Table of Contents

S.No.	Chapter Name	Pg. No.
1.	Sexual Reproduction in Flowering Plants	1-17
2.	Principles of Inheritance And Variation	18-47
3.	Molecular Basis of Inheritance	48-65
4.	Microbes in Human Welfare	66-71
5.	Organisms And Populations	72-83
6.	Ecosystem	84-88
7.	Biodiversity and Conservation	89-94
8.	Human Reproduction	95-113
9.	Reproductive Health	114-118
10.	Evolution	119-130
11.	Human Health And Disease	131-150
12.	Biotechnology Principles and Processes	151-156
13.	Biotechnology and it's Application	157-159
	Answer Keys	160-174

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ELP

Educator Led Practice

NEET-BIOLOGY **ELP NO.-1** **SEXUAL REPRODUCTION IN FLOWERING PLANTS**

1. Whorl of petals in flower represents
(A) Gynoecium (B) Androecium (C) Calyx (D) Corolla

2. Whorl of sepals in flower represents
(A) Androecium (B) Gynoecium (C) Calyx (D) Corolla

3. Stamens consists of which of the following parts?
(A) Filament (B) Style, stigma (C) Anther (D) Both (A) and (C)

4. The number and length of stamens in flowers are
(A) Variable in different species.
(B) Same in plants present in similar climatic condition.
(C) Variable and dependent on the amount of hormonal secretion.
(D) Variable in different species and depend on the seasonal variation.

5. Typical angiosperm anther is
(A) Unilobed and dithecous (B) Bilobed and dithecous
(C) May be both (A) and (B) (D) Bilobed and tetrathecous

6. The anther in transverse section appears to be
(A) Diagonal (B) Tetragonal (C) Unilobed (D) Mosaic

7. What are A, B, C and D in this figure?

(A) A: Thalamus, B: Style, C: Ovary, D: Stigma
(B) A: Style, B: Ovary, C: Stigma, D: Thalamus
(C) A: Stigma, B: Style, C: Ovary, D: Thalamus
(D) A: Ovary, B: Stigma, C: Thalamus, D: Style

8. Tetragonal anther consists of
(A) One microsporangia (B) Two microsporangia
(C) Three microsporangia (D) Four microsporangia

9. How many microsporangia are there in each lobe of anther?
(A) One microsporangia (B) Two microsporangia
(C) Three microsporangia (D) Four microsporangia

10. Pollen sacs develop from
(A) Microspore (B) Microspore mother cell
(C) Microsporangium (D) Megaspore

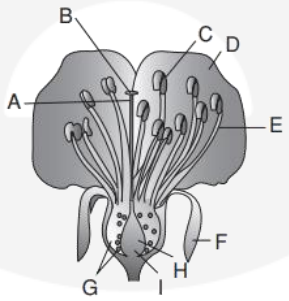
11. Typical microsporangium appear _____ in transverse section.
(A) Wavy (B) Circular (C) Oval (D) Irregular

12. Which one amongst the given perform the function of protection in typical microsporangium?
(A) Epidermis (B) Endothecium (C) Tapetum (D) Middle layer
(A) A and B (B) A and C (C) A and D (D) A, B and D

13. Which of the following layer of microsporangium provides nourishment to the developing anther?
(A) Middle layers (B) Tapetum (C) Endothecium (D) Epidermis

14. Function performed by the outer three layers of microsporangium?
(A) Protection to developing pollen
(B) Provides nourishment to developing pollen
(C) Helps in the dehiscence of anther to release pollen
(D) Both (A) and (C)

15. Identify the parts A to I in this figure.



(A) A: Ovary, B: Anther, C: Filament, D: Nectariferous area, E: Sepal, F: Stigma, G: Style, H: Ovule, I: Petal
(B) A: Anther, B: Ovule, C: Stigma, D: Anther, E: Petal, F: Filament, G: Sepal, H: Nectariferous area, I: Ovary
(C) A: Ovary, B: Ovule, C: Nectariferous area, D: Sepal, E: Filament, F: Petal, G: Anther, H: Stigma, I: Style
(D) A: Style, B: Stigma, C: Anther, D: Petal, E: Filament, F: Sepal, G: Nectariferous area, H: Ovule, I: Ovary

16. The microsporangium cells which posses dense cytoplasm and have more than one nucleus is the characteristic of
(A) Middle layers (B) Tapetum
(C) Endothecium (D) Epidermis

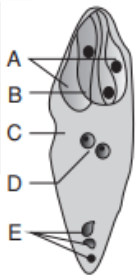
17. In young anther the tissue occupying the centre of each microsporangium is called
(A) Megaspore mother cell (B) Sporogenous tissue
(C) Parietal tissue (D) None of these

18. Sporogenous tissue of microsporangia is
(A) Groups of compactly arranges homogenous cells
(B) Occupies the centre of microsporangium
(C) Present inside young anther
(D) All the above

19. Arrange the following layers of microsporangium according to their presence from inside to outside.
(A) Endothecium (B) Middle layer (C) Tapetum (D) Epidermis
(A) A, B, C, D (B) B, A, C, D (C) D, C, B, A (D) C, B, A, D

20. Each cell of microspore tetrad is
(A) 2n (B) n
(C) Some n and some 2n (D) 3n

21. Identify A to E in this figure?



(A) A: Synergids, B: Egg, C: Central cell, D: 2 polar nuclei, E: Antipodals
(B) A: Antipodals, B: Synergids, C: Central cell, D: Egg, E: 2 polar nuclei
(C) A: Synergids, B: Central cell, C: 2 polar nuclei, D: Antipodals, E: Egg
(D) A: Egg, B: 2 polar nuclei, C: Antipodals, D: Central cell, E: Synergids

22. Match the following

Column – I	**Column – II**
A. Vegetative cell	1. Sporopollenin
B. Generative cell	2. Spindle-shaped cell
C. Exine	3. Large sized and has abundant food reserve
D. Intine	4. Cellulose and pectin

(A) A:1, B:2, C:3, D:4 (B) A:4, B:3, C:2, D:1 (C) A:3, B:2, C:1, D:4 (D) A:2, B:1, C:4, D:3

23. **Assertion:** Pollen grains are well preserved as fossils.
Reason: Pollen posses sporopollenin.
(A) If both the assertion and the reason are true and the reason is a correct explanation of the assertion.
(B) If both the assertion and reason are true but the reason is not a correct explanation of the assertion.
(C) If the assertion is true but the reason is false.
(D) If both the assertion and reason are false

24. **Assertion:** Pollen tables is used as a food supplement.
Reason: Pollen grains are rich in nutrient.
(A) If both the assertion and the reason are true and the reason is a correct explanation of the assertion.
(B) If both the assertion and reason are true but the reason is not a correct explanation of the assertion.
(C) If the assertion is true but the reason is false.
(D) If both the assertion and reason are false

NEET-BIOLOGY **ELP NO.-2 SEXUAL REPRODUCTION IN FLOWERING PLANTS**

1. Which type of cell division occurs in the cell of sporogenous tissue to form microspore?
(A) Reduction division (B) Equational division
(C) Both (A) and (B) (D) Amitosis

2. Formation of pollen from pollen mother cell is referred to as
(A) Pollenogenesis (B) Megasporogenesis
(C) Microsporogenesis (D) Ovulation

3. Pollen grains are
(A) Microspore tetrad (B) Dehydrated microspores
(C) Megaspore tetrad (D) Pollen mother cells

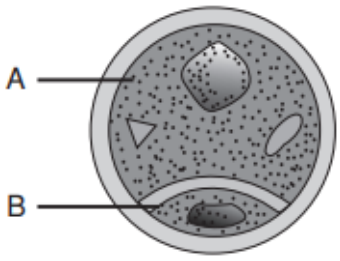
4. Male gametophyte in angiosperm is represented by
(A) Anther (B) Androecium (C) Microsporangium (D) Pollen grain

5. Pollen grains are
(A) Spherical (B) Oval
(C) Generally spherical (D) Irregular

6. Diameter of pollen grain is
(A) 20–50 µm (B) 25–50 µm (C) 30–50 µm (D) 10–50 µm

7. Exine of pollen is
(A) Hard outer layer of pollen grain
(B) Most resistant organic matter known.
(C) Layer made up of sporopollenin.
(D) Layer which can withstand high temperature, strong acids and alkali.
(E) Layer which cannot be degraded by any known enzyme.
Which one of the following is correct?
(A) A and B (B) A, B, C and D (C) A, B, C, D and E (D) A, C and E

8. What are the parts A and B in this figure?



(A) A: Generative cell, B: Vegetative cell (B) A: Tapetal cell, B: Generative cell
(C) A: Vegetative cell, B: Generative cell (D) A: Homogenous cell, B: Tapetal cell

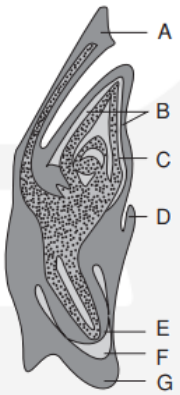
9. Sporopollenin is
(A) Most resistant organic matter known
(B) Present in exine of pollen grain
(C) Absent in the germ pole of pollen grain
(D) All of these

10. Pollen grains can be preserved as fossil because
(A) They vary from species to species
(B) They have variety of architecture
(C) They are made up of sporopollenin
(D) They exhibit a fascinating array of pattern and design

11. Which part of pollen exhibit a fascination array of pattern and design?
(A) Intine (B) Exine (C) Germ pore (D) None of these

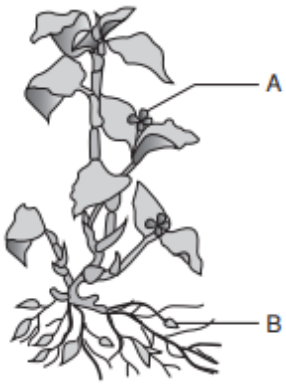
12. Intine of pollen grain is
(A) Inner layer of pollen grain
(B) A thin and continuous layer
(C) Made up of cellulose and pectin
(D) All of these

13. What does 'A' indicate in this figure?



(A) Scutellum (B) Shoot apex (C) Radicle (D) Coleorhiza

14. What are A and B in this figure?



(A) A: Chasmogamous flower, B: Cleistogamous flower
(B) A: Cleistogamous flower, B: Chasmogamous flower
(C) A: Chasmogamous flower, B: Chasmogamous flower
(D) A: Cleistogamous flower, B: Self-pollinated flower

15. Pollen grains are mature when

(A) It contains vegetative and generative cell

(B) It contains only single haploid cell

(C) Contains two haploid cell

(D) Both (A) and (C)

16. Pollen grains are shed in 2 celled stage in

(A) > 90% Angiosperm plant (B) < 50% Angiosperm plant

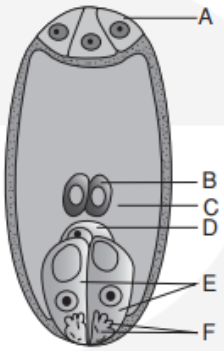
(C) > 60% Angiosperm plant (D) < 40% Angiosperm plant

17. Generate cell floats in the cytoplasm of

(A) Vegetative cell (B) Microspore mother cell

(C) Pollen mother cell (D) Megasporangium

18. Identify the parts of A to F in the following figure?



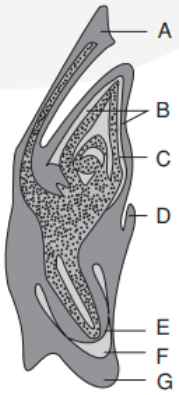
(A) A: Filiform apparatus, B: Polar nuclei, C: Antipodals, D: Synergids, E: Egg, F: Central cell

(B) A: Antipodals, B: Polar nuclei, C: Central cell, D: Egg, E: Synergids, F: Filiform apparatus

(C) A: Antipodals, B: Central cell, C: Polar nuclei, D: Egg, F: Synergids, G: Filiform apparatus

(D) A: Eggs, B: Central cell, C: Filiform apparatus, D: Polar nuclei, E: Antipodals, F: Synergids

19. Identify the part 'D'.



(A) Radicle (B) Root cap

(C) Coleorhiza (D) Epiblast

20. Thin and continuous layer of pollen made up of cellulose and pectin

(A) Intine (B) Exine

(C) Germ pore (D) None of these

21. Match the following

Column – I	**Column – II**
A. Dithecus	1. Inner most layer of anther wall
B. Apocarpous	2. Anther
C. Tapetum	3. Pistil
D. Exine	4. Sporopollenine

(A) A:1, B:2, C:3, D:4 (B) A:4, B:3, C:2, D:1 (C) A:3, B:2, C:1, D:4 (D) A:3, B:1, C:2, D:4

22. **Assertion:** Pollen tube enters the ovule through micropyle.
Reason: Pollen tube enters in one of the synergids through filiform apparatus.

(A) If both the assertion and the reason are true and the reason is a correct explanation of the assertion.
(B) If both the assertion and reason are true but the reason is not a correct explanation of the assertion.
(C) If the assertion is true but the reason is false.
(D) If both the assertion and reason are false

23. **Assertion:** Coconut water is a cellular endosperm.
Reason: White kernel of coconut is a free nuclear endosperm.

(A) If both the assertion and the reason are true and the reason is a correct explanation of the assertion.
(B) If both the assertion and reason are true but the reason is not a correct explanation of the assertion.
(C) If the assertion is true but the reason is false.
(D) If both the assertion and reason are false.

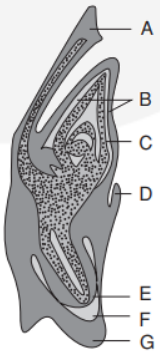
NEET-BIOLOGY **ELP NO.-3 SEXUAL REPRODUCTION IN FLOWERING PLANTS**

1. The below figure represents

(A) Self-pollinated flowers
(B) Cross-pollinated flowers
(C) Cleistogamous flowers
(D) None of these

2. Which one of the following is incorrect?
(A) Parthenium or carrot gases causes pollen allergy.
(B) Vegetative cell of pollen has abundant food reserve.
(C) All pollen's cause severe allergies and bronchial afflictions.
(D) Sporopollenin is the most resistant organic matter known.
(A) All are correct
(B) A
(C) B
(D) C

3. What 'C' is showing in the given figure?



(A) Epiblast (B) Scutellum (C) Shoot apex (D) Radicle

4. Pollen grains
(A) Represent gametophytic phase of plant
(B) Can cause severe allergies like asthma and bronchitis
(C) Are rich in nutrient
(D) Are used as food supplements
(E) Are available in form of tables and syrups in market of western countries
(A) Only A is correct
(B) All are correct
(C) All are wrong
(D) Only A, B and C are correct

5. Viability of pollen grains depend upon
(A) A particular species (B) Prevailing temperature
(C) Humidity (D) All of the above

6. Rice pollen grains are viable for
(A) 6.0 mins (B) 30 mins (approx)
(C) 60 mins (approx) (D) 40 mins

7. Pollens are stored in
(A) Oxygen (–196°C) (B) Nitrogen (–196°C)
(C) Oxygen (196°C) (D) Nitrogen (+196°C)

8. Syncarpous condition is referred to as
(A) Gynoecium containing single pistil
(B) More than one pistil fused together
(C) More than one pistil free from one another
(D) Gynoecium containing many pistils

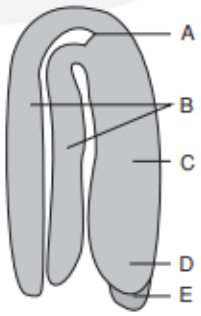
9. Landing platform for pollen grains is
(A) Stigma (B) Style
(C) Ovary (D) None of them

10. Bulged basal part of pistil is
(A) Stigma (B) Style
(C) Ovary (D) None of these

11. Elongated slender part of pistil is
(A) Stigma (B) Style
(C) Ovary (D) None of these

12. Megasporangia is referred to as
(A) Ovule (B) Ovary (C) Gynoecium (D) All of these

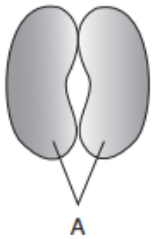
13. What are parts A to E in this below figure?



(A) A: Plumule, B: Cotyledons, C: Hypocotyl, D: Radicle, E: Root cap
(B) A: Root cap, B: Hypocotyl, C: Plumule, D: Radicle, E: Cotyledons
(C) A: Cotyledons, B: Root cap, C: Cotyledons, D: Plumule, E: Hypocotyl
(D) A: Plumule, B: Cotyledons, C: Root cap, D: Radicle, E: Hypocotyl

14. Plants having single ovule in ovary are
(A) Wheat (B) Paddy
(C) Mango (D) All of these

15. What represents 'A' in the following figure?



(A) Cotyledons (B) Scutellum (C) Shoot apex (D) Radicle

16. More than one ovule is found in the ovary of
(A) Wheat (B) Paddy (C) Papaya (D) None of these

17. The stalk attaching ovule to placenta is
(A) Funiculus (B) Hilum (C) Raphe (D) Chalaza

18. The junction between ovule and funiculus is
(A) Placenta (B) Hilum (C) Raphe (D) Chalaza

19. The tips on the ovule where integument are absent are called
(A) Germ pore (B) Micropyle (C) Both (A) and (B) (D) None of these

20. The end opposite to micropyles end is called
(A) Funicle (B) Chalaza (C) Germ pore (D) Hilum

21. Match the following.

Column – I	**Column – II**
A. Pollen grain	1. Parthenium
B. Allergy	2. Tablet and Syrup
C. Papaver	3. Female part
D. Mega sporangium	4. Multicarpellary + syncarpous

(A) A:1, B:2, C:3, D:4 (B) A:4, B:3, C:2, D:1 (C) A:2, B:1, C:4, D:3 (D) A:3, B:1, C:2, D:4

22. **Assertion:** Most of the zygote divides only after certain amount of endosperm is formed
Reason: This is an adaptation to provide assumed nutrition to the developing embryo.
(A) If both the assertion and the reason are true and the reason is a correct explanation of the assertion.
(B) If both the assertion and reason are true but the reason is not a correct explanation of the assertion.
(C) If the assertion is true but the reason is false.
(D) If both the assertion and reason are false

23. **Assertion:** Embryos of monocotyledons posses only one cotyledon.
Reason: In the grass family the cotyledon is called scutellum.
(A) If both the assertion and the reason are true and the reason is a correct explanation of the assertion.
(B) If both the assertion and reason are true but the reason is not a correct explanation of the assertion.
(C) If the assertion is true but the reason is false.
(D) If both the assertion and reason are false.

NEET-BIOLOGY **ELP NO.-4 SEXUAL REPRODUCTION IN FLOWERING PLANTS**

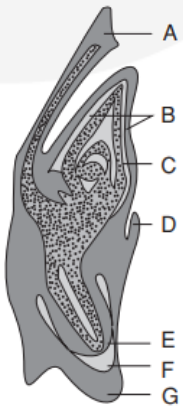
1. Female gametophyte of angiosperm is referred to as
(A) Megasporangium (B) Megaspore
(C) Embryo sac (D) Nucleus

2. Embryo sac is formed by
(A) Reduction division in megaspore
(B) Equational division in megaspore
(C) Reduction division followed by equational division in megaspore mother cell
(D) Both (B) and (C)

3. How many embryo sacs are present in an ovule?
(A) One embryo sac (B) More than one embryo sac
(C) One embryo sac (generally) (D) Two embryo sacs

4. What is functional megaspore referred to as?
(A) The megaspore that degenerates after formation.
(B) The megaspore that only develops in female gametophyte.
(C) The megaspore that undergoes reduction division.
(D) The megaspore that is functionally inactive.

5. What is 'B' in the given figure?



(A) Scutellum (B) Coleorhiza (C) Coleoptile (D) Shoot apex

6. Monosporic development is referred to as
(A) Single megaspore developing in the embryo sac
(B) Single megaspore mother cell undergoing meiosis
(C) Presence of single ovule in ovary
(D) None of them is correct

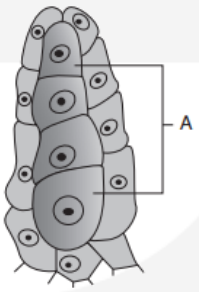
7. What is the ploidy level of nucleus, MMC, functional megaspore and female gametophyte?
(A) 2n, n, 2n, 2n (B) 2n, n, 2n, n
(C) 2n, 2n, n, n (D) n, 2n, n, n

8. How many mitotic division takes place for complete development of embryo sac?
(A) 4 (B) 3 (C) 2 (A) 1

9. The inside three mitotic division which occurs in the megaspore are
(A) Followed by cytoplasmic division immediately.
(B) Strictly free nuclear not immediately followed by cell wall formation.
(C) Wall formation occurs after the completion of the second mitosis.
(D) Wall formation will never occur.

10. Typical female gametophyte is
(A) 7-celled 8 nucleate (B) 6-celled 8 nucleate
(C) 4-celled 6 nucleate (D) 5-celled 6 nucleate

11. What is 'A' in this figure?



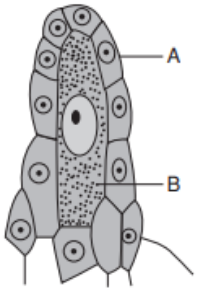
(A) Megaspore mother cell (B) Megaspore tetrad
(C) Embryo sac (D) Micropyle

12. Egg apparatus consists of
(A) Two synergids (B) Two antipodals
(C) Egg cell (D) Both (A) and (C)

13. The cellular thickening at the tip of micropyle is
(A) Synergids (B) Egg apparatus
(C) Filiform apparatus (D) All of these

14. The cells located at chalazal ends are called as
(A) Synergids (B) Antipodals
(C) Egg apparatus (D) None of these

15. Identify the parts A and B in this figure.



(A) A: Megaspore tetrad, B: Nucleus (B) A: Central cell, B: Megaspore dyad
(C) A: Nucellus, B: Megaspore mother cell (D) A: Nucellus, B: Central cell

16. The central cell
(A) Contains two haploid nuclei (B) Has two polar nuclei
(C) Located in the centre of embryo sac (D) All of these

17. The cells in embryo sac located at the micropyles end are
(A) Egg apparatus (B) Only synergid (C) Antipodal cell (D) Central cell

18. The male and female gametes of angiosperm are respectively
(A) Motile, non-motile (B) Non-motile, motile
(C) Motile, motile (D) Non-motile, non-motile

19. After three meiotic divisions in the functional megaspore, the gametophyte (embryosac) has how many cells.
(A) 7 cells (B) 4 cells (C) 5 cells (D) 8 cells

20. Match the following

Column – I	**Column – II**
A. Endosperm	1. 7 celled stage, 8 nucleate
B. Embryo sac	2. 2 celled stage
C. Pollen grain	3. 3n
D. Antipodal cell	4. n

(A) A:1, B:2, C:3, D:4 (B) A:2, B:3, C:1, D:4 (C) A:2, B:1, C:4, D:3 (D) A:3, B:1, C:2, D:4

21. **Assertion:** Parthenocarpic fruits are seedless
Reason: Parthenocarpic fruits develop without fertilization.
(A) If both the assertion and the reason are true and the reason is a correct explanation of the assertion.
(B) If both the assertion and reason are true but the reason is not a correct explanation of the assertion.
(C) If the assertion is true but the reason is false.
(D) If both the assertion and reason are false

22. **Assertion:** Angiosperm can colonize is other areas easily.
Reason: Angiosperms have seeds and seeds have better adoptive strategies for dispersal to new habitats.
(A) If both the assertion and the reason are true and the reason is a correct explanation of the assertion.
(B) If both the assertion and reason are true but the reason is not a correct explanation of the assertion.
(C) If the assertion is true but the reason is false.
(D) If both the assertion and reason are false.

NEET-BIOLOGY **ELP NO.-5 SEXUAL REPRODUCTION IN FLOWERING PLANTS**

1. The below figure represents

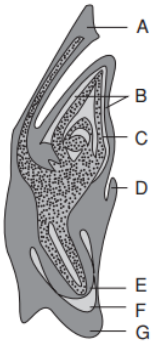
(A) Anther (B) Typical stamen (C) Pollen grain (D) Microsporangium

2. Pollination in plants is referred to as
(A) Fusion of male and female gametes.
(B) Transfer of pollen grain to stigma of pistil.
(C) Germination of pollen of stigma.
(D) Production of pollen grew inside the microsporangium.

3. Autogamy refers to
(A) Transfer of pollen grain to stigma of another flower
(B) Transfer of pollen grain to stigma of same flower
(C) Both (A) and (B)
(D) None of these

4. What is observed in a normal flower which opens and exposes the stigma and anther?
(A) Autogamy is absent (B) Complete autogamy is rare
(C) Always autogamous (D) Always xenogamous

5. What is 'G' in the given figure?



(A) Scutellum (B) Coleorhiza (C) Coleoptile (D) Shoot apex

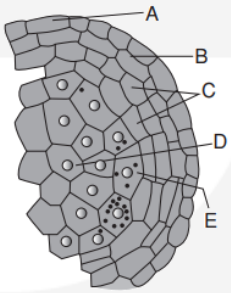
6. Plants which produce two types of flowers are
(A) Viola (B) Oxalis (C) Commelina (D) All of these

7. The two types of flowers found in autogamous plant is
(A) Flower similar to flowers of other species with exposed anthers and stigma.
(B) Flowers which do not open at all.
(C) Both (A) and (B)
(D) Flowers with only stigma and no anther.

8. _____ flowers produce assured seed set even in the absence of pollinators
(A) Cleistogamous flower (B) Chasmogamous flowers
(C) Both (A) and (B) (D) Flowers showing geitonogamy

9. A type of cross pollination involving a pollinating agent is genetically similar to autogamy since pollen grain come from same plant, it is called
(A) Xenogamy (B) Geitonogamy (C) Autogamy (D) All of these

10. What are the parts A, B, C, D and E in the below figure?

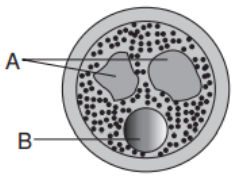


(A) A: Tapetum, B: Middle layers, C: Microspore mother cells, D: Endothecium, E: Epidermis
(B) A: Middle layers, B: Endothecium, C: Tapetum, D: Epidermis, E: Microspore mother cell
(C) A: Endothecium, B: Epidermis, C: Tapetum, D: Endothecium, E: Microspore mother cell
(D) A: Epidermis, B: Endothecium, C: Middle layers, D: Microspore mother cells, E: Tapetum

11. The only type of pollination during which pollination brings genetically different types of pollen grains to stigma
(A) Xenogamy (B) Geitonogamy (C) Autogamy (D) All of these

12. Majority of plants uses which types of pollinating agents?
(A) Biotic (B) Abiotic (C) Both (A) and (B) (D) None of these

13. What are A and B in the following figure?



(A) A: Vacuoles, B: Intine (B) A: Vacuoles, B: Nucleus
(C) A: Nucleus, B: Intine (D) A: Exine, B: Intine

14. _____ proportion of plants uses abiotic agents for pollination.
(A) Major (B) Most
(C) Small (D) Can be small or major

15. _____ factor is responsible for the contact of pollen with stigma in wind and water pollinated plants.

(A) Luck (B) Chance (C) Time (D) Temperature

16. Enormous amount of pollens are produced in wind and water pollinated plants

(A) To compensate for uncertainties for contact of pollen with stigma.

(B) To compensate for loss of pollen grains.

(C) To ensure pollination for large number of ovules present.

(D) Both (A) and (B)

17. Most of the common abiotic pollinating agent for plant is

(A) Anemophily (B) Hydrophily

(C) Pollination by bees (D) Pollination by ants

18. Light and non-sticky pollen grains are favourable for

(A) Water pollinated plant (B) Wind pollinated plant

(C) Plants with fatherly sigma (D) Both (A) and (C)

19. Which of the following are true for wind pollinated plants?

(A) Well exposed statements

(B) Large and often feathery stigma

(C) Single ovule in each ovary

(D) Large number of flower packed into an inflorescence

(A) Only A (B) Only B and C

(C) Only C (D) All are correct

20. Wind pollinated flowers have

(A) Single ovule in one ovary (B) More than one ovule in ovary

(C) Been packed into an inflorescence (D) Both (A) and (C)

21. The tassels of corn cob are

(A) Stigma and style (B) Meant to trap pollen grains in wind

(C) Both (A) and (B) (D) All are incorrect

22. Match the following

Column – I	**Column – II**
A. Tree fruit	1. Banana
B. Parthenocarpic fruit	2. Mango
C. False fruit	3. Maize grain
D. Fruit with seed	4. Apple fruit

(A) A:1, B:2, C:3, D:4 (B) A:2, B:3, C:1, D:4

(C) A:2, B:1, C:4, D:3 (D) A:3, B:1, C:2, D:4

23. **Assertion:** Seed is the basic tool for agriculture.

Reason: Dehydration and dormancy of mature seed is not crucial for the storage of seeds.

(A) If both the assertion and the reason are true and the reason is a correct explanation of the assertion.

(B) If both the assertion and reason are true but the reason is not a correct explanation of the assertion.

(C) If the assertion is true but the reason is false.

(D) If both the assertion and reason are false

24. **Assertion:** Polyembryony is found in all angiosperm.
Reason: All angiosperm are produced by apomixis.
(A) If both the assertion and the reason are true and the reason is a correct explanation of the assertion.
(B) If both the assertion and reason are true but the reason is not a correct explanation of the assertion.
(C) If the assertion is true but the reason is false.
(D) If both the assertion and reason are false.

NEET-BIOLOGY **ELP NO.-1** **PRINCIPLES OF INHERITANCE AND VARIATION**

1. Out of seven characters in Pea plant studied by Mendel, the number of flower based characters was
(A) One (B) Three (C) Four (D) Two.

2. How many true breeding pea plant varieties did Mendel select as pairs, which were similar except in one character with contrasting traits?
(A) 4 (B) 2 (C) 14 (D) 8.

3. Gregor Mendel selected Pea plant for his genetic experiments, because
(A) Many pure varieties of pea are available
(B) The reproductive organs of pea plant are enclosed by petals and generally self pollination and fertilisation takes place & accidentally too there is no possibility of hybridization
(C) The hybrids obtained by reproduction of two different varieties are fertile.
(D) All of the above statements are correct.

4. It is said that Mendel proposed that the factor controlling any character is discrete and independent. His proposition was based on the :
(A) Results of F_3 generation of a cross
(B) Observations that the offspring of a cross made between the plants having two contrasting characters shows only one character without any blending.
(C) Self pollination of F_1 offsprings
(D) Cross pollination of F_1 generations with recessive parental

5. Among seven pairs of traits studied by Mendel. The number of traits related to flower, pod and seed were
(A) 2, 2, 2 (B) 2, 2, 1 (C) 1, 2, 2 (D) 1, 1, 2

6. All are dominant traits studied by Mendel
(A) Axial flower, green pod, green seed (B) Green pod, inflated pod, axial flower
(C) Yellow seed, violet flower, yellow pod (D) Round seed, constricted pod, axial flower.

7. In his classic experiments on pea plants, Mendel did not use
(A) Pod length (B) Seed shape (C) Flower position (D) Plant height

8. What does the principle of dominance in genetics state?
(A) Crosses between parents with different traits are called hybrids.
(B) Alleles which are dominant express in heterozygous condition but recessive allele not express.
(C) A recessive allele will be expressed instead of a dominant allele.
(D) The genotype for eye color is the same for all eye colors.

9. Read the following statements
(I) Mendel studied four characters related to colour in garden pea plant.
(II) One pair of gene always segregates independently of another pair of gene.
(III) Experiment year of Mendel's hybridization experiment is 1956 to 1963.
(IV) Independent assortment follow in dihybrid cross only.
How many of the above statements are correct?
(A) Four (B) Three (C) Two (D) One

10. **Assertion:** Mendel work on 7 character and 14 traits.
Reason: Mendel used 2 character for monohybrid cross at a time.
(A) Both assertion and reason are true and reason is not correct explanation of assertion.
(B) Both assertions and reason are true but reason is correct explanation of assertion.
(C) Assertion is true but reason is false.
(D) Assertion is false but reason is true.

11. Mendel proposed that something was being stably passed down, unchanged, from parent to offspring through the gametes, over successive generations. He called these things as..... Now we call them as.....
(A) Allele, gene (B) Gene, Genotype
(C) Factors, Gene (D) Allele, Factors

12. **Assertion:** Mendel conducted artificial pollination/cross pollination experiments using several true-breeding pea lines
Reason: A true breeding line is one that, shows the stable trait inheritance and expression for several generations.
(A) Assertion and reason correct and reason is correct explanation of assertion
(B) Assertion and reason correct and reason is not correct explanation of assertion
(C) Assertion is correct and reason incorrect
(D) Assertion incorrect and reason correct

13. Choose the correct statement
(A) Mendel's work time period 1856-1863
(B) Rediscovery of Mendel's work by Hugo de Vries alone
(C) Mendel proposed two sets of generalization
(D) Mendel's work unrecognized due to ethical issues
(E) Linkage was observed during Mendel's hybridization experiment.
(A) A & C (B) B & D (C) E & A (D) A & D

14. In a dissimilar pair of factors one member of the pair _____ the other (Recessive)
(A) Dominates (B) Co-dominate (C) Both (A) & (B) (D) All incorrect

15. **Assertion:** First time statistical analysis and mathematical logic were applied by Mendel to solve problems in biology.
Reason: Mendel's experiments had a large sampling size, which gave greater credibility to the data that he collected
(A) Assertion and reason correct and reason is correct explanation of assertion
(B) Assertion and reason correct and reason is not correct explanation of assertion
(C) Assertion is correct and reason incorrect
(D) Assertion is Incorrect and reason correct

16. Choose the correct statement

(A) Confirmation of inferences from Mendel's experiments on successive generations of out cross plants, proved that his results pointed to general rules of inheritance rather than being unsubstantiated ideas.

(B) Mendel investigated characters in the garden pea plant that were manifested as two opposing traits, e.g. tall or dwarf plants

(C) Mendel set up a advance framework of rules governing inheritance

(D) Mendel selected 14 true-breeding pea plant varieties, as pairs which were similar except for one character with contrasting traits.

17. Reason for success of Mendel in experiment of hybridisation (Except)

(A) Characters of pisum sativum. (B) True breeding lines of pisum sativum

(C) Linkage among factors (D) Paired factors of characters

18. Characters used by Mendel represent by genotype

(X)	**(Y)**
(A) GG/gg	Gg
(B) rr/Rr	Rr
(C) Dd/dd	DD
(D) FF/Ff	ff

19. If two persons with AB' blood group marry and have sufficiently large number of children, these children could be classified as 'A' blood group: 'AB' blood group: 'B' blood group in 1:2:1 ratio. Modern technique of protein electrophoresis reveals presence of both 'A' and 'B' type proteins in 'AB' blood group individuals. This is an example of :

(A) Incomplete dominance (B) Partial dominance

(C) Complete dominance (D) Co-dominance

20. Mother and father of a person with 'O' blood group have 'A' and 'B' blood group respectively. What would be the genotype of both mother and father ?

(A) Mother is homozygous for 'A' blood group and father is heterozygous for 'B'

(B) Mother is heterozygous for 'A' blood group and father is homozygous for 'B'

(C) Both mother and father are heterozygous for 'A' and 'B' blood group, respectively

(D) Both mother and father are homozygous for 'A' and 'B' blood group, respectively.

21. 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 ; 4 phenotypes (B) 4 genotypes ; 3 phenotypes

(C) 4 genotypes ; 4 phenotypes (D) 3 genotypes ; 3 phenotypes

22. 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) Pink colour in F_1 is due to incomplete dominance

(B) Ratio of F_2 is 1/4 (Red) : 2/4(Pink) : 1/4 (White)

(C) Law of Segregation does not apply in this experiment

(D) This experiment does not follow the Principle of Dominance.

23. 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)

24. **Assertion:** ABO blood group system provides a good example of multiple alleles.

Reason: In ABO blood group system, when I^A and I^B alleles are present together, they both express their own types.

(A) Assertion and reason is correct and reason is correct explanation of assertion

(B) Assertion and reason is correct and reason is not correct explanation of assertion

(C) Assertion is correct and reason is incorrect.

(D) Assertion is Incorrect and reason is correct

25. Three children in a family have blood types O, AB and B respectively. What are the genotypes of their parents?

(A) I^Ai and I^Bi (B) I^BI^B and I^AI^A (C) I^AI^B and i^I (D) I^AI^A and I^Bi.

