

NEET

(National Eligibility *cum* Entrance Test)

SOLVED PAPER 2017

1. Which one of the following statements is correct, with reference to enzymes?

- (a) Apoenzyme = Holoenzyme + Coenzyme
- (b) Holoenzyme = Apoenzyme + Coenzyme
- (c) Coenzyme = Apoenzyme + Holoenzyme
- (d) Holoenzyme = Coenzyme + Cofactor

2. Which cells of 'Crypts of Lieberkuhn' secrete antibacterial lysozyme ?

- (a) Argentaffin cells
- (b) Paneth cells
- (c) Zymogen cells
- (d) Kupffer cells

3. Phosphoenol pyruvate (PEP) is the primary CO₂ acceptor in

- (a) C₃-plants
- (b) C₄-plants
- (c) C₂-plants
- (d) C₃ and C₄-plants

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

Column I	Column II
(A) Gonorrhoea	(i) HIV
(B) Syphilis	(ii) <i>Neisseria</i>
(C) Genital Warts	(iii) <i>Treponema</i>
(D) AIDS	(iv) Human Papilloma Virus

Codes

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

5. Which among the following are the smallest living cells, known without a definite cell wall, pathogenic to plants as well as animals and can survive without oxygen ?

- (a) *Bacillus*
- (b) *Pseudomonas*
- (c) *Mycoplasma*
- (d) *Nostoc*

6. Which one from those given below is the period of Mendel's hybridisation experiments?

- (a) 1856 - 1863
- (b) 1840 - 1850
- (c) 1857 - 1869
- (d) 1870 - 1877

7. Flowers, which have single ovule in the ovary and are packed into inflorescence are usually pollinated by

- (a) water
- (b) bee
- (c) wind
- (d) bat

8. Asymptote in a logistic growth curve is obtained, when

- (a) The value of 'r' approaches zero
- (b) $K = N$
- (c) $K > N$
- (d) $K < N$

9. Out of 'X' pairs of ribs in humans only 'Y' pairs are true ribs. Select the option that correctly represents values of X and Y and provides their explanation.

- | | |
|--------------------|--|
| (a) X = 12, Y = 7 | True ribs are attached dorsally to vertebral column and ventrally to the sternum. |
| (b) X = 12, Y = 5 | True ribs are attached dorsally to vertebral column and sternum on the two ends. |
| (c) X = 24, Y = 7 | True ribs are dorsally attached to vertebral column, but are free on ventral side. |
| (d) X = 24, Y = 12 | True ribs are dorsally attached to vertebral column, but are free on ventral side. |

10. MALT constitutes about per cent of the lymphoid tissue in human body.

- (a) 50%
- (b) 20%
- (c) 70%
- (d) 10%

11. Homozygous purelines in cattle can be obtained by

- (a) mating of related individuals of same breed
- (b) mating of unrelated individuals of same breed
- (c) mating of individuals of different breed
- (d) mating of individuals of different species

12. Among the following characters, which one was not considered by Mendel in his experiments on pea?

- (a) Stem – Tall or Dwarf
- (b) Trichomes – Glandular or Non-glandular
- (c) Seed – Green or Yellow
- (d) Pod – Inflated or Constricted

13. Which of the following cell organelles is responsible for extracting energy from carbohydrates to form ATP?

- (a) Lysosome
- (b) Ribosome
- (c) Chloroplast
- (d) Mitochondrion

- 14.** If there are 999 bases in an RNA that codes for a protein with 333 amino acids and the base at position 901 is deleted such that the length of the RNA becomes 998 bases, how many codons will be altered ?
 (a) 1 (b) 11
 (c) 33 (d) 333
- 15.** Which of the following are found in extreme saline conditions?
 (a) Archaeobacteria (b) Eubacteria
 (c) Cyanobacteria (d) Mycobacteria
- 16.** Receptor sites for neurotransmitters are present on
 (a) membranes of synaptic vesicles
 (b) pre-synaptic membrane
 (c) tips of axons
 (d) post-synaptic membrane
- 17.** Artificial selection to obtain cows yielding high milk output represents
 (a) stabilising selection as it stabilises this character in the population
 (b) directional as it pushes the mean of the character in one direction
 (c) disruptive as it splits the population into two, one yielding higher output and the other lower output
 (d) stabilising followed by disruptive as stabilises the population of produce higher yielding cows
- 18.** The hepatic portal vein drains blood to liver from
 (a) heart (b) stomach
 (c) kidneys (d) intestine
- 19.** The water potential of pure water is
 (a) zero
 (b) less than zero
 (c) more than zero, but less than one
 (d) more than one
- 20.** Which of the following represents order of 'Horse'?
 (a) Equidae (b) Perissodactyla
 (c) Caballus (d) Ferus
- 21.** Alexander von Humbolt described for the first time
 (a) ecological biodiversity
 (b) law of limiting factor
 (c) species area relationships
 (d) population growth equation
- 22.** DNA fragments are
 (a) positively charged
 (b) negatively charged
 (c) neutral
 (d) either positively or negatively charged depending on their size
- 23.** A baby boy aged two years is admitted to play school and passes through a dental check-up. The dentist observed that the boy had twenty teeth. Which teeth were absent?
 (a) Incisors (b) Canines
 (c) Premolars (d) Molars
- 24.** Anaphase Promoting Complex (APC) is a protein degradation machinery necessary for proper mitosis of animals cells. If APC is defective in a human cells, which of the following is expected to occur?
 (a) Chromosomes will not condense
 (b) Chromosomes will be fragmented
 (c) Chromosomes will not segregate
 (d) Recombination of chromosome arms will occur
- 25.** An important characteristic that hemichordates share with chordates is
 (a) absence of notochord
 (b) ventral tubular nerve cord
 (c) pharynx with gill slits
 (d) pharynx without gill slits
- 26.** The genotypes of a husband and wife are $I^A I^B$ and $I^A i$. Among the blood types of their children, how many different genotypes and phenotypes are possible ?
 (a) 3 genotypes ; 3 phenotypes
 (b) 3 genotypes ; 4 phenotypes
 (c) 4 genotypes ; 3 phenotypes
 (d) 4 genotypes ; 4 phenotypes
- 27.** Transplantation of tissues/organs fails often due to non-acceptance by the patient's body. Which type of immune-response is responsible for such rejections ?
 (a) Autoimmune response
 (b) Cell-mediated immune response
 (c) Hormonal immune response
 (d) Physiological immune response
- 28.** Adult human RBCs are enucleate. Which of the following statement(s) is/are most appropriate explanation for this feature?
 (I) They do not need to reproduce.
 (II) They are somatic cells.
 (III) They do not metabolise.
 (IV) All their internal space is available for oxygen transport.
Codes
 (a) Only (IV)
 (b) Only (I)
 (c) (I), (III) and (IV)
 (d) (II) and (III)
- 29.** Lungs are made up of air-filled sacs, the alveoli. They do not collapse even after forceful expiration, because of
 (a) Residual Volume (RV)
 (b) Inspiratory Reserve Volume (IRV)
 (c) Tidal Volume (TV)
 (d) Expiratory Reserve Volume (ERV)
- 30.** Zygotic meiosis is characteristic of
 (a) *Marchantia*
 (b) *Fucus*
 (c) *Funaria*
 (d) *Chlamydomonas*

