

DEHRADUN PUBLIC SCHOOL
ASSIGNMENT 2023-24
SUBJECT- BIOLOGY (044)
CLASS- XI
Chapter-1: The Living World

Multiple Choice Questions:

- Q1.** Which one of the following is a defining characteristic of living organism?
a. Growth
b. Reproduction
c. Ability to make sound
d. Response to external stimuli
- Q2.** The nomenclature is given by whom according to which humans are called *Homo sapiens* _____
a. Darwin
b. Mendel
c. Aristotle
d. Linnaeus
- Q3.** Choose the incorrect match:
a. Order- a group of related families
b. Genus- a group of related species
c. Class- a group of related orders
d. Division- a group of related phyla
- Q4. Assertion:** Systematics is the branch of biology that deals with classification of organisms.
Reason: Aim of classification is to group the organisms in orderly manner.
a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
c. If Assertion is true but Reason is false.
d. If Assertion is false but Reason is true.
- Q5. Assertion:** Living organisms possess specific individuality with the definite shape and size.
Reason: Both living and non-living entities resemble each other at the lower level of organization.
a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
c. If Assertion is true but Reason is false.
d. If Assertion is false but Reason is true.

Subjective Type Questions:

- Q6.** Name the various units of classification in their hierarchical levels.
- Q7.** Why is simpler common name not used instead of the complex scientific name in biology?
- Q8.** Discuss in detail the binomial nomenclature of living organisms given by Carolus Linnaeus.
- Q9.** Name the four processes that are basic to taxonomy.

Case Based Question:

- Q10.** When we try to define 'living', we conventionally look for distinctive characteristics exhibited by living organisms. Growth, reproduction, ability to sense environment and mount a suitable response are unique features of living organisms. Few more features like metabolism, ability to self replicate, self organize and interact can be added to the list.

Read the above passage carefully and answer the following questions:

- i. Which of the following is a characteristic of living?
a. Growth
b. Production of sound
c. Production of antibodies
d. Autotrophism
- ii. All the chemical energy transformations that occur within a cell is called _____
a. Growth
b. Metabolism
c. Reproduction
d. Response to external stimuli
- iii. Metabolism can be defined as _____
a. Series of chemical reactions to sustain life
b. Series of mechanical breakdown to sustain life
c. Study of chemical reactions
d. Series of binomial nomenclature
- iv. An attribute found in plants but not animals is _____
a. Metabolism
b. Sexual reproduction

c. Autotrophy

d. Asexual reproduction

Chapter-2: Biological Classification

Multiple Choice Questions:

- Q1.** Lichens are composite organisms containing an alga and_____.
- a. Fungus b. Bacterium c. Moss d. Protozoan
- Q2.** Yeast is included in fungi but not in Protista because_____.
- a. It has eukaryotic organisation
b. Chlorophyll is absent
c. It forms pseudomycelium
d. Cell wall has cellulose and food reserve as starch
- Q3.** Methanogens belongs to_____
- a. Eubacteria b. Archaeobacteria
c. Dinoflagellates d. Slime moulds
- Q4. Assertion:** Bacteria are classified among plants.
Reason: They have cell walls.
- a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
c. If Assertion is true but Reason is false.
d. If Assertion is false but Reason is true.
- Q5. Assertion:** Anabaena inhabits root nodules of leguminous plant.
Reason: Leguminous plants are an example of symbiotic nitrogen fixation.
- a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
c. If Assertion is true but Reason is false.
d. If Assertion is false but Reason is true.

Subjective Type Questions:

- Q6.** How is five kingdom classification advantageous over two kingdom classification.
- Q7.** Why are blue-green algae included under Monera and not under Plantae?
- Q8.** Who proposed the five kingdom classification? Name the five kingdoms.
- Q9.** Draw a well labelled diagram of bacteriophage. Mention its characteristics feature.