NEET-BIOLOGY **ELP NO.-2** **Principles of Inheritance and Variation**

1. Pure tall plants are crossed with pure dwarf plants. In the F_1 generation all plants were tall. These tall plants of F_1 generation were selfed and the ratio of tall to dwarf plants obtained was 3 : 1. This is called
(A) Dominance (B) Inheritance (C) Co-dominance (D) Heredity

2. **Assertion:** At F_2 stage in monohybrid cross, both parental traits are expressed in the proportion of 3 : 1.
Reason: The contrasting parental traits show blending at F_2 stage.
Read the assertion and reason carefully to mark the correct option in question
(A) Both assertion and reason are true and reason is correct explanation of assertion
(B) Both assertion and reason are true and reason is not correct explanation of assertion
(C)Assertion is true but reason is false
(D) If both assertion and reason are false.

3. If at a tall plant is crossed with a dwarf plant and half of the obtained progeny is tall and half dwarf plants. Then the genotype of progeny will be
(A) TT × tt (B) Tt × tt (C) TT × Tt (D) Tt × Tt

4. Which one of the following cannot be explained on the basis of Mendel's Law of Dominance
(A) Out of one pair of factors, one is dominant and the other recessive
(B) Alleles do not show any blending and both the characters recover as such in F_2 generation
(C) Factors occurs in pairs
(D) Discrete unit controlling a particular character is called a factor

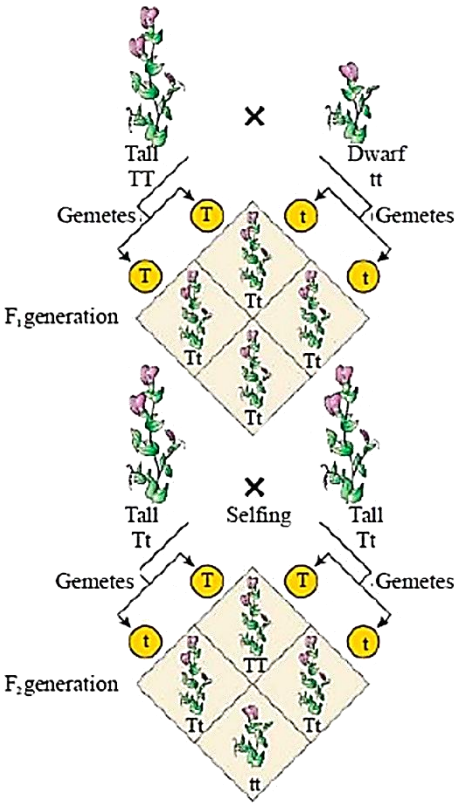
5. A test cross is performed to know
(A) Genotype of F_2 dominants (B) Linkage between two traits
(C) Number of alleles of a gene (D) Success of inter-varietal and interspecific cross

6. 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) 3 : 1 :: Tall : Dwarf
(B) 3 : 1 :: Dwarf : Tall
(C) 1 : 2 : 1 :: Tall homozygous : Tall heterozygous : Dwarf
(D) 1 : 2 : 1 :: Tall heterozygous : Tall homozygous : Dwarf.

7. The modified allele is equivalent to the unmodified allele, it will produce
(A) Normal enzyme result in the transformation of substrate S
(B) Non-functional enzyme
(C) No enzyme.
(D) All correct

8. Character chosen by Mendel during hybridization experiment, can not express in heterozygous combination.
(A) Axial Flower (B) Tall plant (C) Wrinkled seed (D) Inflated pods

9. Which of the following cytogenetically event is not depicted here ?
Phenotypic ratio : tall : dwarf
3 : 1
Genotypic ratio : TT : Tt : tt
1 : 2 : 1



(A) Segregation of factors (B) Pairing of factor
(C) Independent assortment of factors (D) Descrete nature of factors

10. **Assertion:** Dominance is not an autonomous feature of gene
Reason: Dominance of trait depends on product and also the expression of product.
(A) Both assertion and reason is correct and reason is correct explanation of assertion
(B) Both assertion and reason is correct and reason is not correct explanation of assertion
(C) Assertion is correct and reason incorrect
(D) Assertion is incorrect and reason is correct

11. Law based on monohybrid cross are
I. Law of dominance
II. Law of segregation
III. Law of paired factors
IV. Law of gamete formation
V. Law of independent assortment
(A) I, II, III (B) I, II and IV (C) I, II only (D) II, IV only

12. Law of Segregation confirmed first time by Mendel through
(A) F_2 progeny of monohybrid cross (B) F_1 progeny of Dihybrid cross
(C) F_1 progeny of monohybrid cross (D) All progeny of any hybrid cross

13. Postulates of paired factors confirmed first time by Mendel through

(A) F_2 progeny of monohybrid cross (B) F_1 progeny of Dihybrid cross

(C) F_1 progeny of monohybrid cross (D) Both (A) & (C)

14. Cross of TT x tt as parental generation continue upto 3 generation, phenotype ratio of F_3 generation for Dwarf : tall will be

(A) 3 : 1 (B) 4 : 12 (C) 9 : 3 : 3 : 1 (D) 6 : 10

15. Monohybrid cross performed as per mendelian pattern and 64 progeny produced in F_2 generation, choose appropriate quantity of progeny found in F_2 generation of particular trait

(A)Tall 12 : Dwarf 4 (B)Axial flower 45 : terminal flower 15

(C)Round seed 48: wrinkled seed 16 (D)Inflated pod 30: Shrink pod 10

16. Total seed produced in F_2 generation is 1024, how many progeny contain RR genotype during mendelian experiment

(A) 240 (B) 160 (C) 256 (D) 1000

17. To obtained 400 progeny of seed, cross between Rr x rr performed for 100 times, ratio of round seed and wrinkled seed will be

(A) 40:60 (B) 1:1 (C) 30:40 (D) 60:30

18. Non essential for test cross performing plant

(A) Sexual reproduction (B) Pollen grain formation

(C) Vegetative reproduction (D) Seed formation

19. Dwarf plant undergoes selfing for 3 generation and 40 plant produced, Among 40 plants Dominance of height seen in.....Plants

(A) 30 (B) 10

(C) 40 (D) 0

20. Axial flower plant crossed with axial flower plant and 128 plant produces, Ratio of **Axial heterozygous :Axial homozygous: Terminal heterozygous : Terminal homozygous** plant will be

(i) 64:0:64:0 (ii) 64:32:0:32

(iii) 0:128:0:0 (iv) 64:32:32:0

(A) i and iii possible (B) iv and iii possible

(C) ii and iii possible (D) Only iii possible

21. A man with blood group 'A' marries a women with blood group 'B'. What are all the possible blood groups of their offsprings

(A) A,B,AB and O (B) O only (C) A and B only (D) A,B and AB only

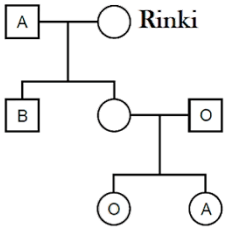
22. In Antirrhinum two plants with pink flowers were hybridised. The F_1 plants produced red. pink and white flowers in ratio of 1 : 2 : 1. What could be genotype of the F_1 plants.

(A) rr (B) Rr (C) RR (D) RRrr

23. There are 12 allele responsible for one character and its traits. Possible phenotype is

(A) 70 (B) 78 (C) 100 (D) 101

24. The diagram shows the inheritance of ABO blood groups. The blood groups of some of the individuals are given.



What could be rinki's genotype?

(A) $i^A\ i^o$ (B) $i^B\ i^B$ (C) $i^B\ i^o$ (D) $i^o\ i^o$

25. The ratio of children's with blood groups O : AB : B : A born to a set of parents in which mother is with B blood group and father with A blood group, will be :-

(A) 1 : 1 : 1 : 1 (B) 2 : 0 : 2 : 0 (C) 0 : 0 : 4 : 0 (D) 4 : 2 : 6 : 4

NEET-BIOLOGY **ELP NO.-3** **PRINCIPLES OF INHERITANCE AND VARIATION**

1. Types of gametes produced by any genotypes depends on
(A) Number of heterozygous pair of factor
(B) Number of homozygous pair of characters
(C) Number of homologous pair of chromosomes
(D) Number of heterologous pair of chromosomes.

2. Self-fertilizing trihybrid plant forms
(A) 8 different gametes and 16 different zygotes
(B) 8 different gametes and 32 different zygotes
(C) 8 different gametes and 64 different zygotes
(D) 4 different gametes and 16 different zygotes

3. How many different types of gametes can be formed by F_1 progeny, resulting from the following cross: AA BB CC × aa bb cc
(A) 3 (B) 8 (C) 27 (D) 64

4. Plant with genotype TtRr AaBb undergoes gametogenesis. Total types of gametes and Possibility of gamete "TraB" out of total types (respectively) is
(A) 64, 16 (B) 12, 4 (C) 64, 1 (D) 16, 1

5. Possible number of gametes from genotype Aa and genotype BB is
(A) 2,1 (B) 1,1 (C) 3,2 (D) 4,4

6. Possible types of gametes equals to
(A) 3^n (B) 2^n (C) 4^n (D) 1^n

7. **Assertion:** Types of gametes possible depends on number of heterozygous pair of alleles in genotypes
Reason: Segregation of allele during gametes formation is basis of possible types.
(A) Assertion and reason correct and reason is correct explanation of assertion
(B) Assertion and reason correct and reason is not correct explanation of assertion
(C) Assertion is correct and reason is incorrect.
(D) Assertion is incorrect and reason is correct.

8. Plant with genotype AaBbGgDdCc undergoes gametogenesis, Choose all possible types of gametes among below mentioned genotypes
ABGDc, abGDc, aaBBgDC, AbCdG, aaBDgc
(A) 5 (B) 4 (C) 3 (D) 2

9. Gamete WRyGa is product of meiosis from genotypes WwRrYyGgAa, how many possible types of gametes except gamete mentioned here
(A) 32 (B) 16 (C) 8 (D) 31

10. TR, Tr, tR, tr gametes produced from
(A) TTRr (B) TtRr (C) ttRr (D) TtRR

11. Only progeny in F_1 generation is AaGgRR than possible parent genotype is
(A) AAGGRR x aaggrr (B) AaGgRr x AaGgRr
(C) aaGGrr x AAggrr (D) Both (B) and (C)

12. Genotypes of gametes is GD,gD,Gd,gd produced by GgDd genotypic organism, if total number of gametes produce in such way about 1024. Choose the correct option
(A) gD = 512 (B) Gd=256 (C) gd=128 (D) GD=16

13. By using fork line method of gamete formation, possible gametes produced by Dihybrid genotype is
(A) 8 - AB, aB, Ab, ab, AAB, Abb, aab, AAb (B) 4 - AB, aB, Ab, ab.
(C) 2 - Ab,AB (D) 16 - any types of gametes

14. Organism with dihybrid genotypes produces gametes with
(A) Homozygous allele of one gene (B) Heterozygous allele of one gene
(C) One pair of allele (D) One of the paired allele

15. Allelic interaction within gene occur in except
(A) Gametes (B) Zygote
(C) Embryo (D) Somatic cell

16. Gametes produced by Non allelic interaction of genes control a character is
(A) Two allele of one character (B) One allele of one character.
(C) Three allele of one character. (D) Two allele of one character.

17. Three organism with genotype AaBB, DdRd, GgPp. Choose the correct option of for possible genotypes of gametes
(A) 2 Types = AB &aB (B) 4 Types = DR, Dr, dR, dr
(C) 4 Types = GP, Gp, gP, gp (D) All are correct

18. Complete homozygous genotypes of gametes produced by organism genotypes AaBB is
(A) Ab (B) AB
(C) Aa (D) aB

19. RrDDggBBYy genotype contain gamete
(A) RDgbY (B) rDgBy
(C) RdGBy (D) rDGbY

20. **Assertion:** All gametes are identical produces by genotype RRgg
Reason: Homozygous alleles in a gene produces parental genotype of gametes.
(A) Assertion and reason is correct and reason is correct explanation of assertion
(B) Assertion and reason is correct and reason is incorrect explanation of assertion
(C) Assertion is correct and reason is Incorrect.
(D) Assertion is Incorrect and reason is correct.

21. When a tall plant with rounded seeds (TTRR) is crossed with a dwarf plant with wrinkled seeds (ttrr), the generation consists of tall plants with rounded seeds. How many types of gametes an plant would produce

(A) One (B) Three (C) Four (D) Eight

22. In the cross YYRR x yyrr, the number of green coloured seeds in F_2 generation is

(A) 9/16 (B) 6/16 (C) 4/16 (D) 1/16.

23. Dihybrid cross F_2 generation ratio is 9:3:3:1 where number of progeny with one recessive trait - one dominant trait are

(A) 10 (B) 9

(C) 6 (D) 12

24. Dihybrid cross between TtRr x TTrr where T = tallness, R= Round seed , t=Dwarfness, r= wrinkled seed

	Tall round	**Tall wrinkled**
(A)	1	1
(B)	2	3
(C)	4	1
(D)	4	8

25. Axial flower with Green pod plant produces four type of gamete

(A) Plant genotype is Homozygous for both character

(B) Plant genotype is heterozygous for one character

(C) Plant genotype is homozygous for one character

(D) Plant genotype is heterozygous for both character

NEET-BIOLOGY **ELP NO.-4** **PRINCIPLES OF INHERITANCE AND VARIATION**

1. Identify the wrong statement -
(A) In male grasshopper, 50% of the sperm have no sex chromosome.
(B) Female birds produce two types of gametes based on sex chromosome.
(C) The human males have one of their sex Chromosomes much shorter than other.
(D) In fowls, the sex of the progeny depends on the type of sperm rather than egg.

2. Select the incorrect match
(A) Y-linked = Holandric
(B) Diandric = Mother ---son--- Grand daughter
(C) Diagynic = Mother---son--- Grand daughter
(D) X-linked = Male hemizygous.

3. Read the following statements :-
(i) Chromosomal disorders can be easily studied by analysis of karyotype
(ii) A daughter will not normally be colour blind, unless her mother is at least carrier and father is colour blind.
(iii) Sperm is responsible for the sex of the chicks.
(iv) Experimental verification of chromosomal theory of inheritance was done by Sutton and Boveri.
How many of the above statements are incorrect?
(A) Four (B) Three (C) Two (D) One

4. Henking gave a name to this structure as the ..... but he could not explain its significance.
(A) X bodies (B) Y bodies
(C) Z body (D) W body

5. Female heterogamy usually found in
(A)Insects (B) Birds
(C) Human (D) Honey bee

6. **Assertion:** XX -XY type of sex determination mechanism is an example of male heterogamety.
Reason: In birds, male heterogamety is seen as male produce two different types of gametes.
Read the assertion and reason carefully to mark the correct option in question
(A) both assertion and reason are true and reason is correct explanation of assertion
(B) both assertion and reason are true and reason is not correct explanation of assertion
(C) both assertion is true and reason is false
(D) both assertion and reason are false

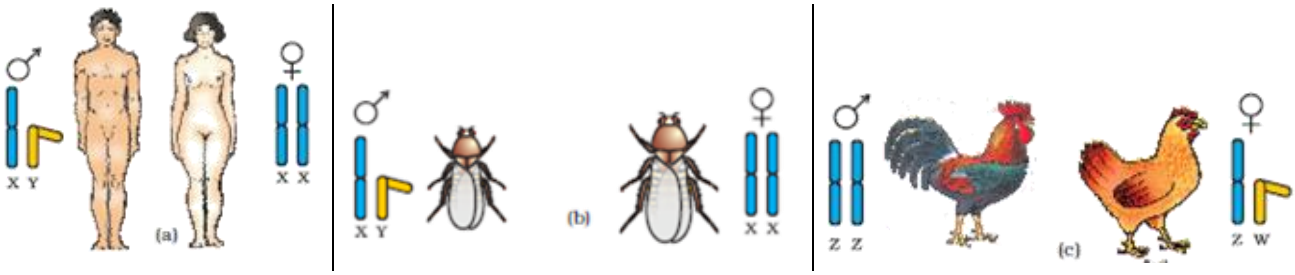
7. ZZ/ZW type of sex determination is seen in:
(A) Platypus (B) Snails (C) Cockroach (D) Peacock

8. What type of sex determination in found in Grasshopper
(A) XX-XY (B) ZW-ZZ (C) ZZ-ZY (D) XX-XO.

9. In a certain taxon of insects some have 17 chromosomes and the others have 18 chromosomes. The 17 and 18 chromosome-bearing organisms are :
(A) Males and females, respectively (B) Females and males, respectively
(C) All males (D) All females.

10. Which one correctly determines the sex
(A) XO condition in Turner's syndrome determines female sex
(B) Homozygous XX produce male in Drosophila
(C) Homozygous ZZ determine female sex in birds.
(D) XO determines male sex in Grasshopper.

11. The figure given below shows three types of sex determination. Select the option giving correct identification.



(A) a- ZW males, ZZ females (B) a - XY Males, XX females
(C) b - XY females, XX males (D) c - ZZ females, XX males

12. From given statement A to E, which of the following options is correct?
(A) CB Bridges proposed genic balance theory of sex determination in honey bees
(B) An unfertilised egg of honey bee develops as a male (drone) by mean of parthenogenesis
(C) In honey bees the females are diploid having 32 chromosomes and males are haploid having 16chromosomes
(D) In honey bees a maternal grand father can have grandsons
(E) Due to false notion the in our society women are blamed for giving birth of female children and they have been ostracised and ill -treated
(A) only A, B and E (B) only B, D and E
(C) only B and D (D) All A, B, C, D and E

13. If Male birds contain 20 chromosome in gametes than gametes of female birds contain
(A) 10 (B) 20 (C) 30 (D) 40

14. Male insect contain 9 chromosomes while female insect contain
(A) 10 (B) 11 (C) 12 (D) 14

15. Zygote of which taxon contain odd number of chromosome
(A) Bird (B) Insect (C) Human (D) All

16. Genotype AAXY produces
(A) Homogametic (B) Heterogametic
(C) Iso-gametic (D) Aniso-gametic

17. **Assertion:** Heterogametic condition found in Male bird
Reason: Homogametic condition found in male insect
(A) Assertion and reason is correct and reason is correct explanation of assertion
(B) Assertion and reason is correct and reason is not correct explanation of assertion
(C) Assertion is correct and reason is Incorrect
(D) Assertion is incorrect and reason is correct

18. The gene frequency for free ear lobe person is 0.6. Calculate the percentage of heterozygous individuals out of a population of 8000.
(A) 1600 (B) 3840 (C) 3860 (D) 3600

19. What is the probability of the next child from the same parents having free earlobes?
(A) 0% (B) 25% (C) 50% (D) 75%

20. Imagine that a population is in Hardy-Weinberg equilibrium. A certain gene presents as twodifferent alleles, and 49% of the population is homozygous dominant.
What percentage of the population is homozygous recessive?
(A) 51% (B) 9% (C) 42% (D) 49%

21. The allele frequencies for a population displaying Hardy-Weinberg equilibrium were found tobe 0.4 dominant and 0.6 recessive. What percentage of the population is showing dominantphenotype?
(A) 16% (B) 64%
(C) 36% (D) 48%

22. Which of the following equation is applied directly to know the distribution and frequencies of traits and gene in random mating population?
(A) $P + 2Pq + q = 1$ (B) $P^2 + 2Pq + q = 1$
(C) $P^2 + 2Pq + q^2 = 1$ (D) $P^2 + 2Pq + q^2 = 2$

23. In a population of 2000 individuals 960 belong to genotype Aa and 320 to aa. Based on this data, the frequency of allele A in the population is:
(A) 0.7 (B) 0.8 (C) 0.4 (D) 0.6

1. The 'Cri-du-Chat' syndrome is caused by change in chromosome structure involving
(A) Deletion (B) Duplication
(C) Inversion (D) Translocation

2. Mongoloid condition is related to or In mongolism a patient shows
(A) Monosomy (B) Trisomy
(C) Nullisomy (D) None of the above

3. Conditions of a karyotype 2n±1 and 2n±2 are called:
(A) Aneuploidy (B) Polyploidy
(C) Nullisomy (D) Monosomy

4. Match the following column and choose the correct option

Column-I	**Column-II**
A. Normal Woman	i. 14
B. Klinwfelter'ssyndrome	ii. 45
C. Turner's syndrome	iii. 46
D. Pisum sativum	iv. 47

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

5. Match the following column and choose the correct option

Column-I	**Column-II**
A. Down's syndrome	i. 18^{th} chromosome
B. Edward's syndrome	ii. Loss of one 'X' chromosome
C. Patau's syndrome	iii. 13^{th} chromosome
D. Tumer's syndrome	iv. 21 chromosome

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

6. An abnormal human body with 'XXX' sex chromosomes was born due to
(A) Fusion of two ova and one sperm
(B) Fusion of two sperms and one ovum
(C) Formation of abnormal sperms in the father
(D) Formation of abnormal ova in the mother.

7. The mechanism that causes a gene to move from one linkage group to another is called
(A) Translocation (B) Crossing-over
(C) Inversion (D) Duplication.

8. 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) Aneuploidy (B) Polyploidy (C) Somaclonal variation (D) Polyteny

9. Match the following.

Column-I	**Column-II**
a Monoploidy	1. 2n - 1
b. Monosomy	2. 2n + 1
c. Nullisomy	3. 2n + 2
d. Trisomy	4. 2n - 2
e. Tetrasomy	5. n
	6. 3n

(A) a-(4); b-(3); c-(1); d-(2);e-(5) (B) a-(4); b-(3); c-(1); d-(2);e-(5)

(C) a-(5); b-(1); c-(4); d-(2);e-(3) (D) a-(3); b-(2); c-(1); d-(4);e-(5)

10. Select the incorrect statement from the following

(A) Baldness is sex limited trait.

(B) Linkage is an exception to the principle of independent assortment in heredity.

(C) Galactosemia is an in born error of metabolism.

(D) Small population size results in random genetic drift in a population.

11. The klinefelter's syndrome in human being is due to :

(A) The presence of an additional copy of X-chromosome at 23rd chromosome number of male.

(B) The presence of an addition copy of X-chromosome at 23rd chromosome number of female.

(C) The absence of the X-chromosome at 23rd chromosome number of female

(D) The absence of the X-chromosome at 23rd chromosome number of male

12. 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.

13. Klinefelter's syndrome is caused due to the

(A) Presence of an additional copy of the chromosome number 21

(B) Absence of one of the X-chromosome, i.e., 45 with XO

(C) Presence of an additional copy of X-chromosome resulting into a karyotype of 47, XXY

(D) Presence of an additional copy of chromosome number 17.

14. Turner's syndrome is

(A) Case of monosomy (B) Cause of sterility in females

(C) Absence of Barr body (D) All of the above.

15. Which one of the following symbols and is representation, used in human pedigree analysis is correct

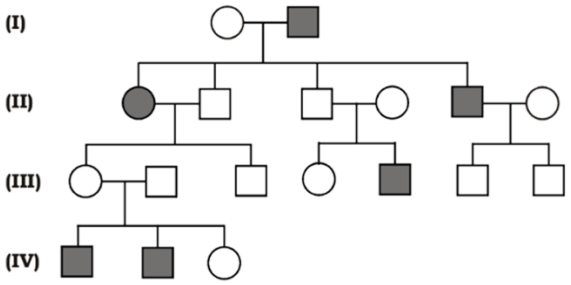
(A)  = unaffected male

(B)  = unaffected female

(C)  = male affected

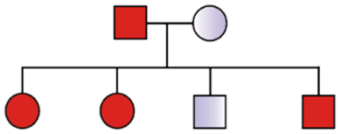
(D)  = mating beetween relatives.

16. Study the pedigree chart of certain family given here and select the correct conclusion.



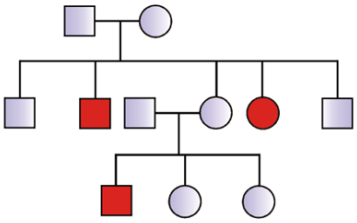
(A) The female parent is heterozygous
(B) The parents could not have had a normal daughter for this character
(C) The trait under study could not be colour blindness
(D) The male parent is homozygous dominant

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



(A) Maternal inheritance
(B) Autosomal recessive
(C) X-linked dominant
(D) Autosomal dominant.

18. Study of pedigree chart. What does it show



(A) Inheritance of a condition like phenylketonuria as an autosomal recessive trait
(B) Inheritance of a recessive sex-linked disease like haemophilia
(C) Inheritance of sex-linked inborn error of metabolism like phenylketonuria
(D) Pedigree chart is wrong as this is not possible.

19. Occasionally, a single gene may express more than one effect. The phenomenon is called :
(A) Multiple allelism (B) Mosaicism (C) Pleiotropy (D) Polygeny.

20. Which of the following is the example of pleiotropic gene
(A) Haemophilia (B) Thalassemia
(C) Sickle cell anaemia (D) Colour blindness

21. Pleiotropy refers to a situation where
(A) A gene affects one specific trait only
(B) A gene affects more than one seemingly unrelated traits
(C) Many small genes affect a single trait
(D) A single gene masks the effect of another gene.

22. Which of the following statement is correct about polygenic inheritance?
(A) In polygenic inheritance one gene regulates the expression of many characters
(B) Qualitative characters which are regulated by polygene's only
(C) Besides the involvement multiple genes, Polygenic inheritance also takes into account the influence of sex chromosomes.
(D) Human skin colour is example of polygenic inheritance.

23. In brinjal, genotype aabbccdd produces 100 gm brinjal fruit and AABBCCDD produces 260 gm brinjal fruit. What is contribution of each polygene in the production of brinjal :-
(A) 10 gm. (B) 20 gm. (C) 30 gm. (D) 40 gm

24. 9:3:3:1 ratio is modified to 9:7 ratio due to

(A) Complementary gene (B) Epistatic gene

(C) Hypostatic gene (D) Supplementary gene

25. Fruit colour in squash is an example of

(A) Inhibitory genes (B) Recessive epistasis

(C) Dominant epistasis (D) Complementary genes

26. 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 heterozygous 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

(A) a-iv, b-i, c-ii, d-iii (B) a-iv, b-iii, c-i, d-ii

(C) a-ii, b-i, c-iv, d-iii (D) a-ii, b-iii, c-iv, d-i

27. Identify the pair that does not match from the following pairs :-

(I) Gene of seed shape and size of starch grains - Pleiotropic gene

(II) Inheritance of ABO blood group - Polygene

(III) Size of starch grains in sweet pea - Co-Dominance

(IV) Human skin colour - Polygene

(V) Inheritance of AB - Incomplete Dominance

(A) Only V (B) I, IV and V (C) II, III & V (D) III, IV and V.

28. Match the following column-I with column-II

Column-I	**Column-II**
A. Multiple Alleles	1. Colour of snapdragon flower
B. Co-dominance	2. ABO blood group
C. Polygene	3. AB blood group
D. Incomplete dominance	4. Human height

	A	**B**	**C**	**D**
(A)	1	2	3	4
(B)	2	3	4	1
(C)	3	4	1	2
(D)	4	3	2	1

NEET-BIOLOGY **ELP NO.-6** **PRINCIPLES OF INHERITANCE AND VARIATION**

1. Crossing over that results in genetic recombination in higher organisms occurs between

(A) Two daughter nuclei

(B) Two different bivalents

(C) Sister chromatids of a bivalent

(D) Non-sister chromatids of a bivalent

2. Choose incorrect statements by comparing column A & Column B

A	**B**
i. Occur in pairs	**i.** Occur in pairs
ii. Segregate at the time of gamete formation such that only one of each pair is transmitted to a gamete	**ii.** Segregate at gamete formation and only one of each pair is transmitted to a gamete
iii. Independent pairs segregate independently of each other	**iii.** One pair segregates independently of another pair

Read the following statements :-

(A) All the statements of column A are true for chromosome

(B) All the statements of column B are always true for chromosome

(C) All these statements of column A are always true for Gene

(D) All the statements of column B are not true for Gene and chromosome

(A) One (B) Two

(C) Three (D) Four

3. Choose the Incorrect statements

(A) communication was not easy (as it is now) in those days and Mendel's work could not be widely publicised.

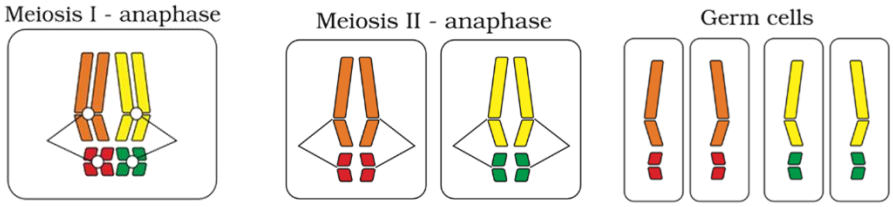
(B) Concept of genes (or factors, in Mendel's words) as stable and discrete units that controlled the expression of traits and, of the pair of alleles which did not 'blend' with each other, was not accepted by his contemporaries

(C) Mendel's work suggested that factors (genes) were discrete units, he could not provide any physical proof for the existence of factors or say what they were made of.

(D) Due to advancements in microscopy that were taking place, Mendel carefully observe cell division.

4. **Statement 1:** Three Scientists (deVries, Correns and von Tschermak) independently rediscovered Mendel's results on the inheritance of characters.
Statement 2: Discovery of structures in the nucleus that appeared to double and divide just before each cell division.
(A) Statement 1 and 2 correct
(B) Statement 1 and 2 incorrect
(C) Statement 1 correct and statement 2 incorrect
(D) Statement 1 Incorrect and statement 2 Correct

5. Observe possibility of meiosis mention in diagram



Choose the correct statement
(A) chromosome composition of germ cell decided after anaphase II
(B) Arrangement of dividing nucleus position in cytoplasm decide composition of chromosome
(C) Number of chromosome may not equal generally
(D) Anaphase I is crucial step for determining composition of germs cell chromosome.

6. Sutton & bovery did not performed any experiment for chromosomal theory of inheritance while basis of their argument was
(A) pairing and separation of a pair of chromosomes would lead to the segregation of a pair of factors
(B) Knowledge of chromosomal segregation with Mendelian principles
(C) Factors stability and independent nature of factor and chromosome.
(D) All are correct

7. Arrange the events with respect chronology of time.
(I) Chromsomal theory of inheritance,
(II) Drosophila experiment,
(III) Mendel's work rediscovery,
(IV) Study of cell division and movement of chromosomes.
(A) iv-iii-ii-i (B) i-ii-iii-iv
(C) ii-iii-iv-i (D) iii-iv-i-ii

8. Gametes contain 6 pair of homologous chromosome, during meiosis for gameteogensis.
Total chromosome present just after Anaphase I is.....and anaphase II is.....as per Sutton & bovery
(A) 12, 24 (B) 24,12 (C) 10,10 (D) 2,12

9. Chromosomal theory of inheritance was impossible without
(A) mendelian principles (B) Knowledge of cell division mechanism
(C) Linkage (D) Both (A) and (B)

10. Sutton bovery unable to conclude position and distance of gene in chromosomal theory of inheritance because
(A) number of progeny with recombinants and parental type data not available
(B) Total number of cell present during meiosis was known
(C) Segregation of daughter cell also takes place during meiosis
(D) Error full meiosis mechanism

11. Sutton, who was American, Boveri, who was German, studied the chromosomes and meiosis in_____& _____respectively & published their finding independently.
(A) Drosophila, Snake (B) Honey bee, drososphila
(C) Grasshopper, sea urchin (D) Pea , snapdragon

12. Pairing of chromosome occur during gametogenesis
(A)Metaphase (B)Metaphase I (C)Anaphase II (D)Anaphase I

13. Cell division study helps to understand Mendelian principle by Sutton &bovery is
(A) Mitosis (B) Meiosis (C) Amitosis (D) All are correct

14. behaviour of chromosomes can be studied during
(A) equational division (B) reduction division
(C) Un-equational division (D) Both (A) & (B)

15. Albinism in maize due to
(A) Cytoplasmic inheritance (B) Maternal inheritance
(C) Plastid gene inheritance (D) All are correct

16. Character and disease caused by maternal inheritance
Male Sterility in maize, Sickle cell anaemia, petite form of yeast, poke neurospora, thalassemia, colourless maize, colour blindness
(A) 6 (B) 5 (C) 4 (D) 8

17. Chromosomal theory of inheritance was based on
(A) Mendel's experiment (B) Morgan's experiment
(C) Griffith's experiment (D) Hershey chase experiment

18. Height of organism controlled by 3 gene A,B,C.
Maximum height =24 ft ; Minimum height = 12 ft
Find out height of organism with genotype =AaBbCc, aaBBcc, AAbbCc
(A) 18,22,24 (B) 22,24,15 (C) 18,16,18 (D) 20,18,20

19. Mulatto skin male (AaBbCc) marry with mulatto skin female (AaBbCc) possible progeny with mulatto skin is
(A) 1/64 (B) 15/64 (C) 20/64 (D) 6/64

20. Wheat kernel colour is full red cross with full white kernel plant, possible progeny plant with white kernel will be..
(A) 6/16. (B) 4/16. (C) 1/16. (D) 8/16

21. Case of polygenic inheritance of three gene, where 128 progeny produced by F2 generation cross, Probability of number of progeny with genotype with AAbbCC is
(A) 16/128 (B) 20/128 (C) 2/128 (D) 6/128

22. **Assertion:** Polygenic inheritance not follow mendelian law of segregation
Reason: Gametogenesis is absent in polygenic inheritance
(A) Assertion and reason correct and reason is correct explanation of assertion
(B) Assertion and reason correct and reason is not correct explanation of assertion
(C) Assertion is correct and reason is incorrect
(D) Assertion is incorrect and reason is incorrect

23. **Assertion:** Genes included polygenic inheritance of character usually present over non homologous chromosomes
Reason: To avoid crossing over among non-homologous chromosomes.
(A) Assertion and reason correct and reason is correct explanation of assertion
(B) Assertion and reason correct and reason is not correct explanation of assertion
(C) Assertion is correct and reason is incorrect
(D) Assertion is incorrect and reason is incorrect

24. Mendelian law strictly follow by which character
(A) Height of Pea plant (B) Human skin colour
(C) Pleiotropic gene of RBC shape (D) All are correct

25. How many of the following statements are correct for polygenic inheritance
I. They show uniformity
II. Controlled by two or more genes
III. It is not influenced by environment
IV. Phenotype reflects contribution of dominant alleles only
(A) I,III,IV correct (B) II,IV,III correct (C) Only II correct (D) II and IV correct

26. Choose correct ratio of Polygenic inheritance controlled by three gene and two gene
(A) 1:4:6:8:1 Di-genic and 1:6:15:20:15:8:1 Tri-genic
(B) 1:6:15:30:15:8:1 Tri-genic and 1:4:10:8:1 Di-genic
(C) 1:8:6:8:1 Di-genic and 1:8:6:8:1 Di-genic
(D) 1:6:15:20:15:6:1 Tri-genic and 1:4:6:4:1 Di-genic

27. Polygenic expression of character is violation of
(A) Dominance (B) Segregation
(C) Monogenic inheritance (D) Linkage

NEET-BIOLOGY **ELP NO.-7** **PRINCIPLES OF INHERITANCE AND VARIATION**

1. Lack of independent assortment of two genes A and B in fruit fly Drosophila is due to
(A) Crossing over (B) Repulsion (C) Recombination (D) Linkage

2. **Assertion:** When yellow bodied, white eyed Drosophila females were hybridized with brown-bodied, red eyed males and F1 progeny was intercrossed, F2 ratio deviated from 9 : 3 : 3 : 1.
Reason: When two genes in a dihybrid are on the same chromosome, the proportion of parental gene combinations are much higher than the non-parental type.
(A) Both assertion and reason is true and reason is correct explanation
(B) Both assertion and reason is true and reason is not correct explanation
(C) Assertion is true but reason is false
(D)Both assertion and reason are false.

3. **Assertion:** Number of chromosomes in one genome is equal to number of linkage groups.
Reason: Linkage groups give important information about the location of genes in the chromosomes.
(A) Both assertion and reason is true and reason is correct explanation
(B) Both assertion and reason is true and reason is not correct explanation
(C) Assertion is true but reason is false
(D) Both assertion and reason are false

4. Fruit fly Drosophila melanogaster was found to be very suitable for experimental verification of chromosome theory of inheritance by Morgan and his colleagues because
(A) It reproduce parthenogenetically
(B) Smaller female is easily distinguishable from large male
(C) A single mating produces two young flies
(D) It completes life cycle in about two weeks

5. 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

6. R and Y genes of Maize lie very close to each other. When RRYY and rryy genotypes are hybridised, F2 generation will show
(A) Sagregation in 9.3 : 3 : 1
(B) Sagregation in 3 : 1 ratio
(C) Higher number of parental types
(D) Higher number of recombinant types.

