C-Extension in the presence of heat stable DNA polymerase
    b) A-Annealing with two set of primers
    c) B-Denaturation at a temperature of about 98°C separating the two DNA strands
    d) A-Denaturation at a temperature of about 50°C

Ans. (a)

35. Biolistics (gene-gun) is suitable for:
    a) Constructing recombinant DNA by joining with vectors
    b) DNA finger printing
    c) Disarming pathogen vectors
    d) Transformation of plants cells

Ans. (d)

NEET – 2013

36. Which of the following Bt crops is being grown in India by the farmers?
    a) Brinjal b) Soybean
    c) Maize d) Cotton

Ans. (d)

37. The colonies of recombinant bacteria appear white in contrast to blue colonies of non-recombinant bacteria because of:
    a) Insertional inactivation of alphagalactosidase in recombinant bacteria
    b) Inactivation of glycosidase enzyme in recombinant bacteria
    c) Non-recombinant bacteria containing beta-galactosidase
    d) Insertional inactivation of alphagalactosidase in non-recombinant bacteria

Ans. CBSE has given the answer (a) but the correct answer is (c) as per NCERT.

Hint: In insertional inactivation a recombinant DNA is inserted within the coding sequence of enzyme β – galactosidase. If the plasmid in the bacteria does not have the insert (*i.e.*, non – recombinants) then the chromogenic substrate gives blue coloured colonies. Presence of the insert (*i.e.*, recombinants) leads to inactivation of the β-galactosidase enzyme thus the colonies do not produce any colour.

Option:
- **Option (a) is wrong, it should be β galactosidase**
- **Option (b) is wrong, it should be galactosidase instead of glycosidase**
- **Option (c) is correct, as the non-recombinants have the β galactosidase enzymes intact.**
- **Option (d) is wrong it should be "Insertional inactivation of β galactosidase of recombinant bacteria".**

38. DNA fragments generated by the restriction endonucleases in a chemical reaction can be separated by:
    a) Electrophoresis
    b) Restriction mapping
    c) Centrifugation
    d) Polymerase chain reaction

Ans. (a)

39. Which of the following is **not** correctly matched for the organism and its cell wall degrading enzyme?
    a) Algae – Methylase
    b) Fungi – Chitinase
    c) Bacteria – Lysozyme
    d) Plant cells – Cellulase

Ans. (a)

AIPMT – 2014

40. Which vector can clone only a small fragment of DNA?
    a) Cosmid
    b) Bacterial artificial chromosome
    c) Yeast artificial chromosome
    d) Plasmid

Ans. (d)

Hint:

- **Cosmid - Can clone DNA fragments upto 45 kb in length**
- **BAC - can accommodate upto 300 – 350kb of foreign DNA**
- **YAC - used for cloning large (upto 1000kb or 1 Mb) DNA segments.**
- **Plasmids - They can accommodate < 5 – 8 kb DNA inserts.**

41. The first human hormone produced by recombinant DNA technology is:
    a) Progesterone b) Insulin
    c) Estrogen d) Thyroxin

Ans. (b)

AIPMT – 2015

42. The crops engineered for glyphosate are resistant / tolerant to:
    a) Bacteria b) Insects
    c) Herbicides d) Fungi

Ans. (c)

Hint: Glyphosate is a broad spectrum herbicide used to kill weeds which are known to compete with commercial crops. Thus crops ressistant to glyphosate allow farmers to use this as a weedicide without damaging the cereal crops/commercial crops.

43. In Bt cotton, the Bt toxin present in plant tissue as pro-toxin is converted into active toxin due to:
    a) Acidic pH of the insect gut
    b) Action of gut micro-organisms
    c) Presence of conversion factors in insect gut
    d) Alkaline pH of the insect gut

Ans. (d)

44. Which body of the Government of India regulates GM research and safety of introducing GM organisms for public services?
    a) Indian Council of Agricultural Research
    b) Genetic Engineering Approval Committee
    c) Research Committee on Genetic Manipulation
    d) Bio-safety committee

Ans. (b)

AIPMT RETEST – 2015

45. The cutting of DNA at specific locations became possible with the discovery of:
    a) Restriction enzymes b) Probes
    c) Selectable markers d) Ligases

Ans. (a)

46. The introduction of t-DNA into plants involves:
    a) Infection of the plant by Agrobacterium *tumefaciens*
    b) Altering the pH of the soil, then heat-shocking the plants
    c) Exposing the plants to cold for a brief period
    d) Allowing the plant roots to stand in water

Ans. (a)

47. The DNA molecule to which the gene of interest is integrated for cloning is called:
    a) Transformer b) Vector
    c) Template d) Carrier

Ans. (b)

48. Golden rice is a genetically modified crop plant where the incorporated gene is meant for biosynthesis of:
    a) Vitamin B b) Vitamin C
    c) Omega 3 d) Vitamin A

Ans. (d)

AIPMT – 2016

49. The two polypeptides of human insulin are linked together by:
    a) Phosphodiester bond
    b) Covalent bond
    c) Disulphide bridges
    d) Hydrogen bonds

Ans. (c)

50. The taq polymerase enzyme is obtained from:
    a) *Thiobacillus ferroxidans*
    b) *Bacillus subtilis*
    c) *Pseudomonas putida*
    d) *Thermus aquaticus*

Ans. (d)

51. Which part of the tobacco plant is infected by *Meloidogyne incognita*?
    a) Leaf b) Stem
    c) Root d) Flower

Ans. (c)

52. Which of the following is a restriction endonuclease?
    a) Protease b) DNase I
    c) RNase d) Hind II

Ans. (d)

NEET-2; 2016

53. Stirred-tank bioreactors have been designed for
    a) Purification of product
    b) Addition of preservatives to the product
    c) Availability of oxygen throughout the process
    d) Ensuring anaerobic conditions in the culture vessel

Ans. (c)

54. A foreign DNA and plasmid cut by the same restriction endonuclease can be joined to form a recombinant plasmid using
    a) *Eco* RI b) *Taq* polymerase
    c) Polymerase III d) Ligase

Ans. (d)

55. Which of the following is not a component of downstream processing?
    a) Separation b) Purification
    c) Preservation d) Expression

Ans. (d)

56. Which of the following restriction enzymes produces blunt ends?
    a) *Sal* I b) *Eco* RV
    c) *Xho* I d) *Hind* III

Ans. (b)

57. Which kind of therapy was given in 1990 to a four-year-old girl with adenosine deaminase (ADA) deficiency?
    a) Gene therapy b) Chemotherapy
    c) Immunotherapy
    d) Radiation therapy

Ans. (a)

NEET – 2017

58. The process of separation and purification of expressed protein before marketing is called
    a) Upstream processing
    b) Downstream processing
    c) Bioprocessing
    d) Postproduction processing

Ans. (b)

59. What is the criterion for DNA fragments movement on agarose gel during gel electrophoresis?
    a) The larger the fragment size, the farther it moves
    b) the smaller the fragment size, the farther it moves
    c) positively charged fragments move to farther end
    d) negatively charged fragments do not move

Ans. (b)

60. A gene whose expression helps to identify transformed cell is known as:
    a) Selectable marker b) Vector
    c) Plasmid d) Structural gene

Ans. (a)

61. The DNA fragments separated on an agarose gel can be visualized after staining with:
    a) Bromophenol blue
    b) Acetocarmine
    c) Aniline blue
    d) Ethidium bromide

Ans. (d)

NEET - 2018

62. Which of the following is commonly used as a vector for introducing a DNA fragment in human lymphocytes?
    a) Retrovirus b) Ti plasmid
    c) λ phage d) pBR 322

Ans. (a)

63. In India, the organisation responsible for assessing the safety of introducing genetically modified organisms for public use is

a) Indian Council of Medical Research (ICMR)
b) Council for Scientific and Industrial Research (CSIR)
c) Research Committee on Genetic Manipulation (RCGM)
d) Genetic Engineering Appraisal Committee (GEAC)