Case Based Questions:

- Q10.** Virus is a nucleoprotein which is able to utilize the synthetic machinery of a living cell of another organism for its multiplication which does not involve growth and division. Virus is the smallest entity. An inert virus is called virion. It can be crystallized and stored indifferently. Viruses are host specific. They cause diseases in plants as well as in animals.

Read the above passage carefully and answer the following questions:

- i. A virus can be considered living as it_____.
- a. Reproduces inside the host b. Can cause diseases
c. Responds to touch stimuli d. Respire
- ii. Viroids differ from viruses in having_____.
- a. DNA molecules without protein coat. b. RNA molecules with protein coat
c. RNA molecules without protein coat d. DNA molecules with protein coat
- iii. The process in which viruses are involved in sexual reproduction of bacteria is called__.
- a. Transduction b. Transcription
c. Transformation d. Translation
- iv. The virus which has a double stranded RNA as its genetic material_____.
- a. TMV b. Retroviruses
c. Influenza virus d. Bacteriophage

Chapter-3: Plant Kingdom

Multiple Choice Questions:

- Q1.** Sporophyte is dependent on gametophyte in_____.

- a. Bryophytes b. Angiosperms c. Gymnosperms d. Pteridophytes
- Q2.** Fusion of two motile gametes which are dissimilar in size is termed as _____.
- a. Oogamy b. Anisogamy c. Isogamy d. Zoogamy
- Q3.** Isogamous condition with non-flagellated gametes is found in _____.
- a. Chlamydomonas b. Volvox c. Spirogyra d. Fucus
- Q4. Assertion:** Chlorella could be utilised to keep the air pure in space vehicles.
Reason: The space travelers feed on Chlorella soup.
- a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 c. If Assertion is true but Reason is false.
 d. If Assertion is false but Reason is true.
- Q5. Assertion:** Algae and fungi are grouped in thallophyta.
Reason: Algae and fungi show no differentiation in thallus.
- a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 c. If Assertion is true but Reason is false.
 d. If Assertion is false but Reason is true.

Subjective Type Questions:

- Q6.** Mention two common characteristics shared by all gymnosperms.
Q7. Why bryophytes are called amphibians of plant kingdom?
Q8. Why is the plant body (dominant phase) of bryophytes called gametophyte?
Q9. Name one dioecious liverwort. How liverworts differ from mosses?

Case Based Questions:

Q10. Algae are diverse group of aquatic organisms. They are unicellular or multicellular and undifferentiated organisms that occur in variety of forms and sizes. Algae belong to a polyphyletic group, the organisms of this group are not related to each other. Based on the pigment composition and reserved food material, algae had been divided into three major classes. The members of these classes also differ in cell wall compositions, stored food material, body structure, mode of reproduction etc.

Read the above passage carefully and answer the following questions:

- i. A representative organisms of class Rhodophyceae is _____.
- a. Spirogyra b. Fucus c. Polysiphonia d. Chlorella
- ii. Stored food material in class – Phaeophyceae is _____.
- a. Mannitol and laminarin b. Floridean starch
 c. Pyrenoids d. Starch
- iii. Green algae used by space travellers as protein rich food _____.
- a. Chlorella b. Resin
 c. Sargassum d. Spirogyra
- iv. Write one characteristic feature of Rhodophyceae.

Chapter -4: Animal Kingdom

Objective Type Questions:

- Q1.** Which one of the following sets of animals share a four chambered heart?
- a. Amphibian, Reptiles, Birds b. Crocodiles, Birds, Mammals
 c. Crocodiles, Lizards, Turtles d. Lizards, Mammals, Birds
- Q2.** Phylum Porifera is classified based on _____.
- a. Branching b. Spicules
 c. Symmetry d. Reproduction
- Q3.** A chordate character is _____.
- a. Gills b. Spiracles
 c. Post-anal tail d. Chitinous exoskeleton.
- Q4. Assertion:** Skin is moist in birds.
Reason: This reduces effects of friction due to flying in air

- a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- c. If Assertion is true but Reason is false.
- d. If Assertion is false but Reason is true.