7. Select the correct statement from the ones given below with respect to dihybrid cross
(A) Genes far apart on the same chromosome show very few recombinations
(B) Genes loosely linked in the same chromosome show similar recombinations as the tightly linked ones
(C) Tightly linked genes on the same chromosome show very few recombinations.
(D) Tightly linked genes on the same chromosome show higher recombinations.

8. Which of the following statements is not true of two genes that show 50% recombination frequency?
(A) The genes are tightly linked.
(B) The genes show independent assortment.
(C) If the genes are present on the same chromosome, they undergo more than one crossovers in every meiosis.
(D) The genes may be on different chromosomes.

9. Linkage refers to
(A) Co-inheritance of two alleles of the same gene
(B) Attached X-chromosomes in Drosophila
(C) Co-inheritance of two different genes
(D) Role of sex-chromosomes in sex-determination.

10. The term "linkage" was coined by
(A) T. Boveri (B) G. Mendel (C) W. Sutton (D) T.H. Morgan.

11. In a test cross involving Pi dihybrid flies, more parental-type offspring were produced than the recombinant-type offspring. This indicates
(A) The two genes are linked and present on the same chromosome
(B) Both of the characters are controlled by more than one gene
(C) The two genes are located on two different chromosomes
(D) Chromosomes failed to separate during meiosis.

12. Tendency of genes to be inherited together is known as
(A) Dominance (B) Linkage (C) Crossing over (D) Translocation

13. Morgan worked with the tiny fruit flies Drosophila malanogaster which were found very suitable for such studies as.
(A) Could be easily grown on simple synthetic Medium in lab.
(B) Complete their life cycle in about 2 weeks
(C) Single mating produces large number of flies
(D) All the above

14. Genes which are tightly linked on chromosome shows:-
(A) Very low recombination (B) High recombination
(C) Very low parental combination (D) Independent assortment

15. How many correct statement
(A) Experimental verification of the chromosomal theory of inheritance by Thomas Hunt Morgan and his colleagues, led to discovering the basis for the variation that sexual reproduction produced.
(B) Morgan hybridized yellow-bodied, White-eyed females to brown-bodied, red-eyed males and intercrossed their F1 progeny.
(C) Morgan attributed this due to the physical association of the two genes and coined the term linkage.
(D) Alfred Sturtevant used the frequency of recombination between gene pairs on the same chromosome as a measure of the distance between genes
(A) A, B, C, D (B) A, B, C (C) A (D) A, C, D only

16. The experiment shown in the figure has been carried Out by Morgan to show the phenomenon of linkage and recombination. If in cross-I genes are tightly linked and in cross-II, genes are loosely linked then what will be the percentage of recombinants produced in cross-I & cross-II respectively?
(A) 98.7% and 62.8% (B) 1.3% and 37.2%
(C) 37.2% and 1.3% (D) 62.8% and 98.7%

17. Some fruit flies have White eyes and others have red eyes. If two white-eyed fruit flies are crossed, their offspring always have white eyes. If two red-eyed fruit flies are crossed, their off spring some times include both white-eyed and red-eyed flies. What can be concluded from these observations?
(A) Crossing a white-eyed fly with a red-eyed fly will produce a 1 : 1 ratio in the offspring.
(B) The allele for white eyes is dominant.
(C) The allele for red eyes is dominant.
(D) We could determine which allele is dominant only by doing a cross that produces a 3 : 1 ratio.

18. **Assertion:** combinations were much higher than the non-parental type.
Reason: Physical association or linkage of the two genes
(A) Assertion and reason correct and reason is correct explanation of assertion
(B) Assertion and reason correct and reason not is correct explanation of assertion
(C) Assertion correct and reason is incorrect
(D) Assertion Incorrect and reason is correct.

19. Theory of linkage possible only after introduction of -------
(A) Mendels experiment (B) Morgans experiment
(C) Chromosomal theory of inheritance (D) Sturtevants gene mapping

20. Sexual dimorphism present in
(A)Maize (B) Pisum sativum
(C) Drosophila malanogaster (D) Mirabilis jalapa

21. Any two genes are said to be linked, only when:-
(A) They show only new combination
(B) They show only parental combination and no new combinations
(C) They show more parental and less new combinations (less than 50% recombination)
(D) They show 50% new combination

22. A test cross of F_1 flies ++/ab produced the following offsprings
(a) ++/ab – 9 (b) ab/ab – 9 (c) +b/ab – 41 (d) +a/ab – 41
this cross represents :-
(A) Trans configuration (B) Cis configuration
(C) Complete linkage (D) No crossing over

23. Which one of the following is correct when dihybrid test cross with 90% parental combination and 10% recombinants :-
(A) Incomplete linkage (B) Complete linkage
(C) Independent assortment (D) Double crossing over

24. Which is incorrect for Drosophila melanogaster
(A) They could be grown on simple synthetic medium
(B) Single mating could produce a large number of progeny
(C) They complete their life cycle in about 7 weeks
(D) There was a clear differentiation of the sexes.

25. In maize chromosome number is 2n = 20. The number of linkage groups in it shall be :-

(A) 20 (B) 40 (C) 10 (D) 5

26. The map distance between genes A and B = 3 units, between B and C= 10 units and between C and A =7 units. The order of the genes in a linkage map constructed on the above data would perhaps be:-

(A) A, B, C (B) A, C, B (C) B, C, A (D) B, A, C

27. Cross between TtRr x TtRr produce progeny with

Tall Red = 800

Tall white. = 200

Dwarf Red. = 200

Dwarf white = 800

Distance beween linked gene is

(A) 80 % cis (B) 20 % trans (C) 20 % cis (D) 60 % trans

NEET-BIOLOGY **ELP NO.-8** **PRINCIPLES OF INHERITANCE AND VARIATION**

1. The recessive genes located on X-chromosome in humans are always
(A) Expressed in males (B) Expressed in females
(C) Lethal (D) Sub-lethal

2. A man whose father was colour blind marries a woman who had a colour blind mother and normal father. what percentage of male children of this couple will be colour blind
(A) 75% (B) 25%
(C) 0% (D) 50%

3. A colour blind man marries a normal woman (without any history of colour blindness in her family). What proportion of their sons will be colour blind
(A) 50% (B) 25% (C) 12.5% (D) 0%.

4. In man sex-linked characters are mainly transmitted through
(A) Y-chromosome
(B) Autosomes
(C) X-chromosome
(D) X-chromosome, Y-chromosome and Autosomes

5. **Assertion:** Gene which are present on autosome but in Heterozygous condition express differently in Male and female bodies
Reason: Few gene express itself under influence of sex hormones
(A) Both assertion and reason correct and reason is correct explanation of assertion
(B) Both assertion and reason correct and reason is not correct explanation of assertion
(C) Assertion true and reason is false
(D) Assertion is false and reason is true

6. _____is an autosome linked recessive trait that can be transmitted from parents to the offspring when both the partners are carrier for the gene.
Fill the blank with correct option:-
(A) Haemophilic (B) Colour blinder
(C) Sickle cell anaemia (D) More than one option are correct

7. In which type of inheritance, maternal influence occurs in offspring
(A) X-linked (B) Y-linked
(C) Autosomal (D) Cytoplasmic inheritance

8. Which condition of the zygote will lead to the birth of normal human female child.
(A) One X-chromosome (B) One X and Y-chromosome
(C) two X-chromosome (D) One Y-chromosomes

9. Scientists have characterized a new genetic disorder that only affects males. What is the most likely explanation of how this disorder is passed from generation to generation?.
(A) Abnormal testosterone levels
(B) Inheritance of the father's Y chromosome
(C) Inheritance of the mother's Y-chromosome
(D) Epigenetic inheritance

10. A man whose father was colour blind marries a woman who had a colour blind father and normal mother. What percentage of male children of this couple will be colour blind
(A) 25% (B) 0% (C) 50% (D) 75%

11. First child of a normal couple is phenylketonuric. The probability of second male child is affected will be
(A)75 % (B) 25% (C) 50% (D) 100%

12. colourblind person marries a girl having no history of the disease in her pedigree. What is the chance that a haemophilic child is born to them
(A) 0% (B) 25% (C) 50% (D) 75%

13. Which of the following is incorrect?
(A) The Y chromosome is deficient in dosage compensation.
(B) X-linked genes are inherited in a crisscross pattern
(C) Y-linked genes, such as hemophilia, are passed down from father to son
(D) Females carry X-linked recessive genes

14. If only mother affected by Autosomal disease in homozygous genotypic pattern what will be the Inheritance in son and daughter
(A) Both Son and daughter will affect in both Autosomal dominant and autosomal recessive disease.
(B) Only Son will affect in Autosomal dominant and no offspring's affected in autosomal recessive disease.
(C) All son and daughters will be affected in autosomal dominant disease, and all son – daughters will be carrier for autosomal recessive disease.
(D) All will be normal in both autosomal diseases.

15. Which of the following is not true if colour-blindness is a X linked dominant trait?
(A) It would be expressed in heterozygous females
(B) It would be expressed in males
(C) It would never be silenced
(D) It would never skip generations

16. Y linked inheritance is also referred to as _____ inheritance.
(A)Crisscross (B) Straight (C) Loop (D) Jumping

17. A child born to normal parents who is turner child. Where did the disjunction take place
(A) Mother (B) Father
(C) Zygote (D) Both (A) & (B)

18. **Assertion:** The possibility of a female becoming a haemophilic is extremely common
Reason: mother of such a female has to be at least carrier and the father should be haemophilic
(A) Assertion and reason is correct and reason is correct explanation of assertion.
(B) Assertion and reason is correct and reason is not correct explanation of assertion.
(C) Assertion is correct and reason is incorrect
(D) Assertion is Incorrect and reason is correct

19. Choose the correct statement about colour blind ness:

(A) It is Y linked recessive disorder. It is due to mutation in certain genes present in the Y-chromosome

(B) Defect occurs in either red or green cone of eye resulting in failure to discriminate between red and green colour

(C) Normally son will be colour blind if father is colour blind

(D) All sons of a normal woman are colour blind if she marries with colour blind man

20. Which of the following statement is not incorrect about haemophilia

(A) This is a sex -linked recessive disease, which shows its transmission from unaffected carrier female to all of the male progeny

(B) The family pedigree of Queen Victoria shows a number of haemophilic descendents because queen was also haemophilic

(C) In this disease the possibility of a more becoming a haemophilic is extremely rare.

(D) In this disease a single protein that is a part of the cascade of proteins involved in the clotting of blood is affected

21. A normal vision woman whose father was colour blind marries a colour blind man and give birth to a colour blind daughter. Her husband dies and she again marries a normal man whose father was colour blind what is the probability of her son having abnormality in vision :

(A) 0% (B) 50% (C) 100% (D) 25%

22. Which of the following human syndrome occurs due to monosomy

(A) down syndrome (B) Turner's syndrome

(C) Klinefelter's syndrome (D) Jacob's syndrome

23. Choose the correct match by comparing Column-I & Column-II

Column-I	**Column-II**
a. Autosomal recessive trait	(i) Down's syndrome
b. Sex-linked recessive trait	(ii) Phenylketonuria
c. Metabolic error linked to autosomal recessive trait	(iii) Haemophilia
d. Additional 21st chromosome	(iv) Sickle cell anaemia

(A) a–ii, b–i, c–iv, d–iii (B) a–iv,b–i,c–ii,d–iii

(C) a–iv, b–iii, c–ii, d–i (D) a–iii, b–iv, c–i, d–ii.

24. What is the example of sex-linked disorder

(A) Phenylkutonuria (B) Sickle cell anaemia

(C) Haemophilia (D) Thalassemia.

25. Haemoglobins of normal and sickle cell patient are subjected to electrophoresis. They will show

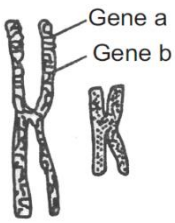
(A) Same mobility (B) Different mobility

(C) No mobility (D) Haemoglobin of patient does not move.

26. Haemophilia is more common in males than females, because it is

(A) Dominant autosomal
(B) Dominant X-linked
(C) Recessive X-linked
(D) X-linked.

27. Given below is a highly simplified representation of the human sex chromosomes from a karyotype.



The genes a and b could be of

(A) Colour blindness and body height
(B) Attached ear lobe and Rhesus blood group
(C) Haemophilia and red-green colour blindness
(D) Phenylketonuria and haemophilia

1. The first genetic material could be
(A) DNA (B) RNA (C) Protein (D) Carbohydrates

2. DNA is not present in
(A) Nucleus (B) Chloroplast (C) Ribosomes (D) Mitochondria

3. A molecule to act as a genetic material has the following properties
(i) Should be able to replicate
(ii) Should be structurally more stable
(iii) Should be more reactive and labile
(iv) Should provide scope for slow changes
Choose the correct option
(A) (i) alone is correct (B) (iii) and (iv) are correct
(C) (i), (ii) and (iii) are correct (D) (i), (ii) and (iv) are correct

4. Circular and double stranded DNA occurs in
(A) Golgi body (B) Mitochondria
(C) Nucleus (D) Cytoplasm

5. DNA duplication occurs at
(A) Meiosis-II (B) Mitotic interphase
(C) Mitosis only (D) Meiosis and mitosis both

6. A DNA strand is directly involved in the synthesis of all the following except
(A) Another DNA (B) t-RNA & m-RNA (C) r-RNA (D) Protein

7. The function of chromosome of carrying the genetic information from one cell generation to another is performed by
(A) RNA (B) DNA (C) Histones (D) Calcium

8. DNA is acidic due to
(A) Sugar (B) Phosphoric acid (C) Purine (D) Pyrimidine

9. DNA molecules of each chromosome replicates in
(A) G_1 phase (B) G_2 phase (C) S phase (D) Mitotic phase

10. Which of the following function is odd w.r.t RNA?
(A) Adapter molecule (B) Structural molecule
(C) Catalytic molecule (D) Expression molecule

11. Hershey and chase used radioactive isotopes for their experiment and proved that DNA is a genetic material. These radioactive isotopes were.
(A) ^{14}C, ^{32}C (B) ^{60}C, ^{35}S (C) ^{15}N & ^{14}C (D) ^{32}P & ^{35}S

12. Which of the following types of bacteria were used in Griffith's transformation experiment?
(A) *Diplococcus*, R-III and S-II type (B) *Pneumococcus*, T_2 phage
(C) *Streptococcus*, R-II and S-III type (D) *Diplococcus*, *E. coli*

13. The biochemical nature of transforming principle was defined by
(A) Griffith (B) Avery, Macleod, McCarty
(C) Watson and Crick (D) Taylor

14. Before the work of Avery, Maccleod and Mccarty, the genetic material was thought to be:
(A) DNA (B) RNA (C) Protein (D) Polypeptide

15. The Hershay and chase experiment have following steps in their fix order:
(A) Infection, Blending and Gel Electrophoresis
(B) Blending, Centrifugation, Infection
(C) Infection, Centrifugation, Blending
(D) Infection, Blending and Centrifugation

16. The unequivocal proof that DNA is the genetic material came from the experiments of
(A) Hershey and Chase (1952) (B) Frederic Griffith (1928)
(C) Watson and Crick (D) Meselson and Stahl (1958)

17. RNA as the genetic material present in viruses:
(A) Tobacco mosaic virus (B) QB Bacteriophage
(C) Both (A) and (B) (D) T_4-Bacteriophage (E.coli phage)

18. In microbial genetics which one is referred to as “Griffith effect”?
(A) Sexduction (B) Conjugation (C) Transduction (D) Transformation

19. In relation to Griffith principle, that heat which killed the bacteria does not destroy some of the properties of genetic material; this indicate _____
(A) Stability of DNA (B) Acidic nature of DNA
(C) Basic nature of DNA (D) Single stranded DNA nature

20. The result of which of the following reaction experiments carried out by Avery *et al* on *Streptococcus pneumoniae* has proved conclusively that DNA is the genetic material?
(A) Live ‘R’ strain + DNA from ‘S’ strain + RNase
(B) Live ‘R’ strain + DNA from ‘S’ strain + DNase
(C) Live ‘R’ strain + Denatured DNA of ‘S’ strain + protease
(D) Heat killed ‘R’ strain + DNA from ‘S’ strain + DNase

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ELP

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NEET-BIOLOGY **ELP NO.-2** **MOLECULAR BASIS OF INHERITANCE**

1. The additional stability of DNA is due to
(A) Presence of phosphate group (B) Presence of Ribose sugar
(C) Presence of thymine instead of uracil (D) Presence of phosphdiester bond

2. DNA is made up of two polynucleotide chains. What is a very unique property to the polynucleotide chains.
(A) Complementary to each other
(B) H-bond present between them
(C) Uniform distance between both the chain
(D) All of these

3. Two adjacent nucleotides of DNA are joined by
(A) Ionic bond (B) Phosphodiester bond
(C) Glycosidic bond (D) None of the above

4. Which of the following bond is not associated with a deoxyribonucleotide?
(A) Phosphoester bond (B) Glycosidic bond
(C) Phosphodiester bond (D) More than one option is correct

5. RNA possess additional _____ group at _____ position in the sugar than the DNA.
(A) OH, 5' (B) H, 2' (C) OH, 2' (D) H, 5'

6. Hallmark of the Watson and Crick three dimensional DNA model was based upon the findings of
(A) Wilkins and Franklin (B) Erwin Chargaff
(C) Hershey and Chase (D) Meselson and Stahl

7. Which of the following does not confer stability to the helical structure of DNA?
(A) Phosphodiester bond (B) H-bond
(C) N-glycosidic linkage (D) More than one option is correct

8. Choose the correct option w.r.t. RNA.
(A) Presence of thymine in place of uracil (B) Absence of free 2'OH in sugar
(C) Mutates at faster rate (D) Is non-catalytic

9. Which of the following nitrogenous bases are common for both RNA and DNA?
(A) C, G, A (B) G, A, U (C) T, A, C (D) U, A, C

10. Adjacent nucleotides in a polynucleotide chain are joined by
(A) N-glycosidic bond (B) Phosphodiester bond
(C) O-glycosidic bond (D) Hydrogen bond

11. Which of the following group of histone take part in formation of nucleosome?
(A) H_1, H_{2A}, H_{2B}, H_4 (B) H_{2A}, H_{2B}, H_3, H_4, H_1 (C) H_1, H_{2A}, H_{2B}, H_3 (D) H_1, H_3, H_4

12. If DNA has 30% thymine, calculate the percentage of cytosine in the DNA
(A) 30% (B) 40% (C) 60% (D) 20%

13. The length of DNA in *E. coli* is
(A) 2 m (B) 1.2 mm (C) 34 mm (D) 1.36 mm

14. Which of the following DNA form has maximum number of base pairs per turn?
(A) A-DNA (B) B-DNA (C) C-DNA (D) Z-DNA

15. Which of the following is a part of nu-body?
(A) Histone octamer
(B) DNA + Core of nucleosome
(C) H_1 protein
(D) $1\frac{3}{4}$ turn of DNA + H_1 protein

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ELP

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NEET-BIOLOGY **ELP NO.-3** **MOLECULAR BASIS OF INHERITANCE**

1. Heterochromatin
(A) Is translationally active
(B) Is densely packed
(C) Replicated during G_1 stage
(D) Stains lightly

2. Semiconservative DNA replication was proved by Messelson and Stahl, in which DNA was made
(A) Radioactive using ^{15}N
(B) Heavy using ^{14}N
(C) Heavy using $^{15}NH_4Cl$
(D) Radioactive using $^{14}NH_4Cl$

3. In E.coli, total DNA content is about ___A___ bp which replicate in ___B___ min.
(A) A - 3.3×10^9 ; B - 38
(B) A - 4.6×10^9 ; B - 18
(C) A – 4.6×10^6 ; B - 18
(D) A – 6.6×10^9 ; N – 40

4. DNA replication is
(A) Semi-conservative, continuous, unidirectional
(B) Conservative, continuous
(C) Semi-conservative, semi-discontinuous
(D) Semi-continuous, conservative

5. Which of the following structures are present in core particle of nucleosome?
(A) Octamer of histone proteins
(B) 200 bp of DNA
(C) Non-histone proteins
(D) Linker DNA

6. Packaging of DNA helix
(A) Involves polyamines in eukaryotes
(B) Occurs with the help of NHC proteins only
(C) Requires acidic proteins that help in coiling of DNA in prokaryotes
(D) Is more complex in eukaryotes than prokaryotes

7. Taylor and Colleagues in 1958 prove semi-conservative DNA replication by using which of the following material?
(A) Radioactive Thymidine
(B) Radioactive Uridine
(C) Radio isotopic Adenine
(D) Radio isotopic Guanosine

8. **Statement-I:** Replication of DNA and cell division cycle should be highly coordinated.
Statement-II: A failure in cell division after DNA replication results in Aneuploidy.
(A) Only statement II is correct
(B) Both statement I and II are correct
(C) Only statement I is correct
(D) Both statement I and II are incorrect

9. If Meselson and Stahl's experiment is continued for four generations in bacteria, the ratio of $^{15}N/^{15}N$: $^{15}N/^{14}N$: $^{14}N/^{14}N$ containing DNA in the fourth generation would be
(A) 1 : 1 : 0 (B) 1 : 4: 0 (C) 0 : 1 : 3 (D) 0 : 1 : 7

10. What will be the percentage of guanine in a DNA molecule having 20% adenine?
(A) 20% (B) 30% (C) 40% (D) 60%

11. During DNA replication, strand separation by breaking the H-bonds is performed by
(A) Topoisomerase (B) Gyrase
(C) Helicases (D) More than one option is correct

12. Which of the following acts as substrate as well as provide energy for DNA polymerisation?
(A) Ribonucleoside (B) Deoxyribonucleoside
(C) Ribonucleotide (D) Deoxyribonucleoside triphosphate

13. DNA polymerases catalyse polymerisation of /in
(A) Ribonucleotides (B) 5' → 3' direction
(C) 3' → 5' direction (D) Deoxyribonucleosides

14. During DNA replication which of the following does not act as substrates?
(A) dATP (B) dCTP (C) dUTP (D) dGTP

15. During replication in long DNA molecules, the two strands of DNA cannot be separated in its entire length due to
(A) Presence of hydrogen bonds (B) Very high energy requirement
(C) Presence of phosphodiester bonds (D) Presence of polarity at ends of DNA

16. Discontinuous synthesis of DNA occurs in one strand, because
(A) DNA dependent DNA polymerase catalyses polymerisation only in one direction (5'→3')
(B) DNA molecule being synthesised is very long
(C) DNA ligase has to have a role
(D) It is a more efficient process

17. When DNA replication starts :
(A) The phosphodiester bonds between the adjacent nucleotides break
(B) The bonds between the nitrogen base and deoxyribose sugar break
(C) The leading strand produces Okazaki fragments
(D) The hydrogen bonds between the nucleotides of two strands break

18. The 3'-5' phosphodiester linkages inside a polynucleotide chain serve to join
(A) One nucleoside with another nucleoside
(B) One nucleotide with another nucleotide
(C) One nitrogenous base with pentose sugar
(D) One DNA strand with the other DNA strand

19. During replication of DNA, Okazaki fragments are formed in the direction of
(A) 3'→5' (B) 5'→3' (C) 5'→5' (D) 3'→3'

20. DNA gyrase, the enzymes that participates in the process of DNA replication is a type of
(A) DNA ligase (B) DNA polymerase
(C) DNA topoisomerase (D) Reverse transcriptase

NEET-BIOLOGY **ELP NO.-4** **MOLECULAR BASIS OF INHERITANCE**

1. RNA primer is removed by
(A) DNAP-I (B) DNAP-II (C) DNAP-III (D) Primase

2. Which of the following is a genetic RNA?
(A) mRNA (B) rRNA
(C) hn-RNA (D) RNA present in plant viruses

3. Which of the following type of ribosomal RNA is not present in eukaryotic cytoplasm?
(A) 18S (B) 28S (C) 5.8S (D) 16S

4. Soluble RNA is
(A) tRNA (B) mRNA (C) rRNA (D) HnRNA

5. In bacteria, catalytic RNA is found in
(A) 60S subunit of ribosome (B) 23S subunit of ribosome
(C) 30S subunit of ribosome (D) 40S subunit of ribosome

6. Correct order of molecular weight is
(A) DNA<r-RNA<t-RNA (B) DNA<m-RNA<r-RNA
(C) t-RNA<m-RNA<DNA (D) t-RNA<DNA<m-RNA

7. Which of the following conditions does not involved in regulation of gene expression
(A) Metabolic conditions (B) Physical conditions
(C) Physiological conditions (D) Environmental conditions

8. The smallest RNA is
(A) r-RNA (B) m-RNA (C) t-RNA (D) nuclear RNA

9. The most abundant RNA of cell is
(A) r-RNA (B) t-RNA (C) m-RNA (D) None of these

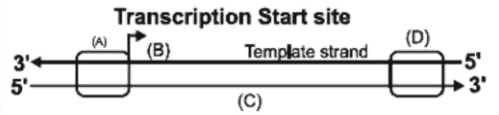
10. Anticodons are found in
(A) m RNA (B) t-RNA (C) r RNA (D) In all

11. Inverted L-shaped three-dimensional structure of tRNA was suggested by
(A) Kim and Klug (B) Kuntz (C) Fraenkel-Conrad (D) Holley

12. If the sequence of bases in sense strand of DNA is 5'-GTTCATCG-3', then the sequence of bases in its RNA transcript would be
(A) 5'-GTTCATCG-3' (B) 5’GUUCAUCG-3' (C) 5’CAAGTAGC-3' (D) 5’CAAGUAGC -3'

13. During transcription why the both strand of DNA are not transcribed?
(A) Sequence of amino acid would be same (B) One ds DNA forms two different protein
(C) Two single strand RNA are formed (D) Transcription would be fast

14. Schematic structure of a transcription unit Select the correct option



(A) (A) Promoter (B) Structural gene (C) Coding strand (D) Terminator
(B) (A) Structural gene (B) Coding strand (C) Terminator (D) Promoter
(C) (A) Coding strand (B) Terminator (C) Promoter (D) Structural gene
(D) (A) Terminator (B) Promoter (C) Structural gene (D) Coding strand

15. If the sequence of m-RNA is 5' UACGAUCUGACG 3' then the sequence of coding strand of DNA will
(A) 3' AUGCUAAGACUG 5' (B) 5' AUGCUAAGACUG 3'
(C) 5' TACGATCTGACG 3' (D) 3' TACGATCTGACG 5'

16. The anticodon of t-RNA and codon of m-RNA are combined through
(A) H-bond (B) Phosphodiester bond
(C) Glycosidic bond (D) Phosphoester bond

17. Which of the following acts as adapter molecule during Protein synthesis
(A) m-RNA (B) r-RNA (C) t-RNA (D) Sn-RNA

18. In a transcription unit promoter is said to be located towards
(A) 3’ end of coding strand (B) 5’ end of structural gene
(C) 5’ end of template strand (D) 3’ end of template strand

19. The strand of DNA, which does not code for anything is referred to as
(A) Template strand (B) Antisense strand
(C) Coding strand (D) Noncoding strand

20. The enzyme responsible for transcription is
(A) DNA polymerase I (B) RNA polymerase
(C) Reverse transcriptase (D) DNA polymerase III

NEET-BIOLOGY **ELP NO.-5** **MOLECULAR BASIS OF INHERITANCE**

1. The mRNA of prokaryotes is
(A) Polycistronic (B) Monocistronic
(C) Formed by splicing of hnRNA (D) Carries genetic message to DNA

2. Capping in hnRNA is catalysed by
(A) Poly A polymerase (B) SnRNA
(C) Guanyl transferase (D) Catalytic RNA

3. Removal of introns and joining of exons in a defined order during transcription is called
(A) Slicing (B) Splicing (C) Looping (D) Inducing

4. Transcription starts non-specifically in the absence of
(A) Sigma factor (B) Rho factor (C) Core enzyme (D) DNA polymerase

5. Tailoring/Splicing of hnRNA is done by
(A) Snurps (B) Introns (C) Exons (D) 18 SrRNA

6. Dominance of RNA world is proved by
(A) Capping (B) Splicing (C) Polyadenylation (D) All of these

7. Out of the two strands of DNA one is carrying genetic information for transcription and it is called
(A) Coding strand (B) Non template strand
(C) Sense strand (D) Template strand

8. When a mature mRNA was hybridised to its gene certain loops were observed. These loops represent
(A) Introns in DNA (B) Introns in rRNA (C) Exons in tRNA (D) Exons in DNA

9. Poly A tail is present in
(A) mRNA of bacteria (B) tRNA of eukaryotes
(C) Promotor of bacteria (D) mRNA of eukaryotes

10. In tailing, adenylate residues are added at 3' end
(A) With the help of guanyl transferase (B) In a template independent manner
(C) With the help of methyl transferase (D) Of hn-RNA of E.coli

11. In the genetic code dictionary, how many codones are used to code for all the 20 essential amino acids?
(A) 64 (B) 20 (C) 61 (D) 60

12. The one aspect which is not a salient feature of genetic code, is its being.
(A) Specific (B) Degenerate (C) Ambiguous (D) Universal

13. Which property of genetic code is utilised in wobble hypothesis?
(A) Degeneracy (B) Non-overlapping (C) Non-ambiguous (D) Universal

14. In the mitochondrial DNA, UGA codes for
(A) Chain termination (B) Chain initiation (C) Tryptophan (D) Tyrosine

15. Find out the incorrect match.
(A) UUU – Phenylalanine (B) UAG – Sense condon
(C) GUG – Valine (D) UGG – Tryptophan

16. One codon codes for only one amino acid, hence the code is
(A) Ambiguous and non-specific (B) Unambiguous and specific
(C) Ambiguous and specific (D) Unambiguous and non-specific

17. Which statement is incorrect:
(A) Some amino acids contain sulphur such as methionine & Cysteine
(B) AUG has dual functions. It codes for methionine (met) and it also act as initiation codon.
(C) The process of tailing shows the dominance of RNA world
(D) RNA polymerase III is responsible for transcription of t-RNA, 5S rRNA & Sn-RNA in Eukaryotes

18. Central dogma is
(A) Replication → Transcription → Translation
(B) Transcription → Translation → Replication
(C) Translation → Replication → Transcription
(D) Transcription → Replication → Translation

19. All the terminator codons begin with the nucleotide of
(A) Adenine (B) Uracil (C) Guanine (D) Cytosine

20. Polypeptide synthesis in prokaryotes is initiated by
(A) AUG (B) GUU (C) UGA (D) CUG

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ELP

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NEET-BIOLOGY **ELP NO.-6** **MOLECULAR BASIS OF INHERITANCE**

1. Find the incorrect match
(A) Central Dogma : F. Crick (B) Reverse Central Dogma : Temin and Baltimore
(C) Split genes : Kornberg (D) mRNA : Jacob and Monad

2. Activation of amino acids during translation is done by
(A) Peptidyl transferase (B) Aminoacyl-tRNA synthetase
(C) Methionine (D) Initiation factors

3. Movement of ribosome on mRNA is called
(A) Transcription (B) Translation (C) Translocation (D) Protein synthesis

4. To initiate translation, the mRNA first binds to
(A) The smaller ribosomal subunit (B) The larger ribosomal subunit
(C) The whole ribosome (D) No such specificity exists

5. Charging of tRNA is also known as
(A) Acylation (B) Transamination (C) Amine Alkylation (D) Aminoacylation

6. The mechanism by which a gene is able to express itself in the phenotype of an organism is called
(A) Gene expression (B) RNA synthesis (C) Translocation (D) Formylation

7. Which of the following process is related to reverse transcription?
(A) DNA dependent DNA synthesis (B) RNA dependent DNA synthesis
(C) DNA dependent RNA synthesis (D) RNA dependent polypeptide synthesis

8. During polymerisation of deoxyribonucleosides triphosphates in bacteria which of the following enzyme is mainly required?
(A) DNA dependent RNA polymerase (B) DNA dependent DNA polymerase
(C) RNA dependent DNA polymerase (D) DNA gyrase

9. Formylated methionine acts as translation initiation in
(A) Eubacteria (B) Eukaryotes (C) Viruses (D) Archaebacteria

10. Which of the following enzyme is a RNA dependent DNA polymerase enzyme?
(A) DNA polymerase I (B) RNA polymerase I
(C) Reverse transcriptase (D) Taq polymerase

11. Regulation of gene expression in eukaryotes be exerted at
a. Transcriptional level (formation of primary transcript)
b. Processing level (regulation of splicing)
c. Transport of mRNA from nucleus to the cytoplasm
d. Translational level
(A) a,b and c (B) b,c and d (C) a,c and d (D) a,b,c and d

12. In prokaryotes, the predominant site (or primary step) of control of gene expression is at
(A) Control of rate of transcriptional initiation
(B) Control of rate of translational initiation
(C) Control of rate of initiation of replication
(D) Processing level

13. Genes regulate growth and differentiation through
(A) Transcription and translation (B) Transduction and translation
(C) Transformation (D) Translation

14. *Escherichia coli* growing on medium having glucose is transferred to lactose containing medium. Which change occurs?
(A) Lac operon is induced (B) Lac operon is suppressed
(C) All operons are induced (D) The bacterium stops dividing

15. A gene of operon which forms the repressor protein is
(A) Operator (B) Promoter (C) Regulator (D) Structural

16. What is correct gene expression pathway ?
(A) Gene—mRNA
(B) Transcription—gene—translation—mRNA—protein
(C) Gene—transcription—mRNA—translation—protein
(D) Gene—translation—mRNA—translation—protein

17. Lac operon 'inducer lactose' serves as an enzyme substrate for
(A) Inducer that binds to operator gene (B) Repressor that binds to operator gene
(C) Inducer that binds to repressor protein (D) Corepressor that binds to repressor protein

18. Untranslated regions of mRNA occur in
(A) Tail region behind stop signal (B) Ahead of initiation codon
(C) Intervening sequences (D) Both A and B

19. Operon is
(A) A set of closely linked genes regulating a metabolic pathways in prokaryotes
(B) The sequence of three nitrogen bases determining a single amino acid
(C) The sequence of nitrogen bases in mRNA which codes for single amino acid
(D) A gene responsible for switching on or off other genes

20. In Eukaryotes, which of the following mechanisms is not correct in terms of regulation of gene expression?
(A) Transcription
(B) Splicing
(C) Transport of mRNA from cytoplasm to nucleus
(D) Translation

NEET-BIOLOGY **ELP NO.-7** **MOLECULAR BASIS OF INHERITANCE**

1. Lac operon is turned on when allolactose binds to
(A) Operator gene (B) mRNA (C) Repressor protein (D) Promoter site

2. Environmental agent triggering transcription from an operon is
(A) Inducer (B) Regulator (C) Repressor (D) Promoter site

3. In operon model, regulator gene functions as
(A) Repressor (B) Regulator (C) Inhibitor (D) All of the above

4. Operon contains
(A) Operator and regulator genes
(B) Operator and structural genes
(C) Operator and regulator genes, and repressor
(D) Operator gene, regulator gene, repressor, structural genes and promoter gene

5. In *Escherichia coli,* the product of i gene combines with
(A) Operator gene to switch off structural genes
(B) Inducer gene to switch on structural genes
(C) Operator gene to switch on structural genes
(D) Regulator gene to switch off structural genes

6. In *E.coli,* the lac operon get switched on when
(A) Lactose is present and it binds to the repressor.
(B) Repressor binds to operator.
(C) RNA polymerase binds to the operator.
(D) Lactose is present and it binds to RNA polynurose.