Ans. (d)

64. A new variety of rice was patented by a foreign company though such varieties have been present in India for a long time. This is related to
a) Co-667 b) Sharbati Sonora
c) Lerma Rojo d) Basmati

Ans. (d)

65. Use of bioresources by multinational companies and organisations without authorisation from the concerned country and its people is called
a) Bio-infringement b) Biopiracy
c) Biodegradation d) Bioexploitation

Ans.(b)

66. The correct order of steps in Polymerase Chain Reaction (PCR) is
a) Extension, Denaturation, Annealing
b) Annealing, Extension, Denaturation
c) Denaturation, Extension, Annealing
d) Denaturation, Annealing, Extension

Ans. (d)

NEET – 2019

67. Which of the following is true for Golden rice?
a) It is Vitamin A enriched, with a gene from daffodil
b) It is pest resistant, with a gene from *Bacillus thuringiensis*
c) It is drought tolerant, developed using *Agrobacterium vector*
d) It has yellow grains, because of a gene introduced from a primitive variety of rice

Ans. (a)

68. Which of the following features of genetic code does allow bacteria to produce human insulin by recombinant DNA technology?
a) Genetic code is not ambiguous
b) Genetic code is redundant
c) Genetic code is nearly universal
d) Genetic code is specific

Ans. (c)

69. Following statements describe the characteristics of the enzyme Restriction Endonuclease. Identify the incorrect statement.
a) The enzyme cuts DNA molecule at identified position within the DNA.
b) The enzyme binds DNA at specific sites and cuts only one of the two strands
c) The enzyme cuts the sugar-phosphate backbone at specific sites on each strand
d) The enzyme recognizes a specific palindromic nucleotide sequence in the DNA.

Ans. (b)

70. DNA precipitation out of a mixture of biomolecules can be achieved by treatment with
a) Isopropanol
b) Chilled ethanol
c) Methanol at room temperature
d) Chilled chloroform

Ans. (b)

71. What triggers activation of protoxin to active Bt. toxin of *Bacillus thuringiensis* in boll worm?
a) Body temperature
b) Moist surface of midgut
c) Alkaline pH of gut
d) Acidic pH of stomach

Ans. (c)

NEET ODISHA – 2019

72. Match the following enzymes with their functions:
    A) Restriction endonuclease — i) Joins the DNA fragements
    B) Restriction exonuclease — ii) Extends primers on genomic DNA template
    C) DNA ligase — iii) Cuts DNA at specific position
    D) Taq polymerase — iv) Removes nucleotides from the ends of DNA

    Select the correct option from the following:
    a) A-iii, B-i, C-iv, D-ii
    b) A-iii, B-iv, C-i, D-ii
    c) A-iv, B-iii, C-i, D-ii
    d) A-ii, B-iv, C-i, D-iii

Ans. (b)

73. The two antibiotic resistance genes on vector pBR322 are for
    a) Ampicillin and Tetracycline
    b) Ampicillin and Chloramphenicol
    c) Chloramphenicol and Tetracycline
    d) Tetracycline and Kanamycin

Ans. (a)

74. Exploitation of bioresources of a nation by multinational companies without authorization from the concerned country is referred as-
    a) Bioweapon b) Biopiracy
    c) Bioethics d) Biowar

Ans. (b)

75. A selectable marker is used to:
    a) help in eliminating the non-transformants, so that the transformants can be regenerated
    b) Identify the gene for a desired trait in an alien organism
    c) select a suitable vector for transformation in a specific crop
    d) mark a gene on a chromosome for isolation using restriction enzyme

Ans. (a)

76. Given below are four statements pertaining to separation of DNA fragments using gel electrophoresis. Identify the incorrect statements.
    A) DNA is negatively charged molecule and so it is loaded on gel towards the Anode terminal
    B) DNA fragments travel along the surface of the gel whose concentration does not affect movement of DNA.
    C) Smaller the size of DNA fragment larger is the distance it travels through it
    D) Pure DNA can be visualized directly by exposing UV radiation.

    Choose correct answer from the options given below
    a) A, C and D b) A, B and C
    c) B, C and D d) A, B and D

Ans. (d)

Hint: DNA is loaded on gel towards the cathode and being negatively charged, the DNA fragments move towards anode. Pure DNA cannot be visualized directly by exposing UV radiation. It can be visualized only after staining the DNA with a compound known as ethidium bromide followed by exposure to UV radiation.

77. In RNAi, the genes are silenced using:
    a) ds-RNA b) ss-DNA
    c) ss-RNA d) ds-DNA

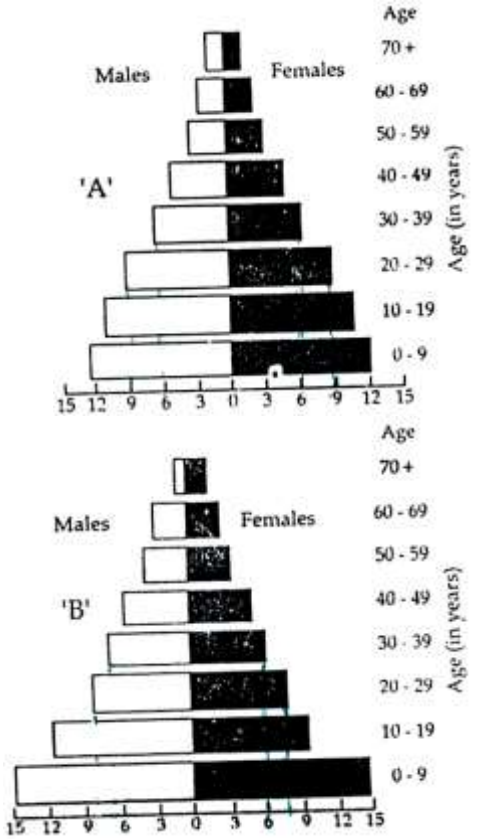
Ans. (a)

ECOLOGY

ORGANISMS AND POPULATIONS

CBSE PRELIMS – 2009

1. A country with a high rate of population growth took measures to reduce it. The figure below shows age-sex pyramids of populations A and B twenty years apart. Select the correct interpretation about them:



Interpretations:
(a) "B" is more recent showing that population is very young.
(b) "A" is the earlier pyramid and no change has occurred in the growth rate.
(c) "A" is more recent and shows slight reduction in the growth rate.
(d) "B" is earlier pyramid and shows stabilized growth rate.

Ans. (c)

2. Reduction in vascular tissue, mechanical tissue and cuticle is characteristic of:
a) Epiphytes b) Hydrophytes
c) Xerophytes d) Mesophytes

Ans. (b)

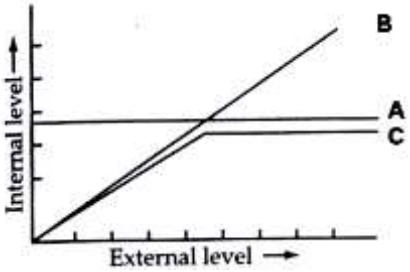
CBSE PRELIMS – 2010

3. Study the four statements given below and select the two correct ones out of them:
(i) A lion eating a deer and a sparrow feeding on grain are ecologically similar in being consumers
(ii) Predator star fish *Pisaster* helps in maintaining species diversity of some invertebrates
(iii) Predators ultimately lead to the extinction of prey species
(iv) Production of chemicals such as nicotine, strychnine by the plants are metabolic disorders

The two correct statements are:
a) (i) and (ii) b) (ii) and (iii)
c) (iii) and (iv) d) (i) and (iv)

Ans. (a)

4. The figure given below is a diagrammatic representation of response of organisms to abiotic factors. What do a, b and c represent respectively?