Q5. Assertion: The body of hemichordates is divisible into proboscis, collar and trunk.

Reason: Proboscis gland helps in digestion.

- e. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- f. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- g. If Assertion is true but Reason is false.
- h. If Assertion is false but Reason is true.

Subjective Type Questions:

Q6. Give an outline classification of kingdom Animalia.

Q7. What is pseudocoelom? What are the advantages of having a coelom?

Q8. What four characteristics do all chordates have at some time in their life time?

Q9. Draw a labeled diagram of the basic body plan of the chordates.

Case Based Questions:

Q10. Your younger brother is fascinated by the fact that animals are found in the marine ecosystem. You take him to Aquarium House in your city, there he sees many aquatic animals and also watch documentary on their increasing death rates due to human activities.

Read the above passage carefully and answer the following questions:

- i. In Class Pisces we have two classes of fishes. Choose the correct class of above fish _____.
 - a. Osteichthyes
 - b. Chondrichthyes
 - c. Both a & b
 - d. Hemichordata
- ii. Star fish is a member of _____.
 - a. Pisces
 - b. Echinodermata
 - c. Annelida
 - d. Helminthes
- iii. How can we help in maintaining the aquatic animal diversity?
 - a. Throwing less plastic in seas
 - b. By Mixing of plastic in sea
 - c. By Mixing of chemical in sea
 - d. Throwing waste in seas
- iv. The cartilaginous fish includes all except _____.
 - a. Lampreys
 - b. Sharks
 - c. Skates
 - d. Rays

Chapter-5: Morphology of Flowering Plants

Objective Type Questions:

Q1. The largest petal overlaps the lateral ones in _____ aestivation.

- a. Papilionaceous
- b. Valvate
- c. Twisted
- d. Imbricate

Q2. The coloured part of a Bougainvillea flower is the _____.

- a. corolla
- b. calyx
- c. bracts
- d. androecium

Q3. The arrangement of sepals or petals in floral bud is called _____.

- a. Placentation
- b. Aestivation
- c. Bracteate
- d. Phyllotaxy

Q4. Assertion: The cymose type of inflorescence has limited growth.

Reason: In cymose in florescence the main axis terminates in a flower.

- a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- c. If Assertion is true but Reason is false.
- d. If Assertion is false but Reason is true.

Q5. Assertion: Flower of racemose inflorescence are pollinated by insects.

Reason: In Racemose head inflorescence, the florets are arranged in a centripetal fashion.

- a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- c. If Assertion is true but Reason is false.

d. If Assertion is false but Reason is true.

Subjective Type Questions:

Q6. How would you distinguish a dicot leaf from a monocot leaf by external observations only?

Q7. Draw the various types of aestivation possible for a typical pentamerous flower.

Q8. What is a parthenocarpic fruit? Give two examples. Explain how true fruits differ from false fruits?

Q9. Differentiate between apocarpous ovary and syncarpous ovary. How will you differentiate between a superior and inferior ovary?

Case Based Question:

Q10. The flower is the reproductive unit in the angiosperms. It is meant for sexual reproduction. A typical flower has four different kinds of whorls arranged successively on the swollen end of the stalk or pedicel, called thalamus or receptacle. These are calyx, corolla, androecium and gynoecium.

Read the above passage carefully and answer the following questions:

- In symmetry, the flowers may be actinomorphic which means _____.
 - Bilateral symmetry
 - Radial symmetry
 - Asymmetric
 - Diagonal symmetry.
- Tetramerous flower means having _____ floral appendages.
 - 2
 - 4
 - 5
 - 3
- In hypogynous flower the gynoecium occupies the _____.
 - Highest position
 - Centre
 - Inferior
 - lowest position
- Which of the following is not the part of a gynoecium flower?
 - Calyx
 - Corolla
 - Pedicel
 - Filament
- _____ are the non-essential part of a flower.
 - Androecium and Gynoecium
 - Sepals and Carpels
 - Sepals and Petals
 - Sepals and Gynoecium

Chapter-6: Anatomy Of flowering plants

Multiple Choice Questions:

Q1. Meristematic activity is seen maximum in _____.