- 31.** Select the correct route for the passage of sperms in male frogs.
- Testes → Bidder's canal → Kidney → Vasa efferentia → Urinogenital duct → Cloaca
 - Testes → Vasa efferentia → Kidney → Seminal vesicle → Urinogenital duct → Cloaca
 - Test → Vasa efferentia → Bidder's canal → Ureter → Cloaca
 - Testes → Vasa efferentia → Kidney → Bidder's canal → Urinogenital duct → Cloaca
- 32.** Which one of the following statements is not valid for aerosols ?
- They are harmful to human health
 - They alter rainfall and monsoon patterns
 - They cause increased agricultural productivity
 - They have negative impact on agricultural land
- 33.** Viroids differ from viruses in having
- DNA molecules with protein coat
 - DNA molecules without protein coat
 - RNA molecules with protein coat
 - RNA molecules without protein coat
- 34.** During DNA replication, Okazaki fragments are used to elongate
- The leading strand towards replication fork
 - The lagging strand towards replication fork
 - The leading strand away from replication fork
 - The lagging strand away from the replication fork
- 35.** Plants, which produce characteristic pneumatophores and show vivipary belong to
- mesophytes
 - halophytes
 - psammophytes
 - hydrophytes
- 36.** The process of separation and purification of expressed protein before marketing is called
- upstream processing
 - downstream processing
 - bioprocessing
 - postproduction processing
- 37.** Identify the wrong statement in context of heartwood.
- Organic compounds are deposited in it
 - It is highly durable
 - It conducts water and minerals efficiently
 - It comprises dead elements with highly lignified walls
- 38.** Spliceosomes are not found in cells of
- plants
 - fungi
 - animals
 - bacteria
- 39.** Which of the following statements is correct?
- The ascending limb of loop of Henle is impermeable to water
 - The descending limb of loop of Henle is impermeable to water
 - The ascending limb of loop of Henle is permeable to water
 - The descending limb of loop of Henle is permeable to electrolytes
- 40.** Which ecosystem has the maximum biomass?
- Forest ecosystem
 - Grassland ecosystem
 - Pond ecosystem
 - Lake ecosystem
- 41.** The final proof for DNA as the genetic material came from the experiments of
- Griffith
 - Hershey and Chase
 - Avery, Macleod and McCarty
 - Hargobind Khorana
- 42.** The function of copper ions in copper releasing IUD's is
- they suppress sperm motility and fertilising capacity of sperms
 - they inhibit gametogenesis
 - they make uterus unsuitable for implantation
 - they inhibit ovulation
- 43.** An example of colonial alga is
- Chlorella*
 - Volvox*
 - Ulothrix*
 - Spirogyra*
- 44.** Root hairs develop from the region of
- maturation
 - elongation
 - root cap
 - meristematic activity
- 45.** Hypersecretion of growth hormone in adults does not cause further increase in height because
- growth hormone becomes inactive in adults
 - epiphyseal plates close after adolescence
 - bones lose their sensitivity to growth hormone in adults
 - muscle fibres do not grow in size after birth
- 46.** Which of the following in sewage treatment removes suspended solids ?
- Tertiary treatment
 - Secondary treatment
 - Primary treatment
 - Sludge treatment
- 47.** Select the mismatch.
- | | | |
|-----|------------------|---------------|
| (a) | <i>Pinus</i> | Dioecious |
| (b) | <i>Cycas</i> | Dioecious |
| (c) | <i>Salvinia</i> | Heterosporous |
| (d) | <i>Equisetum</i> | Homosporous |
- 48.** What is the criterion for DNA fragments movement on agarose gel during gel electrophoresis ?
- The larger the fragment size, the farther it moves
 - The smaller the fragment size, the farther it moves
 - Positively charged fragments move to farther end
 - Negatively charged fragments do not move
- 49.** In *Bougainvillea* thorns are the modifications of
- stipules
 - adventitious root
 - stem
 - leaf

50. The association of histone H1 with a nucleosome indicates

- (a) transcription is occurring
- (b) DNA replication is occurring
- (c) the DNA is condensed into chromatin fibre
- (d) the DNA double helix is exposed

51. A temporary endocrine gland in the human body is

- (a) pineal gland
- (b) corpus cardiacum
- (c) corpus luteum
- (d) corpus allatum

52. Select the mismatch.

(a)	<i>Frankia</i>	<i>Alnus</i>
(b)	<i>Rhodospirillum</i>	Mycorrhiza
(c)	<i>Anabaena</i>	Nitrogen fixer
(d)	<i>Rhizobium</i>	Alfa-fa

53. GnRH, a hypothalamic hormone, needed in reproduction, acts on

- (a) anterior pituitary gland and stimulates secretion of LH and oxytocin
- (b) anterior pituitary gland and stimulates secretion of LH and FSH
- (c) posterior pituitary gland and stimulates secretion of oxytocin and FSH
- (d) posterior pituitary gland and stimulates secretion of LH and relaxin

54. A gene, whose expression helps to identify transformed cells is known as

- (a) selectable marker
- (b) vector
- (c) plasmid
- (d) structural gene

55. Presence of plants arranged into well defined vertical layers depending on their height can best seen best in

- (a) tropical savannah
- (b) tropical rain forest
- (c) grassland
- (d) temperate forest

56. Functional megaspore in an angiosperm develops into

- (a) ovule
- (b) endosperm
- (c) embryo sac
- (d) embryo

57. DNA replication in bacteria occurs

- (a) during S-phase
- (b) within nucleolus
- (c) prior to fission
- (d) just before transcription

58. Which among these is the correct combination of aquatic mammals ?

- (a) Seals, Dolphins, Sharks
- (b) Dolphins, Seals, *Trygon*
- (c) Whales, Dolphines, Seals
- (d) *Trygon*, Whales, Seals

59. Coconut fruit is a

- (a) drupe
- (b) berry
- (c) nut
- (d) capsule

60. Double fertilisation is exhibited by

- (a) gymnosperms
- (b) algae
- (c) fungi
- (d) angiosperms

61. Which of the following components provides sticky character to the bacterial cell ?

- (a) Cell wall
- (b) Nuclear membrane
- (c) Plasma membrane
- (d) Glycocalyx

62. Life cycle of *Ectocarpus* and *Fucus* respectively are

- (a) Haplontic, Diplontic
- (b) Diplontic, Haplodiplontic
- (c) Haplodiplontic, Diplontic
- (d) Haplodiplontic, Haplontic

63. Which one of the following is related to *Ex-situ* conservation of threatened animals and plants?

- (a) Wildlife Safari parks
- (b) Biodiversity hotspots
- (c) Amazon rainforest
- (d) Himalayan region

64. Good vision depends on adequate intake of carotene rich food.

Select the best option from the following statements.

- I. Vitamin-A derivatives are formed from carotene.
- II. The photopigments are embedded in the membrane discs of the inner segment.
- III. Retinal is a derivative of vitamin-A.
- IV. Retinal is a light absorbing part of all the visual photopigments.

- (a) (I) and (II)
- (b) (I), (III) and (IV)
- (c) (I) and (III)
- (d) (II), (III) and (IV)

65. Thalassaemia and sickle-cell anaemia are caused due to a problem in globin molecule synthesis. Select the correct statement.