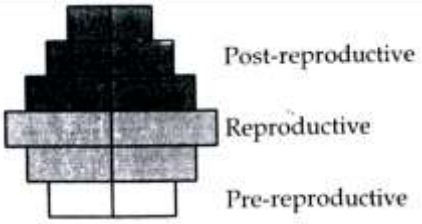


A	B	C
a) Regulator	Conformer	Partial regulator
b) Conformer	Regulator	Partial regulator
c) Regulator	Partial regulator	Conformer
d) Partial regulator	Regulator	conformer

Ans. (a)

CBSE PRELIMS – 2011

5. What type of human population is represented by the following age pyramid?



a) Vanishing population
b) Stable population
c) Declining population
d) Expanding population

Ans. (c)

6. Of the total incident solar radiation the proportion of PAR is:
a) About 70% b) About 60%
c) Less than 50% d) More than 80%

Ans. (c)

7. Consider the following four conditions (a – d) and select the correct pair of them as adaptation to environment in *desert lizards*. The conditions:
(i) Burrowing in soil to escape high temperature
(ii) Losing heat rapidly from the body during high temperature
(iii) Bask in sun when temperature is low
(iv) Insulating body due to thick fatty dermis

Options:
a) (iii), (iv) b) (i), (iii)
c) (ii), (iv) d) (i), (ii)

Ans. (b)

8. Which one of the following is categorised as a parasite in true sense?
a) The female *Anopheles* bites and sucks blood from humans.
b) Human foetus developing inside the uterus draws nourishment from the mother
c) Head louse living on the human scalp as well as laying eggs on human hair
d) The cuckoo (koel) lay its eggs in crow's nest

Ans. (c)

Hint: A parasite in the true sense is an organism which obtains both food and space/shelter from the host and does not benefit the host.

CBSE MAINS PMT – 2010

9. Which one of the following is *most appropriately* defined?
a) Host is an organism which provides food to another organism
b) Amensalism is a relationship in which one species is benefited whereas the other is unaffected
c) Predator is an organism that catches and kills other organism for food
d) Parasite is an organism which always lives inside the body of other organism and may kill it

Ans. (c)

CBSE MAINS PMT– 2011

10. Consider the following statements (A) – (D) each with one or two blanks
(A) Bears go into __(1)__ during winter to __(2)__ cold weather.
(B) A conical age pyramid with a broad base represents __(3)__ human population
(C) A wasp pollinating a fig flower is an example of __(4)__.
(D) An area with high levels of species richness is known as __(5)__.
Which one of the following options, gives the correct fill ups for the respective blank numbers from (1) to (5) in the statements?
a) (3) – stable (4) – commensalism, (5) marsh
b) (1) – aestivation, (2) – escape, (3) – stable, (4) – mutualism
c) (3) – expanding, (4) – commensalism, (5) – biodiversity park
d) (1) – hibernation, (2) – escape, (3) – expanding, (5) hot spot.

Ans. (d)

Hint: 1. Hibernation 2. Escape 3. Expanding 4. Mutualism 5. Hot spot

11. The logistic population growth is expressed by the equation:
a) $dt/dN = Nr\left(\frac{K-N}{K}\right)$ b) $dN/dt = rN\left(\frac{K-N}{K}\right)$
c) $dN/dt = rN$ d) $dN/dt = rN\left(\frac{N-K}{N}\right)$

Ans. (b)

NEET – 2013

12. Natural reservoir of phosphorus is:
    a) Rock b) Fossils
    c) Sea water d) Animal bones

Ans. (a)

13. A sedentary sea anemone gets attached to the shell lining of hermit crab. The association is:
    a) Commensalism b) Amensalism
    c) Ectoparasitism d) Symbiosis

Ans. (a)

Hint: Some authors have called this association Mutualism (Symbiosis), some called it Protocooperation while some others say it is Commensalism. Thus (a) and (d) are both correct.

14. A biologist studied the population of rats in a barn. He found that the average natality was 250, average mortality 240, immigration 20 and emigration 30. The net increase in population is:
    a) 05 b) zero c) 10 d) 15

Ans. (b)

AIPMT – 2014

15. Just as a person moving from Delhi to Shimla, escape the heat for the duration of hot summer, thousands of migratory birds from Siberia and other extremely cold northern regions move to:
    a) Keolado National Park
    b) Western Ghat
    c) Meghalaya
    d) Corbett National Park

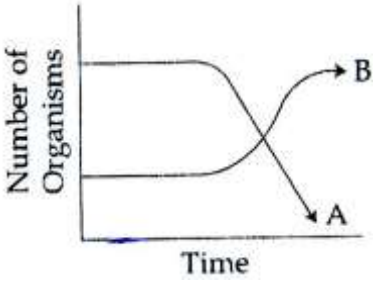
Ans. (a)

AIPMT – 2015

16. Most animals are tree dwellers in a:
    a) thorn woodland
    b) temperate deciduous forest
    c) tropical rain forest
    d) coniferous forest

Ans. (c)

17. The following graph depicts changes in two populations (A and B) of herbivores in a grassy field. A possible reason for these changes is that:



    a) Population B competed more successfully for food than population A
    b) Population A produced more offspring than population B
    c) Population A consumed the members of population B
    d) Both plant populations in this habitat decreased

Ans. (a)

AIPMT – 2015

18. The species confined to a particular region and not found elsewhere is termed as:
    a) Keystone b) Alien
    c) Endemic d) Rare

Ans. (c)

19. An association of individuals of different species living in the same habitat and having functional interactions is:
    a) Ecological niche b) Biotic community
    c) Ecosystem d) Population

Ans. (b)

20. In which of the following interactions both partners are adversely affected?
    a) Competition b) Predation
    c) Parasitism d) Mutualism

Ans. (a)

AIPMT – 2016

21. Gause's principle of competitive exclusion states that:
    a) Competition for the same resources excludes species having different food preferences
    b) No two species can occupy the same niche indefinitely for the same limiting resources
    c) Larger organisms exclude smaller ones through competition
    d) More abundant species will exclude the less abundant species through competition

Ans. (b)

22. When does the growth rate of a population following the logistic model equal zero? The logistic model is given as dN /dt = rN (1-N/K):
    a) When N nears the carrying capacity of the habitat.
    b) When N / K equals zero.
    c) When death rate is greater than birth rate.
    d) When N / K is exactly one.

Ans. (d)

NEET-2; 2016

23. Which of the following is correct for *r*-selected species?
    a) Large number of progeny with small size
    b) Large number of progeny with large size
    c) Small number of progeny with small size
    d) Small number of progeny with large size

Ans. (a)

Hint: r-selected species are those that have a high growth rate; large number of offsprings, small body size, early maturity, short generation time and ability to disperse offspring widely.

24. If '+' sign is assigned to beneficial interaction, '-' sign to detrimental and 'O' sign to neutral interaction, then the population interaction represented by '+' '-' refers to
    a) Mutualism b) Amensalism
    c) Commensalism d) Parasitism

Ans. (d)

25. The principle of competitive exclusion was stated by
    a) C. Darwin b) G. F. Gause
    c) MacArthur d) Verhulst and Pearl

Ans. (b)

NEET- 2017

26. Asymptote in a logistic growth curve is obtained when:
    a) The value of 'r' approaches zero
    b) K = N
    c) K > N
    d) K < N

Ans. (b)

27. Plants which produce characteristic pneumatophores and show vivipary belong to:
    a) Mesophytes b) Halophytes
    c) Psammophytes d) Hydrophytes

Ans. (b)

NEET - 2018

28. Niche is
    a) All the biological factors in the organism environment
    b) The physical space where an organism lives
    c) the range of temperature that the organism needs to live.
    d) The functional role played by the organism where it lives

Ans. (d)

29. Natality refers to
    a) Death rate
    b) Birth rate
    c) Number of individuals leaving a habitat
    d) Number of individuals entering a habitat

Ans. (b)

30. In a growing population of a country
    a) Pre-reproductive individuals are more than the reproductive individuals.
    b) Reproductive individuals are less than the post-reproductive individuals.
    c) Reproductive and pre-reproductive individuals are equal in number.

d) Pre-reproductive individuals are less than the reproductive individuals

Ans. (a)

NEET – 2019 - NIL

NEET ODISHA – 2019

31. Carnivorous animals-lions and leopards, occupy the same niche but lions predate mostly larger animals and leopards take smaller ones. This mechanism of competition is referred to as
    a) Character displacement
    b) Altruism
    c) Resource partitioning
    d) Competitive exclusion

Ans. (c)

32. Between which among the following, the relationship is not an example of commensalism?
    a) Orchid and the tree on which it grows
    b) Cattle Egret and grazing cattle
    c) Sea Anemone and Clown fish
    d) Female wasp and fig species

Ans. (d)

Hint: Female wasp & fig species are an example of mutualism.