7. *Escherichia coli* with mutated z gene of lac operon cannot grow in medium containing only lactose as the source of energy because
(A) Lac operon is constitutively active in these cells
(B) They cannot synthesise functional beta-galactosidase
(C) In the presence of glucose, *Escherichia coli* cannot utilise lactose
(D) The bacterium cannot transport lactose from the medium into the cell

8. β-Galactosidase is synthesized *by E.coli* to catalyse hydrolysis of Lactose into
(A) Glucose and Fructose (B) Glucose and Galactose
(C) Galactose and Maltose (D) Glucose and Sucrose

9. Operon model of gene regulation and organisation of prokaryotes was proposed by
(A) Messelson and franklin (B) Wilkins and Franklin
(C) Beadle and tatum (D) Jacob and monod

10. Sequence of structural genes of lac operon is
(A) y,z,a (B) z,y,a (C) a,y,z (D) a,z,y

11. In lac operon genes a ,i , y and z code for
(A) Repressor protein, permease, β-galactosidase transacetylase
(B) Transacetylase, repressor protein, permease, β-galactosidase
(C) Transacetylase, permease, β-galactosidase, repressor protein
(D) Permease, transacetylase, repressor protein, β-galactosidase

12. In Eukaryotic cell transcription, RNA splicing, and RNA capping takes place in:
(A) Ribosomes (B) Nucleus (C) Dictyosomes (D) ER

13. In the lac operon, the structural genes are switched off when
(A) Repressor binds to operator (B) Repressor binds to promoter
(C) Repressor binds to regulator (D) Repressor binds to allolactose

14. In lac operon system lac gene-z codes for
(A) Inducer (B) Repressor (C) Promoter (D) β-galactosidase

15. Lactose metabolising enzyme, produced by yeast cells in the presence of lactose only, is called as
(A) A constitutive enzyme (B) A regulatory enzyme
(C) A repressible enzyme (D) An inducible enzyme

16. In split genes, the coding sequence are called
(A) Exon (B) Introns (C) Cistrons (D) Operons

17. Differentiation of organs and tissues in a developing organism, is associated with
(A) Differential expression of genes (B) Lethal Mutations
(C) Deletion of genes (D) Development Mutations

18. The enzyme required to catalyse polymerisation of deoxynucleotides is
(A) DNA ligase (B) DNA polymerase
(C) b-galactosidase (D) Transacetylase

19. Presence and position of which defines the template and coding strands in a transcription unit
(A) Repressor (B) Operator (C) Structural gene (D) Promoter

20. In lac operon of *Escherichia coli* out of three structural genes (Z, Y, A) gene A codes for
(A) β-galactosidase (B) β-galactoside transacetylase
(C) β-galactoside permease (D) Polymerase

NEET-BIOLOGY **ELP NO.-8** **MOLECULAR BASIS OF INHERITANCE**

1. Single base DNA differences are called
(A) VNTR (B) SCP (C) SNPs (D) Expressed sequence tags

2. Choose the wrong statement
(A) VNTR belong to class of mini-satellite DNA
(B) DNA sequencers work on principle developed by Frederick sanger
(C) HGP was coordinated by US department of energy and national institute of health
(D) DNA finger printing involves identifying similarities in repetitive DNA

3. In humans, most number of genes are located on chromosome
(A) 1 (B) 6 (C) X (D) 21

4. Human genome is said to have approximately
(A) 3×10^9 bp (B) 3×10^6 bp (C) 6.6×10^6 bp (D) 3.3×10^6 bp

5. How many total number of genes are found in human genome?
(A) 18,000 (B) 30,000 (C) 13,000 (D) 4,000

6. ____% of the genome codes for protein in human beings.
(A) 98% (B) 50% (C) 24% (D) < 2%

7. In humans, the largest gene is present on
(A) Chromosome-1 (B) Y-chromosome (C) X-chromosome (D) Chromosome-7

8. How many locations have been identified in human genome where single base differences occur?
(A) 1.4 million (B) 14 million (C) 1.4 billion (D) 14 billion

9. Mark the correct one (w.r.t. application of DNA fingerprinting)
(A) Forensic science (B) Determining the population diversity
(C) Determining the genetic diversity (D) More than one option is correct

10. Human genome project was officially started in
(A) 1989 (B) 1990 (C) 1985 (D) 1993

11. One of the following is a major requirement for DNA finger printing
(A) Electron microscopy (B) ELISA
(C) Electrophoresis (D) HPLC

12. Variable number tandem repeats (VNTRs) are analysed for
(A) Recombinant DNA technology (B) Gene therapy
(C) Direct gene transfer (D) DNA finger printing

13. Agrose is a gel, which is used to separate
(A) Carbohydrates (B) Fats (C) Both A and B (D) Proteins

14. Gel electrophoresis is used for
(A) Construction of recombinant DNA by joining with cloning vectors
(B) Isolation DNA molecules
(C) Cutting of DNA into fragments
(D) Separation of DNA fragments according to their size

15. Which one of the following is not an application of DNA finger printing
(A) Solving immigration cases (B) Solving paternity cases
(C) Therapy for curing SCID (D) Identifying gene mutation

16. PCR and RFLP are employed in
(A) DNA sequencing (B) Genetic fingerprinting
(C) Study of enzymes (D) Genetic transformation

17. During DNA fingerprinting, separation of DNA fragments is done by
(A) Autoradiography (B) Hybridisation (C) Denaturation (D) Electrophoresis

18. Sequencing the whole set of genome that contained all the coding and non-coding sequences and later assigning different regions in the sequence with functions is known as
(A) Sequence annotation (B) PCR
(C) Northern blot (D) Microarray

19. The last step of DNA fingerprinting is
(A) Blotting (B) Autoradiography
(C) Hybridisation (D) Isolation of desired DNA

20. DNA fingerprinting can be used
(A) To solve cases of disputed paternity and maternity
(B) For criminal identification and forensics
(C) For personal identification
(D) More than one option is correct

NEET-BIOLOGY **ELP NO.-9** **MOLECULAR BASIS OF INHERITANCE**

1. One of the most frequently used techniques in DNA fingerprinting is
(A) VNTR (B) SSCP (C) SCAR (D) AFLP

2. One geneone enzyme hypothesis was postulated by
(A) Beadle and Tatum (B) R. Franklin
(C) Hershey and Chase (D) A. Garrod

3. In mutational event, when adenine is replaced by guanine, it is a case of
(A) frame shift mutation (B) transcription
(C) transition (D) transversion

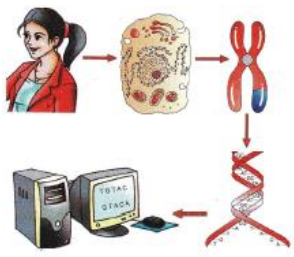
4. Which of the following step of translation does not consume a high energy phosphate bond?
(A) Peptidyl transferase reaction (B) Aminoacyl tRNA binding to Asite
(C) Translocation (D) Amino acid activation

5. In split genes, the coding sequences are called
(A) exons (B) cistrons (C) introns (D) operons

6. If you grow some bacteria in heavy nitrogen for many generations and then shift them to light nitrogen, how many generations after shifting bacteria would have some light/light DNA?
(A) First generation (B) Second generation
(C) Only the third generation (D) Never as DNA replication is semiconservative

7. Allelic sequence variations, where more than one varient (allele) at a locus in a human population with a frequency greater than 0.01 is referred to as
(A) incomplete dominance (B) EST
(C) SNP (D) DNA polymorphism

8.



The above diagram shows:-
(A) Method of DNA fingerprinting (B) Human genome project work
(C) Cloning technique (D) Chromosome walking

9. DNA is a long polymer of nucleotides. If in a ds DNA 4000 base pairs are found then what will be number of nucleotides, sugar molecules, phosphate molecules and ester bond:

(A) 8000, 4000, 4000, 2 (B) 4000, 4000, 8000, 2

(C) 4000, 8000, 4000, 2 (D) 8000, 8000, 8000, 2

10. Select the incorrect match with respect to HGP

(A) Dystrophin gene → 2.4 million base pairs (B) Chromosome-1 → 2968 genes

(C) EST → 1.4 million locations (D) Human genome → 3164.7 million base pairs

11. DNA finger printing technology was discovered by Alec Jaffery and this technology uses:

(a) DNA polymorphism as the basis of identification

(b) VNTRs, which are proved to be most useful in studies

(c) The intervening minisatellites having 11-60 bp repeats to synthesize complementary probes

(d) Gel electrophoresis to amplify the unknown DNA

(A) All are correct (B) Only (d) is incorrect

(C) Both (a) and (b) are incorrect (D) Only (c) is incorrect

12. In eukaryotes, RNA polymerase III is responsible for synthesis of

(A) 28S RNA, 18S RNA and 5.8S RNA (B) tRNA, hnRNA, rRNA

(C) tRNA, 5sRNA, snRNA (D) hnRNA, tRNA, rRNA

13. β-galactosidase is synthesized by E. coli to catalyze hydrolysis of _____ into _____ and glucose

(A) Galactose, lactose (B) Galactose, glucose

(C) Lactose, galactose (D) Maltose, galactose

14. Which of the following is NOT a salient feature of the Human Genome Project?

(A) The human genome contains 3614.7 million nucleotide bases.

(B) Less than 2 per cent genome codes for proteins.

(C) Over 50 per cent of the genes discovered are yet to be investigated regarding their functions.

(D) Chromosome Y has the fewest of genes

15. VNTRs vary in size from _____ to _____.

(A) 0.1 to 20 bases (B) 0.1 to 20 kilobases

(C) 0.1 to 20 hectobases (D) 0.1 to 20 decabases

16. In DNA fingerprinting, the hybridized strands are detected by

(A) Radiometery (B) Radioscopy

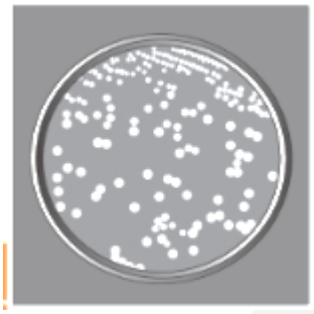
(C) Autoradiography (D) Scintillation counter

17. In Meselson and Stahl experiment, E. coli was grown in a medium containing

(A) ^{40}KCl (B) $^{24}NaCl$ (C) $^{15}NH_4Cl$ (D) CsCl

NEET-BIOLOGY **ELP NO.-1** **MICROBES IN HUMAN WELFARE**

1. Identify the following image.



(A) Fungal Colony growing in petri dish.
(B) Bacteriophage growing in petri dish.
(C) Bacterial Colony
(D) Viruses

2. Cheeses are classified on the basis of
(A) Taste (B) Flavour (C) Texture (D) All of these.

3. Lactic acid Bacteria convert milk into curd &improves its nutritional quality by enhancing
(A) Vitamin A (B) Vitamin C (C) Vitamin B_{12} (D) Vitamin D

4. The Roquefort cheese are ripened by growing a specific _____ on them.
(A) Bacteria (B) Viruses (C) Fungi (D) protozoa.

5. Toddy, a traditional South Indian drink is obtained from a sap of
(A) Mango (B) Palms (C) Neem (D) Pinus

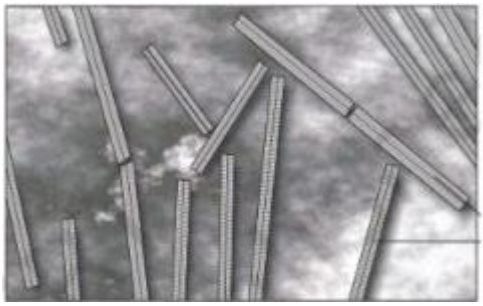
6. Which of the following is used for preparation of Bread?
(A) *Lactobacillus* (B) *Penicillium* (C) *Trichoderma* (D) *S.cerevisiae*

7. *Propionibacterium sharmanii* is responsible for the production of __
(A) Roquefort cheese (B) Swiss cheese
(C) Camembert cheese (D) None of the Above.

8. A. LAB produces acids that coagulate and partially digest the milk proteins.
B. In our stomach, LAB play very beneficial role in checking disease causing microbes
(A) Statement A is incorrect but B is correct.
(B) Statement A is correct but B is incorrect.
(C) Both A and B are incorrect.
(D) Both A and B are correct

9. Dough kept overnight in warm weather becomes soft and spongy because of
(A) Cohesion
(B) Fermentation
(C) Osmosis
(D) Absorption of CO_2.

10. Identify the following image



(A) Bacteriophage
(B) Adenovirus
(C) Streptococcus
(D) TMV (Tobacco Mosaic Virus)

11. Cyclosporin A, used as an immune suppressive agent in organ-transplant patients, is produced by_____.
(A) Clostridium
(C) Trichoderma
(B) Saccharomyces
(D) Aspergillus

12. Statins produced by the yeast *Monasus purpureus* have been commercialized as _____.
(A) Clot buster
(C) Immunosuppressor
(B) Antibiotic
(D) blood-cholesterol lowering agents.

13. Match the following:
(I) Acetic acid
(i) *Lactobacilus*
(II) Butyric acid
(ii) *Aspergillus niger*
(III) Lactic acid
(iii) *Acetobacter aceti*
(IV) Citric acid
(iv) *Clostridium butylium*
(A) I(iii) II (ii)III (iv) IV (i)
(B) I(iii) II (iv) III(i)IV (ii)
(C) I(i) II (ii) III (iii) IV (iv)
(D) I(iv) II(i) III (iii)IV (iii)

14. The Full potential of Penicillin as the effective antibiotic was established by _____.
(A) E. Chain &H. Florey
(B) Schleiden & Schwann
(C) Jacob & Monod.
(D) Beadle and Tatum

15. Find the odd one w.r.t diseases treated by antibiotics.
(A) Leprosy
(B) Whooping cough
(C) Flu
(D) Plague

16. The bottled juices bought from the market are clearer as compared to those made at home. These bottled juices are clarified using _____.
(A) Lipase
(B) Cyclosporin A
(C) Proteases & pectinases
(D) Alcohol

17. The domestic sewage in large cities
(A) Has a high BOD as it contains both aerobic and airobicbacteria
(B) Is processed by aerobic and then anaerobic bacteria in the secondary treatment in Sewage Treatment plants (STPs)
(C) When treated in STPs does not really require the aeration step as the sewage contains adequate oxygen
(D) Has very high amounts of suspended solids and dissolved salts

18. Which of the following statements is incorrect regarding fermentation?
(A) Propionibacterium is used to ferment the cheese.
(B) The puffed-up appearance of dough is due to the production of CO_2 gas.
(C) Fermentation in muscle produces ethanol.
(D) Toddy is made by fermenting sap from palms.

19. Probiotics are:
(A) Safe antibiotics
(B) Cancer induding microbes
(C) New kind of food allergens
(D) Live microbial food supplement

20. Select the correct statement
(A) Acetobacter aceti produces citric acid.
(B) Saccharomyces cerevisiae is used as clot buster
(C) Penicillium notanum restrict the growth of Staphylococci
(D) Methanogens are found in aerobic conditions.

21. Monascus purpureus is a yeast used commercially in the production of
(A) Ethanol
(B) Streptokinase for removing clots from the blood vessels.
(C) Citric acid
(D) Blood cholesterol lowering statins.

22. A patient brought to a hospital with myocardial infarction is normally immediately given
(A) Penicillin (B) Streptokinase (C) Cyclosporin-A (D) Statins

23. Identify the incorrectly matched pair:

1	Streptococcus	Clot buster
2.	Monascus Purpureus	Statins
3.	Trichoderma Harziamum	Immunosuppre
4.	Aspergillus niger	Citric acid

24.

	Bacterium		Product
(i)	Aspergullus Niger	(A)	Lactic Acid
(ii)	Acetobacter Aceti	(B)	Butyric Acid
(iii)	Clostridium Butylicum	(c)	Acetic Acid
(iv)	Lactobacillus	(D)	Citric Acid

Choose the correct match:
(A) (i) - b, (ii) - c, (iii) - d, (iv) – a
(B) (i) - b, (ii) - d, (iii) - c, (iv) – a
(C) (i) - d, (ii) - c, (iii) - b, (iv) – a
(D) (i) - a, (ii) - b, (iii) - c, (iv) – d

25. Which one of the following alcoholic drinks is produced without distillation?
(A) Wine (B) Whisky (C) Rum (D) Brandy

NEET-BIOLOGY **ELP NO.-2** **MICROBES IN HUMAN WELFARE**

1. The Ladybird beetle with red and black markings is useful to get rid from ____.
(A) Mosquitoes (B) Aphids (C) Dragonflies (D) Bacteria

2. *Bacillus thuringiensis* is used to control the population of ____.
(A) Beetle (B) Butterfly caterpillars
(C) Mosquitoes (D) Fish.

3. Select the incorrect statement among the following.
(A) Baculoviruses are pathogens that attack insects and other arthropods.
(B) Baculoviruses belongs to Genus *Nucleopolyhedrovirus.*
(C) These viruses are species- specific and have narrow spectrum application.
(D) They have negative impacts on plants, mammals, birds, fish or even on non- target insects.

4. The free-living Nitrogen fixing bacteria which fix can atmospheric nitrogen are ___.
(A) *Rhizobium & Azotobacter.* (B) *Rhizobium & Frankia.*
(C) *Frankia & Azospirillum* (D) *Azospirillum & Azotobacter*

5. _____ species are free living fungi that are very common in the root ecosystem and effective biocontrol agent of several plant pathogens.
(A) Baculoviruses (B) *Trichoderma*
(C) *Anabaena* (D) *Aspergillus*

6. _____ are organisms that enrich the nutrient quality of the soil.
(A) Biofertilizers (B) Fishes
(C) Insects (D) None of the above

7. Find the odd one w.r.t Biofertilizers.
(A) Bacteria (B) Virus (C) Fungi (D) Cyanobacteria.

8. In Paddy fields which cyanobacteria serve as an important biofertilizer.
(A) *Glomus* (B) *Nostoc*
(C) *Azotobacter* (D) *Microcystis*

9. Glomus is symbiotically associated with roots of higher plants like Pinus helps in absorption of _____.
(A) N (B) K (C) P (D) Na

10. Select the odd one
(A) *Anabaena* (B) *Nostoc*
(C) *Oscillatoria* (D) *Rhizopus*

11. Find the incorrect statement.
(A) Biogas can be used as fuel.
(B) Biogas burns without smoke and prevents air pollution.
(C) Biogas can be used to light street lights and spent slurry can be used as manure.
(D) Biogas production is very expensive and complex processes.

12. The step of sewage treatment in which flocs growth occur vigorously is _____.
(A) Primary treatment. (B) Secondary treatment.
(C) Tertiary treatment. (D) None of the above.

13. A. The Biological oxygen demand is the amount of the oxygen that would be released if all the organic matter in one liter of water were oxidized by bacteria.
B. The Ministry of Environment and Forests has initiated Ganga Action plan and Yamuna Action plan to save major rivers of India.
(A) Only Statement A is Incorrect. (B) Only Statement B is Incorrect.
(C) Both Statement A and B are Correct. (D) Both Statement A and B are Incorrect.

14. The technology of biogas production was developed in India mainly due to the efforts of _____.
(A) IARI only (B) KVIC only
(C) Both (a) and (b) (D) None of the above.

15. Which of the following is not used as a biopesticide?
(A) *Bacillus thuringiensis* (B) *Trichoderma harzianum*
(C) Nuclear Polyhedrosis Virus (NPV) (D) *Xanthomonas campestris*

16. Select the correct statement from the following
(A) Biogas is produced by the activity of aerobic bacteria on animal waste
(B) Methanobacterium is an aerobic bacterium found in rumen of cattle.
(C) Biogas, commonly called gobar gas, is pure methane
(D) Activated sludge-sediment in settlement tanks of sewage treatment plant is a right source of aerobic bacteria

17. Which one of the following is not used in organic farming?
(A) *Glomus* (B) *Earthworm* (C) *Oscillatoria* (D) *Snail*

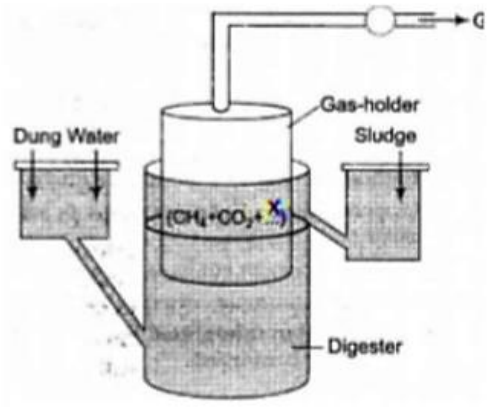
18. Which one of the following microbes forms symbiotic association with plants and helps them in their nutrition?
(A) *Azotobacter* (B) *Aspergillus* (C) *Glomus* (D) *Trichoderma*

19. Which one of the following helps in absorption of phosphorus from soil by plants?
(A) Rhizobium (B) Anabaena (C) Frankia (D) Glomus

20. Which of the following in sewage treatment removes suspended solids?
(A) Tertiary treatment (B) Secondary treatment
(C) Primary treatment (D) Sludge treatment

21. Baculoviruses are:
(A) Species specific, narrow spectrum insecticides
(B) Species specific, broad spectrum insecticides
(C) Non specific, narrow spectrum inseticides
(D) Non specific, broad spectrum insecticides

22. In the given diagram the gas X can be,



(A) Hydrogen (B) Carbon monoxide (C) Ammonia (D) Oxygen

23. Big holes in Swiss cheese are made by a:
(A) A machine
(B) A bacterium that produces metha
(C) A bacterium producing a large am carbon dioxide
(D) A fungus that releases a lot of gas during its metabolic activities.

24. The residue left after methane production from cattle dung is:
(A) Burnt (B) Burried in land fills
(C) Used as manure (D) Used in civil construction

25. BOD of waste water is estimated by measuring the amount of:
(A) Total inorganic matter (B) Biodegradable organic matter
(C) Oxygen evolution (D) O xygen consumption.

NEET-BIOLOGY **ELP NO.-1** **ORGANISMS AND POPULATIONS**

1. A population is
(A) A group of organisms of one species occupying a defined area
(B) A group of organisms of different species occupying a defined area
(C) A group of organisms of different species occupying different geographical area
(D) A group of sexually isolated organisms occupying a defined area

2. Which is the correct order of ecological hierarchy?
(A) Biome → Populations → Community → Organism
(B) Organism → Biome → Population → Community
(C) Population → Community → Biome → Organism
(D) Organism → Population → Community → Biome

3. Ecology describes
(A) Interactions between living organisms only
(B) Interactions between members of a single spices only
(C) Interactions of organisms among themselves as well as with their surrounding abiotic components
(D) Intraspecific competitions only

4. Ecology is basically concerned with how many basic levels of organisation?
(A) Three (B) Two (C) Four (D) Eight

5. Endemic Plants-
(A) Cosmopolitan (B) Occur in a particular area
(C) Occur at high altitudes (D) Occur on north pole

6. Occurrence of endemic species in South America and Australia due to:
(A) These species has been extinct from other regions
(B) Continental separation
(C) There is not terrestrial route to these places
(D) Retrogressive evolution

7. Prosopis community at Aravalli hills is an example of
(A) Critical link species (B) Key stone species
(C) Endemic species (D) Dominant species

8. Which of the followings is a structural character of biotic community?
(A) Dominance (B) Stratification
(C) Species diversity (D) All of the above

9. Fig trees can maintain community structure during food scarcity in tropical deciduous forest. These act as
(A) Exotic Species (B) Pioneer Species
(C) Edge species (D) Key stone species

10. Key stone species are -
(A) High number or bio-mass, high influence on the community
(B) High number of bio-mass, low in influence on the community
(C) Low number or bio-mass, high influence on the community
(D) Low number or bio-mass, low influence on the community

11. Most relevant ecological factor.
(A) Temperature (B) pH (C) Water (D) Soil

12. Distinct season occurs due to
(A) Rotation of our planet (B) Intensity of temperature
(C) Duration of temperature (D) All are correct

13. Major biomes formation
(A) Desert (B) Biome (C) Rain forest (D) All are correct

14. **Assertion –** Intestine is a unique habitat for hundred of species of microbes.
Reason – Most important ones are temperature, water, light soil.
(A) Assertion and reason both are correct statements, and reason is correct explanation for assertion.
(B) Assertion and reason both are correct statements, but reason is not correct explanation for assertion.
(C) If assertion is correct but reason is incorrect.
(D) If assertion is wrong but reason is correct.

15. Organism is evolved adaptation to optimise its survival and reproduction in its habitat occur due to
(A) Artificial selection (B) Natural selection
(C) Genetic selection (D) All are correct

16. **Assertion :** Acclimatization is adaptation to new environment
Reason : A man travelling in car during summer he can accomplished homeostasis through physiological mean.
(A) Assertion and reason correct and reason is correct explanation
(B) Assertion and reason correct and reason is not correct explanation
(C) Assertion is correct and reason is incorrect
(D) Assertion is incorrect, reason is correct

17. **Statement 1:** Physiological adaptation is internal fat oxidation for water in kangaroo rat
Statement 2: Modification of leaf into spines and Anti freezing Protein is morphological adaptation
(A) Both statement correct (B) Both statement incorrect
(C) Statement 1 correct (D) Statement 2 correct

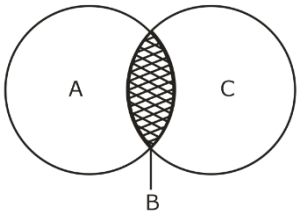
18. Statement 1 : Human homeostasis is accomplished through physiological artificial means
Statement 2: All birds and mammals, and a very few lower vertebrate and invertebrate species are indeed capable of such regulation (thermoregulation and osmoregulation).
(A) Both statement correct (B) Both statement incorrect
(C) Statement 1 correct (D) Statement 2 correct

19. Statement 1: Evolutionary biologists believe that the 'success' of mammals is largely due to their ability to maintain a constant body temperature
Statement 2: Plants have mechanisms to maintain internal temperatures.
(A) Both statement correct (B) Both statement incorrect
(C) Statement 1 correct (D) Statement 2 correct

20. What enables the organism to survive and reproduce in its habitat.
(A) Adaptation (B) Growth (C) Division (D) Metabolism

NEET-BIOLOGY **ELP NO.-2** **ORGANISMS AND POPULATIONS**

1. See the diagram given below and answer the question :



If A is a forest ecosystem and C is a lake ecosystem then what is correct for B :-

(a) It is an ecotone

(b) Transition zone in between two ecosystems

(c) It is an littoral zone

(d) Species richness is very low

(A) a, b (B) c, d

(C) a, b, c (D) b, d

2. Read the following statements and select the correct ones.

(i) All the colour components of the visible spectrum are available for marine plants living in different depths of the ocean.

(ii) Many herbs and shrubs in rainforests adapt to photosynthesise optimally under very low light conditions as they grow under canopy trees.

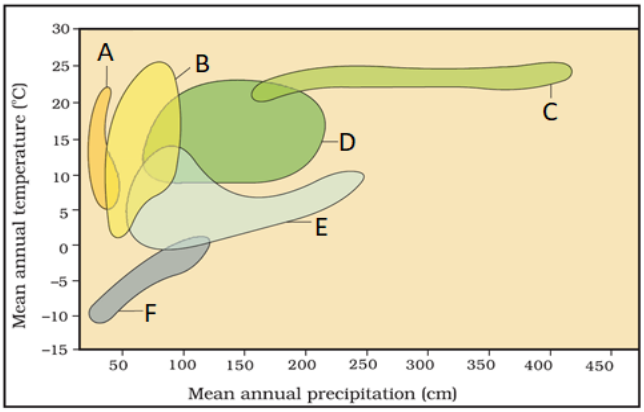
(iii) Gradual increase in average global temperature will affect the distributional range of some species.

(iv) The quality of soil does not depend upon the weathering process.

(A) (i) and (ii) (B) (ii) and (iv)

(C) (ii) and (iii) (D) (i) and (iv)

3. In the given figure, identify the temperate forest and coniferous forest respectively from the markings A-F and select the correct option.



(A) (A) and (B) (B) (B) and (D)

(C) (D) and (E) (D) (C) and (F)

4. Given below are two statements:

Statement I:

Sediment characteristics often determine the type of benthic animals that can thrive there.

Statement II:

Sediment characteristics determine type of vegetation founded in this specific aquatic habitat.

(A) Both Statement I and Statement II are correct

(B) Both Statement I and Statement II are incorrect

(C) Statement I is correct but Statement II is incorrect

(D) Statement I is incorrect but Statement II is correct.

5. Two populations which are interconnected by dispersing individuals are known as :-

(A) Local population (B) Metapopulation

(C) Sister population (D) None

6. Kangaroo rat in desert is an example of :

(A) Keystone species (B) Critical link species

(C) Endemic species (D) Dominant species

7. *Pinus* community at Himalayas is an example of :

(A) Endemic species (B) Rare species

(C) Dominant species (D) Keystone species

8. Which of the following zone of lake stratification also known as ecotone area ?

(A) Littoral zone (B) Profundal zone

(C) Limnetic zone (D) Benthic zone

9. In which of the zone of lake stratification maximum diversity present ?

(A) Limnetic zone (B) Littoral zone

(C) Profundal zone (D) Benthic zone

10. Statement-I: Population ecology is an important area of ecology.

Statement-II: It links ecology to population genetics and evolution.

(A) If both Statement-I & Statement-II are True & the Statement-II is a correct explanation of the Statement-I.

(B) If both Statement-I & Statement-II are True but Statement-II. is not a correct explanation of the Statement-I.

(C) If Statement-I is True but the Statement-II is False.

(D) If both Statement-I & Statement-II are False.

11. Narrow range of temperature restrict the organism of survive is

(A) Stenothermal (B) Eurytheromal

(C) Cold blooded (D) Hot blooded

12. Next to temperature, most important factor influencing the life of organism is

(A) Water (B) Temperature (C) Light (D) Oxygen

13. Salt concentration 30-35 ppt found –

(A) Sea (B) Inland water (C) Lake (D) All are correct

14. Organism choose their habitat on the basis of

(A) Abiotic factor only (B) Biotic factor only

(C) Both biotic and abiotic factor (D) Food, shelter only

15. Many species of small plants growing in forest are adapted to photosynthetic optimally on term.
(A) Very low light (B) Very high light (C) Low light (D) High light

16. Water requirements through internal fat oxidation occur in
(A) Kangaroo (B) Kangaroo rat (C) Python (D) Mango

17. Physiological adaptation in polar seas aquatic mammals like seals
(A) Thick layer of fat (blubber) below their skin
(B) Fat store in all tissue
(C) Night activity
(D) All are correct

18. Statement 1: Stomata of CAM plants to remain closed during day time because excess water loss
Statement 2: Xerophytic plant show Night opening stomata to avoid transpiration loss
(A) Both statement correct (B) Both statement incorrect
(C) Statement 1 correct (D) Statement 2 correct

19. Increase of population under optimum conditions is
(A) Biotic reduction (B) Biotic potential
(C) Biotic capacity (D) Biotic interactions

20. Statement 1: Niche is address of an organism
Statement 2: Niche is better explained by unique quote “What it eats and what eats it”
(A) Both statement correct (B) Both statement incorrect
(C) Statement 1 correct (D) Statement 2 correct

NEET-BIOLOGY **ELP NO.-3** **ORGANISMS AND POPULATIONS**

1. The increase in population per unit time is called -

(A) Population growth (B) Population dynamics

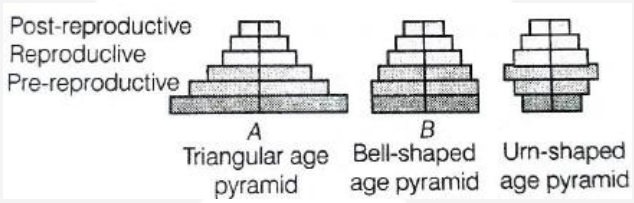
(C) Population ratio (D) Population density

2. If a pond has 20 lotus plants and 8 new plants are added through reproduction. Then the birth rate is -

(A) 0.8 offspring per lotus per year (B) 0.2 offspring per lotus per year

(C) 0.4 offspring per lotus per year (D) 0.6 offspring per lotus per year

3. Age pyramid A, B and C indicates.



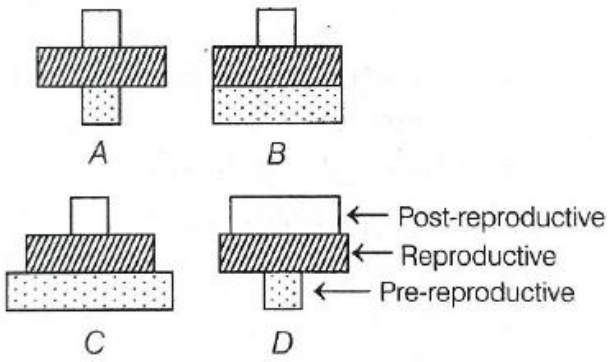
(A) A–Expanding population, B-Stable population, C-Declining population

(B) A-Expanding population, B-Declining population, C-Stable population

(C) A-Stable population, B-Declining, population C-Expanding population

(D) A-Declining population, B-Stable, population C-Expanding population

4. Which of the following statements correctly correlates with the diagrams?



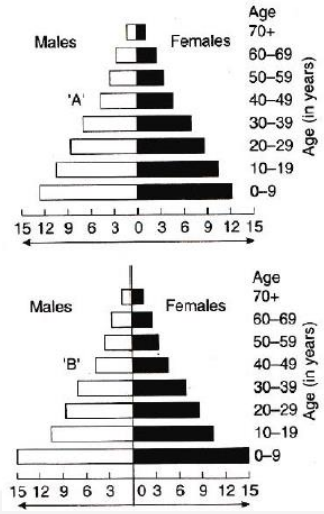
(A) A and B are steady population

(B) A and D are declining population

(C) C and D are growing population

(D) B and D are declining population

5. 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 year apart. Select the correct interpretation about them.



Interpretations

(A) B is earlier pyramid and shows stabilised growth rate

(B) B is more recent showing that population is very young

(C) A is the earlier pyramid and no change has occurred in the growth rate

(D) A is more recent and shows slight reduction in the growth rate

6. Which of the following is not an attribute of a population?

(A) Natality (B) Mortality

(C) Species interaction (D) Sex ratio

7. Natality refers to

(A) Death rate

(B) Number of individuals entering a habitat

(C) Number of individuals leaving the habitat

(D) Birth rate

8. The change in population size at a given time interval t, is given by the expression, $N_t = N_O + B + I - D - E$, I, B and D, respectively stand for

(A) I-rate of emigration, B-natality rate, D-mortality rate

(B) I-mortality rate, B-natality rate, D-rate of immigration

(C) I-mortality rate, B-rate of immigration, D-natality rate

(D) I-rate of immigration, B-natality rate, D-mortality rate

9. The logistic population growth model

$$\frac{dN}{dt} = rN\left(\frac{K-N}{K}\right)$$

Describes a population's growth when an upper limit to growth is assumed. This upper limit of growth is known as population ___A___ and as. 'N' gets larger, $\frac{dN}{dt}$ ___B___.

(A) A–carrying capacity, B–decrease

(B) A–carrying capacity, B–increases

(C) A–reproductive fitness, B–increase

(D) A–reproductive fitness, B–decreases

10. Statement-I: The logistic growth model is considered a more realistic one.
Statement-II: Resources for growth for most organism/populations are finite and become limiting sooner or later.
(A) If both Statement-I & Statement-II are True & the Statement-II is a correct explanation of the Statement-I.
(B) If both Statement-I & Statement-II are True but Statement-II. is not a correct explanation of the Statement-I.
(C) If Statement-I is True but the Statement-II is False.
(D) If both Statement-I & Statement-II are False.