- (a) Both are due to a qualitative defect in globin chain synthesis.
- (b) Both are due to a quantitative defect in globin chain synthesis.
- (c) Thalassaemia is due to less synthesis of globin molecules.
- (d) Sickle-cells anaemia is due to a quantitative problem of globin molecules.

66. Which of the following are not polymeric ?

- (a) Nucleic acid
- (b) Proteins
- (c) Polysaccharides
- (d) Lipids

67. A disease caused by an autosomal primary non-disjunction is

- (a) Down's syndrome
- (b) klinefelter's syndrome
- (c) Turner's syndrome
- (d) Sickle-cell anemia

68. With reference to factors affecting the rate of photosynthesis, which of the following statements is not correct?

- (a) Light saturation for CO₂-fixation occurs at 10% of full sunlight
- (b) Increasing atmospheric CO₂ concentration upto 0.05% can enhance CO₂-fixation rate
- (c) C₃ plants respond to higher temperature with enhanced photosynthesis, while C₄-plants have much lower temperature optimum
- (d) Tomato is a greenhouse crop, which can be grown in CO₂-enriched atmosphere for higher yield

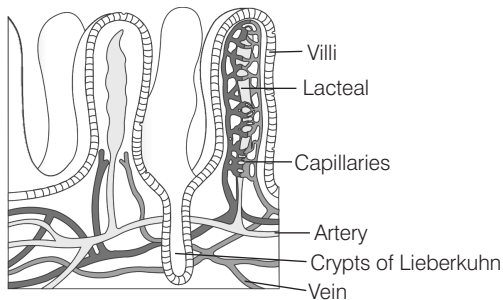
- 69.** Fruit and leaf drop at early stages can be prevented by the application of
 (a) cytokinins (b) ethylene
 (c) auxins (d) gibberellic acid
- 70.** The region of biosphere reserve, which is legally protected and where no human activity is allowed is known as
 (a) core zone (b) buffer zone
 (c) transition zone (d) restoration zone
- 71.** In case of poriferans, the spongocoel is lined with flagellated cells called
 (a) ostia (b) oscula
 (c) choanocytes (d) mesenchymal cells
- 72.** A decrease in blood pressure/volume will not cause the release of
 (a) renin
 (b) atrial natriuretic factor
 (c) aldosterone
 (d) ADH
- 73.** A dioecious flowering plant prevents both
 (a) autogamy and xenogamy
 (b) autogamy and geitonogamy
 (c) geitonogamy and xenogamy
 (d) cleistogamy and xenogamy
- 74.** Which of the following facilitates opening of stomatal aperture ?
 (a) Contraction of outer wall of guard cells
 (b) Decrease in turgidity of guard cells
 (c) Radial orientation of cellulose microfibrils in the cell wall of guard cells
 (d) Longitudinal orientation of cellulose microfibrils in the cell wall of guard cells
- 75.** The DNA fragments separated on an agarose gel can be visualised after staining with
 (a) bromophenol blue
 (b) acetocarmine
 (c) aniline blue
 (d) ethidium bromide
- 76.** Which statement is wrong for Krebs' cycle?
 (a) There are three points in the cycle where NAD^+ is reduced to $\text{NADH} + \text{H}^+$
 (b) There is one point in the cycle where FAD^+ is reduced to FADH_2
 (c) During conversion of succinyl Co-A to succinic acid, a molecule of GTP is synthesised
 (d) The cycle starts with condensation of acetyl group (acetyl Co-A) with pyruvic acid to yield citric acid
- 77.** Mycorrhizae are the example of
 (a) fungistasis (b) amensalism
 (c) antibiosis (d) mutualism
- 78.** The pivot joint between atlas and axis is a type of
 (a) fibrous joint (b) cartilaginous joint
 (c) synovial joint (d) saddle joint
- 79.** Which of the following is correctly matched for the product produced by them?
 (a) *Acetobacter aceti*: Antibiotics
 (b) *Methanobacterium*: Lactic acid
 (c) *Penicillium notatum*: Acetic acid
 (d) *Saccharomyces cerevisiae*: Ethanol
- 80.** Frog's heart when taken out of the body continues to beat for sometime.
 Select the best option from the following statements.
 I. Frog is a poikilotherm.
 II. Frog does not have any coronary circulation.
 III. Heart is "myogenic" in nature.
 IV. Heart is autoexcitable.
 (a) Only III (b) Only IV
 (c) I and II (d) III and IV
- 81.** Myelin sheath is produced by
 (a) Schwann cells and Oligodendrocytes
 (b) Astrocytes and Schwann cells
 (c) Oligodendrocytes and Osteoclasts
 (d) Osteoclasts and Astrocytes
- 82.** Capacitation occurs in
 (a) rete testis
 (b) epididymis
 (c) vas deferens
 (d) female reproductive tract
- 83.** The morphological nature of the edible part of coconut is
 (a) perisperm
 (b) cotyledon
 (c) endosperm
 (d) pericarp
- 84.** Which of the following is made up of dead cells?
 (a) Xylem parenchyma
 (b) Collenchyma
 (c) Phellem
 (d) Phloem
- 85.** In case of a couple, where the male is having a very low sperm count, which technique will be suitable for fertilisation ?
 (a) Intrauterine Transfer
 (b) Gamete intracytoplasmic Fallopian Transfer
 (c) Artificial Insemination
 (d) Intracytoplasmic Sperm Injection
- 86.** Which of the following RNAs should be most abundant in animals cell?
 (a) rRNA (b) tRNA
 (c) mRNA (d) miRNA
- 87.** The vascular cambium normal gives rise to
 (a) phelloderm
 (b) primary phloem
 (c) secondary xylem
 (d) periderm

88. Which of the following options gives the correct sequences of events during mitosis ?
- Condensation → nuclear membrane disassembly → crossing over → segregation → telophase
 - Condensation → nuclear membrane disassembly → arrangement at equator → centromere division → segregation → telophase
 - Condensation → crossing over → nuclear membrane disassembly → segregation → telophase
 - Condensation → arrangement at equator → centromere division → segregation → telophase

89. Which of the following options best represents enzyme composition of pancreatic juice?
- Amylase, peptidase, trypsinogen, rennin
 - Amylase, pepsin, trypsinogen, maltase
 - Peptidase, amylase, pepsin, rennin
 - Lipase, amylase, trypsinogen, procarboxypeptidase
90. Attractants and rewards are required for
- anemophily
 - entomophily
 - hydrophily
 - cleistogamy

Answers with Solutions

1. (b) **Holoenzyme** It is a conjugate complete catalytically active enzyme together with its coenzyme.
Apoenzyme The protein part of catabolically active enzyme is called apoenzyme.
Coenzyme Some enzymes require additional organic or metallo-organic molecules for their activity. These molecules are called coenzyme.
2. (b) The mucosa present in between the bases of villi of small intestine (Crypts of Lieberkuhn) contain panethcells, which secrete antibacterial lysozyme.