ECOSYSTEM

CBSE PRELIMS – 2009

1. Which one of the following types of organisms occupy more than one trophic level in a pond ecosystem?
   a) Zooplankton b) Frog
   c) Phytoplankton d) Fish

Ans. (b)

Hint: Tadpole is herbivorous. Adult frog is carnivorous.

2. The correct sequence of plants in a hydrosere is:
   a) *Pistia → Volvox → Scirpus → Hydrilla → Oak → Lantana*
   b) *Oak → Lantana → Volvox → Hydrilla → Pistia → Scirpus*
   c) *Oak → Lantana → Scirpus → Pistia → Hydrilla → Volvox*
   d) *Volvox → Hydrilla → Pistia → Scirpus → Lantana → Oak*

Ans. (d)

CBSE PRELIMS – 2010

3. The biomass available for consumption by the herbivores and the decomposers is called:
   a) Gross primary productivity
   b) Net primary productivity
   c) Secondary productivity
   d) Standing crop

Ans. (d)

4. Which one of the following is one of the characteristics of a biological community?
   a) Sex-ratio b) Stratification
   c) Natality d) Mortality

Ans. (b)

CBSE PRELIMS – 2011

5. Mass of living matter at a trophic level in an area at any time is called:
   a) Standing crop b) Detritus
   c) Humus d) Standing state

Ans. (a)

6. Which one of the following statements is correct for secondary succession?
   a) It begins on a bare rock
   b) It occurs on a deforested site
   c) It follows primary succession
   d) It is similar to primary succession except that it has a relatively fast pace.

Ans. (b)

7. Which one of the following statements for pyramid of energy is incorrect, whereas the remaining three are correct?
   a) Its base is broad
   b) It shows energy content of different trophic level organisms
   c) It is inverted in shape
   d) It is upright in shape

Ans. (c)

CBSE PRELIMS – 2012

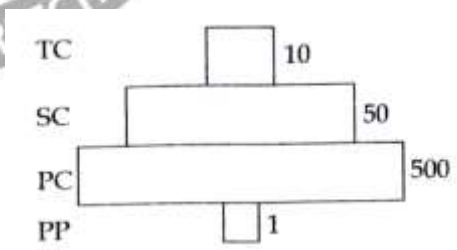
8. Identify the possible link "A" in the following food chain:
   Plant → insect → frog → "A" → Eagle
   a) Wolf b) Cobra
   c) Parrot d) Rabbit

Ans. (b)

9. The upright pyramid of number is absent in:
   a) Forest b) Lake
   c) Grassland d) Pond

Ans. (a)

10. Given below is an imaginary pyramid of numbers. What could be one of the possibilities about certain organisms at some of the different levels?



   a) Level PP is "phytoplanktons" in sea and "Whale" on top level TC
   b) Level one PP is "pipal trees" and the level SC is "sheep"
   c) Level PC is "rats" and level SC is "cats".
   d) Level PC is "insects" and level SC is "small insectivorous birds"

Ans. (d)

11. Which one of the following is not a functional unit of an ecosystem
   a) Decomposition b) Productivity
   c) Stratification d) Energy flow

Ans. (c)

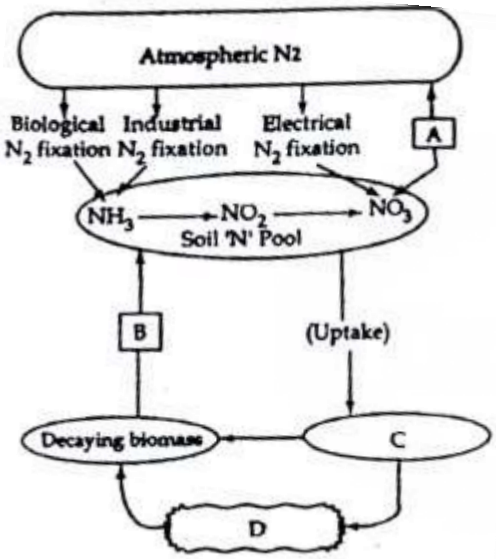
12. Which one of the following is not a gaseous biogeochemical cycle in ecosystem?
    a) Phosphorus cycle b) Nitrogen cycle
    c) Carbon cycle d) Sulphur cycle

Ans. (a)

Hint: Sulphur cycle has both gaseous and sedimentary phases.

CBSE MAINS – 2010

13. Study the cycle shown below and select the option which gives correct words for all the four blanks A, B, C and D.

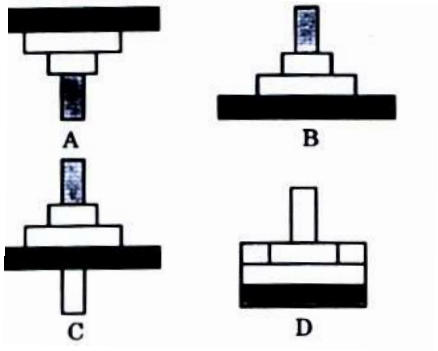


Options:

	A	B	C	D
a)	Nitrification	Ammonification	Animal	Plants
b)	Denitrification	Ammonification	Plants	Animals
c)	Nitrification	Denitrification	Animals	Plants
d)	Denitrification	Nitrification	Plants	Animals

Ans. (b)

14. Which of the following representations shows the pyramid of numbers in a forest ecosystem?



a) D b) A c) B d) C

Ans. (d)

CBSE MAINS – 2011

15. Which one of the following animals may occupy more than one trophic levels in the same ecosystem at the same time?
    a) Sparrow b) Lion
    c) Goat d) Frog

Ans. (a)

Hint:
- **Frog and lion are carnivorous**
- **Goat is herbivorous**
- **Sparrow is omnivorous.**

16. Both, hydrarch and xerarch successions lead to:
    a) Medium water conditions
    b) Xeric conditions
    c) Highly dry conditions
    d) Excessive wet conditions

Ans. (a)

17. The breakdown of detritus into smaller particles by earthworm is a process called:
    a) Humification b) Fragmentation
    c) Mineralisation d) Catabolism

Ans. (b)

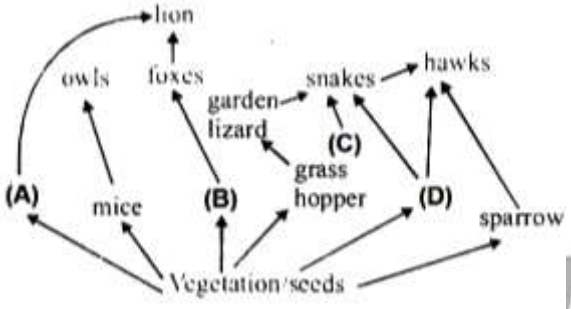
CBSE MAINS – 2012

18. The second stage of hydrosere is occupied by plants like:
    a) *Salix* b) *Vallisneria*
    c) *Azolla* d) *Typha*

Ans. (b)

Hint: The second stage of hydrosere is occupied by submerged aquatic plants *e.g.,* Hydrilla, *Vallisneria*. The third stage has free floating plants *e.g., Azolla* (floating aquatic fern). The fourth stage is Reed Swamp plants like *Typha*. *Salix* includes deciduous trees and shrubs which constitute the sixth (woodland stage) and climax stages.