11. Competition for food, light and space is most severe between two –
(A) Distantly related species growing in different habitat
(B) Distantly related species growing in the same habitat
(C) Closely related species growing in different habitat
(D) Closely related species growing in the same area

12. Cattle or goats are never browsing on Calotropis growing in abandoned fields because of the presence of -
(A) Poisonous glycosides
(B) Alkaloids like quinine
(C) Opium
(D) Long chain fatty acids

13. A predator -
(A) Is too efficient to overexploits its prey
(B) Helps in maintaining species diversity by increasing the intensity of competition among prey species.
(C) Acts as conduits for energy transfer across trophic levels
(D) Shows (+, +) interaction with its prey

14. Which of the following is incorrect w.r.t. competition?
(A) Resources need not be limiting for competition to occur
(B) Competitive species may; evolve mechanism that promote their co–existance
(C) Gause's principle is an example of competitive exclusion
(D) Only closely related species can show competition

15. Parasites adversely affect :-
(A) Survival
(B) Growth of host
(C) Reproduction potential of host
(D) All of the above

16. Population migrate from one place to other, organism enter into new population is called
(A) Immigration
(B) Emmigration
(C) Escape
(D) Movement

17. Habitat of an organism include
(A) Abiotic factor
(B) Biotic factor
(C) Both (A) & (B)
(D) Edaphic factors

18. Group of organism belongs to different species at one place constitute
(A) Metapopulation
(B) Sister population
(C) Community
(D) Biome

19. diurnal and seasonal variations in light intensity and duration (photoperiod) as cues for timing their

(A) Foraging,
(B) Reproductive
(C) Migratory activities
(D) All are correct

20. In aquatic environment, _____often determine the type of benthic animals that can thrive there.

(A) Aggregation of soil
(B) Sedimentation characteristic
(C) Granules size
(D) All are correct

NEET-BIOLOGY **ELP NO.-4** **ORGANISMS AND POPULATIONS**

1. The interaction between two living organisms of different species which is beneficial to both but is not obligatory because they can live without each other is known as -
(A) Proto–cooperation (B) Mutualism or symbiosis
(C) Commensalism (D) Amensalism

2. Biotic potential is -
(A) Intrinsic rate of natural increase under environmental limited condition
(B) Intrinsic rate of natural increase under environmental unlimited condition
(C) Extrinsic rate of natural increase under environmental limited conditions
(D) Extrinsic rate of natural increase under environmental unlimited conditions

3. Which of the following is most appropriately defined?
(A) Commensalism is a relationship in which one species is benefitted and the other is neither benefitted nor harmed.
(B) Parasite is an organism which always lives inside the body of other organism and may kill it
(C) Competition is defined as a process in which the fitness of one species is significantly higher in the presence of another species
(D) Mutualism is a relationship in which one species is benefitted whereas the other is unaffected

4. Mycorrhizae relationship between fungi and roots of higher plants is?
(A) Parasitic relationship (B) Saprophytic relationship
(C) Symbiotic relationship (D) Epiphytic relationship

5. Which of the following is an epiphyte?
(A) Orchid (B) Lianas (C) Santalum (D) Mango

6. An orchid plant growing on the branch of mango tree, what is the interaction between orchid & mango?
(A) Parasitism (B) commensalism (C) Protocoperation (D) Mutualism

7. 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) Viola (D) Banana

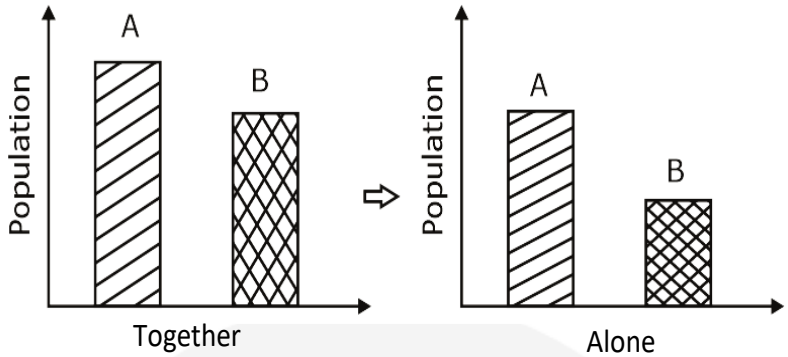
8. Different type of interactions and the nature of interactions between species A & B are given in column I & II respectively :

Column I	**Column II**
I. Mutualism	P. Beneficial to A, no effect for B
II. Competition	Q. Beneficial to both A & B
III. Parasitism	R. No effect to A & harmful to B
IV. Amensalism	S. Beneficial to A & harmful to B
V. Commensalism	T. Harmful to A & B

(A) I-Q, II-T, III-S, IV-R, V-P (C) I-P, II-Q, III-S, IV-R, V-T
(B) I-Q, II-R, III-T, IV-S, V-P (D) I-R, II-T, III-S, IV-Q, V-P

9. Which of the following is not an example of commensalism
(A) Sea anemon-Hermit crab
(B) An orchid growing as an epiphyte one a mango branch
(C) Cattle egret and grazing cattle in close association
(D) Fig flower is pollinated by wasp.

10. Choose the correct option for the relation between species A & species B shown in the graph given below :



(A) Commensalism (B) Mutualism
(C) Competition (D) Amensalism

11. The correct statement for parasites is/are:-
(a) Host specific parasites & hosts tend to co-evolve
(b) Parasites have highly developed sense organs
(c) Parasites may reduce population density of host
(d) Parasites have highly developed digestive system
(A) a and b (B) b and c (C) a and c (D) a and d

12. Which one of the following population interactions is widely used in medical science for the production of antibiotics?
(A) Commensalism (B) Mutualism (C) Amensalism (D) Parasitism

13. Which of the following is a correct match :-
(A) Cuscuta - Partially parasite (B) Endemic species – Found everywhere
(C) *Viscum* – Total parasite (D) Beneficial partnership-commensalism

14. A high density of elephant population in an area can result in
(A) Mutualism (B) Predation of one another
(C) Intraspecific competition (D) Interspecific competition

15. Predation, parasitism and commensalism share a common characteristic i.e.
(A) Both the interacting species are benefitted
(B) Interacting species live closely together
(C) One of the species is benefitted while other is harmed
(D) Both the species belong to same taxonomic group

16. Evolutionary biologists believe that the 'success' of mammals is largely due to their ability to maintain a constant
(A) body temperature (B) Metabolism
(C) Water level (D) Salt level

17. Assertion : Benefits of a constant internal environment to the organism, but conformers had not evolved to become regulators.
Reason : Regulation is very expensive process in terms of energy and all organism can not afford it
(A) Assertion and reason correct and reason is correct explanation
(B) Assertion and reason correct and reason is not correct explanation
(C) Assertion is correct and reason is incorrect
(D) Assertion is incorrect, reason is correct

18. small animals have a larger surface area relative to their volume, they tend to lose body heat
(A) very fast
(B) Very slow
(C) Moderately
(D) Sometimes fast sometimes slow

19. In bacteria, fungi and lower plants, various kinds of thick- walled spores are formed which help them to survive in
(A) Unfavourable conditions
(B) Favourable conditions
(C) State of 'dormancy'.
(D) Suitable environment.

20. Desert lizards lack the physiological ability that mammals have to deal with the high temperatures of their habitat, but manage to keep their body temperature fairly constant by behavioural means. They and absorb heat when their body ____X_____ below the comfort zone, but move into shade when the _____Y_____ increasing.

	X	**Y**
(A)	Temperature drops	Ambient temperature
(B)	pH drops	Local temperature
(C)	Water drops	Ambient temperature
(D)	BP drops	Comfort temperature

NEET-BIOLOGY **ELP NO.-1** **ECOSYSTEM**

1. Net primary productivity is the gross primary productivity minus?
(A) That which is consumed by herbivores
(B) That which is consumed by producer in metabolism
(C) Secondary productivity
(D) Loss of mortality

2. Nitrogen gas makes up early 80% of earth's atmosphere, yet nitrogen is often a limiting factor for plant growth, why?
(A) The atmospheric form of Nitrogen cannot be used by plants
(B) Nitrifying bacteria remove usable nitrogen from the soil more rapidly than plants can absorb it
(C) Atmospheric nitrogen dissolves readily in the soil but is washed out with every rainfall
(D) Plants must absorb nitrogen through their roots which are not in contact with the atmosphere

3. Consider the following two statements?
I. The annual net primary productivity of the whole biosphere is approximately 170 billion tons (dry weight) of organic matter
II. Majority of this is contributed by the oceans as they occupy larger area of Earth
(A) Both I and II are correct and II explains I.
(B) Both I and II are correct but II doesn't explain I.
(C) I is correct but II is incorrect.
(D) I is incorrect but II is correct.

4. What percent of energy in the sunlight available to the primary producers is converted by them into net primary productivity?
(A) 1 (B) 2 (C) 5 (D) 10

5. The second trophic level in a lake is?
(A) Phytoplankton (B) Zooplankton
(C) Benthos (D) Fishes

6. The rate of formation of new organic matter by consumers is called as?
(A) Secondary productivity (B) Standing crop
(C) Standing state (D) Net primary productivity

7. The limitations of ecological pyramid include all of the following except?
(A) They do not take into account the same species belonging to two or more trophic levels
(B) They do not represent relationships between organisms at different trophic levels
(C) They assume a simple Food Chain and do not consider food webs
(D) Saprotrophs are not given any place in the ecological pyramids

8. Most primary productivity in the surface water of lakes and oceans is by?
(A) Floating plants (B) Red and brown algae
(C) Zooplankton (D) Phytoplankton

9. The term Ecosystem was coined by?
(A) A.G Tansely (B) E Hackle (C) E Warming (D) EP Odum

10. Vertical distribution of different species occupying different levels in a biotic community is known as?
(A) Divergence (B) Stratification (C) Zonation (D) Pyramid

11. Which of the following is the functional unit of nature?
(A) A plant (B) An animal (C) Ecosystem (D) Environment

12. Find the odd one out with respect to functional component of ecosystem?
(A) Productivity (B) Stratification (C) Decomposition (D) Nutrient cycling

13. The autotrophic components include
(A) Phytoplankton (B) Some algae (C) Marginal plants (D) All of these

14. Primary productivity depends on
(A) Variety of environmental factors (B) Availability of nutrients
(C) Photosynthetic capacity of plant (D) All of these

15. The annual net primary productivity of the whole biosphere is approximately
(A) 190 million tons (B) 170 million tons (C) 170 billion tons (D) None of these

NEET-BIOLOGY **ELP NO.-2** **ECOSYSTEM**

1. The term 'Detrivore' includes?
(A) Decomposers (B) Primary consumers
(C) Secondary consumers (D) Autotrophs

2. Which of the following pyramid can never be inverted in a natural ecosystem?
(A) Pyramid of numbers (B) Pyramid of energy
(C) Pyramid of biomass (D) All can be inverted

3. Plants capture approximately _____of the Sun's energy while other trophic levels capture about _____ of the energy available to them in their food?
(A) 1%, 10% (B) 10%, 60% (C) 10%, 1% (D) 60%, 10%

4. Which trophic level is incorrectly defined?
(A) Carnivores -secondary or tertiary consumer
(B) Decomposers- microbial heterotrophs
(C) Herbivores- primary consumer
(D) Omnivores- moulds, yeast and mushrooms

5. In general the Biomass in an ecosystem will be greatest at the trophic level comprising?
(A) Secondary consumers (B) Primary consumers
(C) Producers (D) Tertiary consumers

6. The second trophic level in a lake is?
(A) Phytoplankton (B) Zooplankton (C) Benthos (D) Fishes

7. Most food chains are composed of?
(A) 1 or 2 species (B) 3 or 4 species
(C) 9 or 10 species (D) more than 16 species

8. The rate of release of nutrients into the atmosphere is regulated by?
(A) Ph and moisture (B) Temperature
(C) Soil (D) All of the above

9. Which are the primary consumers in a grazing food chain?
(A) Carnivores (B) Herbivores (C) Detritivores (D) Omnivores

10. Energy flow in an ecosystem is?
(A) Unidirectional (B) Bidirectional (C) Multidirectional (D) All of these

11. Which of the following statements is incorrect?

(A) Ecosystems are exempted from second law of thermodynamics

(B) Ecosystem has a tendency towards increasing disorderliness

(C) Flow of energy is unit directional from the sun to Producers and then to consumers

(D) All organisms are dependent for their food on producers either directly or indirectly

12. Which one of the following is called as "farmer's friend"?

(A) Cow (B) Bacteria (C) Earthworm (D) Crops

13. The correct way of decomposition

(A) Fragmentation → leaching → humification → catabolism → mineralization

(B) Fragmentation → leaching → catabolism → humification → mineralization

(C) Fragmentation → catabolism → leaching → mineralization → humification

(D) Fragmentation → mineralization → catabolism → leaching → humification

14. Bacteria and fungal enzymes degrade detritus into simpler inorganic substances. This process is called as

(A) Leaching (B) Fragmentation

(C) Catabolism (D) Humification

15. Based on the source of their nutrition or food, organisms occupy a specific place in the food chain that is known as their

(A) Food web (B) Trophic level (C) Niche (D) Eco level

16. Match the following

	Column I		**Column II**
i.	Plants	a.	Lion
ii.	Carnivores	b.	Phytoplanktons
iii.	Herbivores	c.	Wolf
iv.	Top Carnivores	d.	Cow

(A) i-b, ii-c, iii-d, iv-a

(B) i-c, ii-d, iii-b, iv-a

(C) i-b, ii-d, iii-a, iv-c

(D) i-d, ii-b, iii-a, iv-c

17. Each tropical level has a certain mass of living material at a particular time called as the

(A) Biomass (B) Standing crop (C) Standing state (D) None of these

18. Pyramid of energy is

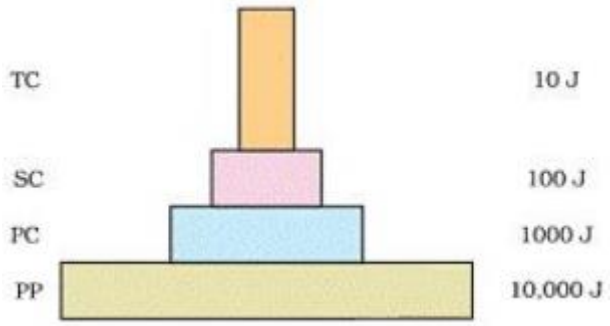
(A) Always inverted

(B) Sometime upright

(C) Always upright

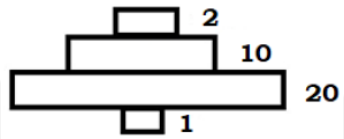
(D) Sometimes inverted

19. Identify the pyramid



(A) Pyramid of number
(B) Pyramid of biomass
(C) Pyramid of energy
(D) None of these

20. Identify the pyramid



(A) Pyramid of number
(B) Pyramid of biomass
(C) Pyramid of energy
(D) None of these

NEET-BIOLOGY **ELP NO.-1** **BIODIVERSITY AND CONSERVATION**

1. Loss of biodiversity may lead to all except:
(A) Decline in plant production
(B) Increased resistance to environmental perturbance
(C) Increased variability in water use
(D) Increase variability in pest and disease cycle

2. When a threatened plant needs urgent measures to save it from extinction the desirable approach is:
(A) In-situ conservation (B) Ex-situ conservation
(C) Cryopreservation (D) Bio preservation

3. Which of the following is not a reason that accounts for Greater biodiversity of tropics?
(A) Availability of more solar energy
(B) More niche specialization
(C) More time for species diversification
(D) Large seasonal variations in environmental factors

4. The hotspots of biodiversity conservation are characterized by:
(A) High endemicity and high threat of extinction
(B) Low endemicity and high threat of extinction
(C) High endemicity and low threat of extinction
(D) Low endemicity and low threat of extinction

5. The most effective means of conservation of biodiversity is :
(A) Remove predators (B) Preserve habitats
(C) Vaccinate against disease (D) Census the species during breeding season

6. How many hotspots of biodiversity in the world have been identified till date by Norman Myers?
(A) 17 (B) 34 (C) 25 (D) 43

7. The species confined to a particular region and found nowhere else is termed as:
(A) Keystone (B) Alien (C) Endemic (D) Rare

8. Hotspots are priority areas for in-situ conservation, the key criteria for determining a hotspot are:
(A) Location in developed/underdeveloped country
(B) Vicinity to the sea
(C) Number of endemic species and degree of threat
(D) All of the above

9. Ex-situ conservation strategies include:
A. Botanical Garden
B. Zoos
C. Seed /Pollen banks
D. Gene bank and tissue culture
(A) A,B (B) A,B,C (C) B,C,D (D) A,B,C,D

10. Rich biodiversity is important for:
(A) Healthy ecosystem (B) Survival of human race on this planet
(C) Alien spaces (D) Both (A) and (B)

11. With respect to biodiversity, discovered and described, which of the following is correct -
(A) Molluscs > Crustaceans > insects (B) Birds > reptiles > fishes
(C) Angiosperms >Algae > Mosses (D) Bryophytes > Ferns > Angiosperms

12. All statements are broad ultilitarian aspect for biodiversity conservation except -
(A) 25,000 species of plant contribute to traditional medicines.
(B) Pollination provides fruits and seeds.
(C) Aesthetic pleasures of walking through thick woods, watching spring flowers in full bloom.
(D) 20% of the total oxygen in earth's atmosphere is produced by photosynthesis of Amazon forest.

13. Which of the following characters are changed with altitude and latitude -
A. Temperature B. Rain fall
C. Vegetation D. Species diversity
Options -
(A) Only B (B) Only A and B
(C) Only A, B and C (D) A, B, C and D

14. Going from equator to pole in following order, (Columbia India New york Green land) No. of Bird species -
(A) Decreases (B) Increases
(C) First increases then decreases (D) First decreases then increases

15. Read the following statements and select the correct option
Statement I : The western ghats have a greater amphibian species diversity than the eastern ghats
Statement II : Out of every 10 animals on this planet, 7 are insects.
(A) Only statement I is correct
(B) Only statement II is correct
(C) Statement I and statement II both are correct
(D) Statement I and statement II both are incorrect

16. Biologists are not sure about how many prokaryotic species might be there, becuase -
(A) Prokaryotes are less in number
(B) Many species are not culturable under laboratory conditions
(C) Only conventional taxonomic methods are used to study prokaryotes
(D) More than one options are correct.

17. Read the following statements-

(a) A stable community should not show too much variation in productivity from year to year.

(b) Rivet popper hypothesis was given by stanford ecologist Paul Ehrlich.

(A) Only statement (a) is correct

(B) Only statement (b) is correct

(C) Both statements are correct

(D) Both statements are incorrect

18. Read the following statements (i-iv) and choose the option that correctly states the statements are ture (T) or false (F) -

i. In Rivet popper hypohtesis of Paul Ehrlich , loss of rivet is related to loss of species.

ii. The extinct animal Steller's sea cow is from Russia.

iii. If the present trends of loss of biodiversity continue, all the species on earth might be wiped out in less than 100 years.

iv. Exploring molecular, genetic and species-level diversity for products of economic important is called as bio-prospecting.

	i.	ii.	iii.	iv.
(A)	F	F	T	F
(B)	T	T	F	T
(C)	F	T	F	T
(D)	T	F	T	F

19. Following are the various methods of conservation. Classify them into in-situ and ex-situ conservation method and select the correct option -

i. Biosphere reserves
ii. In vitro fertilizaiton
iii. National Park
iv. Tissue culture technique
v. Sacred groves
vi. Wild life safari parks
vii. Wildlife sanctuaries
viii. Cryopreservation

	In situ	Ex situ
(A)	i, ii, iii, v	iv, vi, vii, viii
(B)	i, ii, iii, v, vii	iv, vi, viii
(C)	i, ii, iii, vii	iv, v, vi, viii
(D)	i, iii, v, vii	ii, iv, vi, viii

20. Correct statement is -

(A) Increased diversity contributes to higher productivity.

(B) Tilman found that plot with more species showed less year to year variation in total biomass.

(C) in an airplane (ecosystem) all parts are joined together using thousands of rivets (species)

(D) All of these

NEET-BIOLOGY **ELP NO.-2** **BIODIVERSITY AND CONSERVATION**

1. The number of fungi species in the world is more than the combined total of-
(A) Fishes + Amphibians + Reptiles + Mammals
(B) Algae + Mosses + Ferns + Angiosperms
(C) Prokaryotes
(D) All invertebrates

2. Which of the following has maximum Global biodiversity?
(A) Angiosperms (B) Algae (C) Fungi (D) Mosses

3. Global species diversity and land area of covered by India with respect to world is respectively:
(A) 12%, 7% (B) 2.4%, 9% (C) 8.1% ,2.4% (D) 4%, 3%

4. For many taxonomic groups species inventories are more complete in:
(A) Temperate countries (B) Tropical countries
(C) Subtropical countries (D) Both 1 and 3

5. Which of the following statement is wrong about species diversity?
(A) More than 70% of all the species recorded are animals
(B) Algae and fungi comprise more than 22% of the total species diversity
(C) Plants include algae, fungi, bryophytes, gymnospersm, angiosperms comprise no more than 22% of the total species diversity
(D) 70% of the total animals come from insecta

6. The greatest biodiversity on the earth is found in:
(A) African grassland (B) Amazonian rain forest in South America
(C) Western ghats in India (D) Nile delta in Egypt

7. The relation between species richness and area for a wide variety of taxa on a logarithmic scale is:
(A) Rectangular hyperbola (B) Straight line
(C) Sigmoid curve (D) More than one options are correct

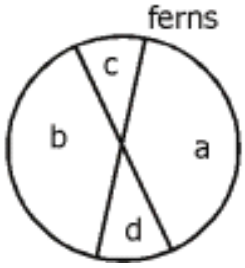
8. Which part of the world has a high density of organisms?
(A) Deciduous forest (B) Grasslands
(C) Tropical rainforest (D) Savannah

9. According to the concept of species area relations:
(A) The number of species in an area increases with the size of the area
(B) Larger species require larger habitat areas than do smaller species
(C) Most species within any given area are endemic
(D) The larger the area, the greater the extinction rate

10. Which of the following is not a pattern of biodiversity ?

(A) Latitudinal gradient
(B) Species area relationship
(C) Segmentation
(D) Both 1 and 3

11. From the pie chart for proportionate number of species of plants and fungi, label a, b, c and d



(A) a - Angiosperms
b - Algae
c - Fungi
d - Bryophytes

(B) a - Angiosperms
b - Fungi
c - Algae
d - Pteridophytes

(C) a - Angiosperms
b - Fungi
c - Mosses
d - Algae

(D) a - Fungi
b - Algae
c - Pteridophytes
d – Angiosperms

12. Which of the following statement (s) are correct/incorrect-

(A) Species area relationship was given by an American naturalist and geographer alexander von Humboldt.
(B) For frugivorous (fruit-eating) birds and mammals in the tropical forests of different continents, the z-value is found 1.15 .

(A) Only statement (A) is correct
(B) Only statement (B) is correct
(C) Both statements are correct
(D) Both statements are incorrect

13. **Assertion:** Amazon rain forest is called lung of our planet.
Reason: Amazon rain forest produces 80% of total oxygen in Earth's atmosphere through process of photosynthesis.

(A) Both the assertion and the reason are true and the reason is a correct explanation of the assertion.
(B) Both the assertion and reason are true but the reason is not a correct explanation of the assertion.
(C) The assertion is true but the reason is false.
(D) Both the assertion and reason are false.

14. **Assertion:** Removal of key stone species from an ecosystem leads to destruction of ecosystem.
Reason: Keystone species drive major ecosystem functions.

(A) Both the assertion and the reason are true and the reason is a correct explanation of the assertion.
(B) Both the assertion and reason are true but the reason is not a correct explanation of the assertion.
(C) The assertion is true but the reason is false.
(D) Both the assertion and reason are false.

15. Mark the correct statement
(A) Amazonian rain forest has greatest biodiversity on earth.
(B) According to Robert May estimates, the global species diversity is 7 million.
(C) Biodiversity is greatest in tropics.
(D) All of the above

16. Match the examples of recent extinctions given in column A with their respective country given in column B and select the **correct** option.

	Column A		**Column B**
P.	Dodo	**i.**	Russia
Q.	Quagga	**ii.**	Mauritius
R.	Thylacine	**iii.**	Africa
S.	Steller's sea cow	**iv.**	Australia

(A) P – ii, Q – iv, R – iii, S – i
(B) P – i, Q – ii, R – iii, S - iv
(C) P – ii, Q – iii, R – iv, S – i
(D) P – iv, Q – iii, R –ii, S – i

17. State true **(T)** or false **(F)** for the given statements and select the **correct** option.
P. Khasi and Jaintia hills of Maharashtra are examples of sacred groves.
Q. Core zone of biosphere reserve comprises an undisturbed and legally protected ecosystem.
R. Degree of threat, measured in terms of habitat loss is one of the key criteria for determining a hot spot.
(A) P – T, Q – T, R – T
(B) P – F, Q – T, R - T
(C) P – T, Q – F, R – F
(D) P – F, Q – F, R – T

18. The "Earth summit" held in __A__ and the world summit on sustainable development held in __B___.
(A) A = Rio de Janeiro, B = Brazil
(B) A = Brazil, B = Rio de Janeiro
(C) A = Rio de Janeiro, B = Johannesburg
(D) A = Johannesberg, B = Rio de Janeiro

19. The IUCN red list (2004) documents the extinction of 784 species, including.
(A) 338 vertebrates
(B) 359 invertebrates
(C) 87 plants
(D) All of these

20. Which of the following statement/s regarding stable community is/are true-
i. It must be resilient to natural or man-made distrubances
ii. It must be resistant to invasion by alien species.
iii. It should have less species diversity.
iv. It should show almost no varation in productivity from year to year.
(A) i,ii and iv are correct
(B) i and iii are correct
(C) only i is correct
(D) i, ii and iii are correct

NEET-BIOLOGY **ELP NO.-1** **HUMAN REPRODUCTION**

1. Scrotal sacs of man is connected with the abdominal cavity by

(A) Inguinal canal (B) Haversian canal

(C) Spermatic canal (D) Rete testis

2. Primary sex organs differ from the secondary sex organs in all the following, except

(A) They produce gametes

(B) They secrete sex hormones

(C) They are concerned with the conduction of gametes

(D) Testes in male and ovaries in female are the examples of primary sex organs

3. Why the testes in human beings and most of mammals are situated outside the abdominal cavity within a pouch called scrotum?

(A) There is not enough space in the pelvic area for the testicles to be housed internally

(B) The scrotum helps in maintaining the low temperature of testes, 2.5°C lower than normal body temperature required for spermatogenesis

(C) The scrotum helps in maintaining the high temperature of testis, 25°C higher than the normal body temperature required for spermatogenesis

(D) Providing more space for the growth of epididymis

4. Read the following paragraph with two blanks:

Each testis has about __A__ compartments called as testicular lobules. Each lobule contains __B__ highly coiled seminiferous tubules in which the sperms are produced. The correct option for the two blanks i.e. A and B are:

(A) 50, 1 - 3 (B) 100, 1 –3

(C) 250, 1 – 3 (D) 500, 1 –3

5. Vas deferens receives a duct from seminal vesicle and opens into urethra as _____.

(A) Urethral meatus (B) Ejaculatory duct

(C) Ureter (D) Epididymis

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

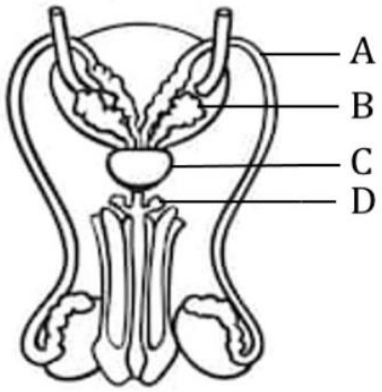
(A) Urethra (B) Ureter

(C) Vas deferens (D) Vasa efferentia

7. Which of the following is a set of male accessory ducts?
(A) Rete testis, vasa efferentia, tubuli recti
(B) Rete testis, vasa efferentia, epididymis and vas deferens
(C) Epididymis, ejaculatory duct, urethra
(D) Seminiferous tubules, vasa efferentia, epididymis and vas deferens

8. Trace the correct path of movement of the sperms upto urethra.
(A) Seminiferous tubules → Vasa efferentia → Rete testis → Epldidymls → Vas deferens → Ejaculatory duct → Urethra
(B) Seminiferous tubules → Rete testis → Epididymis → Vasa efferentia → Vas deferens → Ejaculotory duct → Urethra
(C) Seminiferous tubules → Rete testis → Vasa efferentia → Epididymis → Vas deferens → Ejaculatory duct → Urethra
(D) Seminiferous tubules → Rete testis → Vasa efferentia → Epididymis → Ejaculatory duct → Vas deferens → Urethra

9. Given below is a diagrammatic sketch of a portion of human male reproductive system. Which of the following labeled part helps in lubrication of penis?



(A) A (B) B (C) C (D) D

10. Cryptorchidism is the condition in man when
(A) There are two testes in each scrotum
(B) Testes do not descent into the scrotum
(C) Testes enlarge in the scrotum
(D) Testes degenerate in the scrotum

11. Accessory glands of male reproductive system are
(A) Only Prostate and seminal vesicles
(B) Prostate, Bartholin and seminal vesicles
(C) Seminal vesicles and Bartholin
(D) Prostate, Cowper's and seminal vesicles

12. Which of the following cells secrete testicular hormones called androgens and form endocrine part of the testis?
(A) Leydig cells (B) Interstitial cells
(C) Sertoli cells (D) Both (A) & (B)

13. Sertoli cells are found in

(A) Ovaries and secrete progesterone (B) Testes and secrete testosterone

(C) Seminiferous tubules (D) Adrenal cortex and secrete adrenaline

14. There is a connective tissue cord extending between the testis and abdominal wall called

(A) Testis cord (B) Gubernaculum (C) Mesentric cord (D) Spermatic cord

15. The abdominal passage which connects the abdominal cavity with the scrotal sac in mammals is known as

(A) Spermatic canal (B) Neurenteric canal

(C) Inguinal canal (D) Haversian canal

16. Match the following

a. Seminal vesicle (i) Opens into penile urethra

b. Prostate gland (ii) Opens into ejaculatory duct

c. Cowper's gland (iii) Opens into prostatic urethra

(A) a(i), b(iii), c(ii) (B) a(iii), b(ii), c(i)

(C) a(ii), b(i), c(iii) (D) a(ii), b(iii), c(i)

17. The function of the secretion of prostate gland is to

(A) Stimulate sperm activity

(B) Attract sperms

(C) Inhibit sperm activity

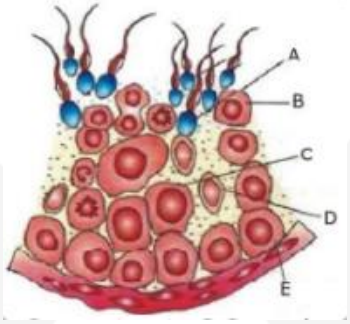
(D) None of Above

NEET-BIOLOGY **ELP NO.-2** **HUMAN REPRODUCTION**

1. Fructose is present in the secretion of
(A) Corpus spongiosum
(B) Seminal vesicles
(C) Urethra
(D) Tyson's gland

2. Male accessory glands include
(A) Paired seminal vesicles
(B) A prostate gland
(C) Paired bulbourethral gland
(D) All of these

3. The given figure refers to seminiferous tubule. Identify the marked alphabets (A to E)



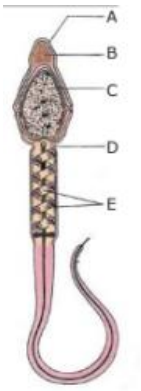
(A) A-Spermatid, B-Primary Spermatocyte, C-Secondary Spermatocyte, D-Sertoli cell E-Spermatogonium
(B) A-Spermatid, B-Secondary Spermatocyte, C-Primary Spermatocyte, D-Sertoli cell, E-Spermatogonium
(C) A-Spermatid, B-Secondary Spermatocyte, C-Sertoli cell, D-Primary Spermatocyte, E-Spermatogonium
(D) A-Spermatid, B-Secondary spermatocyte, C-Primary Spermatocyte, D-Spermatogonium, E-Sertoli cell

4. The role of Leydig or interstitial cells is
(A) Nourishment to sperms
(B) Give motility to sperms
(C) Synthesize testosterone hormone
(D) All above

5. Sertoli cells are found
(A) In the germinal epithelium of ovary
(B) Between the seminiferous tubules
(C) In the germinal epithelium of the seminiferous tubules
(D) In the upper part of the fallopian tube

6. What would happen if vasa deferentia of man are cut?
(A) Sperms are non-nucleate
(B) Spermatogenesis does not occur
(C) Semen is without sperms
(D) Sperms are nonmotile

7. The given figure refers to sperm. Identify the marked alphabets (A to E)



(A) A-Plasma membrane, B-Nucleus, C-acrosome, D-Neck, E-Mitochondria
(B) A-Plasma membrane, B-acrosome, C-Nucleus, D-Neck, E-Mitochondria
(C) A-Plasma membrane, B-Neck, C-Nucleus, D-acrosome, E-Mitochondria
(D) A-Plasma membrane, B-acrosome, C-Nucleus, D-Mitochondria, E-Neck

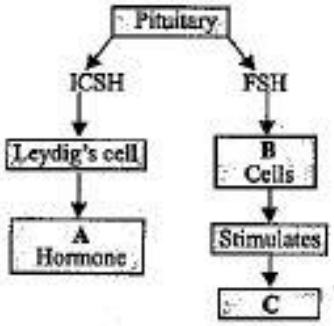
8. In spermatogenesis, reduction division of chromosome occurs during conversion of
(A) Spermatogonia to primary spermatocytes
(B) Primary spermatocytes to secondary spermatocytes
(C) Secondary spermatocytes to spermatids
(D) Spermatids to sperms

9. In humans, at the end of the first meiotic division, the male germ cells differentiate into the
(A) Spermatids (B) Spermatogonia
(C) Primary spermatocytes (D) Secondary spermatocytes

10. The correct sequence of spermatogenetic stages leading to the formation of sperms in a mature human testis is
(A) Spermatogonia -spermatocyte -spermatid -sperms
(B) Spermatid -spermatocyte -spermatogonia -sperms
(C) Spermatogonia -spermatid -spermatocyte -sperms
(D) Spermatocyte -spermatogonia -spermatid -sperms.

11. Consider the following statements each with two blanks.
(a) Seminiferous tubules produce __(i)__ while Leydig's cells produce __(ii)__.
(b) In females, urethra is small and conducts __(iii)__ while in males it conducts urine and __(iv)__.
(c) The process of formation of spermatozoa from spermatogonia is called __(v)__ and the process of maturation of spermatids into spermatozoa is called __(vi)__.
Which one of the following options, gives the correct fill ups for the respective blank numbers from (i) to (vi) in the statements ?
(A) (i)-spermatozoa, (ii)-testosterone (v)-spermatogenesis, (vi)-spermiogenesis,
(B) (i)-testosterone, (ii)-spermatozoa,(iii)-urine, (iv)-semen
(C) (i)-estrogen, (ii)-testosterone,(v)-spermiogenesis, (vi)-spermatogenesis
(D) (iii)-urine, (iv)-semen, (v)-spermiogenesis, (vi)-spermatogenesis

12. Given below is an incomplete flowchart showing influence of hormones on gametogenesis in males. Observe the flowchart carefully and identify A, B and C.



(A) Progesterone, Follicular, Spermatogenesis
(B) GnRH, Follicular, Spermiogenesis
(C) GnRH, Sertoli, Spermatogenesis
(D) Androgens, Sertoli, Spermatogenesis

13. How many sperms are formed from a secondary spermatocyte?
(A) 4 (B) 8 (C) 2 (D) 1

14. Which of the following labelled parts produces energy for the movement of the tail that facilitate sperm motility essential for fertilisation?

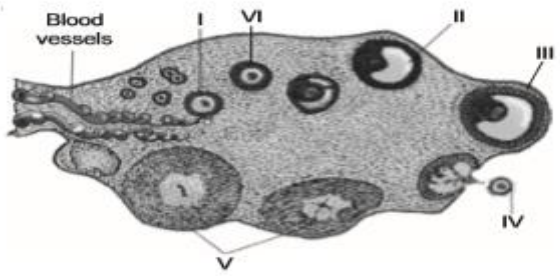
(A) A (B) B (C) C (D) D

NEET-BIOLOGY **ELP NO.-3** **HUMAN REPRODUCTION**

1. The part of the fallopian tube closest to the ovary is
(A) Ampulla (B) Isthmus (C) Infundibulum (D) Cervix

2. Which of the following is last part of the oviduct, which has narrow lumen and joins with the uterus ?
(A) Ampulla (B) Isthmus (C) Infudibulum (D) Fimbriae

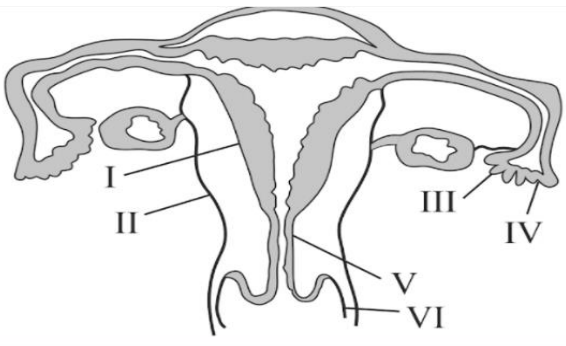
3. The figure given below depicts a diagrammatic sectional view of ovary. Which one set of three parts out of I-VI are correctly identified.