A section of small intestinal mucosa showing villi and the Crypts of Lieberkuhn

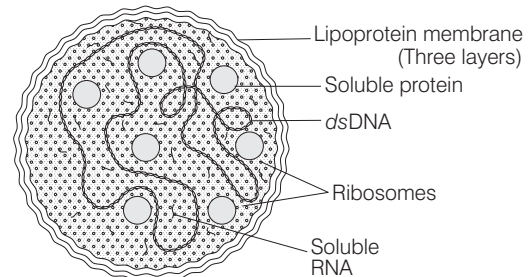
Concept Enhancer Kupffer cells are phagocytic cells of liver. Zymogen cells produce enzyme. Argentaffin cells produce hormones.

3. (b) Phosphoenol Pyruvate (PEP) is found in the mesophyll cell, which accepts the atmospheric CO_2 in C_4 -plants and converts it to oxaloacetate — a C_4 compound. It is the first stable compound of C_4 -plants.

Concept Enhancer C_4 -plants possess special adaptation anatomy in their leaves to cope up the photorespiratory losses. There are dimorphic chloroplast present in them—agranal in bundle sheath cells and granal in mesophyll cells.

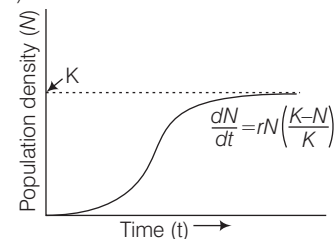
4. (a)
- | | Column I | | Column II |
|-----|---------------|-------|------------------------------|
| (A) | Gonorrhoea | (ii) | <i>Neisseria gonorrhoeae</i> |
| (B) | Syphilis | (iii) | <i>Treponema pallidum</i> |
| (C) | Genital Warts | (iv) | Human Papilloma Virus |
| (D) | AIDS | (i) | HIV |

5. (c) *Mycoplasma* is triple layered smallest living cells. It does not have definite cell wall. It is an anaerobic organism. It cause diseases in plants (little leaf of brinjal) as well as in animals (pleuromorphic pneumonia in man).



6. (a) Mendel was a great Mathematician and was Austrian Monk. He became interested in genetics and conducted experiments in pea plant (*Pisum sativum*). He hybridise the contrasting characters of the plant and conducted his experiments for more than 10 years between 1856-1863; this experimental data was published in 1865.
7. (c) The flowers with packed inflorescence and single ovary are air pollinated. These flower have pollen grains produced in large numbers, which are light weighted, sometimes winged, e.g. cereals and grasses.
8. (b) When $K = N$ in a logistics growth curve, it is asymptote.

It means a population growing in a habitat with limited resources show initially a lag phase, followed by phase of acceleration and deceleration and finally an asymptote, i.e. when the population density (N) reaches the carrying capacity (K)



Population growth curve is logistic, when responses are limiting the growth, here K is carrying capacity and N is population density.

Time Saver For logistic growth

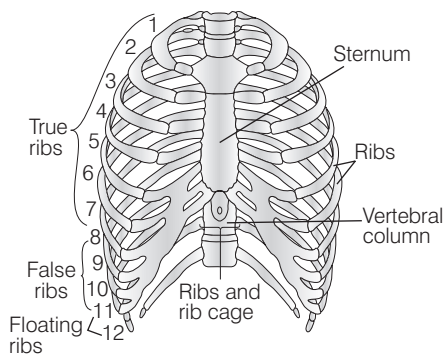
$$\frac{dN}{dt} = rN \left(\frac{K - N}{K} \right)$$

if, $K = N$, then $\frac{K - N}{K} = 0$

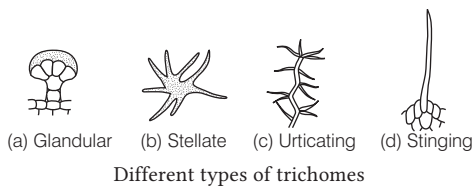
\therefore The $\frac{dN}{dt} = 0$

the population reaches asymptote.

9. (a) In the rib cage, the true ribs are those which are attached to the sternum in the front and vertebral column at back. These are 7 in numbers. Although there are total 12 ribs in the rib cage. The 11th and 12th ribs are attached to the vertebral column and keep floating in the thoracic cavity, so are called floating ribs.



10. (a) MALT is mucosa associated lymphoid tissue located with in the lining of the major tracts like respiratory, digestive and urinogenital tracts. It is nearly 50% of the total lymphoid tissue in the human body.
11. (a) When closely related species of same organisms are crossed continuously for few successive generations, it results in accumulation of recessive characters thus homozygous purelines are obtained.
12. (b) Trichomes are the epidermal tissues structure. When epidermal cells become glandular hair, it is called trichome. This character was not amongst the seven characters of pea, which mendel selected for his hybridisation experiments.



13. (d) Mitochondria is referred as 'Power house of the cell'. It contains the enzymes for cellular respiration. It oxidises carbohydrate to produce ATP molecules in the process of aerobic respiration.
14. (c) 33 codons will be altered if the 901st base is deleted and RNA has only 998 bases instead of 999 bases.
- Total bases present in RNA = 999
 Bases left after deletion of 901st base in RNA
 = 999 - 901
 = 98
 Number of codon present in 98 = 33
 (Approximately as three codons code for one amino acid).

15. (a) Archaeobacteria are the most primitive form of bacteria. These live in diverse habitat, e.g. extreme hot temperature, saline condition, variable pH, etc. Saline bacteria are called Halophiles (e.g., *Halobacterium*, *Halococcus*).

Concept Enhancer The ability of archaeobacteria to survive in such conditions is due to the presence of branched lipid chain in their membrane, which reduces the fluidity of their membrane.

16. (d) The post synaptic membrane of the synapse of a neuron contains the receptors for neurotransmitters.

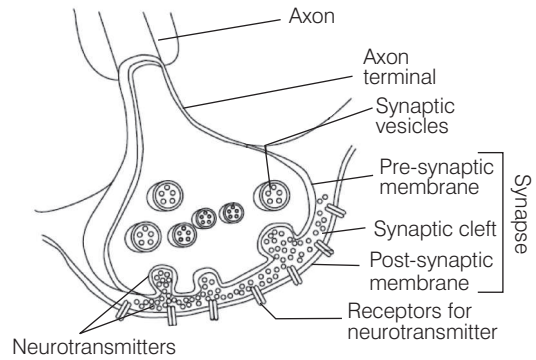
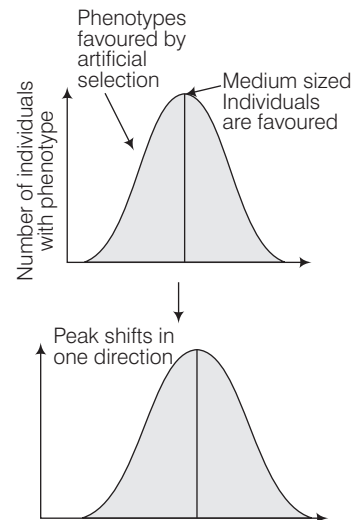


Diagram showing axon terminal and synapse

17. (b) The directional selection leads to change in the phenotypic characters of a population in one direction. In the case of artificial selection, it is intentionally done to increase the milk production, so directional selection operates.



Diagrammatic representation of the operation of artificial traits in the directional selection manner

18. (d) In the hepatic portal system, the hepatic veins takes blood from intestine to the liver. This way, it takes all the nutrients absorbed from intestine to the liver first, where screening and storing of nutrition takes place.