19. Identify the likely organisms (A), (B), (C) and (D) in the food web shown below:



Options:

	(A)	(B)	(C)	(D)
(a)	rat	dog	tortoise	crow
(b)	squirrel	cat	rat	pigeon
(c)	deer	rabbit	frog	rat
(d)	dog	squirrel	bat	deer

Ans. (c)

20. The rate of formation of new organic matter by rabbit in a grassland is called:
    a) Net primary productivity
    b) Gross primary productivity
    c) Net productivity
    d) Secondary productivity

Ans. (d)

NEET – 2013

21. Secondary productivity is rate of formation of new organic matter by:
    a) Consumer b) Decomposer
    c) Producer d) Parasite

Ans. (a)

22. Which one of the following processes during decomposition is correctly described?
    a) Catabolism - Last step in the decomposition under fully anaerobic condition
    b) Leaching – Water soluble inorganic nutrients rise to the top layers of soil.
    c) Fragmentation – Carried out by organism such as earthworm
    d) Humification – Leads to the accumulation of a dark coloured substance humus which undergoes microbial action at a very fast rate.

Ans. (c)

Hint:

a) False, All the three processes *i.e.,* Fragmentation, leaching and catabolism operate simultaneously and is followed by humification and Mineralisation. The process of decomposition is largely an oxygen requiring process.

b) False; Leaching is the moving down of water soluble inorganic nutrients into the soil horizon.

c) True

d) False; Humus is highly resistant to microbial action and gets decomposed at a very slow rate.

AIPMT – 2014

23. If 20J of energy is trapped at producer level, then how much energy will be available to peacock as food in the following chain?
    Plant → mice → snake → peacock
    a) 0.0002J b) 0.02 J
    c) 0.002 J d) 0.2J

Ans. (b)

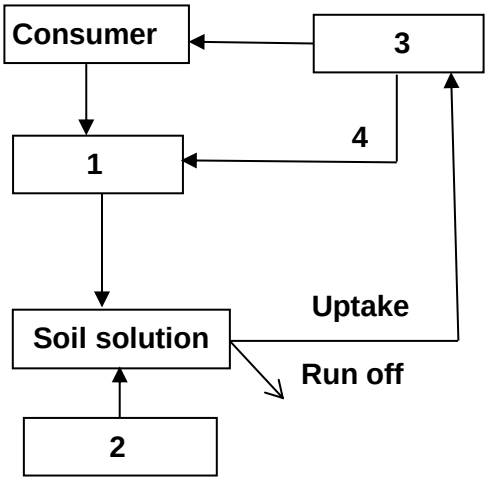
24. Match the following and select the correct option:

(1) Earthworm	(i) Pioneer species
(2) Succession	(ii) Detritivore
(3) Ecosystem service	(iii) Natality
(4) Population growth	(iv) Pollination

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

Ans. (a)

25. Given below is a simplified model of phosphorus cycling in a terrestrial ecosystem with four blanks (1 – 4). Identify the blanks



	1	2	3	4
a)	Producers	Litter fall	Rock minerals	Detritus
b)	Rock minerals	Detritus	Litter fall	Producers
c)	Litter fall	Producers	Rock mineral	Detritus
d)	Detritus	Rock minerals	Producer	Litter fall

Ans. (d)

AIPMT – 2015

26. Vertical distribution of different species occupying different levels in a biotic community is known as:
    a) Stratification b) Zonation
    c) Pyramid d) Divergence

Ans.(a)

27. The mass of living material at a trophic level at a particular time is called:
    a) Standing state
    b) Net primary productivity
    c) Standing crop
    d) Gross primary productivity

Ans. (c)
Hint:

a) Standing state – The amount of inorganic nutrients present any time in soil/water of the ecosystem.
b) Net primary productivity – It is the total organic matter stored by producers per unit area/volume per unit time.
c) Standing crop – It is the amount of living biomass in an ecosystem.
d) Gross primary productivity – It is the total organic matter synthesized by the producers in the process of photosynthesis per unit area per unit time.

28. In which of the following both pairs have correct combination?

a)	Gaseous nutrient cycle	Carbon and Nitrogen
	Sedimentary nutrient cycle	Sulphur and Phosphorus
b)	Gaseous nutrient cycle	Carbon and sulphur
	Sedimentary nutrient cycle	Nitrogen and Phosphorus
c)	Gaseous nutrient cycle	Nitrogen and sulphur
	Sedimentary nutrient cycle	Carbon and Phosphorus
d)	Gaseous nutrient cycle	Sulphur and Phosphorus
	Sedimentary nutrient cycle	Carbon and Nitrogen

Ans. (a)

29. During ecological succession:
    a) The gradual and predictable change in species composition occurs in a given area.
    b) The establishment of a new biotic community is very fast in its primary phase.
    c) The numbers and types of animals remain constant.
    d) The changes lead to a community that is in near equilibrium with the environment and is called pioneer community

Ans. (a)

30. Most animals that live in deep oceanic waters are:
    a) primary consumers
    b) secondary consumers
    c) tertiary consumers
    d) detritivores

Ans. (d)

31. In an ecosystem the rate of production of organic matter during photosynthesis is termed as:
    a) Gross primary productivity
    b) Secondary productivity
    c) Net productivity
    d) Net primary productivity

Ans. (a)

32. Secondary Succession takes place on/in:
    a) Degraded forest
    b) Newly created pond
    c) Newly cooled lava
    d) Bare rock

Ans. (a)

AIPMT – 2016

33. Which one of the following is a characteristic feature of cropland ecosystem?
    a) Least genetic diversity
    b) Absence of weeds
    c) Ecological succession
    d) Absence of soil organisms

Ans. (a)

34. Which of the following would appear as the pioneer organisms on bare rocks?
    a) Liverworts b) Mosses
    c) Green algae d) Lichens

Ans. (d)

35. The term ecosystem was coined by:
    a) A.G. Tansley b) E. Haeckel
    c) E. Warming d) E.P. Odum

Ans. (a)

NEET – 2017

36. Which ecosystem has the maximum biomass?
    a) Forest ecosystem
    b) Grassland ecosystem
    c) Pond ecosystem
    d) Lake ecosystem

Ans. (a)

37. Presence of plants arranged into well-defined vertical layers depending on their height can be seen best in:
    a) Tropical Savannah b) Tropical Rain Forest
    c) Grassland d) Temperate Forest

Ans. (b)

NEET – 2018

38. What type of ecological pyramid would be obtained with the following data?
    Secondary consumer : 120 g
    Primary consumer : 60 g
    Primary producer : 10 g
    a) Inverted pyramid of biomass
    b) Pyramid of energy
    c) Upright pyramid of numbers
    d) Upright pyramid of biomass

Ans. (a)

39. Which one of the following population interactions is widely used in medical science for the production of antibiotics?
    a) Commensalism b) Mutualism
    c) Parasitism d) Amensalism

Ans. (d)

NEET – 2019

40. Which of the following ecological pyramids is generally inverted?
    a) Pyramid of numbers in grassland
    b) Pyramid of energy
    c) Pyramid of biomass in a forest
    d) Pyramid of biomass in a sea

Ans. (d)

ODISHA – 2019 : NIL

DR. ARVIND'S BIOLOGY CLASSES
(A Unit of Med-Xel Tutorials)

BIODIVERSITY AND CONSERVATION

CBSE PRELIMS – 2009

1. Tiger is not a resident in which one of the following national park?
   a) Gir b) Jim Corbett
   c) Ranthambhor d) Sunderbans