- Shoot
- Leaf
- Bud
- Root hair

Q2. Companion cells are seen associated with _____.

- Secondary cambium
- Idioblasts
- Tracheids
- Sieve tubes

Q3. Vascular tissue that conducts organic solute _____.

- Xylem
- Trichome
- Phloem
- Mesophyll

Q4. **Assertion** : Open vascular bundles are found in dicot stem & gymnosperm.

Reason : Cambium is absent in between xylem & phloem.

- If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- If Assertion is true but Reason is false.
- If Assertion is false but Reason is true.

Q5. **Assertion**: Each stoma is composed of two bean shaped cells known as guard cells.

Reason: Guard cells regulate the opening and closing of stomata.

- If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- If Assertion is true but Reason is false.
- If Assertion is false but Reason is true.

Subjective Type Questions-

Q6. Name the components of Epidermal tissue system.

Q7. Define the function of cortex.

Q8. Explain the components of Vascular Tissue System.

Q9. Explain the types of vascular bundles on the basis of the position of protoxylem in plants.

Case Based Question:

Q10. A tissue system usually consists of only one tissue or an association of tissues which performs the same function. The Vascular tissue system consists of a variable number of vascular bundles which are arranged in a ring in roots and dicotyledonous stems but are scattered in general ground tissue in monocotyledonous stems. The vascular systems conduct water and raw food materials from roots to leaves and prepared food materials from leaves to storage organs and growing regions.

Read the above passage carefully and answer the following questions:

- i. Vascular bundles are scattered in _____.
 - a. Monocot root
 - b. Dicot stem
 - c. Dicot root
 - d. Monocot stem
- ii. Identify the tissue system from the following _____.
 - a. Parenchyma
 - b. Lacteals
 - c. Epidermal
 - d. Endarch
- iii. Conjoint and open vascular bundles are found in _____.
 - a. Roots
 - b. Maize stem
 - c. Cucurbits root
 - d. Mango stem
- iv. The presence of casparian strips is characteristic feature of _____.
 - a. Monocot root
 - b. Dicot stem
 - c. Dicot root
 - d. Monocot stem

Chapter-7: Structural Organizations In Animal

Multiple Choice Questions:

- Q1.** Vocal sacs are found in _____.
 - a. Male frogs
 - b. Female frogs
 - c. Both 'a' and 'b'
 - d. cockroach
- Q2.** Taking shelter in deep burrows during peak summers is _____.
 - a. Camouflage
 - b. Aestivation
 - c. Hibernation
 - d. Burrowing
- Q3.** The organisms that excrete urea _____.
 - a. Uricotelic
 - b. Ammonotelic
 - c. Ureotelic
 - d. Nephron
- Q4. Assertion:** The indian bull frog *Rana tigrina* is cold blooded or poikilothermic animal.
Reason: Frogs do not have constant body temperature i.e, their body temperature varies with the temperature of the environment.
 - a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 - b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 - c. If Assertion is true but Reason is false.
 - d. If Assertion is false but Reason is true.
- Q5. Assertion:** Specialization of cells is advantageous for the organisms.
Reason: It increases the operational efficiency through division of labour which avoids duplication of work.
 - a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 - b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 - c. If Assertion is true but Reason is false.
 - d. If Assertion is false but Reason is true.

Short Answer Type Questions:

- Q6.** How can you differentiate between a male and a female frog?
- Q7.** Define cutaneous respiration in frogs.
- Q8.** Explain the morphology of frog with the help of diagram.
- Q9.** Frogs have well developed male and female reproductive systems. Explain with the help of diagrams.