(A) V -Primary follicle; III -Graafian follicle, VI -Corpus luteum
(B) II -Secondary follicle; III -Tertiary; follicle IV -Ovulation
(C) I -Primary follicle; II -Tertiary follicle; V -Corpus luteum
(D) I -Primary follicle; II -Corpus luteum; V -Graafian follicle

4. The Graafian follicle ruptures to release ____ from the ovary by the process called ovulation
(A) Primary oocyte
(B) Secondary oocyte after completing meiosis-II
(C) Secondary oocyte after completing meiosis-I and with the release of 1st polar body
(D) Mature ovum

5. Which of the following depicts the site of implantation of blastocyst under normal condition?



(A) II (B) V (C) I (D) VI

6. Cervix lies between
(A) Oviduct and uterus (B) Uterus and Vagina
(C) Vagina and clitoris (D) Clitoris and labia

7. Which of the following organs is devoid of glands?
(A) Uterus (B) Vagina (C) Vulva (D) Oviduct

8. Which of the following is not a part of female reproductive organ ?
(A) Uterus (B) Ovary (C) Seminal vesicle (D) Clitoris

9. Fimbriate funnel is found over:
(A) Ureter (B) Urinary bladder (C) Uterus (D) Fallopian tube

10. The scrotal sac of a male mammal is homologous to
(A) Clitoris (B) Labia majora
(C) Vagina (D) Uterus

11. Select the true statement regarding clitoris in female reproductive system.
(a) It is tiny finger-like structure which lies at the upper junction of the two labia minora
(b) It is formed by three erectile bodies, two solid and one hollow
(c) It is homologous to the penis of male
(A) (a) only (B) (b) & (c) only
(C) (a) & (c) only (D) None of these

12. A sectional view of mammary gland shows
(i) Nipple + Areola
(ii) Mammary lobe, alveolus and duct
(iii) Antibodies + Pectoralis major muscles + Ribs
(iv) Ampulla + Lactiferous duct
(A) (i), (ii) and (iv) (B) (i), (ii) and (iii)
(C) (iii) and (iv) (D) (i), (ii), (iii) and (iv)

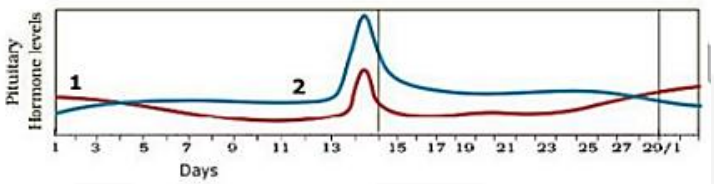
13. What is the female counterpart of prostate gland in the male (man)
(A) Bartholin's gland (B) Uterus
(C) Clitoris (D) None of these

14. Bartholin's glands are situated
(A) On the either side of vagina in humans
(B) On either side of vas deferens in humans
(C) On either side of penis in humans
(D) On either side of Fallopian tube in humans.

15. The ciliated columnar epithelial cells in humans are known to occur in
(A) Eustachian tube and stomach lining (B) Bronchioles and fallopian tubes
(C) Bile duct and oesophagus (D) Fallopian tubes and urethra

NEET-BIOLOGY **ELP NO.-4** **HUMAN REPRODUCTION**

1. The following graph shows the levels of pituitary hormones during a menstrual cycle. What do 1 and 2 represent ?



	1	2
(A)	Prolactin	FSH
(B)	Estrogen	Progesterone
(C)	FSH	LH
(D)	Progesterone	Estrogen

2. Read the following statements about menstrual cycle and select two correct statements.

(i) Lack of menstruation may be indicative of pregnancy.

(ii) The changes in the ovary and the uterus are induced by changes in the levels of ovarian hormones only.

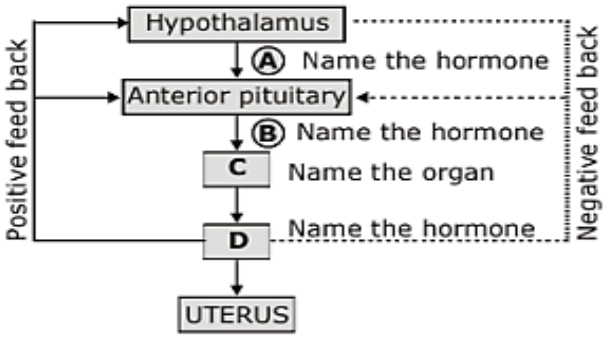
(iii) LH surge induces ovulation.

(iv) If fertilization occurs, corpus luteum degenerates immediately.

(A) (i) and (ii) (B) (ii) and (iii)

(C) (i) and (iii) (D) (ii) and (iv)

3. Given below is an incomplete flowchart showing influence of hormones on gametogenesis in human females, Study it carefully and identify A, B, C and D,



	A	B	C	D
(A)	FSH	LH	Ovary	Progesterone
(B)	GnRH	FSH & LH	Ovary	Estrogen and Progesterone
(C)	GnRH	FSH	Testis	Testosterone
(D)	LH	FSH	Testis	Testosterone

4. Below is given the unorganized list of some important events in the human female reproductive cycle. Identify the correct sequence of these events and select the correct option.

(i) Secretion of FSH
(ii) Growth of corpus luteum
(iii) Growth of the follicle and oogenesis
(iv) Ovulation
(v) Sudden increase in the levels of LH

(A) (i) → (iv) → (iii) → (v) → (ii)
(B) (ii)→ (i) → (iii) → (iv) → (v)
(C) (iii) → (i) → (iv) → (ii) → (v)
(D) (i) → (iii) → (v) → (iv) → (ii)

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

(A) Proliferative phase: Rapid regeneration of myometrium and maturation of Graafian follicle
(B) Secretory phase: Development of corpus luteum and increased secretion of progesterone
(C) Menstruation: Development of corpus luteum and decreased secretion of progesterone
(D) Ovulation: LH and FSH attain peak level and sharp fall in the secretion of progesterone

6. In the 36 days human ovarian cycle, the ovulation takes place typically on

(A) Day 14 of the cycle
(B) Day 22 of the cycle
(C) Day 5 of the cycle
(D) Day 28 of the cycle

7. Cessation of menstrual cycle in a woman is called

(A) Lactation
(B) Ovulation
(C) Menopause
(D) Parturition

8. In the 28 days human ovarian cycle, the ovulation takes place typically on

(A) Day 1 of the cycle
(B) Day 14 of the cycle
(C) Day 5 of the cycle
(D) Day 28 of the cycle

9. After ovulation, remains of graafian follicle develops into

(A) Corpus atresia
(B) Corpus callosum
(C) Corpus luteum
(D) Corpus albicans

10. Corpus luteum is the source of secretion of

(A) Estrogen
(B) Progesterone
(C) (A) & (B) Both
(D) LH

11. During proliferative phase uterine wall undergoes certain changes, these are

(A) Myometrium wall is sloughed off
(B) Endometrium wall is sloughed off
(C) Blood vessels in endometrium become long and coiled
(D) Proliferation of myometrial epithelial lining.

12. Immediately after ovulation, the mammalian egg is covered by a membrane known as

(A) Chorion
(B) Zona pellucida
(C) Corona radiata
(D) Vitelline membrane

13. Which one of the following is the incorrect match of the events occurring during menstrual cycle?

(A) Menstruation : Breakdown of endometrium and ovum not fertilised
(B) Ovulation : LH and FSH attain peak level
(C) Proliferative phase : Rapid regeneration of endometrium and maturation of Graafian follicle
(D) Development of corpus luteum : Follicular phase and increased secretion of progesterone

14. Which one of the following statement is incorrect about menstruation?
(A) During normal menstruation about 40ml blood is lost
(B) The menstrual fluid can easily clot
(C) At menopause in the female, there is especially abrupt increase in gonadotropic hormones
(D) The beginning of the cycle of menstruation is called menarche

15. The secretory phase in the human menstrual cycle is also called
(A) Luteal phase and lasts for about 14 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

16. Newly released mammalian egg is covered by....
(A) Plasma membrane
(B) Vitelline membrane
(C) Zona pellucida
(D) All the above

NEET-BIOLOGY **ELP NO.-5** **HUMAN REPRODUCTION**

1. 50 secondary oocytes in female and 50 secondary spermatocytes in male give rise to
(A) 100 ova and 100 sperms (B) 200 ova and 50 sperms
(C) 100 ova and 200 sperms (D) 50 ova and 100 sperms

2. Which one is released from the ovary?
(A) Primary oocyte (B) Secondary oocyte
(C) Graafian follicle (D) Oogonium

3. At what stage of life is oogenesis initiated in a human female?
(A) At puberty (B) During menarch
(C) During menopause (D) During embryonic development

4. During oogenesis, each diploid cell produces
(A) Four functional eggs
(B) Two functional eggs and two polar bodies
(C) One functional egg and nearly 2-3 polar bodies
(D) Four functional polar bodies

5. Layers of an ovum from outside to inside is
(A) Corona radiata, zona pellucida and vitelline space
(B) Zona pellucida, corona radiata and vitelline space
(C) Vitelline space, zona pellucida and corona radiata
(D) Zona pellucida, vitelline space and corona radiata.

6. At what stage of life is oogenesis initiated in a human female?
(A) At puberty (B) During menarch
(C) During menopause (D) During embryonic development

7. Which of the following enzyme helps sperm to penetrate zona pellucida?
(A) Hyaluronidase (B) Neuraminidase
(C) Acrosin (D) Corona penetrating enzyme

8. The starting of the menstrual cycle is termed
(a) Menopause (b) Menstruation
(c) Menarche (d) Puberty

9. Ovulation in the human female normally takes place during the menstrual cycle
(A) At the mid secretory phase
(B) Just before the end of the secretory phase
(C) At the beginning of the proliferative phase
(D) At the end of the proliferative phase

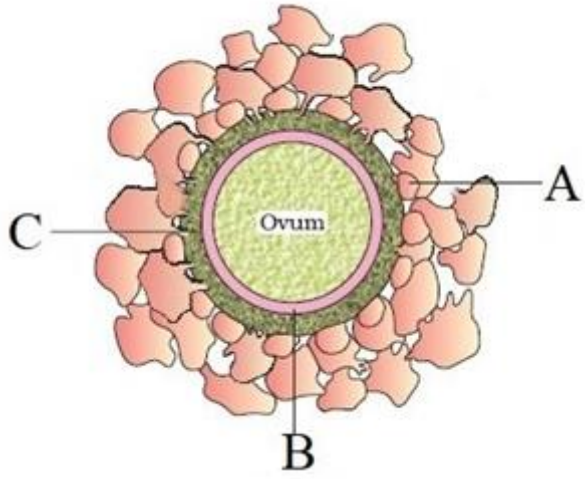
10. Identify the hormones that are secreted in large amount prior to ovulation.

a. LH b. FSH

c. Estrogen d. Progesterone

(A) a only (B) a & b only (C) a, b & c only (D) a, b, c & d

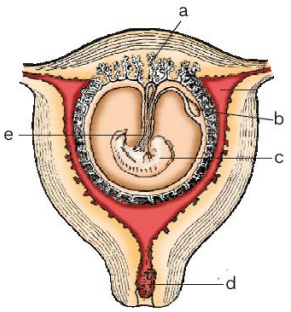
11. Label the following layers around ovum properly



	A	B	C
(A)	Zona pellucida	Corona radiata	Perivitelline space
(B)	Follicular cells	Perivitelline space	Corona radiata
(C)	Corona radiata	Perivitelline space	Zona pellucida
(D)	Perivitelline space	Zona pellucida	Corona radiata

NEET-BIOLOGY **ELP NO.-6** **HUMAN REPRODUCTION**

1. The given figure refer to human fetus within the uterus. Identify the parts labelled (a to e).

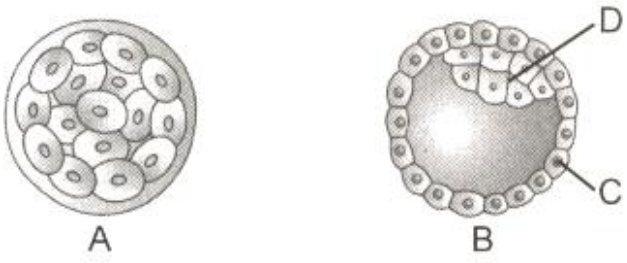


(A) a - Placental villi, b – yolk sac, c - embryo, d - plug of mucus in cervix, e - umbilical cord
(B) a - Placental villi, b - umbilical cord, c - embryo, d - plug of mucus in cervix, e - yolk sac
(C) a - Placental villi, b - yolk sac, c - embryo, d - umbilical cord, e - plug of mucus in cervix
(D) a - Placental villi, b - plug of mucus in cervix, c - embryo, d - umbilical cord, e - yolk sac

2. Urine test during pregnancy determines the presence of
(A) Human chorionic gonadotropin hormone
(B) Estrogen
(C) Progesterone
(D) Luteinising hormone

3. Why do all copulations not lead to fertilisation and pregnancy? The root cause is _____.
(A) Due to numerous sperms and one ovum
(B) Due to less progesterone
(C) Ovum and sperms are not transported simultaneously to the ampullary region
(D) Due to non-formation of corpus luteum

4. Identify the stages A and B; and what is the correct labelling to C and D?
Choose the correct option.



	A	B	C	D
(A)	Morula	Blastocyst	Follicular cells	Inner cell mass
(B)	Morula	Blastocyst	Embroyo- blast	Tropho- blast
(C)	Morula	Blastocyst	Tropho- blast	Inner cell mass
(D)	Blastocyst	Morula	Tropho- blast	Inner cell mass

5. What is true about cleavage in the fertilized egg in humans?
(A) It starts while the egg is in fallopian tube
(B) It starts when the egg reaches uterus
(C) It is meroblastic
(D) It is identical to the normal mitosis

6. Fertilisation in humans is practically feasible only if
(A) The ovum and sperms are transported simultaneously to ampullary region of the fallopian tube
(B) The ovum and sperms are transported simultaneously to ampullary region 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

7. Several hormones like hCG, hPL, oestrogen progesterone are produced by
(A) Ovary (B) Placenta (C) Fallopian tube (D) Pituitary

8. Capacitation occurs in
(A) Rete testis (B) Epididymis
(C) Vas deferens (D) Female reproductive tract

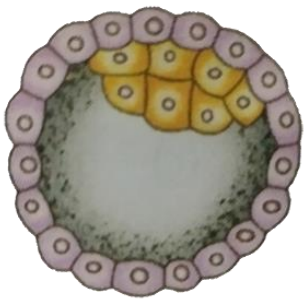
9. Match the column I with column II and select the correct option using the codes given below

Column I	Column II
A. Mons pubis	1. Embryo formation
B. Antrum	2. Sperm
C. Trophectoderm	3. Female external genitalia
D. Nebenkern	4. Graafian follicle

Codes

	A	**B**	**C**	**D**
(A)	3	4	2	1
(B)	3	4	1	2
(C)	3	1	4	2
(D)	1	4	3	2

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



Options :

	Development stage	**Site of occurrence**
(A)	Blastocyst	Uterine wall
(B)	8-called morula	Starting point of fallopian tube
(C)	Late morula	Middle part of fallopian tube
(D)	Blastula	First part of fallopian tube

11. Sperm enters the egg from .....
(A) Animal pole (B) Vegetal pole (C) Micropyle (D) Megapyle

12. In human adult females oxytocin
(A) Causes strong uterine contractions during parturition
(B) Is secreted by anterior pituitary
(C) Stimulates growth of mammary glands
(D) Stimulates pituitary to secrete vasopressin

13. What is true for cleavage?
(A) Size of embryo increases
(B) Size of cells decrease
(C) Size of cells increase
(D) Size of embryo decreases

14. The fertilized egg divides by the process of
(A) Regeneration (B) Oogenesis (C) Cleavage (D) Invagination

15. Which mammals have more yolk than cytoplasm in their eggs
(A) Placental mammals (B) Aquatic mammals
(C) Marsupials (D) Egg laying mammals

16. If the first cleavage furrow divides the zygote completely into two, the cleavage type is
(A) Radial (B) Equatorial (C) Meroblastic (D) Holoblastic

NEET-BIOLOGY **ELP NO.-7** **HUMAN REPRODUCTION**

1. Which of the following hormones is not a secretory product of human placenta?
(A) Human chorionic gonadotropin (B) Prolactin
(C) Estrogen (D) Progesterone

2. Which of the following does not occur during implantation?
(A) The embryo secretes enzymes that digest away part of the endometrium.
(B) The embryo is drawn into the placenta and becomes surrounded by it.
(C) The embryo forms finger-like projections that burrow into the uterine wall.
(D) The embryo develops a hollow ball around it.

3. The main function of trophoectoderm in mammalian embryo is
(A) Formation of future endoderm
(B) Formation of the body of developing embryo
(C) Formation of future ectoderm
(D) Formation of placenta

4. Blood flowing in umbilical cord of mammalian embryo is
(A) 100% maternal (B) 50% maternal and 50% foetal
(C) 100% foetal (D) 75% foetal and 25% maternal

5. In human female, menstruation can be deferred by the administration of
(A) LH only
(B) Combination of FSH and LH
(C) Combination of estrogen and progesterone
(D) FSH only

6. The first movements of the foetus and appearance of hair on its head are usually observed during which month of pregnancy?
(A) Fourth month (B) Fifth month
(C) Sixth month (D) Third month

7. A change in the amount of yolk and its distribution in the egg will effect
(A) Formation of zygote (B) Pattern of cleavage
(C) Number of blastomeres produced (D) Fertilisation

8. Which one of the following statements about morula in humans is correct ?
(A) It has almost equal quantity of cytoplasm as an uncleaved zygote but much more DNA
(B) It has far less cytoplasm as well as less DNA than in an uncleaved zygote
(C) It has more or less equal quantity of cytoplasm and DNA as in uncleaved zygote
(D) It has more cytoplasm and more DNA than an uncleaved zygote

9. Which of the following statements about human sperm is correct ?
(A) Acrosome serves no particular function
(B) Acrosome has a conical pointed structure used for pierrcing 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

10. Hysterectomy is surgical removal of
(A) Prostate gland (B) Vas-deference (C) Mammary glands (D) Uterus

11. In human female the blastocyst
(A) Forms placenta even before implantation
(B) Gets implanted into uterus 3 day after ovulation
(C) Gets nutrition from uterine endometrial secretion only after implantation
(D) Gets implanted in endometrium by the trophoblast cells

12. Match the columns and find the correct combination

Column I	**Column II**
(a) Oxytocin	(p) Stimulates ovulation
(b) Prolactin	(q) Implantation and maintenance of pregnancy
(c) LH	(r) Lactation after child birth
(d) Progesterone	(s) Uterine contraction during labor
	(t) Reabsorption of water by nephrons

(A) a → s, b → r, c → p, d → q (B) a → t, b → r, c → p, d → s
(C) a → s, b → q, c → r, d → t (D) a → t, b → p, c → s, d → r

13. **Assertion :** In morula stage the cell divides without increase in size
Reason : Zona pellucida remain till cleavage is finished...
(A) Both assertion and reason are true and reason is the correct explanation of assertion
(B) The assertion and reason are true but reason is not correct explanation of assertion
(C) Assertion is true but, reason is false
(D) Assertion is false but, reason is true

14. Pregnancy begins with implantation of.....
(A) Embryo (B) Fertilized ovum (C) Blastopore (D) Blastocyst

15. Ectopic pregnancies are referred to as
(A) Pregnancies with genetic abnormally
(B) Implantation of embryo at site other than uterus
(C) Implantation of defective embryo in the uterus
(D) Pregnancies terminated due to the hormonal imbalance

16. Which of the following extraembryonic membrane/s is/are involved in placenta formation in human?
(A) Yolk sac (B) Allantois (C) Chorion (D) Both (A) & (C)

17. 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

18. Select the correct option describing gonadotropin activity in a normal pregnant female
(A) High level of FSH and LH stimulates the thickening of endometrium
(B) High level of FSH and LH faciliatate implanation of the embryo
(C) High level of hCG stimulates the synthesize of estrogen and progesterone
(D) High level of hCG stimulates the thickening of endometrium

19. Sometimes the labor pains are less and uterine contractions have to be induced. What do you think the doctors inject to facilitate delivery?
(A) Progesterone and estrogen hormones
(B) Oxytocin
(C) FSH and LH
(D) Relaxin

20. In human adult females oxytocin
(A) Causes strong uterine contractions during parturition
(B) Is secreted by anterior pituitary
(C) Stimulates growth of mammary glands
(D) Stimulates pituitary to secrete vasopressin

NEET-BIOLOGY **ELP NO.-1** **REPRODUCTIVE HEALTH**

1. According to the World Health Organisation (WHO), reproductive health means a total well-being in all aspects of reproduction i.e., physical, emotional, behavioural and social. The headquarters of WHO are located in?
(A) USA (B) Geneva (C) England (D) France

2. India was amongst the first countries in the world to initiate action plans and programs at national level to attain reproductive health. The programs called as 'family planning' were initiated in _____ in India.
(A) 1951 (B) 1976 (C) 1971 (D) 1987

3. According to 2011 census, the population growth rate was?
(A) 2.6% (B) 1.7% (C) 2.1% (D) 2.7%

4. World Population day is observed on?
(A) 11th July (B) 21st September (C) 7th April (D) 1st July

5. In India, marriageable age for boys is _____ and girls is _____ respectively.
(A) 21, 18 years (B) 15, 14 years (C) 15, 18 years (D) 18, 21 years

6. Natural methods of contraception work on the principle of avoiding chances of ovum and sperm meeting, It includes:-
a. Periodic abstinence b. Withdrawal
c. Coitus interruptus d. Lactational amenorrhoea
(A) a & b only (B) b & c only (C) a, b & c (D) a, b, c & d

7. In the rhythm method of birth control, the couple refrains from intercourse:-
(A) One day before and after ovulation (B) Two days before and after ovulation
(C) Three days before and after ovulation (D) One week before and after ovulation

8. Which of the following method of contraception has maximum chances of failure?
(A) Rhythm/Periodic abstinence (B) Vasectomy
(C) Condoms (D) IUDs

9. Lactational amenorrhoea, is a natural way of birth spacing. It is due to the high level of?
(A) FSH and LH hormones (B) Estrogen
(C) Prolactin (D) Progesterone

10. In India, population crossed one billion mark in May 2000. The probable reasons for this are, decline in?
a. Maternal mortality rate (MMR) b. Infant mortality rate (IMR)
c. Number of people in reproducible age d. Death rate
(A) a & b only (B) a, b & c (C) a, b & d (D) a, b, c & d

11. Among the following methods, which one has the highest failure rate?
(A) Diaphragm with spermicide (B) Condom
(C) Intrauterine device (D) Rhythm method

12. Which of the following is not a natural method of contraception?
(A) Periodic abstinence (B) Withdraw method
(C) Lactational amenorrhoea (D) Condoms

13. Which of the following is an incorrect statement for periodic abstinence?
(A) The couple should abstain from coitus from day 10 to 17 of the menstrual cycle when ovulation could be expected.
(B) 10^{th} to 17^{th} day of the cycle is fertile period, when the chances of fertilisation are high.
(C) This prevents the chances of union of male and female gametes.
(D) In this method , the ovum and sperms are prevented from physically meeting with the help of barriers.

14. Use of which of the following contraceptive device has increased in recent years due to its additional benefit of protecting the user from contracting STDs and AIDS?
(A) Diaphragms and cervical caps (B) IUDs
(C) Condoms (D) Contraceptive pills

15. Which of the following statement is/are correct about diaphragms, cervical caps and vaults?
a. Barrier methods of contraception b. Cover the cervix during coitus
c. Protect the user from contacting STDs d. They are reusable
(A) a & b only (B) a, b & c (C) a, b & d (D) a, b, c & d

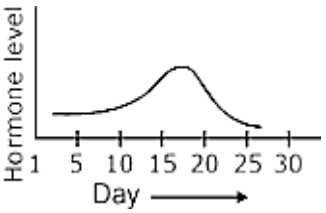
16. 'Nirodh' is a popular brand of
(A) IUDs for female (B) Contraceptive pill for female
(C) Condom for male (D) Condom for female

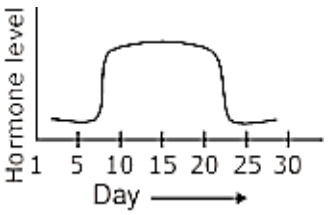
17. The diaphragm is a rubber dome shaped structure and stops the sperms from entering into?
(A) Vestibule (B) Vagina (C) Cervix (D) Both (A) & (B)

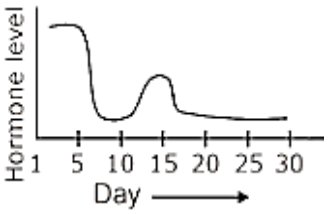
18. Use of spermicidal creams, jellies and foams along with diaphragms, cervical caps and vaults leads to:-
(A) Increased contraceptive efficiency (B) Prevention of ovulation
(C) Prevention of implantation (D) Increased sexual desire and drive

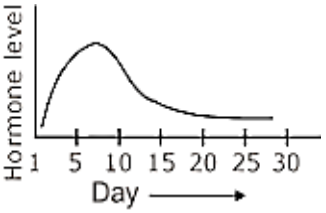
19. Which of the following is not included under barrier methods of birth control?
(A) Vaginal pouch (B) Diaphragm (C) Cervical cap (D) Implant

20. Which of the following graphs is the correct representation of the level of progesterone in a female who has been using Mala-D as a method of birth control:-

(A) 

(B) 

(C) 

(D) 

NEET-BIOLOGY **ELP NO.-2** **REPRODUCTIVE HEALTH**

1. Which of the following hormone is/are maintained at high level during hormonal method of birth control?
(A) FSH (B) LH (C) Progesterone (D) Both (C) & (B)

2. Which of the following is world's first non-hormonal oral contraceptive pill for females , developed by scientists at Central Drug Research Institute (CDRI) in Lucknow, India?
(A) Mala-D (B) Saheli (C) Morning after pills (D) PoP

3. Which of the following is a once-a-week pill with very few side effects and high contraceptive value?
(A) Mala-D (B) Saheli (C) Depo-provera (D) Norplant

4. Oral contraceptive pills contain?
(A) FSH and LH hormones (B) Progestogen and estrogen combination
(C) Prolactin (D) Mifepristone

5. Contraceptive pills are very effective with lesser side effects used by females They work by?
(A) Inhibiting ovulation
(B) Inhibiting implantation
(C) They alter the quality of cervical mucus to prevent/retard the entry sperms
(D) All of these

6. Which one of the following is the most widely used method of contraception by females in India?
(A) Oral contraceptive pills (B) Condoms
(C) IUDs (D) Sterilisation

7. **Assertion (A) :** Surgical method blocks gamete transport and thereby prevent conception.
Reason (R) : Surgical method are highly effective but their reversibility is very poor.
(A) Both (A) and (R) are true and (R) is the correct explanation of (A)
(B) Both (A) and (R) ae true but (R) is not the correct explanation of (A)
(C) (A) is true statement but (R) is false.
(D) Both (A) and (R) are false.

8. Amongst the following methods of contraception, which can be regarded as the most cost effective and easily reversible method of contraception?
(A) Cu-T (B) Tubectomy
(C) Vasectomy (D) Sterilisation method

9. Which of the following is hormone releasing IUD?
(A) Cu-T (B) LNG-20
(C) Multiload 375 (D) Implant

10. Which of the following is a terminal method of contraception to prevent any more pregnancies?
(A) Barrier method (B) IUD
(C) Hormonal method (D) Sterilisation method

11. Implants under the skin and injectables contain?
(A) Progestogen alone (B) Progestogen and estrogen
(C) FSH and LH (D) Both (A) & (B) are correct

12. A birth control implant having six small , plastic cylinders and with the effective period much longer upto 5 years is
(A) Norplant (B) Multiload-375
(C) Injectable (D) LNG-20

13. Select the correct matching in the following :

I. Natural methods	A. Coitus interrupts
II. IUDs	B. LNG 20
III. Barrier methods	C. Diaphragms
IV. Surgical methods	D. Saheli
V. Oral Contraceptives	E. Vasectomy

(A) I-B, II-D, III-C, IV-E, V-A (B) I-A, II-D, III-C, IV-E, V-B
(C) I-E, II-D, III-C, IV-A, V-B (D) I-A, II-B, III-C, IV-E, V-D

14. MTPs are considered relatively safe up to _____ weeks of pregnancy.
(A) 12 (B) 20 (C) 25 (D) 18

15. All the following are uses of amniocentesis, but one is misuse. Which one is misuse?
(A) The centres for genetic counselling offer amniocentesis on request to women for chromosome analysis.
(B) This technique has been developed for detecting foetal abnormalities by analysing chromosomal defects.
(C) It is used to study metabolic defects of foetus like PKU (phenyl ketonuria).
(D) It is done to examine the sex of the foetus leading to increasing female foeticides.

16. Which of the following have been found to be very effective as emergency contraceptive as they could be used to avoid possible pregnancy due to rape if given within 72 hours?
a. Administration of progestogens.
b. Progestogen-estrogen combination.
c. IUDs inserted within 72 hours of coitus.
(A) a only (B) c & b only (C) b only (D) a, b & c

17. How many of the following techniques are not related with invitro fertilization?
ZIFT, GIFT, IUET, AI, ICSI
(A) 1 (B) 2 (C) 3 (D) 4

18. Which of the following STDs is not completely curable?
(A) Chlamydiasis (B) Genital Warts (C) Syphilis (D) Genital Herpes

19. Select the correct match of the techniques given in column I with its feature given in column II.

	Column-I		**Column-II**
A.	ICSI	I.	Artificially introduction of semen into the uterus.
B.	IUI	II.	Transfer of ovum collected from a donor into the fallopian tube where fertilization occur
C.	IUT	III.	Formation of embryo by directly injecting sperm into the ovum
D.	GIFT	IV.	Transfer of the zygote or early embryo (with upto 8 blastomeres) into a fallopian tube.
E.	ZIFT	V.	Transfer of embryo with more than 8 blastomeres into the uterus

(A) A-V, B-IV, C-I, D-III, E-II
(B) A-I, B-II, C-III, D-IV, E-V
(C) A-III, B-V, C-II, D-IV, E-I
(D) A-III, B-I, C-V, D-II, E-IV

20. The stage transferred into the uterus after induced fertilization of ova in the laboratory is?

(A) Zygote
(B) Embryo at 4 blastomere stage
(C) Embryo at 2 blastomere stage
(D) Morula

NEET-BIOLOGY **ELP NO.-1** **EVOLUTION**

1. Abiogenesis theory of origin supports
(A) Spontaneous generation
(B) Origin of life from blue-green algae
(C) Origin of life is due to pre-existing organisms
(D) Organic evolution is due to chemical reactions

2. Which one of the following experiments suggests that simplest living organisms could not have originated spontaneously from non–living matter –
(A) Larvae could appear in decaying organic matter
(B) Meat was not spoiled, when heated and kept sealed in a vessel
(C) Microbes did not appear in stored meat
(D) Microbes appeared from unsterilized organic matter

3. The theory of special creation has three connotations. Which of the following is not true?
(A) The diversity was always the same since creation and will be the same in future also
(B) Earth is about 4000 years old
(C) Species are immutable
(D) There has been gradual evolution of life forms

4. Louis Pasteur by careful experimentation demonstrated that the
(A) Phenomenon of chemical evolution (B) There is spontaneous generation of life
(C) Life comes from pre-existing life (D) Abiogenic origin of life

5. Evolution is defined as
(A) History of race
(B) Development of race
(C) History and development of race with modification
(D) Progressive history of race

6. Origin of earth took place about
(A) 4.5 bya (B) 4.5 mya (C) 20 bya (D) 20 mya

7. Origin of universe took place about
(A) 4.5 bya (B) 4.5 mya (C) 20 bya (D) 20 mya

8. Most acceptable theory for origin of universe is
(A) Big-bang hypothesis (B) Nebular hypothesis
(C) Spontaneous generation (D) Special creation

9. According to one of the most widely accepted theories, earth's atmosphere before origin of life was
(A) Oxidizing
(B) Oxidizing along with H_2
(C) Reducing with O_2 in small amount
(D) Reducing with oxygen absent as free O_2

10. First life form on earth was a
(A) Cyanobacterium (B) Chemoheterotroph
(C) Autotroph (D) Photoautotroph

11. The first life originated
(A) On land (B) In air (C) In water (D) All of these

12. According to Oparin, which one of the following was not present in the primitive atmosphere of the earth?
(A) Methane (B) Free Oxygen (C) Hydrogen (D) Water vapour

13. Miller used which of the following gases in his simulation experiment
(A) Methane, Hydrogen, Carbon monoxide (B) Hydrogen, Ammonia, Carbon dioxide
(C) Ammonia, Hydrogen, Methane (D) Carbon dioxide, Ammonia, Methane

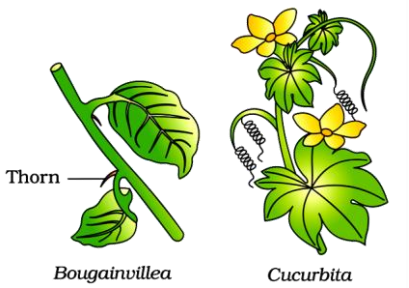
14. In the ancient atmosphere free nitrogen, oxygen and carbon dioxide were not present because
(A) Of the large amount of hydrogen and high temperature
(B) Carbon would have combined with hydrogen to form methane
(C) Any free oxygen would have combined with iron, silicon, aluminium etc. to form minerals of the earth's crust
(D) All of these

15. Which one of the following correctly describes the homologous structures?
(A) Organs with anatomical similarities, but performing different or similar functions.
(B) Organ with anatomical dissimilarities, but performing same function
(C) Organs that have no function now, but had an important function in ancestors
(D) Organs appearing only in embryonic stage and disappearing later in the adult

16. What can you infer about the structures shown in figure?

(A) They are homologous structures
(B) They are vestigial structures
(C) They are analogous structures
(D) They have nothing to do with each other

17. The given figure shows an example of



(A) Homologous organs (B) Convergent evolution
(C) Divergent evolution (D) Both (A) and (C)

18. Which of the following is true?
(A) Wings of birds and insects are homologous organs
(B) Human hands and bat's wings are analogous organs
(C) Hind limbs of human and feathers of birds are analogous organs
(D) Flipper of seal and wing of birds are homologous organs

19. Which ones are the most essential for origin of life?
(A) Enzymes (B) Proteins (C) Carbohydrates (D) Nucleic acid

20. All the following are examples of homologous organs, except
(A) Arm of man and flipper of whale
(B) Thorn of Bougainvillaea and tendril of Cucurbita
(C) Eye of an octopus and eye of a mammal
(D) Brain of frog and man

NEET-BIOLOGY **ELP NO.-2** **EVOLUTION**

1. Evolutionary convergence is characterized by
(A) Development of dissimilar characteristics in closely related groups
(B) Development of a common set of characteristics in groups of different ancestry
(C) Development of characteristics by random mating
(D) Replacement of common characteristics in different groups

2. The presence of gill slits, in the embryos of all vertebrates, supports the theory of
(A) Metamorphosis (C) Biogenesis
(C) Organic evolution (D) Recapitulation

3. The phenomenon 'ontogeny repeats phylogeny' is explained by
(A) Recapitulation theory (B) Inheritance theory
(C) Mutation theory (D) Natural selection theory

4. Dinosaur with dagger like teeth was
(A) *Tyranosaurs* (B) *Brachiosaurs* (C) *Triceratops* (D) *Pteranodon*

5. Eye of cephalopods and eye of human being is an example of
(A) Analogous organs (B) Homologous organs
(C) Vestigeal organs (D) Retrogressive evolution

6. Mosquitoes, pigeons and bats provide evidence of which type of evolution
(A) Convergent (B) Parallel
(C) Divergent (D) None of these

7. Presence of gills in the tadpole of frog indicates that :-
(A) Fishes evolved from frog like ancestors (B) Frogs will have gills in future
(C) Frogs evolved from gilled ancestors (D) Fishes were amphibious in the past

8. An important evidence in favour of organic evolution is the occurrence of
(A) Homologous and vestigial organs (B) Analogous and vestigial organs
(C) Homologous organs only (D) Homologous and analogous organs

9. Potato and sweet potato: –
(A) Have edible parts which are homologous organs
(B) Have edible parts which are analogous organs
(C) Have been introduced in India from the same place
(D) Are two species of the same genus

10. Dinosaur with aquatic adaptation was
(A) *Stegosaurs* (B) *Brontosaurs* (C) *Ichthyosaurs* (D) *Tyranosaurs*

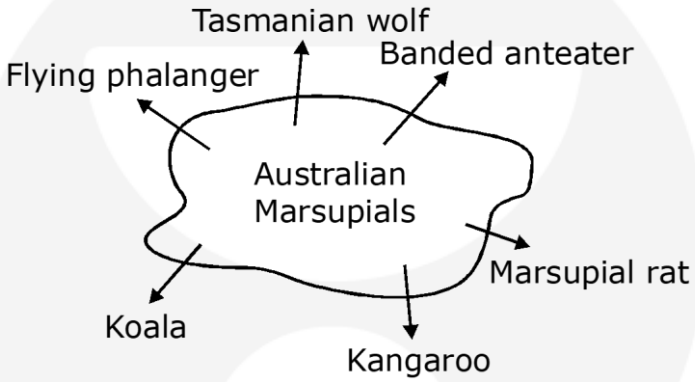
11. Which of the following are the two key concepts of Darwinian theory of evolution?
(A) Genetic drift and mutation
(B) Adaptive radiation and homology
(C) Mutation and natural selection
(D) Branching descent and natural selection