Ans. (a)

CBSE PRELIMS – 2010

2. Which one of the following is an example of *ex-situ* conservation?
   a) National park b) Wildlife sanctuary
   c) Seed bank d) Sacred groves

Ans. (c)

CBSE PRELIMS – 2011

3. Which one of the following expanded forms of the following acronyms is correct?
   a) IPCC = International Panel for Climate Change
   b) UNEP = United Nations Environmental Policy
   c) EPA = Environmental Pollution Agency
   d) IUCN = International Union for Conservation of Nature and Natural Resources

Ans. (d)

Hint: IPCC – Intergovernmental Panel on climate change.
UNEP – United Nations Environmental Programme
EPA – Environment Protection Act

4. Which one of the following have the highest number of species in nature?
   a) Fungi b) Insects
   c) Birds d) Angiosperms

Ans. (b)

5. Large Woody Vines are more commonly found in
   a) Temperate forests b) Mangroves
   c) Tropical rainforests d) Alpine forests

Ans. (c)

CBSE PRELIMS – 2012

6. The highest number of species in the world is represented by:
   a) Mosses b) Algae
   c) Lichens d) Fungi

Ans. (d)

7. Which one of the following areas in India is a hotspot of biodiversity?
   a) Gangetic Plain b) Sunderbans
   c) Western Ghats d) Eastern Ghats

Ans. (c)

CBSE MAINS – 2010

8. The Indian Rhinoceros is a natural inhabitant of which one of the Indian states?
   a) Uttarakhand b) Uttar Pradesh
   c) Himachal Pradesh d) Assam

Ans. (d)

CBSE MAINS – 2011

9. Biodiversity of a geographical region represents:
   a) Endangered species found in the region
   b) The diversity in the organisms living in the region
   c) Genetic diversity present in the dominant species of the region
   d) Species endemic to the region

Ans. (b)

CBSE MAINS – 2012

10. Select the correct statement about biodiversity:
    a) Western Ghats have a very high degree of species richness and endemism
    b) Conservation of biodiversity is just a fad pursued by the developed countries
    c) The desert areas of Rajasthan and Gujarat have a very high level of desert animal species as well as numerous rare animals
    d) Large scale planting of Bt cotton has no adverse effect on biodiversity

Ans. (a)

11. Sacred groves are specially useful in:
    a) Year round flow of water in rivers
    b) Conserving rare and threatened species
    c) Generating environmental awareness
    d) Preventing soil erosion

Ans. (b)

NEET – 2013

12. Which one of the following is not used for *ex situ* plant conservation?
    a) Shifting cultivation b) Botanical Gardens
    c) Field gene banks d) Seed banks

Ans. (a)

AIPMT – 2014

13. The organization which publishes the Red List species is:
    a) WWF b) ICFRE
    c) IUCN d) UNEP

Ans. (c)

14. A species facing extremely high risk of extinction in the immediate future is called:
    a) Extinct b) Vulnerable
    c) Endemic d) Critically endangered

Ans. (d)

Hint:

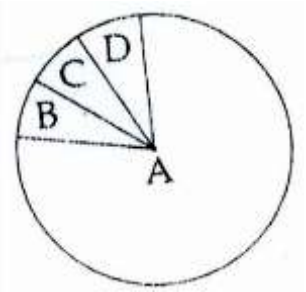
a) Extinct – When taxon has been completely eliminated from earth.

b) Vulnerable – Presently population is sufficient but is undergoing depletion so that it is facing risk of extinction in medium term future.

c) Endemic – A species confined to that region and not found anywhere else.

d) Critically endangered – The taxon facing very high risk of extinction in the wild and can become extinct any moment in the immediate future.

15. Given below is the representation of the extent of global diversity of *invertebrates*. What groups the four portions (A-D) represent respectively?



	A	B	C	D
a)	Insects	Molluscs	Crustaceans	Other animal groups
b)	Insects	Crustaceans	Other animal groups	Molluscs
c)	Crustaceans	Insects	Molluscs	Other animal groups
d)	Molluscs	Other animal groups	Crustaceans	Insects

Ans. Grace marks were awarded to all candidates for this question.

Hint: The given diagram is ambiguous; it does not show any significant difference in the size of the sections B, C, D and thus it is not possible to assign the category to molluscs, crustaceans and other animal groups. Thus, any of the two options (a) or (b) could be correct.

16. An example of *ex situ* conservation is
    a) Sacred Grove b) National Park
    c) Seed Bank d) Wildlife Sanctuary

Ans. (c)

AIPMT – 2015

17. Cryopreservation of gametes of threatened species in viable and fertile condition can be referred to as:
    a) Advanced ex-situ conservation of biodiversity
    b) In situ conservation by sacred groves
    c) In situ cryo-conservation of biodiversity
    d) In situ conservation of biodiversity

Ans. (a)

18. In which of the following both pairs have correct combination?
    a) *In situ* conservation: Cryopreservation
       Ex situ conservation; Wildlife Sanctuary
    b) *In situ* conservation: Seed Bank
       Ex situ conservation: National Park
    c) *In situ* conservation: Tissue culture
       Ex situ conservation: Sacred groves
    d) *In situ* conservation: National Park
       Ex situ conservation: Botanical Garden

Ans. (d)

AIPMT – 2016

19. Which is the National Aquatic Animal of India?
    a) River dolphin
    b) Blue whale
    c) Sea-horse
    d) Gangetic shark

Ans. (a)

20. Which of the following is the most important cause of animals and plants being driven to extinction?
    a) Alien species invasion
    b) Habitat loss and fragmentation
    c) Co-extinctions
    d) Over-exploitation

Ans. (b)

NEET-2; 2016

21. How many hot spots of biodiversity in the world have been identified till date by Norman Myers?
    a) 17 b) 25 c) 34 d) 43

Ans. (c)

22. Which of the following is correctly matched?
    a) Aerenchyma – *Opuntia*
    b) Age pyramid – Biome
    c) *Parthenium hysterophorus* – Threat to biodiversity
    d) Stratification – Population

Ans. (c)

23. Red list contains data or information on
    a) All economically important plants
    b) Plants whose products are in international trade
    c) Threatened species
    d) Marine vertebrates only

Ans. (c)

24. Which of the following National Parks is home to the famous musk deer or hangul?
    a) Keibul Lamjao National Park, Manipur
    b) Bandhavgarh National Park, Madhya Pradesh
    c) Eaglenest Wildlife Sanctuary, Arunachal Pradesh
    d) Dachigam National Park, Jammu and Kashmir

Ans. (d)

NEET- 2017

25. Alexander Von Humbolt described for the first time:
    a) Ecological Biodiversity
    b) Laws of limiting factor
    c) Species area relationships
    d) Population Growth equation

Ans. (c)

26. Which one of the following is related to Ex-situ conservation of threatened animals and plants?
    a) Wildlife Safari parks
    b) Biodiversity hot spots
    c) Amazon rainforest
    d) Himalayan region

Ans. (a)

27. The region of Biosphere Reserve which is legally protected and where no human activity is allowed is known as:
    a) Core zone b) Buffer zone
    c) Transition zone d) Restoration zone

Ans. (a)

NEET – 2018

28. All of the following are included in 'Ex-situ conservation' except
    a) Wildlife safari parks b) Sacred groves
    c) Botanical gardens d) Seed banks

Ans. (b)

NEET – 2019

29. Which one of the following is not a method of *in situ* conservation of biodiversity?
    a) Biosphere Reserve
    b) Wildlife Sanctuary
    c) Botanical Garden
    d) Sacred Grove

Ans. (c)

30. Which of the following is the most important cause for animals and plants being driven to extinction?
    a) Habitat loss and fragmentation
    b) Drought and floods
    c) Economic exploitation
    d) Alien species invasion

Ans. (a)