Concept enhancer

The portal system is a system, in which vein takes blood to some organ/tissue of the body other than heart. In this, the vein has capillary network at it's both ends.

There is one more portal system in human body named hypophyseal portal system present in the hypothalamus, which brings neuro secretions of hypothalamus to pituitary gland.

The renal portal system is found in fishes and amphibians. It supplies blood from posterior region of the body to the kidneys by renal portal veins to remove waste products before sending it to heart *via* renal veins and post canal veins.

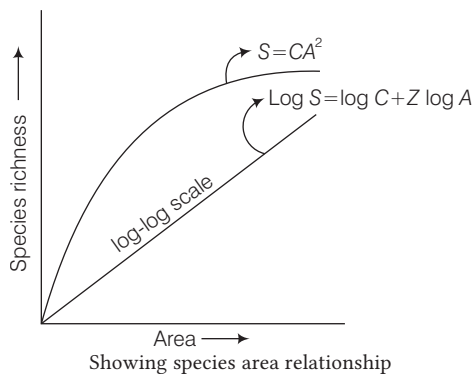
19. (a) The value of water potential of pure water is highest and it is zero. Water molecules possess kinetic energy. Greater the concentration of water in a system, greater is its kinetic energy or its water potential.

If we add solute in water, the solution has fewer free water molecule and concentration of water decreases thus reducing its water potential.

20. (b) Order being the higher taxon of classification exhibit the few similar characters of families. The order of horse is perissodactyla.

Concept Enhancer The order perissodactyla includes odd toed mammals. For example, *Equus asinus* (donkey), *Rhinoceros indicus* (the great one horned rhinoceros).

21. (c) Alexander von Humbolt was a great German naturalist and geographer. He did extensive explorations in the wilderness of South American forests. He established species area relationship. He observed that within a region, species richness increase with increasing explored area, but upto a certain limit. Infact, the relationship between species richness and area for a variety of taxa turns out to be a rectangular hyperbola as shown in figure below



Note that on log scale the relationship becomes linear. On a logarithmic scale, the relationship is a straight line described by the equation.

$$\log S = \log C + Z \log A$$

where,

S = Species richness

A = Area

Z = Slope of the line (regression coefficient)

C = Y-intercept

22. (b) DNA fragments are negatively charged molecules. The reason why DNA is negatively charged is the phosphate (PO_4^{--}) group that constitutes every nucleotide.

Thinking process During the formation of phosphodiester bond, nucleotides retain one of the two negative charge, while the other is lost to form ester bond to new pentose.

23. (c) In human beings, after birth the first set of teeth that develops are deciduous teeth or temporary teeth. These are 20 in number. The dental formula of child is $2102/2102$.

Thus, they have 2 incisors, 1 canine, 0 premolars and 2 molars. Therefore, the baby boy would not have premolars.

24. (c) If anaphase promoting complex is defective in a human cell, the chromosomes will not segregate during anaphase of mitosis. APC triggers the transition from metaphase to anaphase by tagging specific proteins for degradation.

Concept Enhancer Anaphase stage of meiosis is characterised by two events

(a) Splitting of centromeres and segregation of chromosomes.

(b) Movement of chromatids towards the opposite poles.

25. (c) The important characteristic that hemichordates share with chordates is pharynx with gill slits. These gill slits are narrow openings in the pharynx. The position of these pharyngeal gill slits is lateral in chordates, while dorsal in hemichordates.

26. (c) A cross between two individuals, one with AB blood group and other with A blood group will produce four genotypes and three phenotypes.

		Husband	
		σ^A	I^B
Wife	I^A	$I^A I^A$	$I^A I^B$
	i	$I^A i$	$I^B i$

Offsprings Genotypes : 4 ($I^A I^A$, $I^A I^B$, $I^A i$, $I^B i$)

Phenotypes : 3 (A, B, AB)

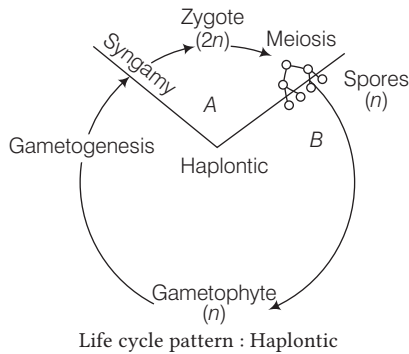
27. (b) Transplantation of tissue/organs may fail, when that tissue is rejected by the recipients immune system leading to its destruction. Tissue rejection is a function of cell-mediated immune response that involves T-cells. These cells have the ability to distinguish between self and non-self. After the recognition of non-self tissue, the killer T-cells induces apoptosis of the target tissue.

28. (a) The absence of nucleus in RBC is an adaptation that allows it to contain more haemoglobin and carry more oxygen by providing empty space. This adaptation also aids in effective diffusion of oxygen.

Concept Enhancer RBC's are initially produced in bone marrow with a nucleus. They, then undergo enucleation at maturity, in which their nucleus is removed.

29. (a) In lungs, even after the most forceful expiration, some of the volume of air remains. This volume is termed Residual Volume (RV). Due to this, lungs do not collapse even after the most forceful expiration. RV is about 1100 mL to 1200 mL.

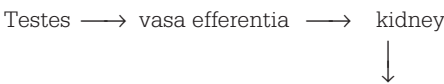
30. (d) Zygotic meiosis is represented in the Chaplontic life cycle of many algae including *Chlamydomonas*. In such a life cycle, all cells are haploid except zygote. This is because meiosis occurs in the zygote itself resulting into four haploid cells that give rise to haploid plants.



Thinking Process All algae except *Fucus*, *Ectocarpus*, *Dictyota* and a few other, show haplontic life cycle or zygotic meiosis. Bryophytes and pteridophytes show haplodiplontic life cycle and undergo sporic meiosis.

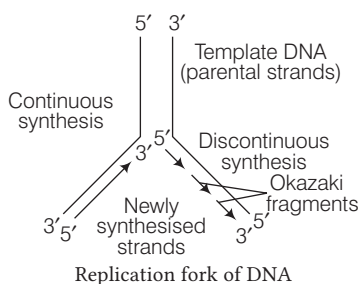
31. (d) In male frogs, germinal epithelium of seminiferous tubules produce sperms, which are transferred to kidney via vasa efferentia, from the kidney, these enter into Bidder's canal from where, the sperms are carried to the transverse collecting tubules, longitudinal collecting tubule and then to urinogenital duct. The later carries the sperms to seminal vesical. where, they are stored temporarily. From here, sperms are carried to cloaca and then these shed into water.

Thus, the correct route of sperms passage is



Cloaca ← Urinogenital duct ← Bidder's cana

32. (c) Aerosol refers to the suspended particulate matter of less than 1 μm size. These are kind of air pollutants that are suspended in our atmosphere. They have a measurable effect on climate change as they can modify the amount of energy reflected by clouds. As a result, they can change the atmospheric circulation patterns and affect agriculture negatively. These also affect human health by causing breathing problems.
33. (d) Viroids differ from viruses in having RNA molecules without protein coat. Viruses on the other hand posses DNA or RNA with a protein coat as their genetic material. Viruses can infect a wide range of organisms including plants, animals or bacteria, while viroids infect only plants.
34. (d) Okazaki fragments are short segments of replicating DNA. These have 1000-2000 bp in prokaryotes and 100-200 bp in eukaryotes. These fragments are used to elongate the lagging strand away from the replication fork.