12. Darwin finches are an example of
(A) Convergent evolution (B) Divergent evolution
(C) Parallel evolution (D) Sympatric species

13. Galapagos island is associated with
(A) Wallace (B) Lamark (C) Malthus (D) Darwin

14. The Finches of Galapagos islands provide _____ evidence in favour of evolution :
(A) Palaentological (B) Embryological (C) Anatomical (D) Biogeographical

15. Following diagram provides an examples of



(A) Convergent evolution (B) Parallel evolution
(C) Recapitulation (D) Divergent evolution

16. The palaeontological evidences are obtained from
(A) Homologous structures (B) Analogous structures
(C) Fossils (D) Lichens

17. Evolutionary history of an organism is known as –
(A) Phylogeny (B) Ancestry (C) Palaeontology (D) Ontogeny

18. Given below are four statement (A-D) each with one or two blanks. Select the option which is correctly fills up the blanks :
(1) Fore limbs of whale, bat, cheetah and human share similarity in pattern of bone and are the result of __(i)__ evolution.
(2) Miller showed that (i), H_2, NH_3 and H_2O when exposed to electrical discharge in a flask resulted in formation of (ii)
(3) Archaeopteryx is a (i) and an (ii) evidence of evolution
(4) According to Darwin evolution took place are to (i) and (ii) of fittest.
(A) (3) : (i) Missing link, (4) : (ii) natural selection
(B) (2) : (ii) Amino acid, (1) : (i) convergent
(C) (4) : (ii) Palaeontological, (2) : (i) CH_4
(D) (1) : (i) Divergent, (3) (ii) Palaeontological

19. Which one of the following phenomena supports Darwin's concept of natural selection in organic evolution –

(A) Production of 'Dolly', the sheep by cloning

(B) Development of organs from 'stem cells' for organ transplantation

(C) Development of transgenic animals

(D) Prevalence of pesticide resistant insects

20. Fitness, according to Darwin refers ultimately and only to

(A) Dominance over others

(B) Ability to defend

(C) Strategy for obtaining food

(D) Reproductive fitness

NEET-BIOLOGY **ELP NO.-3** **EVOLUTION**

1. Select the correct statement :
(A) Darwinian variations are small and directionless
(B) Mutations are random and directional
(C) Fitness is the end result of the ability to adapt and get selected by nature
(D) All mammals except whales and camels have seven cervical vertebrae

2. Neo-Darwinism believes that new species develop through modern theory of organic evolution?
(A) Mutations with natural selection
(B) Continuous variations with natural selection
(C) Hybridisation
(D) Mutations

3. Which is not a concept of Lamarckism?
(A) Rate and survival of organisms are different due to variations
(B) Environmental pressure produces variations
(C) An organ in constant use will grow in size
(D) Inheritance of acquired characters

4. Select the incorrect statement
(A) Natural selection is a heritable variation & by reproduction leave greater number of progeny
(B) During stabilisation of natural selection more individuals acquire value other than mean character value
(C) By the time of 500 million years ago invertebrates were formed and were active
(D) Reptiles lay thick shalled eggs which do not dry up in sun unlike those of Amphibians

5. Penguin is a bird that lost the use of its wings by not flying. Such statement would express the views of
(A) Darwin (B) Wallace (C) Lamarck (D) Huxley

6. The main drawback of Darwin's theory of Natural Selection was that it could not provide satisfactory explanation of
(A) Survival of fittest
(B) Struggle for existence
(C) Natural selection
(D) Basis of variation and the mode of transmission of the variants to the next generation

7. Ultimate source of variation is
(A) Recombination (B) Mutation
(C) Genetic drift (D) Intermingling of two widely separated populations

8. Ship used by Darwin

(A) HSM Beagle (B) Her Majesty service

(C) HMS Beagle (D) He Majesty ship

9. Jurassic period of the Mesozoic era is characterised by –

(A) Gymnosperms are dominant plants and first birds appear

(B) Radiation of reptiles and origin of mammal like reptiles

(C) Dinosaurs become extinct and angiosperms appear

(D) Flowering plants and first dinosaurs appear

10. Gene pool of a population tends to remain stable if the population is large, without mutations, without migration and with

(A) Random mating (B) Moderate environmental changes

(C) Natural selection (D) No predator control

11. Mass extinction at the end of Mesozoic era was probably caused by

(A) Continental drift (B) Massive glaciation

(C) Collision of earth with large meteorite (D) Collision of continents

12. Genetic drift :

(A) Is random change in gene frequency

(B) Has nothing in common with inbreeding

(C) Is appearance of recessive genes

(D) Produces greatest fluctuation in large populations

13. Mesozoic era is known as golden age of

(A) Fishes (B) Amphibians (C) Reptiles (D) Molluscs

14. Dinosaurs were abundant in

(A) Jurassic period (B) Devonian period

(C) Permian period (D) Pleistocene period

15. Which of the following is not true?

(A) About 15 mya, primates called *Dryopithecus* and *Ramapithecus* were existing

(B) *Ramapithecus* was more ape like

(C) *Homo erectus* had a large brain around 900 cm^3

(D) The brain capacities were between 650 to 800 cm^3 of *Homo habilis*

16. Who were the first to use hides to protect their body and buried their dead?

(A) Neanderthal man (B) *Homo erectus* (C) Cro-Magnon man (D) *Homo habilis*

17. Modern *Homo sapiens* arose

(A) Near east and central Asia between 1,00,000 to 40,000 years back

(B) During ice age between 75,000 to 10, 000 years ago

(C) About 10,000 years back

(D) About 18,000 years ago

18. 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

19. The first human like being the hominoid was called

(A) *Australopithecus*

(B) *Homo erectus*

(C) *Homo habilis*

(D) *Homo sapiens*

20. Which of the following is direct ancestor of *Homo sapiens?*

(A) *Homo erectus*

(B) *Homo sapiens neanderthalensis*

(C) *Ramapithecus*

(D) *Australopithecus*

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ELP

Educator Led Practice

NEET-BIOLOGY **ELP NO.-4** **EVOLUTION**

1. The universe is almost ..... years old :
(A) 10 Billion (B) 20 Billion (C) 30 Billion (D) 5 Billion

2. Origin of universe is explained by :
(A) Nebular theory (B) Big Bang theory
(C) Doctrine of Uniformity (D) Theory of Geology

3. Which of the following gases were formed when the universe expanded and temperature came down :
(A) Hydrogen and Chlorine (B) Oxygen and Helium
(C) Hydrogen and Helium (D) Carbon dioxide and Oxygen

4. Earth was formed around :
(A) 3.5 Billion years ago (B) 3.0 Billion years ago
(C) 4.0 Billion years ago (D) 4.5 Billion years ago

5. Choose incorrect statement :
(A) There was no atmosphere on early earth.
(B) Water vapour, methane, CO_2 and ammonia were released from molten mass.
(C) Life appeared 500 million years after formation of earth.
(D) Galaxies are cluster of stars and are free from gases and dust.

6. Primitive world was :
(A) RNA world (B) DNA world
(C) Protein world (D) Polysaccharide world

7. Evolution of life show that life forms had used a trend of moving from :
(A) Land to water (B) Dryland to wetland
(C) Freshwater to sea water (D) Water to land

8. Pre historic cave art developed about
(A) 75,000 year ago (B) 18,000 year ago
(C) 10,000 year ago (D) None of these

9. Golden age of fishes is the name of
(A) Mesozoic era (B) Cenozoic era
(C) Ordovician period (D) Devonian period

10. Which of the following arrangement of periods of the Mesozoic era gives a correct sequence from the earliest to the latest?
(A) Jurassic, Triassic, Cretaceous (B) Triassic, Jurassic, Cretaceous
(C) Permian, Jurassic, Triassic (D) Devonian, Permian, Jurassic

11. Match the following columns :

	Column-I		Column-II
A.	Homo habilis	I.	East African grasslands
B.	Homo erectus	II.	First human-like being hominid
C.	Australopithecus	III.	1,00,000-40,000 years back
D.	Homo neanderthalensis	IV.	Cranial capacity around 900cc

(A) A-I, B-II, C-III, D-IV (B) A-II, B-I, C-IV, D-III
(C) A-II, B-IV, C-I, D-III (D) A-II, B-IV, C-III, D-I

12. **Statement-I :** Evolution for Darwin was gradual while deVries believed mutation caused speciation hence called as saltation.
Statement-II : Nature selects for fitness and it is the end result of the ability to adapt and gets selected by nature.
(A) Both statement I and statement II are true.
(B) Both statement I and statement II are false.
(C) Statement I is true, but statement II is false.
(D) Statement I is false, but statement II is true

13. **Statement-I :** Hardy Weinberg principle says that allele frequencies in a population are stable and is constant from generation to generation.
Statement-II : Genetic drift operates in small population.
(A) Both statement I and statement II are true.
(B) Both statement I and statement II are false.
(C) Statement I is true, but statement II is false.
(D) Statement I is false, but statement II is true

14. Match column I with column II and select the correct option from the codes given below.

	Column-I		Column-II
A.	Mutation	I.	Changes in population's frequencies due to chance effect
B.	Gene migration	II.	Mechanism of evolution
C.	Natural selection	III.	Emigration changes allele frequencies
D.	Genetic drift	IV.	Source of new alleles

(A) A-I, B-II, C-III, D-IV (B) A-IV, B-II, C-III, D-I
(C) A-II, B-I, C-IV, D-III (D) A-IV, B-III, C-II, D-I

15. Correct sequence of stages in evolution of Modern Man is :
(A) Australopithecus → Neanderthal Man → Homo habilis → Homo erectus → Modern Man
(B) Australopithecus → Homo erectus → Homo habilis → Neanderthal Man → Modern Man
(C) Neanderthal Man → Australopithecus → Homo habilis → Homo erectus → Modern Man
(D) Australopithecus → Homo habilis → Homo erectus → Neanderthal Man → Modern Man

16. I. Cranial capacity 900 cc.
II. Lived in near east and central Asia between 1,00,000 – 40,000 yrs. Back.
III. Fossils discovered in Java
IV. Probably eat meat
V. First human like being the hominid
Choose the correct option which is related with Homo erectus :
(A) I and III only (B) I, II and III only
(C) I, III and IV only (D) III and IV only

17. The following are some major events in the early history of life :

P. First heterotrophic prokaryotes Q. First non-cellular from of life

R. First unicellular eukaryotes S. First autotrophic prokaryotes

T. First multicellular animals

Which option below places these events in the correct order?

(A) PQRST (B) QSPTR (C) QPSRT (D) QSPRT

18. Mark the incorrectly matched pair :

A. Origin of universe – 20 BYA

B. Formation of galaxy or earth – 4.5 BYA

C. Origin of life – 4.0 BYA

D. Ist non-cellular life – 3.0 BYA

E. First cellular life (Prokaryotic) – 2.0 BYA

F. Ist eukaryotic life – 1.5 BYA

G. Ichthyosaurs – 200 MYA

H. First vertebrates – 500 MYA

I. Sea Weeds – 320 MYA

J. Dinosaurs extinction – 65 MYA

(A) One (B) Two (C) Three (D) None

19. The tendency of population to remain in genetic equilibrium may be disturbed by:-

(A) Random mating (B) Lack of immigration

(C) Lack of mutations (D) Lack of random mating

20. Correctly match column-I with column-II :

	Column-I		**Column-II**
A.	Ramapithecus	I.	Fossils discovered in Java
B.	Neanderthal man	II.	First man who made tools of stones for hunting
C.	Australopithecus	III.	Brain capacity between 650-800 cc
D.	Homo erectus	IV.	Hairy and walked like gorillas and chimpanzee
E.	Homo habilis	V.	Used hides to protect their body and buried their dead

(A) A-I, B-II, C-III, D-IV, E-V (B) A-IV, B-V, C-I, D-II, E-III

(C) A-IV, B-V, C-II, D-I, E-III (D) A-III, B-IV, C-I, D-V, E-II

NEET-BIOLOGY **ELP NO.-1** **HUMAN HEALTH AND DISEASE**

1. The 'good humor' hypothesis of health was disproved by the
(A) Discovery of blood circulation
(B) Discovery of compound microscope
(C) Demonstration of normal body temperature in persons with blackbile
(D) Both (A) and (C)

2. The term health can be defined as
(A) The state of body and mind in a balanced condition
(B) The reflection of a smiling face
(C) A state of complete physical, mental and social well-being
(D) The symbol of economic prosperity

3. Choose the **incorrect** statement about health.
(A) Health can simply be defined as absence of disease.
(B) Healthy people are more efficient at work.
(C) Health increases productivity.
(D) Health reduces infant and maternal mortality.

4. Choose the **correct** statements about diseases.
(I) Disease adversely affects the functioning of one or more organs.
(II) A disease is characterized by the appearance of various signs and symptoms.
(III) AIDS is a fatal non-infectious disease.
(IV) Cancer is an infectious disease.
(A) (I) and (II) (B) (II) and (III) (C) (III) and (IV) (D) (I) and (IV)

5. Diseases which are easily transmitted from one person to another are called
(A) Non-infectious diseases (B) Genetic diseases
(C) Infectious diseases (D) Congenital disease

6. Match Column-I with Column-II and choose the correct option from the codes given below.

	Column-I		**Column-II**
(A)	Health	(A)	AIDS
(B)	Genetic disorders	(B)	Physical, mental and social well-being
(C)	Infectious disease	(C)	Cancer
(D)	Non-infectious disease	(D)	Inherited from parents from birth

Codes :

	A	**B**	**C**	**D**
(A)	2	4	3	1
(B)	2	4	1	3
(C)	3	2	4	1
(D)	1	3	2	4

7. Among the following, identify the infectious diseases.
(I) Cancer (II) Influenza (III) Allergy (IV) Smallpox
(A) (I) and (II) (B) (II) and (III)
(C) (III) and (IV) (D) (II) and (IV)

8. **Assertion:** Diseases are characterized by the appearance of various signs and symptoms.
Reason: Disease never adversely affects only one organ or system.
(A) Both assertion and reason are true and reason is the correct explanation of assertion.
(B) Both assertion and reason are true but reason is not the correct explanation of assertion
(C) Assertion is true but reason is false.
(D) Both assertion and reason are false.

9. **Assertion:** AIDS is an infectious disease.
Reason: AIDS can be easily transmitted from one person to another.
(A) Both assertion and reason are true and reason is the correct explanation of assertion.
(B) Both assertion and reason are true but reason is not the correct explanation of assertion.
(C) Assertion is true but reason is false.
(D) Both assertion and reason are false.

10. The pathogens can affect our body by :
(A) Interfering with normal vital activities (B) Resulting in morphological damage
(C) Resulting in functional damage (D) All of these

11. The pathogens that enter the gut can
(A) Survive in the stomach at low pH (B) Resist the various digestive enzymes
(C) Survive only at high temperature (D) Both (A) and (B)

12. The pathogen of typhoid fever enters in the body through
(A) Contaminated food & water
(B) Contaminated blood
(C) Inhaling of air droplets released by diseased person
(D) Mosquito bite

13. The typhoid can be diagnosed by
(A) ELISA (B) PCR (C) Widal test (D) ESR

14. The causative agents of pneumonia in humans is/are
(A) *Streptococcus pneumoniae* (B) *Haemophilus influenzae*
(C) *Bacillus anthracis* (D) Both (A) and (B)

15. The group of symptoms that is indicative of pneumonia
(A) Constipation, abdominal pain, cramps, blood clots.
(B) Difficulty in respiration, fever, chills, cough, headache.
(C) Nasal congestion and discharge, cough, constipation, headache.
(D) High fever, weakness, stomach pain, loss of appetite, constipation.

16. Which of the following sets of diseases is caused by bacteria?
(A) Tetanus and mumps
(B) Herpes and influenza
(C) Cholera and tetanus
(D) Typhoid and small pox

17. Match **Column-I** (diseases) with **Column-II** (causative agent) and choose the correct option from the codes given below.

	Column-I		**Column-II**
(A)	Typhoid	(A)	*Streptococcus pneumoniae*
(B)	Pneumonia	(B)	Rhino viruses
(C)	Common cold	(C)	*Salmonella Typhi*
		(D)	*Haemophilus influenzae*

Codes :-

	A	**B**	**C**
(A)	3	1, 4	2
(B)	3	1, 2	4
(C)	2	3	1, 4
(D)	1, 4	2	3

18. The malignant malaria is caused by

(A) *Plasmodium vivax* (B) *Plasmodium falciparum*

(C) *Plasmodium malaria* (D) None of these

19. Haemozoin is a toxin released from

(A) *Streptococcus* infected cells (B) *Plasmodium* infected cells

(C) *Haemophilus* infected cells (D) None of these

20. 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

21. The term 'Health' is defined in many ways. The most accurate definition of the health would be:

(A) Health is the state of body and mind in a balanced condition

(B) Health is the reflection of a smiling face

(C) Health is a state of complete physical, mental and social well-being

(D) Health is the symbol of economic prosperity.

22. The organisms which cause diseases in plants and animals are called :

(A) Pathogens (B) Vectors

(C) Insects (D) Worms

23. Select the incorrect statement about health –

(A) Health simply means ‘absence of disease’ or ‘physical fitness’.

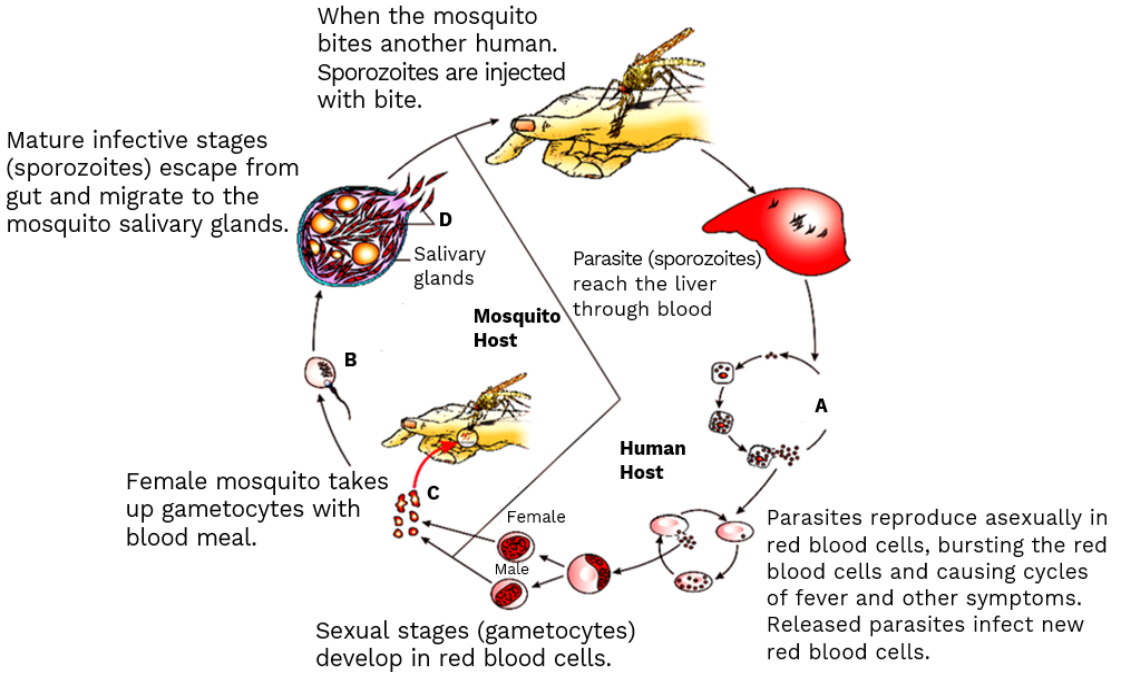
(B) Health could be defined as a state of complete physical, mental and social well-being.

(C) When people are healthy, they are more efficient at work.

(D) Health also increases longevity of people and reduces infant and maternal mortality.

NEET-BIOLOGY **ELP NO.-2** **HUMAN HEALTH AND DISEASE**

1. Refer to the given figure showing stages in the life cycle of use *Plasmodium*. In the figure, which type of reproduction is occurring at stages A and B respectively. Also, identify C and D in the figure.



	A	B	C	D
(A)	Asexual	Sexual	Gametocytes	Sporozoites
(B)	Sexual	Asexual	Gametocytes	Sporozoites
(C)	Asexual	Sexual	Sporozoites	Gametocytes
(D)	Asexual	Sexual	Gametocytes	Ookinetes

2. Match **Column-I** (Diseases) with **Column-II** (causative agents) and choose the correct option from the codes given below.

	Column-I		Column-II
(A)	Typhoid	(1)	*Entamoeba histolytica*
(B)	Malaria	(2)	*Salmonella typhi*
(C)	Amoebiasis	(3)	Rhino viruses
(D)	Common cold	(4)	*Plasmodium vivax*

Codes :-

	A	B	C	D
(A)	2	4	1	3
(B)	4	3	1	1
(C)	1	2	4	3
(D)	3	1	2	4

3. Choose the **correct** statements about amoebiasis.

(I) It is caused by the infection of *Entamoeba histolytica*.

(II) Its symptoms include loose motion, sustain high fever (39-40°C), stools with excess mucous and blood clots.

(III) Houseflies act as mechanical carriers for the parasite.

(IV) The main sources of its infection are drinking water and food contaminated by the fecal matter.

(A) (I) and (II) (B) (II) and (III) (C) (I), (III) and (IV) (D) All of these

4. In which disease does mosquito transmitted pathogen cause chronic inflammation of lymphatic vessels?

(A) Elephantiasis (B) Ascariasis

(C) Ringworm disease (D) Amoebiasis

5. Refer to the given figure.

Which disease is shown in the figure?

(A) Amoebiasis (B) Filariasis

(C) Elephantiasis (D) Both (B) and (C)

6. Match the pathogens given in Column I to the body organs to which they affect in Column-II. Choose the correct answer from the codes given below.

	Column-I		**Column-II**
(A)	*Ascaris*	(1)	Lymphatic vessels of lower limbs
(B)	*Wuchereria*	(2)	Intestine
(C)	*Trichopyton*	(3)	Skin, scalp and nails
(D)	*Streptococcus pneumoniae*	(4)	Lungs

Codes –

	A	**B**	**C**	**D**
(A)	2	1	3	4
(B)	1	2	4	3
(C)	3	2	1	4
(D)	4	3	2	1

7. Mary Mallon was carrier of-

(A) Typhoid (B) Pneumonia

(C) Common cold (D) AIDS

8. Choose the incorrect statement from the following.
(A) *Wuchereria bancrofti* causes chronic inflammation of the lymphatic vessels.
(B) The pathogens of filaria are transmitted to a healthy person through houseflies.
(C) *Trichophyton* is responsible for ringworm.
(D) Common cold is a viral disease.

9. Read the following statements carefully and choose the option that **correctly** identifies the true statements.
(I) Many infectious diseases can be prevented and controlled by maintaining personal and public hygiene.
(II) Proper disposal of waste and excreta is particularly essential for the **air-borne diseases**.
(III) Malaria can be prevented by eliminating its vector and their breeding places.
(IV) Chikungunya is a vector-borne disease.
(A) (I), (II) and (III) (B) (II), (III) and (IV)
(C) (IV), (II) and (I) (D) (I), (III) and (IV)

10. Match Column-I with Column-II and choose the correct option from the codes given below

	Column-I		**Column-II**
(A)	Food-borne disease	(1)	Pneumonia
(B)	Air-borne disease	(2)	Amoebic dysentery
(C)	Vector-borne disease	(3)	Malaria
		(4)	Typhoid

Codes :-

	A	**B**	**C**
(A)	2, 4	1	3
(B)	1, 4	2	3
(C)	3	2, 4	1
(D)	2	3	4, 1

11. **Assertion:** Most of the parasites are pathogens.
Reason: Disease causing organisms are called pathogens hosts as parasite.
(A) Both assertion and reason are true and reason is the correct explanation of assertion.
(B) Both assertion and reason are true but reason is not the correct explanation of assertion.
(C) Assertion is true but reason is false.
(D) Both assertion and reason are false.

12. **Assertion:** Pneumonia is caused by the infection of *Streptococcus pneumoniae*.
Reason: *Streptococcus pneumoniae* bacteria infect upper respiratory passage.
(A) Both assertion and reason are true and reason is the correct explanation of assertion.
(B) Both assertion and reason are true but reason is not the correct explanation of assertion.
(C) Assertion is true but reason is false.
(D) Both assertion and reason are false.

13. **Assertion:** The malarial parasite requires two hosts to complete its lifecycle.
Reason: These two hosts are human and mosquito.
(A) Both assertion and reason are true and reason is the correct explanation of assertion.
(B) Both assertion and reason are true but reason is not the correct explanation of assertion.
(C) Assertion is true but reason is false.
(D) Both assertion and reason are false.

14. **Assertion:** *Wuchereria bancrofti* affects the blood vessels of the lower limbs.
Reason: This pathogen is transmitted to a healthy person through the bite of male mosquito vectors.
(A) Both assertion and reason are true and reason is the correct explanation of assertion.
(B) Both assertion and reason are true but reason is not the correct explanation of assertion.
(C) Assertion is true but reason is false.
(D) Both assertion and reason are false

15. Innate immunity
(A) Is non-specific type of defence. (B) Is present at the time of birth.
(C) Consists of four types of barriers. (D) All of these

16. Identify the physical barrier of immunity from the following.
(A) Skin on our body (B) Acid in the stomach
(C) PMNL-neutrophils (D) Both (A) and (B)

17. Humans have acquired immune system that produces antibodies to neutralize pathogens. Still innate immune system is present at the time of birth because it
(A) Provides passive immunity
(B) Is very specific and uses different macrophages
(C) Produces memory cells for mounting fast secondary response
(D) Has monocytes which can phagocytose and destroy microbes

18. Interferons, produced by virus-infected cells are
(A) Enzymes (B) Glycoproteins
(C) Lipids (D) Hormones

19. Match Column-I with Column-II and choose the correct answer from the codes given below.

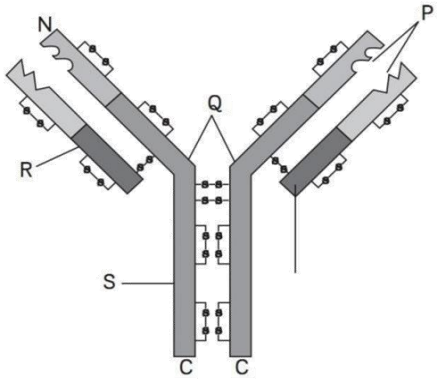
	Column-I		**Column-II**
(A)	Physical barrier	(1)	Acid in the stomach
(B)	Physiological barrier	(2)	Monocytes
(C)	Cellular barrier	(3)	Interferon
(D)	Cytokine barrier	(4)	Mucus coating of the epithelium lining of urogenital tract

Codes :

	A	**B**	**C**	**D**
(A)	4	1	2	3
(B)	1	3	4	2
(C)	2	4	3	1
(D)	3	2	1	4

20. Subsequent encounter with the same pathogen elicits a/an
(A) Secondary response
(B) Highly intensified response
(C) Anamnestic response
(D) All of these

21. Refer to the given figure showing structure of an antibody. In the figure some parts are labelled as P, Q, R and S. Identify the part which binds with antigen.



(A) Q (B) P (C) R (D) S

22. 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

23. 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) Cell-mediated immune response
(B) Humoral immune response
(C) Physiological immune response
(D) Auto immune response

24. Match Column-I with Column-II and choose the correct option from the codes given below.

	Column-I		**Column-II**
(A)	Innate immunity	(1)	Antibodies
(B)	Acquired immunity	(2)	Non-specific immune response
(C)	Humoral immune response	(3)	T–lymphocytes
(D)	Cell mediated immunity	(4)	Pathogen specific immune response

Codes :

	A	**B**	**C**	**D**
(A)	4	2	3	1
(B)	2	4	1	3
(C)	2	4	3	1
(D)	1	3	4	2

25. Choose the **incorrect** statement from the following.
(A) Primary immune response is of low intensity.
(B) The primary and secondary immune responses are carried out with the help of B-lymphocytes and T lymphocytes.
(C) B-cells themselves do not secrete antibodies but help T-cells to produce them.
(D) Antibodies are found in blood, therefore it is called humoral immune response.

NEET-BIOLOGY **ELP NO.-3** **HUMAN HEALTH AND DISEASE**

1. When readymade antibodies are directly given to protect the body against foreign agents, it is called

(A) Cell-mediated immunity (B) Passive immunity

(C) Active immunity (D) Innate immunity

2. Consider the following statements and choose the correct statements.

(I) Active immunity is slow and takes time to give its full effective response.

(II) In passive immunity, ready-made antibodies are directly given.

(III) Colostrum contains IgE antibodies.

(IV) The foetus also receives some antibodies from its mother.

(A) (I), (II) and (III) (B) (I), (II) and (IV) (C) (I), (III) and (IV) (D) All of these

3. Match each disease with its correct type of vaccine.

	Column-I		**Column-II**
(A)	Tuberculosis	(1)	Harmless virus
(B)	Whooping cough	(2)	Non-specific immune response
(C)	Diphtheria	(3)	Killed bacteria
(D)	Polio	(4)	Harmless bacteria

Codes :

	A	**B**	**C**	**D**
(A)	3	2	4	1
(B)	4	3	2	1
(C)	1	2	4	3
(D)	2	1	3	4

4. Vaccine of hepatitis B is produced from transgenic-

(A) *Yeast* (B) *Rhizobium* (C) *Agrobacterium* (D) *Azadirachta*

5. Choose the **incorrect** statement about vaccination.

(A) In passive immunization, preformed antibodies are injected in the body.

(B) Vaccines can be produced using recombinant DNA technology.

(C) Vaccines generate memory B-cells and T-cells.

(D) Vaccines given in case of snakebite contains preformed antigens.

6. Match Column-I with Column-II and choose the correct option from the codes given below.

	Column-I		Column-II
(A)	Colostrum	(1)	IgE
(B)	Allergy	(2)	IgA
(C)	Graft rejection	(3)	Passive immunization
(D)	Preformed antibodies	(4)	Cell-mediated immunity

Codes :

	A	B	C	D
(A)	3	2	4	1
(B)	4	3	2	1
(C)	1	2	4	3
(D)	2	1	4	3

7. Choose the correct reason(s) for rheumatoid arthritis.

(I) Body attacks self-cells.

(II) The ability of immune system to differentiate between self and non-self increases.

(III) The production of antibodies increases.

(IV) Immune system fails to discriminate between self and non-self cells.

(A) (I) and (IV) (B) (II) and (III)

(C) (II) and (IV) (D) (I) and (III)

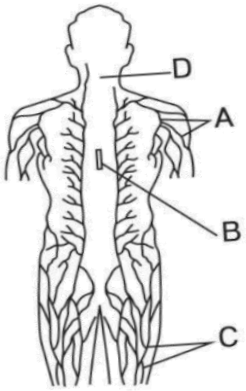
8. Match Column-I with Column-II and choose the correct option from the codes given below.

	Column-I		Column-II
(A)	Allergy	(1)	Inability to discriminate self cells from non self-cells
(B)	Autoimmunity	(2)	Introduction of killed/ Weakened Pathogen
(C)	Active immunization	(3)	Immune response against allergens
(D)	Passive immunization	(4)	Introduction of antibodies

Codes :

	A	B	C	D
(A)	3	1	2	4
(B)	4	3	2	1
(C)	3	1	4	2
(D)	2	4	3	1

9. The figure given below is a diagrammatic representation of lymph nodes. In the figure some parts are labeled as A, B, C and D. Identify the part that serves to trap the antigens.



(A) B (B) A (C) C (D) D

10. MALT constitutes about _____ percent of the lymphoid tissue in human body.
(A) 20% (B) 70% (C) 10% (D) 50%

11. Match Column-I with Column-II and choose the correct option from the codes given below.

	Column-I		**Column-II**
(A)	Allergy	(1)	Inability to discriminate self cells from non self-cells
(B)	Autoimmunity	(2)	Introduction of killed/ Weakened Pathogen
(C)	Active immunization	(3)	Immune response against allergens
(D)	Passive immunization	(4)	Introduction of antibodies

Codes :

	A	**B**	**C**	**D**
(A)	3	1	2	4
(B)	4	3	2	1
(C)	3	1	4	2
(D)	2	4	3	1

12. **Assertion:** The immune response in which antibodies are formed is called humoral immune response.
Reason: Antibodies are found in blood.
(A) Both assertion and reason are true and reason is the correct explanation of assertion.
(B) Both assertion and reason are true but reason is not the correct explanation of assertion.
(C) Assertion is true but reason is false.
(D) Both assertion and reason are false.

13. **Assertion:** In passive immunization, preformed antibodies are given to the patients.
Reason: Polio vaccine also contains preformed antibodies.
(A) Both assertion and reason are true and reason is the correct explanation of assertion.
(B) Both assertion and reason are true but reason is not the correct explanation of assertion.
(C) Assertion is true but reason is false.
(D) Both assertion and reason are false.

14. **Assertion:** Bone marrow is a secondary lymphoid organ.
Reason: In secondary lymphoid organs maturation of lymphocytes occur.
(A) Both assertion and reason are true and reason is the correct explanation of assertion.
(B) Both assertion and reason are true but reason is not the correct explanation of assertion.
(C) Assertion is true but reason is false.
(D) Both assertion and reason are false

15. The word AIDS stands for 'Acquired Immuno Deficiency Syndrome', here syndrome means
(A) Group of diseases (B) Group of symptoms (C) Group of antigens (D) None of these

16. HIV is a member of a group of viruses called
(A) Rota virus (B) Rhino virus (C) Retro virus (D) None of these

17. Which of the following is **correct** regarding AIDS causative agent HIV?
(A) HIV is an unenveloped retrovirus.
(B) HIV does not escape but attacks the acquired immune response.
(C) HIV is an enveloped virus containing one molecule of single stranded RNA and one molecule of reverse transcriptase.
(D) HIV is an enveloped virus that contains two identical molecules of single-stranded RNA and two molecules of reverse transcriptase.

18. HIV is **not** transmitted by

(A) Transfusion of contaminated blood (B) Sharing of infected needles

(C) Sexual contact with infected persons (D) Shaking hands with infected person

19. HIV/AIDS spreads through

(A) Droplets resulting from cough (B) Body fluids

(C) Mere touch (D) All of these

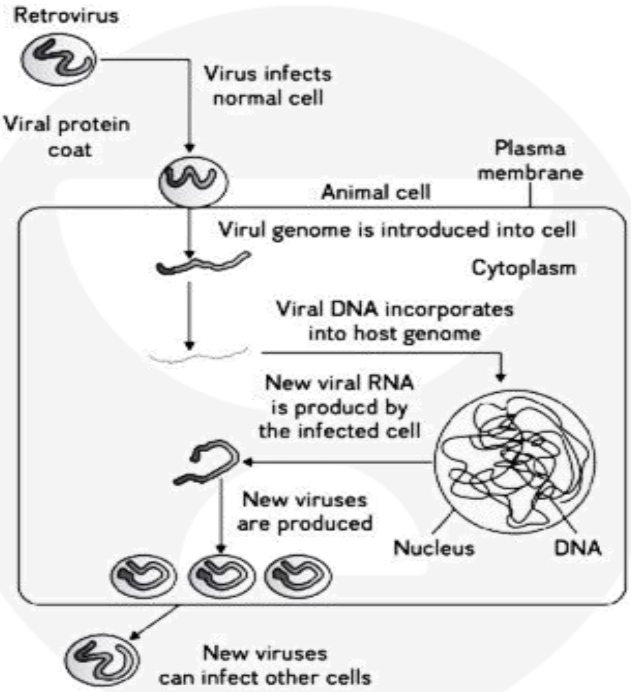
20. HIV that causes AIDS, first starts destroying

(A) Leucocytes (B) Helper T-cells (C) Thrombocytes (D) B-lymphocytes

21. AIDS is diagnosed through which technique?

(A) ELISA (B) Southern blot (C) PAGE (D) Electrophoresis

22. Refer to the given figure showing replication of retrovirus. How is it different from the replication of other viruses?