31. The Earth Summit held in Rio de Janeiro in 1992 was called
    a) to reduce CO_2 emissions and global warming
    b) for conservation of biodiversity and sustainable utilization of its benefits
    c) to assess threat posed to native species by invasive weed species
    d) For immediate steps to discontinue use of CFCs that were damaging the ozone layer

Ans. (b)

NEET ODISHA – 2019

32. Decline in the population of indian native fishes due to introduction of Clarias gariepinus in river Yamuna can be categorised as
    a) Co-extinction
    b) Habitat fragmentation
    c) Over exploitation
    d) Allen species invasion

Ans. (d)

33. Western Ghats have a large number of plant and animal species that are not found anywhere else. Which of the following terms will you use to notify such species?
    a) Endemic b) Vulnerable
    c) Threatened d) Keystone

Ans. (a)

34. Exploration of molecular, genetic and species level diversity for novel products of economic importance is known as:
    a) Biopiracy b) Bioenergetics
    c) Bioremediation d) Bioprospecting

Ans. (d)

ENVIRONMENTAL ISSUES

CBSE PRELIMS – 2009

1. Chipko movement was launched for the protection of:
   a) Livestock b) Wet lands
   c) Grasslands d) Forests

Ans. (d)

2. Steps taken by the Government of India to control air pollution include:
   a) Permission to use only pure diesel with a maximum of 500 ppm sulphur as fuel for vehicles.
   b) Use of non-polluting Compressed Natural Gas (CNG) only as fuel by all buses and trucks.
   c) Compulsory mixing of 20% ethyl alcohol with petrol & 20% biodiesel with diesel.
   d) Compulsory PUC (Pollution Under Control) certification of period driven vehicles which tests for carbon monoxide and hydrocarbons

Ans. (d)

3. Biochemical Oxygen Demand (BOD) in a river water:
   a) Gives a measure of *Salmonella* in the water.
   b) Increases when sewage gets mixed with river water
   c) Remains unchanged when algal bloom occurs.
   d) Has no relationship with concentration of oxygen in the water.

Ans. (b)

4. Which of the following plant species you would select for the production of bioethanol:
   a) *Pongamia* b) *Jatropha*
   c) *Brassica* d) *Zea mays*

Ans. (d)

Hint: Besides sugarcane and maize, potato, sugarbeet, Tapioca etc. can be used for production of alcohol. Jatropa is a petro plant.

5. DDT residues are rapidly passed through food chain causing biomagnification because DDT is:
   a) Non-toxic to aquatic animal
   b) Water soluble
   c) Lipo soluble
   d) Moderately toxic

Ans. (c)

6. Global agreement in specific control stratagies to reduce the release of ozone depleting substances, was adopted by:
   a) The Kyoto Protocol
   b) The Vienna Convention
   c) Rio de Janeiro Conference
   d) The Montreal Protocol

Ans. (d)

Hint: The Kyoto Protocol was for decreasing greenhouse gas emission.
Earth Summit (Reo di genaria) was to decrease green house gases.

7. Montreal Protocol aims at:
   a) Control of water pollution
   b) Control of CO_2 emission
   c) Reduction of ozone depleting substances
   d) Biodiversity conservation

Ans. (c)

CBSE PRELIMS – 2010

8. A renewable exhaustible natural resource is:
   a) Forest b) Coal
   c) Petroleum d) Minerals

Ans. (a)

9. The two gases making highest relative contribution to the greenhouse gases are:
   a) CO_2 and N_2O b) CO_2 & CH_4
   c) CH_4 and N_2O d) CFC_5 & N_2O

Ans. (b)

10. dB is a standard abbreviation used for the quantitative expression of:
    a) A certain pesticide
    b) The density of bacteria in a medium
    c) A particular pollutant
    d) The dominant *Bacillus* in a culture

Ans. (c)

CBSE PRELIMS – 2011

11. Eutrophication is often seen in:
    a) Deserts b) Fresh water lakes
    c) Ocean d) Mountains

Ans. (b)

12. Which one of the following pairs of gases are the major cause of "Greenhouse effect"?
    a) CO_2 and O_3 b) CO_2 and CO
    c) CFCs and SO_2 d) CO_2 and N_2O

Ans. (d)

Hint: CO_2 accounts for 60%, methane 20%, CFCs 14% and N_2O 6%.

13. Which one of the following statements is wrong in case of Bhopal tragedy?
    a) Methyl Isocyanate gas leakage took place
    b) Thousands of human beings died
    c) Radioactive fall out engulfed Bhopal
    d) It took place in the night of December 2/3, 1984.

Ans. (c)

CBSE PRELIMS – 2012

14. In an area where DDT had been used extensively, the population of birds declined significantly because:
    a) earthworms in the area got eradicated
    b) cobras were feeding exclusively on birds
    c) many of the birds eggs laid, did not hatch
    d) birds stopped laying eggs

Ans. (c)

15. Measuring Biochemical Oxygen Demand (BOD) is a method used for:
    a) Working out the efficiency of oil driven automobile engines
    b) Measuring the activity of *Saccharomyces cerevisae* in producing curd on a commercial scale
    c) Working out the efficiency of R.B.Cs about their capacity to carry oxygen
    d) Estimating the amount of organic matter in sewage water

Ans. (d)

16. Which one of the following is a wrong statement?
    a) Ozone in upper part of atmosphere is harmful to animals
    b) Greenhouse effect is a natural phenomenon
    c) Eutrophication is a natural phenomenon in freshwater bodies
    d) Most of the forests have been lost in tropical areas

Ans. (a)

CBSE MAINS – 2010

17. When domestic sewage mixes with river water
    a) Small animals like rats will die after drinking river water
    b) The increased microbial activity releases micro-nutrients such as iron
    c) The increased microbial activity uses up dissolved oxygen
    d) The river water is still suitable for drinking as impurities are only about 0.1%

Ans. (c)

CBSE MAINS – 2011

18. "Good ozone" is found in the
    a) Mesosphere b) Troposphere
    c) Stratosphere d) Ionosphere

Ans. (c)

CBSE MAINS – 2012

19. The domestic sewage in large cities:
    a) When treated in STPs, does not really require the aeration step as the sewage contains adequate oxygen
    b) Has very high amounts of suspended solids and dissolved salts.
    c) Has a high BOD as it contains both aerobic and anaerobic bacteria
    d) Is processed by aerobic and then anaerobic bacteria in the secondary treatment in Sewage Treatment plants (STPs)

Ans. (d)

Hint:

- **Domestic sewage contains large amount of organic matter and microbes. Suspended solids and dissolved salts are more seen in Industrial waste water.**
- **STPs require both the aerobic and the anaerobic steps.**
- **When Aerobic bacteria act break down the organic matter of sewage they consume oxygen. The BOD of the sewage goes on decreasing with the decrease in organic matter. BOD is a measure of the amount of organic matter it does not indicate the presence of bacteria.**

Thus first three options are incorrect.

NEET – 2013

20. Kyoto Protocol was endorsed at:
    a) CoP – 6 b) CoP - 4
    c) CoP – 3 d) CoP – 5

Ans. (c)

Hint: Cop stands for conference of Parties which is the governing body of the convention on Biological Diversity and advances implementation of the convention through the decisions it takes at its periodic meetings. Till date it has held 11 major meetings.
The kyotoprotocol was adopted at the third session of the conference of parties in 1997 in Kyoto, Japan.

21. Global warming can be controlled by:
    a) Increasing deforestation, slowing down the growth of human population.
    b) Increasing deforestation, reducing efficiency of energy usage.
    c) Reducing deforestation, cutting down use of fossil fuel.
    d) Reducing reforestation, increasing the use of fossil fuel.