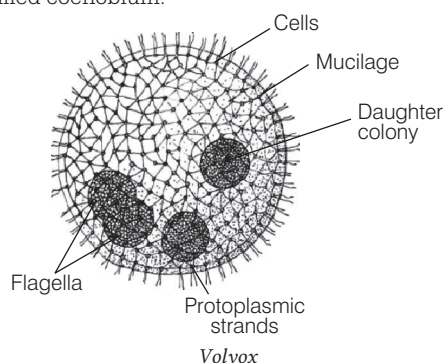


Concept Enhancer During replication the leading strand with polarity 3' → 5' forms its complementary strand continuously, because 3' end of the latter is always open for elongation. On the other hand replication in lagging strand with polarity 5' → 3' is discontinuous, because only a short segment of DNA can be built in 5' → 3' direction at a time. As a result of this, okazaki fragments are formed, which are later joined by DNA ligase.

35. (b) Plants that produce pneumatophores, i.e. negatively geotropic roots and show vivipary, i.e. germination of seeds inside the fruits are halophytes. These plants are adapted to grow in highly saline areas such as mangroves. Pneumatophores help these plants in respiration as they do not get sufficient oxygen from the soil. On the other hand vivipary aids in perennation.
36. (b) The process of separation and purification of expressed protein before marketing is called downstream processing. In this process, a whole range of biochemical separation and purification techniques are used such as drying, chromatography, solvent extraction and distillation. After purification quality control testings are done.
37. (c) Heartwood also called duramen is the central dead wood of trees. It comprises of dead, lignified cells containing organic compounds, e.g. tannins or other substances. These substances make it darker in colour and aromatic. Heartwood is strong durable and resistant to decay. It does not conduct water and minerals because of the presence of dead elements.
- Thinking Process** The conduction of water and minerals is carried out by sapwood, because it contains living cells.
38. (d) Spliceosome is a large molecular complex found in nucleus of eukaryotic cells of plants, animals and fungi, etc. It is assembled from snRNAs and protein complexes that plays an important role in splicing of introns. Spliceosome is absent in cells of bacteria.
39. (a) The ascending limb of loop of Henle is impermeable to water and permeable to K⁺, Cl⁻ and Na⁺ and partially permeable to urea. Due to this, sodium, potassium, calcium, magnesium and chloride are reabsorbed here making the filtrate hypotonic.
40. (a) Biomass refers to the amount of living organic matter. Forest ecosystem have the maximum biomass, because it includes organisms of all trophic levels as compared to pond, lake or grassland ecosystem. In forest ecosystems productivity is also high that contributes to maximum biomass.
41. (b) The final proof that DNA is the genetic material came from the experiments of Alfred Hershey and Martha Chase (1952). Griffith's experiment proved the existence of genetic material while Avery, MacLeod and McCarty worked to determine the biochemical nature of transforming principle.

Concept Enhancer Hershey and Chase during their experiment, grew viruses in two mediums, one containing ³²P and other ³⁵S, when these were allowed to infect bacteria, they observed that viruses containing ³²P DNA were radioactive while those with ³⁵S protein were not radioactive. Hence, DNA not protein coat entered bacterial cells from viruses.

42. (a) An intrauterine device is a small, often T-shaped birth control device that is inserted into a woman's uterus to prevent pregnancy. The copper releasing IUD's primarily work by disrupting sperm motility and damaging sperm. Copper acts as a spermicide. It can also alter the endometrial lining, preventing implantation.
43. (b) *Volvox* is a fresh water green hollow ball-like colonial alga. Its colony has a fixed number of cells (500 to 60000). It is called coenobium.



44. (d) The root is covered at the apex by a thimble-like structure called the root cap. It protects the tender apex of the root as it makes its way through the soil. A few millimetres above the root cap is the region of meristematic activity. The cells of this region are very small, thin-walled and with dense protoplasm. They divide repeatedly. The cell proximal to this region undergo rapid elongation and enlargement and are responsible for the growth of the root in length. This region is called the region of elongation. The cells of the elongation zone gradually differentiate and mature. Hence, this zone, proximal. From this region, some of the epidermal cells form very fine and delicate, thread-like structure called root hairs. These root hairs absorb water and minerals from the soil.

45. (b) Chronic hypersecretion of Growth Hormone (GH) leads to gigantism or acromegally depending on the age of the individual.

If its hypersecretion occurs before the ossification of epiphyseal plates, it causes exaggerated and prolonged growth in long bones. It results in gigantism.

In adults, hypersecretion of GH leads to acromegaly. No increase in height occurs because of the ossified epiphyseal plate.

Thinking Process Epiphyseal plate is responsible for the growth of bone. It closes after adolescence.

46. (c) In sewage treatment, suspended solids are removed during primary treatment. It is also known as physical treatment.

It consists of shredding, churning, screening and sedimentation. Sequential filtration removes floating and large suspended solids.

47. (a) Among the given options, option (a) is mismatched. *Pinus* is a monoecious plant as it bears male and female cones on the same plant.

Concept Enhancer: The male pollen cones of *Pinus* occur in clusters subterminally on lower long branches. The female or seed cones develop in groups of 2 – 6 on upper long branches of the tree.

48. (b) Gel electrophoresis is used for the separation of molecules of similar electric charge on the basis of their size. Hence, smaller the DNA fragment size the farther it moves.

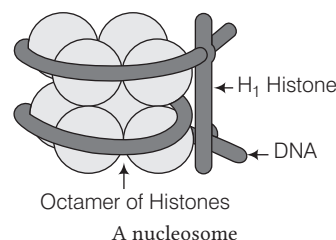
Thinking Process Agarose gel matrix functions as sieve. Smaller DNA fragments easily move and larger fragments take time to move in gel matrix.

49. (c) In *Bougainvillea*, thorns are the modifications of stem. They are stiff, sharp structures, which have lost their growing point and become hard. They reduce transpiration as well as browsing by animals.

50. (c) The association of H_1 histone with nucleosome indicates that DNA remains in its condensed form.

Concept Enhancer In eukaryotes, DNA packaging is carried out with the help of histone proteins. Nucleosome is the unit of compaction. Its core consists of four pairs of histones (H_2A , H_2B , H_3 and H_4). The linker DNA, consisting of H_1 histone connects two adjacent nucleosomes.

They together constitute chromatosome. It gives rise to a chromatin fibre after further condensation.



51. (c) Corpus luteum is a temporary endocrine gland in the human body. It secretes small amount of estradiol and significant amount of progesterone hormone. In the absence of fertilisation, the corpus luteum degenerates.

52. (b) Among the given options, only option (b) is mismatched. *Rhodospirillum* is a free living nitrogen-fixing bacteria. Mycorrhiza is the symbiotic association of a fungus with the root of a higher plant.

53. (b) GnRH is a hypothalamic hormone. It stimulates the anterior lobe of pituitary gland to secrete LH and FSH.