(A) Viral DNA is produced from viral RNA by reverse transcriptase.

(B) Viral RNA produces dsRNA by RNA polymerase.

(C) Viral DNA is produced from viral RNA by DNA polymerase.

(D) Viral DNA is produced from host DNA by DNA polymerase

23. Match Column-I with Column-II and choose the correct option from the codes given below

	Column-I		**Column-II**
(A)	AIDS	(1)	Retrovirus
(B)	HIV	(2)	Enzyme
(C)	Reverse transcriptase	(3)	Diagnostic technique
(D)	ELISA	(4)	Syndrome

Codes :

	A	**B**	**C**	**D**
(A)	4	1	2	3
(B)	1	2	4	3
(C)	3	4	1	2
(D)	2	3	4	1

24. Choose the incorrect statement about AIDS.

(A) AIDS is caused by HIV.

(B) It can be diagnosed using ELISA technique.

(C) HIV destroys B-lymphocytes.

(D) HIV infected people need help and sympathy instead of being shunned by the society.

25. **Assertion:** AIDS is caused by Human Immuno Deficiency Virus (HIV).

Reason: It is a member of group 'retroviruses'.

(A) Both assertion and reason are true and reason is the correct explanation of assertion.

(B) Both assertion and reason are true but reason is not the correct explanation of assertion.

(C) Assertion is true but reason is false.

(D) Both assertion and reason are false.

NEET-BIOLOGY **ELP NO.-4** **HUMAN HEALTH AND DISEASE**

1. **Assertion:** Transmission of HIV infection generally occurs by sexual contact with infected person.
Reason: HIV is not transmitted by the transfusion of contaminated blood and blood products.
(A) Both assertion and reason are true and reason is the correct explanation of assertion.
(B) Both assertion and reason are true but reason is not the correct explanation of assertion.
(C) Assertion is true but reason is false.
(D) Both assertion and reason are false.

2. **Assertion:** AIDS leads to a progressive decrease in number of helper T-lymphocytes in the infected person.
Reason: HIV virus replicates and produces progeny virus in helper T lymphocytes which are released in blood.
(A) Both assertion and reason are true and reason is the correct explanation of assertion.
(B) Both assertion and reason are true but reason is not the correct explanation of assertion.
(C) Assertion is true but reason is false.
(D) Both assertion and reason are False

3. Cancer cells **do not** show this property.
(A) Metastasis (B) Growth
(C) Contact inhibition (D) Both ((A) and ((C)

4. Cancer cells divide continuously and give rise to a mass of cells called
(A) Fibroid (B) Tumor (C) Oncogene (D) Sarcoma

5. Tumour that remains confined to their original location and cause little damage are
(A) Benign (B) Malignant (C) Carcinogen (D) Invasive

6. Mass of neoplastic cells is called
(A) Benign tumour (B) Fibroid (C) Cyst (D) Malignant tumour

7. The cells of malignant tumour
(A) Grow very rapidly
(B) Invade and damage other normal tissues
(C) Show metastasis
(D) All of these

8. Cells sloughed off from malignant tumour move to other parts of the body to form new tumours. This stage of disease is called
(A) Teratogenesis (B) Metastasis
(C) Metachrosis (D) Metagenesis

9. Match **Column-I** with **Column-II** and choose the correct option from the codes given below.

	Column-I		Column-II
(A)	Contact inhibition	(1)	Consists of neoplastic cells
(B)	Benign tumour	(2)	Property of normal cells to inhibit uncontrolled growth of other cells
(C)	Malignant tumour	(3)	Property of cancerous cells to form new tumour at distant sites
(D)	Metastasis	(4)	Remains confined to original location

Codes :

	A	B	C	D
(A)	1	3	4	2
(B)	4	2	3	1
(C)	2	4	1	3
(D)	3	1	2	4

10. Choose the **incorrect** statement about malignant tumours.
(A) These tumours consist of neoplastic cells.
(B) They show the property of metastasis.
(C) The cells of this tumour have the property of contact inhibition.
(D) The cells of malignant tumour starve the normal cells by competing for vital nutrients.

11. Transformation of normal cells into cancerous neoplastic cells may be induced by
(A) Physical agents (B) Chemical agents (C) Biological agents (D) All of these

12. The cancer-causing agents are called
(A) Carcinogens (B) Teratogens (C) Mutagens (D) None of these

13. X-rays lead to neoplastic transformation by causing damage to
(A) Enzymes (B) Hormones (C) DNA (D) All of these

14. The genes that cause cancer are called
(A) Expressor genes (B) Oncogenes
(C) Regulatory genes (D) Structural genes

15. Match **Column-I** with **Column-II** and choose the correct option from the codes given below.

	Column-I (Type of Carcinogen)		Column-II (Example)
(A)	Physical agent	(1)	Oncogenic virus
(B)	Chemical agent	(2)	UV rays
(C)	Biological agent	(3)	Tobacco
		(4)	Gamma rays

Codes :

	A	B	C
(A)	4, 2	3	1
(B)	4, 1	2	3
(C)	2	4, 3	1
(D)	3	2	4, 1

16. Cancer causing viruses are called
(A) Retrovirus (B) Rhinovirus
(C) Oncogenic virus (D) None of these

17. Choose the **correct** statements about carcinogens.

(I) Carcinogens transform normal cells into cancerous cells.

(II) These carcinogens could be physical, chemical or biological.

(III) Ionizing radiations like UV-rays damage DNA leading to neoplastic transformation.

(IV) Several proto-oncogenes have been identified in **neoplastic cells** that get activated under certain conditions.

(A) (I) and (III) (B) (I) and (II)

(C) (III) and (IV) (D) All of these

18. Which technique can be used for the detection of cancer of internal organs?

(A) Radiography (B) CT

(C) MRI (D) All of these

19. Computed tomography uses 'A' to generate a three-dimensional image of the internals of an object. Here 'A' is

(A) X-rays (B) γ-rays

(C) α-rays (D) UV rays

20. Match Column-I with Column-II and choose the correct option from the codes given below.

	Column-I		**Column-II**
(A)	Biopsy	(1)	Three dimensional image using X rays
(B)	Radiography	(2)	Histopathological study
(C)	Computed Tomography	(3)	Use of strong magnetic fields and non ionising radiations
(D)	MRI	(4)	Use of X-rays

Codes :

	A	**B**	**C**	**D**
(A)	4	2	3	1
(B)	2	4	1	3
(C)	3	1	4	2
(D)	1	3	2	4

21. Working of NACO is related with control of :

(A) a STD

(B) a respiratory disease

(C) a bleeding disorder

(D) a type of cancer.

22. Which of the following does not prevent the spread of AIDS?

(A) Monitoring of blood banks

(B) Use of disposable needles and syringes

(C) Having multiple sex partners

(D) Control of drug abuse.

NEET-BIOLOGY **ELP NO.-5** **HUMAN HEALTH AND DISEASE**

1. The common approaches for the treatment of cancer is/are
(A) Surgery (B) Radiation therapy (C) Immunotherapy (D) All of these

2. Which substance is given to cancer patients to activate their immune system?
(A) Carcinogens (B) Cytokinin (C) α-interferon (D) None of these

3. **Assertion:** X-rays and γ-rays are called carcinogens.
Reason: Carcinogens transform normal cells into cancerous neoplastic cells.
(A) Both assertion and reason are true and reason is the correct explanation of assertion.
(B) Both assertion and reason are true but reason is not the correct explanation of assertion.
(C) Assertion is true but reason is false.
(D) Both assertion and reason are false.

4. **Assertion:** Computed tomography can be used for the early detection of cancer of internal organs.
Reason: Computed tomography uses UV-rays to generate a three dimensional image of the internals of an object.
(A) Both assertion and reason are true and reason is the correct explanation of assertion.
(B) Both assertion and reason are true but reason is not the correct explanation of assertion.
(C) Assertion is true but reason is false.
(D) Both assertion and reason are false.

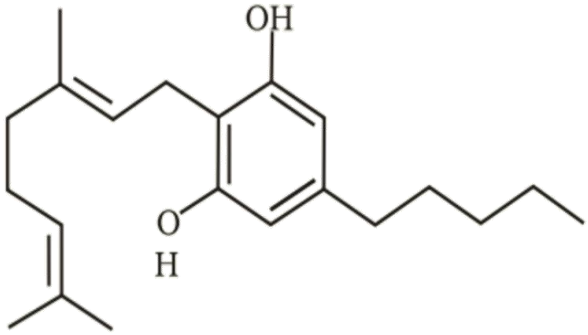
5. **Assertion:** The patients of cancer are given α-interferon.
Reason: α-interferon is a biological response modifier.
(A) Both assertion and reason are true and reason is the correct explanation of assertion.
(B) Both assertion and reason are true but reason is not the correct explanation of assertion.
(C) Assertion is true but reason is false.
(D) Both assertion and reason are false.

6. Opioid receptors are found in :-
(A) Central nervous system (B) Reproductive system
(C) Gastrointestinal tract (D) Both (A) and (C)

7. Drug called 'Heroin' is synthesised by
(A) Methylation of morphine (B) Acetylation of morphine
(C) Glycosylation of morphine (D) Nitration of morphine

8. 'Smack' is obtained from the
(A) Leaves of *Cannabis sativa* (B) Latex of *Papaver somniferum*
(C) Fruits of *Erythroxylum coca* (D) Flowers of *Datura*

9. Refer to the given chemical structure. It is :



(A) Morphine (B) Cocaine (C) Cannabinoid (D) Heroin

10. Refer to the given figure.

The drug obtained from this plant affects

(A) Reproductive system (B) Respiratory system

(C) Nervous system (D) None of these

11. Natural cannabinoids are obtained from the :-

(A) Inflorescence of *Cannabis sativa* (B) Latex of *Cannabis sativa*

(C) Fruits of *Cannabis sativa* (D) Leaves of *Cannabis sativa*

12. Cannabinoids are generally taken by

(A) Inhalation (B) Oral ingestion

(C) Snorting (D) Both (A) and (B)

13. Choose the **incorrect** statement from the following.

(A) Heroin is chemically diacetylmorphine.

(B) Cannabinoids interact with cannabinoid receptors present principally in the gut.

(C) Cannabinoids are taken by inhalation and oral ingestion.

(D) Heroin is a depressant.

14. Coca alkaloid or cocaine is obtained from

(A) *Datura* (B) *Papaver somniferum*

(C) *Atropa belladonna* (D) *Erythroxylum coca*

15. Crack is **usually**

(A) Ingested orally (B) Injected

(C) Inhaled (D) Snorted

16. Refer to the given figure. This plant causes

(A) Hallucinations (B) Insomnia
(C) Depression (D) Sedation

17. Among the following which one is abused by some sportspersons?
(A) Heroin (B) Barbiturates
(C) Cannabinoids (D) Amphetamines

18. Match Column-I with Column-II and choose the correct option from the codes given below.

	Column-I		**Column-II**
(A)	Smack	(1)	Hallucination
(B)	Cocaine	(2)	Depressant
(C)	Datura	(3)	Pain killer
(D)	Morphine	(4)	Stimulant

Codes :

	A	**B**	**C**	**D**
(A)	2	4	1	3
(B)	3	2	4	1
(C)	1	3	2	4
(D)	4	1	3	2

19. Which chemical substance of tobacco stimulates adrenal grand to release adrenaline and noradrenaline?
(A) Tannic acid (B) Nicotine (C) Curamin (D) Catechin

20. Whose concentration is increased in blood by smoking?
(A) Carbon dioxide (CO_2) (B) Oxygen (O_2)
(C) Carbon monoxide (CO) (D) Water (H_2O)

21. Choose the **correct** statements.
(I) Tobacco is smoked, chewed or used as a snuff.
(II) Tobacco contains nicotine, an alkaloid.
(III) Smoking decreases heart rate.
(IV) Tobacco chewing is associated with increased risk of cancer of the oral cavity.
(A) (I) and (II) (B) (III) and (IV)
(C) (I), (II) and (IV) (D) All of these

22. When drugs are taken intravenously, there are increased chances of having
(A) AIDS (B) Hepatitis B
(C) Polio (D) Both (A) and (B)

23. Match **Column-I** with **Column-II** and choose the correct answer from the codes given below.

	Column-I		**Column-II**
(A)	Adolescence	(1)	Oral cancer
(B)	Addiction	(2)	Abrupt discontinuation of regular dose of drug
(C)	Smoking	(3)	Bridge linking childhood and adulthood
(D)	Withdrawal syndrome	(4)	Psychological euphoria associated with drugs

Codes :

	A	**B**	**C**	**D**
(A)	4	2	3	1
(B)	3	4	1	2
(C)	1	3	4	2
(D)	2	1	3	4

24. The measure(s) useful for the prevention and control of alcohol and drug abuse among adolescents is/are

(A) Avoid undue peer pressure
(B) Education and counselling
(C) Looking for danger sign
(D) All of these

25. **Assertion:** Cocaine is obtained from coca plant.
Reason: It has a potent stimulating action on central nervous system.
(A) Both assertion and reason are true and reason is the correct explanation of assertion.
(B) Both assertion and reason are true but reason is not the correct explanation of assertion.
(C) Assertion is true but reason is false.
(D) Both assertion and reason are false.

26. **Assertion:** Withdrawal syndrome is characterised by anxiety, shakiness, nausea and sweating.
Reason: Withdrawal syndrome is not relieved even when use of drugs is resumed again.
(A) Both assertion and reason are true and reason is the correct explanation of assertion.
(B) Both assertion and reason are true but reason is not the correct explanation of assertion.
(C) Assertion is true but reason is false.
(D) Both assertion and reason are false.

27. **Assertion:** Those who take drugs intravenously are much more likely to acquire AIDS and Hepatitis B.
Reason: The viruses of AIDS and Hepatitis B are transferred from one person to another by sharing of infected needles and syringes.
(A) Both assertion and reason are true and reason is the correct explanation of assertion.
(B) Both assertion and reason are true but reason is not the correct explanation of assertion.
(C) Assertion is true but reason is false.
(D) Both assertion and reason are false.

NEET-BIOLOGY **ELP NO.-1 BIOTECHNOLOGY PRINCIPLES AND PROCESSES**

1. Restriction enzymes are used in genetic engineering because:
(A) They can cut DNA at specific base sequence
(B) They are nuclease that can cut DNA at variable sites
(C) They can join different DNA fragments
(D) They are proteolytic enzymes which can degrade harmful proteins.

2. Process by which we can add or delete certain gene is:
(A) Gene therapy (B) Biotechnology
(C) Genetic engineering (D) Cytogenetics.

3. Restriction endonucleases:
(A) Cleave DNA at highly specific recognition sequences
(B) Are inserted into bacteria by bacteriophages
(C) Are made only by eukaryotic cells
(D) Add methyl groups to specific DNA sequences.

4. Which of the following is known as chemical knife of DNA?
(A) Ligase (B) Polymerases
(B) Endonucleases (D) Transcriptase.

5. Which of the following palindromic sequence is recognised by EcoRI?
(A) 5' GAATTC 3' / 3' CTTAAG 5'
(B) 5' CCCGGG 3' / 3' GGGCCC 5'
(C) 5' AGTACT 3' / 3' TCATGA 5'
(D) 5' GGATTC 3' / 3' CCTAGG 5'

6. The controlled use of biological agents, such as microorganisms or cellular components, for beneficial use is called
(A) Plant biology (B) Biochemisty
(C) Biotechnology (D) Molecular biology

7. The experimental manipulation of DNA of different species ,producing recombinant DNA is known as
(A) Electroporesis
(B) Recombinant DNA technology
(C) Transformation
(D) Somatic hybridization

8. The first restriction endonuclease reported was
(A) HindII (B) EcoRI
(B) HindIII (D) BamHI

9. Which one is incorrect
(A) Each restriction endonuclease recognizes a specific palindromic nucleotide sequence.
(B) Specific base sequence is known as recognition sequence.
(C) Restriction enzymes can not cut DNA.
(D) Restriction enzymes belong to enzymes called nucleases.

10. Which one of the following restriction endonuclease is obtained from Escherichia coli?
(A) BamHI (B) Sua3AI (B) HindIII (D) EcoRI

11. Restriction Enzymes cut DNA at
(A) Glycosidic bond (B) H-Bond
(C) Phosphodiester bond (D) All of the above

12. In EcoR1, 'R' refers to
(A) Genus (B) Species (C) Strain (D) Resistant

13. Sticky ends are formed when
(A) Restriction enzyme produces cut at center of pallindomic sequence
(B) Restriction enzyme produces cut within the palindromic sequence but away from centre
(C) Restriction enzyme produces cut away from the pallindromic sequence
(D) Restriction enzyme cut only one strand of DNA

14. Sticky end forms which bond with their complementary cut counter part
(A) Phosphodiester bond (B) Glycosidic bond
(C) Ester bond (D) H-bond

15. First Instance of the construction of An Artificial Recombinant DNA molecule was accomplished in
(A) 1963 (B) 1972 (C) 1983 (D) 1990

16. Enzyme DNA lygase is also known as
(A) Molecular scissor (B) Chemical knives
(C) Molecular Glue (D) Chemical Scalpel

NEET-BIOLOGY **ELP NO.-2** **BIOTECHNOLOGY PRINCIPLES AND PROCESSES**

1. The structure involved in genetic engineering is:
(A) Plasmid (B) Plastid (C) Codon (D) Anticodon.

2. Plasmid present in bacterial cells are :
(A) Circular double helical DNA molecules
(B) Linear double helical DNA molecules
(C) Circular double helical RNA molecules
(D) Linear double helical RNA molecules.

3. Plasmids:
(A) Are circular protein molecules
(B) Are required by bacteria
(C) Are tiny bacteria
(D) Confer resistance to antibiotics

4. Autonomously replicating circular extra chromosomal DNA is called
(A) B-chromosome (B) Jumping gene
(C) Plasmid (D) Recombinant DNA

5. After completing the transformation experiment involving the coding sequence of enzyme β-galactosidase, the recombinant colonies should
(A) Give blue colour
(B) Not give blue colour
(C) Have active β -galactosidase
(D) Both (B) & (C)

6. Which of the following has the ability to transform normal cells into cancerous cells in animals?
(A) Agrobacterium tumefaciens
(B) Retroviruses
(C) DNA-viruses
(D) Plasmids

7. Insertional inactivation is related to
(A) Microinjection
(B) Gene gun
(C) Gel electrophoresis
(D) Selection of recombinants

8. Which enzyme is used to join cut DNA?
(A) Ligase (B) Pectinase (C) Cellulase (D) EcoRI

9. Crown gall disease is caused by
(A) Agrobacterium tumefaciens
(B) Salmonella typhimurium
(C) Meloidegyne Incognitia
(D) Tobacco bud worm

10. Which of the following techniques can be used to introduce foreign DNA into cell?
(A) Using disarmed pathogen (B) Microinjection
(C) Gene gun (D) All of these

11. PBR322 Has how many Restriction sites
(A) 4 (B) 6 (C) 8 (D) 10

12. In PBR322 , rop site has recognition site for which restriction enzyme
(A) EcoR I (B) Pru I (C) Pst I (D) Pru II

13. Limitation of PBR32 in Selection of Recombinant due to Inactivation of antibiotics is
(A) It requires simultaneous plating on two plates having same antibiotics
(B) It requires plating on one plate having different antibiotics
(C) It requires simultaneous plating on two plates having different antibiotics
(D) It requires plating on one plate having same antibiotics

14. If gene of interest is ligated with PBR322 using retsiction enzyme PstI , recombinants will become
(A) Sensitive to ampicillin (B) Sensitive to tetracycline
(C) Resistant to aripicithin (D) Resistant to Kanamycin

15. Term “Gene taxi” is used for
(A) Restriction enzymes (B) Host organism
(C) Gene of Interest (D) Plasmid

16. T-DNA is found in
(A) Saccharomyces (B) Agrobacterium
(C) Penicillium (D) Puccinia

NEET-BIOLOGY **ELP NO.-3** **BIOTECHNOLOGY PRINCIPLES AND PROCESSES**

1. Which of the following enzyme is used in case of fungus to cause release of DNA along with other macromolecules?
(A) Lysozyme
(B) Cellulase
(C) Chitinase
(D) Amylase

2. During gel electrophoresis for separation of DNA fragment
(A) Smallest fragment will move to the farthest point towards cathode
(B) Smallest fragment will move to the farthest point towards anode
(C) Largest fragment will move to the farthest point towards cathode
(D) Largest fragment will move to the farthest point towards anode

3. Since DNA has a _____charge, it moves towards the _____electrode of the electrophoretic chamber-
(A) Positive
(B) Positive, negative
(C) Negative, positive
(D) Natural, neutral

4. What must be done before placing DNA into the electrophoretic chamber?
(A) It must be ground up with mortar and pestle
(B) It must be cut by restriction endonucleases
(C) It must be treated with RNase
(D) None

5. A bioreactor (fermenter) refers to
(A) A tank in which substances are treated to stimulate biochemical-transformation by living cells
(B) A nuclear reactor for biological studies
(C) A tank for biochemical reactions
(D) Organisms reacting to a stimulus

6. DNA fragments can be separated by a technique known as
(A) Gel electrophoresis
(B) Gel digestion
(C) Transformation
(D) Microinjection

7. 1. In Bioreactors raw material are physical converted into specific product using microbial, plant, animal or human cells
2. Most commonly used bio reactors are of Stirring type
3. In continuous culture system, cells are maintained in there lag phase
4. Down stream processing and quality control testing are same for all products

Select the correct option

	1	2	3	4
(A)	T	F	T	T
(B)	T	T	F	F
(C)	F	T	F	F
(D)	F	T	T	F

8. Down stream processing involves
(A) Separation of products
(B) Purification of products
(C) Formulation with suitable preservatives
(D) All of the above

9. PCR stands for
(A) Polymerase chemical
(B) Polymerase chain reaction
(C) Primary chain reaction
(D) Polymerase chain restriction

10. Taq DNA polymerase enzyme is obtained from
(A) Thermus aquaticus
(B) Agrobacterium tumifaciens
(C) Aspergilus flavus
(D) Escherichia coli

11. Term "Spooling" refers to :-
(A) Extraction of desired DNA fragment from agarose gel
(B) Removal of DNA from the suspension
(C) Addition of Chilled ethanol to suspension
(D) Separation of DNA fragments on agarose gel

12. How many copies of desired DNA fragment (Gene of interest) can be obtained after 30 cycles of PCR?
(A) Nearly 1 Billion
(B) Nearly 1 Million
(C) Nearly 10 Millions
(D) Nearly 100 Millions

13. PCR requires
(A) One set of Primer
(B) Two sets of Primers
(C) Three sets of Primers
(D) Four sets of Primers

14. Ist step of PCR (eg. Denaturation), involves breakdown of which bond
(A) H-bond
(B) Phosphodiester Bond
(C) Glycosidic bond
(D) Ester bond

15. Which of the following method can be used for making the bacterial cell 'competent' ?
(A) Treating with specific conc. of divalent cation (ca^{2+})
(B) Treating with specific conc. of monovalent cation (K^{+})
(C) Heat shock
(D) Both (A) & (C)

NEET-BIOLOGY **ELP NO.-1 BIOTECHNOLOGY AND IT'S APPLICATIONS**

1. During synthesis of insulin by recombinant DNA technology, required chains were linked together by disulphide bonds. These chains were extracted from the transgenic organism
(A) Salmonella typhimurium (B) Escherichia coli
(C) Thermus aquaticus (D) Agrobacterium tumefaciens

2. Transgenic animals are used in toxicity testing of a drug for safety of human beings. In such cases, alien gene is introduced in transgenic animals to make them
(A) More sensitive to toxic substances than non-transgenic animals
(B) Resistant to toxic substances for better tolerance
(C) Less sensitive to toxic substances than normal human beings
(D) Non-reactive to toxic substances for safer use in human beings

3. A nematode named _____ infects the roots of tobacco plants and causes a great reduction in its yield.
Select the option which fills the blank correctly.
(A) Meloidogyne incognita (B) Bacillus thuringiensis
(C) Ascaris lumbricoides (D) Escherichia coli

4. Which of the following gene controls corn borer?
(A) Cry I Ac (B) Cry II Ab
(C) T-DNA (D) Cry I Ab

5. Which among the following countries has one of the richest diversities of rice in the world?
(A) Africa (B) India
(C) United states (D) Britain

6. Transgenic plants
(A) Are banned throughout world
(B) Include vitamin A rich rice plant
(C) Increase reliance on chemical pesticides
(D) Are less tolerant to abiotic stresses

7. PCR is used for
(A) Gene recombination (B) Gene flow
(C) Mutation (D) Gene amplification

8. The vector used for the first successful clinical gene therapy to treat ADA deficiency in human is
(A) Disarmed retrovirus (B) Cosmid
(C) Yep (D) Transposon

9. A human protein which is used to treat emphysema and is obtained using transgenic animals is
(A) Insulin
(B) Human lactalbumin
(C) Globulin
(D) α-1-antitrypsin

10. A patient is in the initial stage of a bacterial infection, hence the concentration of pathogen is very low in the body. Which would be the preferable diagnostic method for this patient from the following?
(A) Serum analysis
(B) Blood test
(C) Urine analysis
(D) PCR

11. Select the option which is most appropriate for Agrobacterium tumefaciens.
(A) Non-pathogenic plant bacterium, also used as a cloning vector
(B) Pathogen of plants and animals, also used as a host cell
(C) Pathogen of monocot plants only, also used as a heterologous host
(D) Pathogen of dicot plants, its modified plasmid can be used as a cloning vector

12. Gene encoding Bt protein, specific to cotton bollworm is
(A) cry II Ad
(B) cry IV b
(C) cry I Ac
(D) cry IV Ab

13. At present __A__ recombinants therapeutics being marketed in India whereas __B___ recombinants therapeutics have been approved world over for human-use.
Correct option for A and B is
(A) A – 30, B – 12
(B) A – 12, B – 30
(C) A – 36, B – 24
(D) A – 40, B – 30

14. RNAi technique was used to make tobacco plant resistant to Meloidogyne incognita which belongs to phylum
(A) Platyhelminthes
(B) Aschelminthes
(C) Annelida
(D) Arthropoda

15. The process of RNA interference has been used in the development of plants resistant to
(A) Viruses
(B) Insects
(C) Roundworms
(D) Fungi

16. Advantages of GMOs include all of the following, except
(A) Helping reduce post-harvest losses
(B) Making crops tolerant to abiotic stresses
(C) Enhancing nutritional value of crops
(D) Producing organic crops and fruits

17. Some strains of Bacillus thuringiensis produce proteins that kill dipterans such as
(A) Armyworm and flies
(B) Beetles and mosquitoes
(C) Armyworm and tobacco worm
(D) Flies and mosquitoes

18. In RNAi, host-generated dsRNA triggers protection against nematode infestation as it prevents
(A) Formation of sense-RNA
(B) Translation of a specific mRNA
(C) Formation of antisense-RNA
(D) Lipid synthesis in host plant

19. Which body of the Government of India regulates GM research and safety of introducing GM organisms for public services?
(A) Research Committee on Genetic Manipulation
(B) Bio-safety Committee
(C) Indian Council of Agricultural Research
(D) Genetic Engineering Approval Committee

20. During the processing of proinsulin into mature insulin in humans
(A) C-peptide chain is removed from proinsulin
(B) Disulphide bonds are broken to form proinsulin
(C) B-peptide chain is added to proinsulin
(D) A-peptide chain is removed from proinsulin

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ELP

Educator Led Practice

Sexual Reproduction in Flowering Plant

ANSWER KEY

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	D	C	D	A	B	B	C	D	B	C	B	D	B	D	D
Que.	16	17	18	19	20	21	22	23	24						
Ans.	B	B	D	D	B	A	C	A	A						

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	A	C	B	D	C	B	C	C	D	C	B	D	A	A	D
Que.	16	17	18	19	20	21	22	23							
Ans.	C	A	B	D	A	C	B	D							

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	B	D	C	B	D	B	B	B	A	C	B	A	A	D	A
Que.	16	17	18	19	20	21	22	23							
Ans.	C	A	B	B	B	C	A	D							

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	C	D	C	B	C	A	C	B	B	A	B	D	C	B	C
Que.	16	17	18	19	20	21	22								
Ans.	D	A	D	A	D	A	A								

ELP-5

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	B	B	C	B	B	D	C	A	B	D	A	A	B	C	B
Que.	16	17	18	19	20	21	22	23	24						
Ans.	D	A	B	D	D	C	C	C	D						

ANSWER KEY

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	D	C	D	B	A	B	A	B	D	C	C	A	A	A	B
Que.	16	17	18	19	20	21	22	23	24	25					
Ans.	B	C	D	D	C	B	C	A	B	A					

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	A	B	B	B	A	C	A	C	C	A	A	C	D	D	B
Que.	16	17	18	19	20	21	22	23	24	25					
Ans.	C	B	C	D	C	A	B	B	C	A					

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	A	C	B	D	A	B	A	C	D	B	A	B	B	D	A
Que.	16	17	18	19	20	21	22	23	24	25					
Ans.	B	D	B	B	A	C	C	C	A	D					

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	D	C	C	A	B	C	D	D	A	B	B	D	B	A	B
Que.	16	17	18	19	20	21	22	23							
Ans.	B	B	B	D	B	B	C	B							

ELP-5

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	A	A	A	C	A	D	A	B	C	A	A	B	C	A	D
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28		
Ans.	A	B	A	C	C	B	D	B	A	C	D	C	B		

ELP-6

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	C	B	D	A	D	D	B	A	D	A	C	B	B	D	C
Que.	16	17	18	19	20	21	22	23	24	25	26	27			
Ans.	C	A	C	C	C	C	D	D	A	C	D	C			

ELP-7														
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Ans.	D	A	B	D	A	C	C	B	B	D	A	B	D	A	A
Que.	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**			
Ans.	B	A	A	C	C	C	A	A	C	C	D	B			

ELP-8														
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Ans.	A	D	D	C	A	C	D	C	C	C	B	A	C	C	B
Que.	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**			
Ans.	B	A	D	B	D	B	B	C	B	A	C	C			

ANSWER KEY

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	B	C	D	B	D	D	B	B	C	D	D	C	B	C	D
Que.	16	17	18	19	20										
Ans.	A	C	D	A	B										

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	C	A	B	C	C	B	C	C	A	B	B	D	D	D	A
Que.	16	17	18	19	20										
Ans.	A	C	B	B	A										

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	B	C	C	C	A	D	A	C	D	B	C	D	B	C	B
Que.	16	17	18	19	20										
Ans.	A	D	B	B	C										

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	A	D	D	A	B	C	B	C	A	B	A	B	B	A	C
Que.	16	17	18	19	20										
Ans.	A	C	D	C	B										

ELP-5

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	A	C	B	A	A	B	D	A	D	B	C	C	A	C	B
Que.	16	17	18	19	20										
Ans.	B	C	A	B	A										

ELP-6

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	C	B	C	A	D	A	B	B	A	C	D	A	A	A	C
Que.	16	17	18	19	20										
Ans.	C	C	D	A	C										

ELP-7														
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Ans.	C	A	A	D	A	A	B	B	D	B	B	B	A	D	D
Que.	**16**	**17**	**18**	**19**	**20**										
Ans.	A	A	B	D	B										

ELP-8														
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Ans.	C	D	A	A	B	D	C	A	D	B	C	D	D	D	C
Que.	**16**	**17**	**18**	**19**	**20**										
Ans.	B	D	A	B	D										

ELP-9														
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Ans.	A	A	C	B	B	B	C	B	D	C	B	C	C	A	B
Que.	**16**	**17**													
Ans.	C	C													

ANSWER KEY

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	C	D	C	C	B	D	B	D	B	D	C	D	B	A	C
Que.	16	17	18	19	20	21	22	23	24	25					
Ans.	C	B	C	D	C	D	B	C	C	A					

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	B	B	D	D	B	A	B	B	C	10	D	B	A	C	B
Que.	16	17	18	19	20	21	22	23	24	25					
Ans.	C	D	C	D	C	A	A	C	C	D					

ANSWER KEY

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	A	D	C	C	B	B	D	D	D	C	A	D	D	B	B
Que.	16	17	18	19	20										
Ans.	B	C	A	A	D										

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	C	C	C	A	B	A	C	A	B	D	A	A	A	C	A
Que.	16	17	18	19	20										
Ans.	B	A	A	B	A										

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	A	C	A	B	D	C	D	D	A	A	D	A	C	D	D
Que.	16	17	18	19	20										
Ans.	A	C	C	D	B										

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	B	A	C	A	B	D	C	B	D	A	C	C	D	C	B
Que.	16	17	18	19	20										
Ans.	A	A	A	A	A										

ANSWER KEY

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	B	A	C	A	B	A	B	D	A	B	C	B	D	D	C

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	B	B	A	D	C	B	B	D	B	A	A	C	B	C	B
Que.	16	17	18	19	20										
Ans.	A	B	C	C	A										

ANSWER KEY

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	B	B	D	A	B	B	C	C	D	D	C	A	D	A	C
Que.	16	17	18	19	20										
Ans.	D	C	B	D	D										

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	A	A	C	A	B	B	B	C	A	C	C	B	C	A	D
Que.	16	17	18	19	20										
Ans.	C	B	C	D	A										

ANSWER KEY

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	A	C	B	C	B	A	B	C	D	B	D	D	C	D	C
Que.	16	17													
Ans.	D	A													

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Ans.	B	D	B	C	C	C	B	B	D	A	A	D	C	C	

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	C	B	C	C	C	B	B	C	D	B	C	A	D	A	B

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	C	C	B	D	B	B	C	B	C	C	C	C	D	B	A
Que.	16														
Ans.	C														

ELP-5

Que.	1	2	3	4	5	6	7	8	9	10	11	
Ans.	D	B	D	C	A	D	C	C	D	C	C	

ELP-6

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	A	A	C	C	A	A	B	D	B	A	A	A	B	C	D
Que.	16														
Ans.	D														

ELP-7

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	B	A	D	C	C	B	B	A	C	D	D	A	B	D	B
Que.	16	17	18	19	20										
Ans.	C	C	C	B	A										

ANSWER KEY

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	C	B	B	B	D	C	B	A	B	D	D	A	D	A	D
Que.	16	17	18	19	20										
Ans.	D	B	D	D	D										

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	C	B	B	B	D	C	B	A	B	D	D	A	D	A	D
Que.	16	17	18	19	20										
Ans.	D	B	D	D	D										

ANSWER KEY

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	A	B	D	C	C	A	C	A	D	B	C	B	C	D	A
Que.	16	17	18	19	20										
Ans.	C	D	D	D	C										

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	B	D	A	A	A	A	C	A	B	C	D	B	D	D	D
Que.	16	17	18	19	20										
Ans.	C	A	D	D	D										

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	C	A	A	B	C	D	B	C	A	A	C	A	C	A	B
Que.	16	17	18	19	20										
Ans.	A	B	D	C	A										

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	B	B	C	D	D	A	D	B	D	B	C	A	A	D	D
Que.	16	17	18	19	20										
Ans.	C	C	A	D	C										

ANSWER KEY

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	D	C	A	A	C	B	D	C	A	D	D	A	C	D	B
Que.	16	17	18	19	20										
Ans.	C	A	B	B	D										

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	A	A	C	A	D	A	A	B	D	A	C	C	B	D	D
Que.	16	17	18	19	20	21	22	23	24	25					
Ans.	A	D	B	A	D	B	D	A	B	C					

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	B	B	B	A	D	D	A	A	B	D	A	A	C	D	B
Que.	16	17	18	19	20	21	22	23	24	25					
Ans.	C	D	D	B	B	A	A	A	C	B					

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	C	A	C	B	A	D	D	B	C	C	D	A	C	B	A
Que.	16	17	18	19	20	21	22								
Ans.	C	B	D	A	B	A	C								

ELP-5

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	D	C	A	C	A	D	B	B	C	C	A	D	B	D	D
Que.	16	17	18	19	20	21	22	23	24	25					
Ans.	A	C	A	B	C	C	D	B	D	B					

ANSWER KEY

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	A	C	A	C	A	C	B	A	C	D	C	C	B	D	B
Que.	16														
Ans.	C														

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	A	A	D	C	B	B	D	A	A	D	C	D	C	A	D
Que.	16														
Ans.	B														

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	C	B	C	B	A	A	C	D	B	A	B	A	B	A	D

32. Biotechnology and it's Applications

ANSWER KEY

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	B	A	A	D	B	B	D	A	D	D	D	C	B	B	C
Que.	16	17	18	19	20										
Ans.	D	D	B	D	A										