Ans. (c)

22. The Air Prevention and Control of Pollution Act came into force in:
    a) 1985 b) 1990
    c) 1975 d) 1981

Ans. (d)

AIPMT – 2014

23. A location with luxuriant growth of lichens on the trees indicates that the
    a) Location is not polluted
    b) Trees are very healthy
    c) Trees are heavily infested
    d) Location is highly polluted

Ans. (a)

24. The zone of atmosphere in which the ozone layer is present is called
    a) Troposphere b) Ionosphere
    c) Mesosphere d) Stratosphere

Ans. (d)

25. A scrubber in the exhaust of a chemical industrial plant removes:
    a) Particulate matter of the size 2.5 micrometer or less
    b) Gases like sulphur dioxide
    c) Particulate matter of the size 5 micrometer or above
    d) Gases like ozone and methane

Ans. (b)

AIPMT – 2015

26. High value of BOD (Biochemical Oxygen Demand) indicates that:
    a) water is highly polluted
    b) water is less polluted
    c) consumption of organic matter in the water is higher by the microbes
    d) water is pure

Ans. (a)

27. The UN Conference of Parties on climate change in the year 2011 was held in:
    a) South Africa b) Peru
    c) Qatar d) Poland

Ans. (a)

28. Rachel Carson's famous book "Silent Spring" is related to:
    a) Noise pollution
    b) Population explosion
    c) Ecosystem management
    d) Pesticide pollution

Ans. (d)

29. Which of the following is not one of the prime health risks associated with greater UV radiation through the atmosphere due to depletion of stratospheric ozone?
    a) Reduced Immune System
    b) Damage to eyes
    c) Increased liver cancer
    d) Increased skin cancer

Ans. (c)

AIPMT – 2015

30. The UN conference of Parties on climate change in the year 2012 was held at:
    a) Durban b) Doha
    c) Lima d) Warsaw

Ans. (b)

31. Increase in concentration of the toxicant at successive trophic levels is known as:
    a) Biomagnification
    b) Biodeterioration
    c) Biotransformation
    d) Biogeochemical cycling

Ans. (a)

32. Acid rain is caused by increase in the atmospheric concentration of:
    a) SO_2 and NO_2 b) SO_3 and CO
    c) CO_2 and CO d) O_3 and dust

Ans. (a)

33. Eutrophication of water bodies leading to killing of fishes is mainly due to non-availability of:
    a) food b) light
    c) essential minerals d) oxygen

Ans. (d)

AIPMT – 2016

34. A river with an inflow of domestic sewage rich in organic waste may result in:
    a) Increased population of aquatic food web organisms
    b) An increased production of fish due to biodegradable nutrients
    c) Death of fish due to lack of oxygen
    d) Drying of the river very soon due to algal bloom

Ans. (c)

35. A system of rotating crops with legume or grass pasture to improve soil structure and fertility is called
    a) Contour farming
    b) Strip farming
    c) Shifting agriculture
    d) Ley farming

Ans. (d)

36. Depletion of which gas in the atmosphere can lead to an increased incidence of skin cancers:
    a) Ozone b) Ammonia
    c) Methane d) Nitrous oxide

Ans. (a)

37. Joint Forest Management Concept was introduced in India during:
    a) 1970s b) 1980s
    c) 1990s d) 1960s

Ans. (b)

NEET-2; 2016

38. Biochemical Oxygen Demand (BOD) may not be a good index for pollution for water bodies receiving effluents from
    a) Domestic sewage
    b) Dairy industry
    c) Petroleum industry
    d) Sugar industry

Ans. (c)

39. A lake which is rich in organic waste may result in
    a) Increased population of aquatic organisms due to minerals
    b) Drying of the lake due to algal bloom
    c) Increased population of fish due to lots of nutrients
    d) Mortality of fish due to lack of oxygen

Ans. (d)

40. The highest DDT concentration in aquatic food chain shall occur in
    a) Phytoplankton b) Seagull
    c) Crab d) eel

Ans. (b)

NEET- 2017

41. Which one of the following statements is not valid for aerosols?
    a) They are harmful to human health
    b) They alter rainfall and monsoon patterns
    c) They cause increased agricultural productivity.
    d) They have negative impact on agricultural land

Ans. (c)

NEET – 2018

42. In stratosphere, which of the following element acts as a catalyst in degradation of ozone and release of molecular oxygen?
    a) Carbon b) Cl
    c) Fe d) Oxygen

Ans. (b)

43. Which of the following is a secondary pollutant?
    a) CO b) CO_2
    c) SO_2 d) O_3

Ans. (d)

44. World Ozone Day is celebrated on
    a) 5th June b) 21st April
    c) 16th September d) 22nd April

Ans. (c)

45. Match the items given in Column I with those in Column II and select the correct option given below:

Column – I		***Column – II***
A) *Eutrophication*	(i)	UV-B radiation
B) Sanitary landfill	(ii)	Deforestation
C) Snow blindness	(iii)	Nutrient enrichment
D) Jhum cultivation	(iv)	Waste disposal

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

Ans. (c)

NEET – 2019

46. Which of these following methods is the most suitable for disposal of nuclear waste?
    a) Shoot the waste into space
    b) Bury the waste under Antarctic ice-cover
    c) Dump the waste within rocks under deep ocean
    d) Burry the waste within rocks deep below the Earth's surface

Ans. (d)

47. Which of the following pairs of gases is mainly responsible for green house effect?
    a) Ozone and Ammonia
    b) Oxygen and Nitrogen
    c) Nitrogen and Sulphur dioxide
    d) Carbon dioxide and methane

Ans. (d)

Hint: Relative contribution of various greenhouse gases to total global warming is

- **CO_2 = 60%**
- **CH_4 =20%**
- **CFC = 14%**
- **N_2O = 6%**

Therefore CO_2 and CH_4 are the major greenhouse gases

48. Which of the following protocols did aim for reducing emission of chloroflorocarbons into the atmosphere?
    a) Montreal protocol
    b) Kyoto Protocol
    c) Gothenburg Protocol
    d) Geneva Protocol

Ans. (a)

49. Polyblend, a fine powder of recycled modified plastic, has proved to be a good material for
    a) Making plastic sacks
    b) Use as a fertilizer
    c) Construction of roads
    d) Making tubes and pipes

Ans. (c)

NEET ODISHA – 2019

50. Which of the following statements about ozone is correct?
    a) Tropospheric ozone protects us from UV radiations.
    b) Stratospheric ozone is 'bad'
    c) Tropospheric ozone is 'good'
    d) Stratospheric ozone protects us from UV radiations.

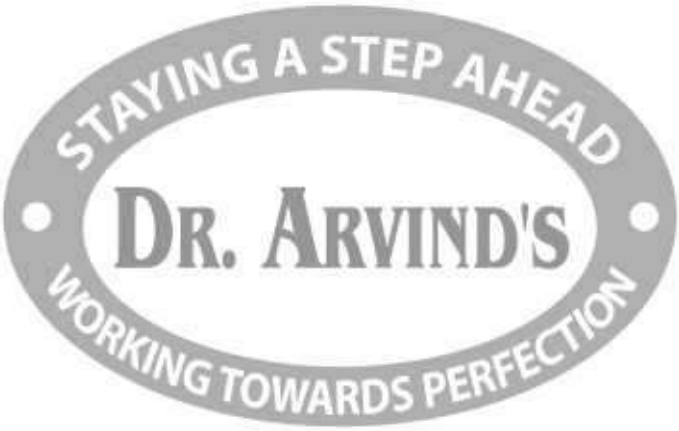
Ans. (d)

51. Which of the following is an innovative remedy for plastic waste?
    a) Burning in the absence of oxygen
    b) Burrying 500m deep below soil surface
    c) Polyblend
    d) Electrostatic precipitator

Ans. (c)

52. If an agricultural field is liberally irrigated for a prolonged period of time, it is likely to face problem of :
    a) Metal toxicity b) Alkalinity
    c) Acidity d) Salinity

Ans. (d)


STAYING A STEP AHEAD
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