54. (a) A gene whose expression helps to identify transformed cell is known as selectable marker. Usually, the genes encoding resistance to antibiotics, such as tetracycline, ampicillin, etc. are useful selectable markers for e.g. *E. coli*.

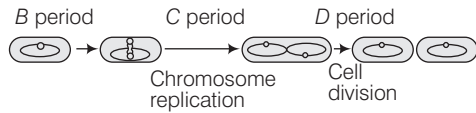
Concept Enhancer Plasmid pBR³²² has two resistance genes; ampicillin resistance (amp^R) and tetracycline resistance (tet^R). These are considered as useful selectable markers.

55. (b) Tropical rain forests show stratification. It can be defined as the grouping of plants into two or more well defined layers depending upon their height. These layers are called strata or storeys. There storeys consist of respectively very tall emergent trees, tall trees, small trees, a shrub layer and a ground layer of ferns, mosses and herbs.

56. (c) In angiosperms, functional megaspore develops into an embryo sac. The functional megaspore is the first cell of female gametophyte.

57. (c) The cell cycle is a series of events that take place in cell leading to its division and duplication of its DNA. Bacteria lack a cell nucleus. Due to their primitive nature they lack a well marked S-phase. In bacteria DNA replication occurs before fission.

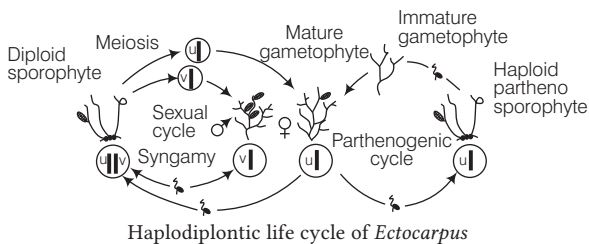
Concept Enhancer: Bacterial cell cycle is divided into the *B*, *C* and *D* periods. The *B* period extends from the end of cell division to the beginning of DNA replication. DNA replication occurs during the *C* period. The *D* period refers to the stage between the end of DNA replication and the division of bacterial cell into two daughter cells.



Bacterial cell cycle

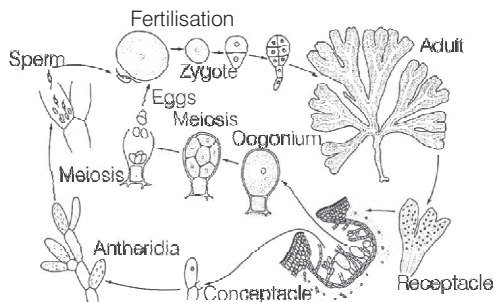
58. (c) Among the given options, option (c) contains all aquatic mammals. Whales are inhabitants of the open sea, while seal (*Phoca*) is a marine carnivore. Dolphins are found in rivers. *Trygon* and sharks are fishes, which belong to chondrichthyes class of superclass-Pisces.
59. (a) Coconut fruit is a drupe. It has a membranous epicarp, fibrous mesocarp and a stony endocarp. Tomato is a berry, litchi is a nut, Capsular fruits are found in cotton.
60. (d) Double fertilisation is the characteristic feature of angiosperms. In this type of fertilisation one male gamete fuses with an egg and forms zygote. The second male gamete fuses with diploid secondary nucleus of central cell to form a triploid primary endosperm nucleus.
61. (d) Glycocalyx is the outer most mucilage layer of the cell envelope. It gives sticky character to the bacterial cell .
62. (c) *Ectocarpus* and *Fucus* respectively show haplodiplontic and diplontic life cycle.

Concept Enhancer: In *Ectocarpus* sporic meiosis occurs and haploid biflagellate meiozoospores are formed. They germinate to produce gametophytic thalli. The gametophytes liberate gametes, which fuse to form diploid zygote, which gives rise to a diploid plant.



Haplodiplontic life cycle of *Ectocarpus*

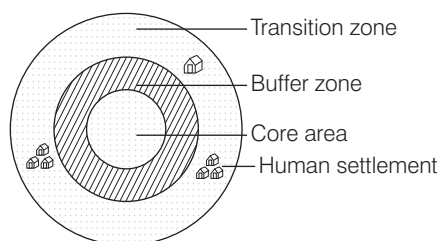
In *Fucus*, there is a single somatic phase. It is diploid and produces haploid gametes. The fuse during fertilisation to give rise to diploid individual.



Diplontic life cycle *Fucus*

63. (a) Wildlife safari parks are used for the *ex situ* conservation of threatened animals and plants. They are taken out from their natural habitat and placed in special settings (wildlife safari park, zoo). Here they are protected and given special cage.
64. (b) Vitamin-A is a group of unsaturated nutritional organic compounds that includes retinol, retinal, retinoic acid and β -carotene. Vitamin-A is needed by the retina of eye in the form of retinal, which combines with protein opsin to form rhodopsin, the light absorbing molecule.
65. (c) Thalassemia is an autosomal recessive disease, which occurs due to mutation in genes. This results in reduced rate of synthesis of the globin chains of haemoglobin. Anaemia is the main feature of this disease. There are two forms of Thalassemia, i.e. α -thalassemia (production of affected α -globin chain, which is governed by genes on 16th chromosome), and β -thalassemia (production of affected β -chain, which is governed by a gene on 11th chromosomes).
- Concept Enhancer** Thalassemia differs from sickle-cell anaemia in that the former is a quantitative problem of synthesising few globin molecules, while the later is a qualitative problem of synthesising an incorrectly functioning globin.
66. (d) Among the given options except lipids all are polymers. These are formed by the polymerisation of monomers. The basic unit of lipid are fatty acids and glycerol molecules that do not form repetitive chains. Instead they form triglycerides from three fatty acids and one glycerol molecules. Protein monomers are amino acids and they bond together in repetitive chains just as, carbohydrate monomers are monosaccharides.
67. (a) Non-disjunction is the failure of chromosomes to disjoin or separate and move away to opposite poles. Non-disjunction of 21st chromosome during oogenesis is the cause of down's syndrome. It occurs due to the presence of an additional copy of chromosome no. 21 (trisomy of 21st chromosome) is humans.
68. (c) In C_4 -plants, the initial fixation of CO_2 occurs in mesophyll cells. The primary acceptor of CO_2 is Phosphoenol Pyruvate (PEP). It combines with CO_2 in the presence of enzyme PEP carboxylase to form the first stable product, i.e. oxaloacetic Acid (OAA). C_3 plants lack PEP_{carboxylase} enzyme. They possess RuBisCO enzyme. This enzyme can work as both carboxylase (fixation of CO_2) and oxygenase (fixation of O_2). RuBisCO has a much greater affinity for CO_2 than for O_2 and the binding is competitive. At higher temperature, its affinity for CO_2 decrease and it works as oxygenase. Therefore, at higher temperature photosynthesis decrease in C_3 -plants, while in C_4 -plants it increases.
69. (c) Auxin delay abscission of leaves and fruits at early stages. Whenever leaf or fruit fall occurs, the organ concerned stops producing auxin. However, it promotes abscission of older, mature leaves and fruits.
70. (a) Biosphere reserve consists of three zones, i.e. core, buffer and transition zone. **Core zone** comprises an undisturbed and legally protected ecosystem, where no human activity is allowed. **Buffer zone** surrounds the core area and **transitions zone** is the outermost area of the biosphere

reserve, where active cooperation between reserve management and the local people occur.



Zonation in terrestrial biosphere

71. (c) The body wall of a common sponge consists of three layer, i.e. **pinacoderm**, **choanoderm** and **mesophyll layer**. Choanoderm is inner cellular layer which consists of highly specialised flagellated cells called choanocytes. The beating of their flagella creates water current.

72. (b) A decrease in blood pressure/volume stimulates the hypothalamus to release ADH (Anti diuretic Hormone) as well as JGA (Juxtglomerular Apparatus) cells to release renin. Renin by **renin angiotensin** mechanism activates the adrenal cortex to release aldosterone. **Atrial Natriuretic Factor** (ANF) is produced by atria of heart during increased blood pressure/volume. It can cause vasodilation and there by, decrease the blood pressure, therefore, option (b) is correct.

73. (b) Dioecious flowering plants contain unisexual flower. In dioecious condition two types of unisexual flowers occur on different plants.

Hence, it does not favour autogamy and geitonogamy because autogamy takes place in bisexual flowers and geitonogamy takes place between different flower of the same plant.

74. (c) Stomata are tiny pore complexes. Each stomata is surrounded by two specialised green epidermal cells called guard cells. The opening of the stoma is facilitated by the orientation of the microfibril in the cell walls of the guard cells. Cellulose microfibrils are oriented radially rather than longitudinally making it easier for the stoma to open.

75. (d) The DNA fragments separated on an agarose gel can be visualised after staining with **ethidium bromide**. It is intercalating agent and a fluorescent agent. The stained DNA fragments are seen bright orange coloured band under UV-light.

Thinking process Intercalation is the insertion of molecules between the planar bases of DNA. This process is used as a method for analysing DNA. Intercalation occurs, when ligands of an appropriate size and chemical nature fit themselves in between base pairs of DNA. These ligands are mostly polycyclic, aromatic and planar and therefore often make good nucleic acid stains. Intensively studied DNA intercalator include **ethidium bromide**, proflavine, etc.

76. (d) Option (d) is incorrect, which can be corrected as: Krebs' cycle starts with the condensation of acetyl group with oxaloacetic acid and water to yield citric acid.

During conversion of succinic acid to fumaric acid FAD^+ is reduced to $FADH_2$. During conversion of pyruvic acid to acetyl Co-A, isocitrate to oxalosuccinic acid and α -ketoglutaric acid to succinyl Co-A NAD^+ is reduced to $NADPH + H^+$

77. (d) Mutualism is an association of two species in, which both species are benefitted.

Mycorrhiza is a mutualistic relationship between fungal hyphae and roots of higher plants. The fungus helps in mineral nutrition absorption for the plants with, which they are associated and obtained in turn, nutrients from plants.

Concept Enhancer

Amensalism is an interaction between different species, in which one species is harmed and other is neither benefitted nor harmed, e.g. *Penicillium*.

Antibiosis It is an antagonistic association between two or more organism, in which one is adversely affected, e.g. antibiosis includes the relationship between antibiotic and bacteria.

Fungitaxis inhibits the growth of fungi.

78. (c) The joint between atlas and axis is a type of synovial joint. A considerable movement is allowed at all synovial joints. They are surrounded by tubular articular capsule. The capsule consists of two layers, i.e. outer fibrous capsule and inner synovial membrane, which secretes synovial fluid lubricates and providing nourishment to articular cartilage.

Concept enhancer

Fibrous joint They do not allow movement because the bones are held firmly by bundles of white fibrous tissue. e.g. joint between the bones of skull.

Cartilaginous joints They allow slight movement; because of the elastic pads of fibrocartilage present between the ends of the bones taking part in the joints, e.g. pubic symphysis of pubis.

Saddle joints This is the type of synovial joints. This type of joint is like ball and socket joint, but not developed fully, e.g. joint between carpal of hand.

79. (d) *Acetobacter aceti* produces acetic acid.

Methanobacterium produces Methane.

Penicillium notatum produces Penicillin.

Saccharomyces cerevisiae produces ethanol.

80. (d) Frog heart is myogenic and autoexcitable. In this conditions, contraction of the heart originates within the muscles itself. When muscles are contracting. They are releasing heat, which keeps the electrochemical reactions in muscles going so the muscles of heart keep contracting after the removal of heart from the body.

81. (a) The myelin sheath is a greatly extended and modified plasma membrane wrapped around the nerve axon in a spiral fashion. It is originated from Schwann cells in the peripheral nervous system and oligodendroglial cells in the central nervous system.

82. (d) Capacitation is a process, where the spermatozoa acquire the capacity to fertilise the eggs. It occurs in female reproductive tract.

Concept Enhancer

Capacitation involves following changes

- Dilution of inhibitory factors of semen.
- Removal of cholesterol vesicles covering sperm head and acrosome.
- Increase in the permeability of acrosome.

83. (c) The edible part of coconut is endosperm. Coconut water is free nuclear endosperm and white kernel is the cellular endosperm.
84. (c) Phellem or cork is a tissue formed on the outer side of cork cambium. It is composed of dead cells. The cell wall become impermeable due to suberisation.
85. (c) Assisted Reproductive Technologies (ARTs) is a general term referred to the method used to achieve pregnancy by artificial means or partial artificial means and is primarily used in infertility treatment. Artificial insemination is a type of ARTs.
- In artificial insemination, the semen is collected either from husband or a healthy donor and then artificially introduced into the vagina or into the uterus of the female. It is commonly used in cases, where male partners are unable to inseminate the female due to very low sperm counts in the ejaculate.
86. (a) There are three main types of RNA, i.e. *rRNA*, *tRNA* and *mRNA*. *rRNA* is the most abundant form of RNA; because it is responsible for coding and protein synthesis in the cell and associated with ribosomes. *mRNA* provides the template for translation. *tRNA* brings amino acids and reads the genetic code.
87. (c) Vascular cambium located between xylem and phloem in the stems and roots of vascular plants. It produces secondary xylem towards the pith and secondary phloem towards the bark.
- Phellogen is made of narrow thin-walled and nearly rectangular cells. phellogen cuts off cells on both sides. The outer cells differentiate into cork or phellem while inner cells differentiate into secondary cortex or phelloderm. The phellogen, phellem and phelloderm are collectively known as periderm.
88. (b) During mitosis following events occurs as their is **condensation of chromosomal material**, which takes place at an early prophase stage. During late prophase **nuclear membrane disintegrates**. Then chromosomes get arranged at equator in the metaphase stage. After that **splitting of centromere** and **segregation of chromosomes** occur in the anaphase stage. In telophase stage chromosomes move to opposite poles of the cell. It is last stage of mitosis.
89. (d) Pancreas consist of exocrine and endocrine part. Exocrine part secrets alkaline pancreatic juice. This juice contains trypsinogen, chymotrypsinogen, procarboxypeptidase, lipase, amylase, elastase.
- Concept Enhancer** Renin and pepsin enzymes are present in gastric juice. Maltase is present in the intestinal juice.
90. (b) Attractant and rewards are required for entomophily (insect pollination). Flowers produce specific odour and nectar to attract the insect for effective pollination. Entomophilous flowers are large with bright colours.