Case Based Questions:

Q10. Frogs can live both on land and in freshwater and belong to class Amphibia of phylum Chordata. They do not have constant body temperature i.e., their body temperature varies with the temperature of the environment. They have the ability to change the colour to hide

them from the enemies. The skin is smooth and slippery due to the presence of mucus. Frogs are not seen during peak summer and winter.

Read the above passage carefully and answer the following questions:

- i. Common species of frog found in India_____.
- a. *Rana tigrina* b. *Rana temporaria* c. *Lithobates catesbeianus* d. *Bufo*
- ii. Membranous structure found on either side of eyes of frog is_____.
- a. Labryinth b. Tympanum
c. Pharynx d. Nostrils
- iii. Partially digested food in frog is_____.
- a. Papillae b. Crop
c. Bolus d. Chyme
- iv. Male frogs can be distinguished from female frogs by_.
- a. Vocal sacs b. Copulatory pads c. Both a and b d. weebed feet

Chapter-8: Cell – The Unit of Life

Multiple Choice Questions:

- Q1.** The stacks of closely packed thylakoids is called_____.
- a. Lumen b. Matrix c. Stroma d. Granum
- Q2.** The structure of plasma membrane through fluid mosaic model is proposed by_____.
- a. Gram b. Singer and Nicolson
c. Schwann and Schleiden d. Robert Hooke
- Q3.** Factory of ribosome in a cell is_____.
- a. Endoplasmic reticulum b. Nucleolus c. Mitochondria d. Golgi body
- Q4. Assertion :** Centrosomes and centrioles are related to each other.
Reason : Centrosome usually contains two cylindrical structures called centrioles.
- a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
c. If Assertion is true but Reason is false.
d. If Assertion is false but Reason is true.
- Q5. Assertion:** The arrangement of axonemal microtubules in cilia or flagella is called 9 + 2 array.
Reason: The axoneme usually has nine pairs or doublets of radially arranged peripheral microtubules, and pair of centrally located microtubules.
- a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
c. If Assertion is true but Reason is false.
d. If Assertion is false but Reason is true.

Subjective Type Questions:

- Q6.** Name the different types of plastids that may be found in plant cells.
- Q7.** Give an account of the structure and functions of various components of nucleus.
- Q8.** Describe the structure of chloroplast with the help of diagram.
- Q9.** What structural and functional characteristics do cilia, flagella and centrioles have in common?

Case Based Questions:

- Q10.** Camillo Golgi (1898) first observed densely stained reticular structures near the nucleus. The Golgi apparatus was first described by Camillo Golgi. Golgi apparatus consists of a set of membrane-bounded, fluid-filled vesicles, vacuoles and flattened cisternae. The cisternae consist of many flat, disc-shaped sacs of 0.5µm to 1.0µm diameter.

Read the above passage carefully and answer the following questions:

- i. The Golgi cisternae are concentrically arranged near the_____.
- a. Periphery b. Vacuole
c. Plastids d. Nucleus
- ii. Golgi apparatus is the important site of formation of_____.
- a. Glycoproteins b. Glycolipids
c. Phospholipids d. Both a and b

- iii. In Golgi apparatus, _____ are stacked parallel to each other.
 a. Thylakoids b. Cisternae c. Grana d. Cristae
- iv. The plant cells contain many freely distributed subunits of Golgi apparatus, called
 a. Dictyosomes b. Stroma
 c. Thylakoid d. Granum

Chapter-9: Biomolecules

Multiple Choice Questions:

- Q1.** Which one of the following pairs of nitrogenous bases of nucleic acids is wrongly matched with the category mentioned against it?
 a. Adenine, Thymine – Purines b. Uracil, Cytosine – Pyrimidines
 c. Guanine, Adenine – Purines d. Thymine, Uracil – Pyrimidines
- Q2.** Proteins perform many physiological functions. For example, some function as enzymes. Which one of the following represents an additional function which some proteins discharge?
 a. Antibiotics b. Pigments making colours of flowers
 c. Hormones d. Pigments conferring colour to skin
- Q3.** An enzyme/protein is formed by chemically bonding together _____.
 a. CO₂ b. Lipases c. Carbohydrates d. Amino acids
- Q4. Assertion :** Glycosidic bonds are formed by dehydration.
Reason : In polysaccharides, individual monosaccharide is linked by glycosidic bond.
 a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 c. If Assertion is true but Reason is false.
 d. If Assertion is false but Reason is true.
- Q5. Assertion :** Secondary metabolites are produced in small quantities and their extraction from the plant is difficult and expensive.
Reason: Secondary metabolites can be commercially produced by using tissue culture technique.
 a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 c. If Assertion is true but Reason is false.
 d. If Assertion is false but Reason is true.

Subjective Type Questions:

- Q6.** What is meant by tertiary structure of proteins?
Q7. What are polysaccharides? Give two examples.
Q8. Describe the important properties of enzymes.
Q9. Define the following terms:

- a. Glycosidic bond b. Competitive Inhibitor
 c. Apoenzymes d. Activation energy

Case Based Questions:

- Q10.** When a protein in its native form, is subjected to physical changes like change in temperature or chemical changes like change in pH, the hydrogen bonds are disturbed. Due to this, globules unfold and helix get uncoiled and protein loses its biological activity. This is called denaturation of protein. The denaturation causes change in secondary and tertiary structures but primary structures remains intact. Examples of denaturation of protein are coagulation of egg white on boiling, curdling of milk, formation of cheese when an acid is added to milk.

Read the above passage carefully and answer the following questions:

- i. Mark the wrong statement about denaturation of proteins.
 a. The primary structure of the protein does not change.
 b. Globular proteins are converted into fibrous proteins.
 c. Fibrous proteins are converted into globular proteins.
 d. The biological activity of the protein is destroyed.

- ii. Which statement(s) of protein remain(s) intact during denaturation process?
 - a. Both secondary and tertiary structures
 - b. Primary structure only
 - c. Secondary structure only
 - d. Tertiary structure
- iii. Which of the following will not denature a protein?
 - a. Temperature above 100°C
 - b. Strong acids or strong bases
 - c. Alcohol
 - d. Distilled water
- iv. α -helix and β -pleated structures of proteins are classified as _____.
 - a. Primary structure
 - b. Secondary structure
 - c. Tertiary structure
 - d. Quaternary structure

Chapter- 10: Cell Cycle and Cell Division

Multiple Choice Questions:

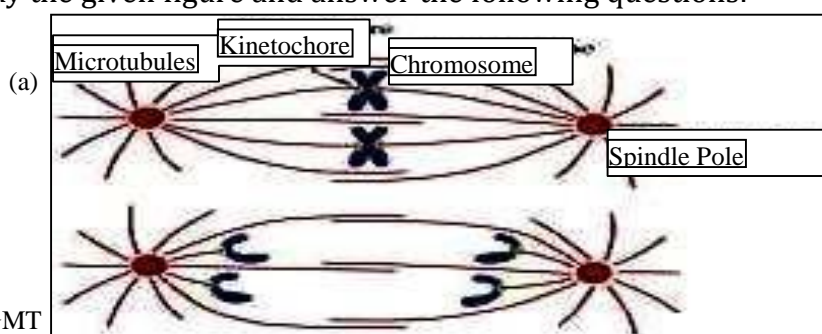
- Q1.** In the somatic cell cycle-
- a. DNA content in G1 phase is double the amount of DNA content in the original cell
 - b. DNA replication takes place in S phase
 - c. A short interphase is followed by a long mitotic phase
 - d. G2 phase follows mitotic phase.
- Q2.** At which stage of the cell cycle, histone proteins are synthesised in a eukaryotic cell?
- a. During G₀ phase
 - b. During S-phase
 - c. During entire prophase
 - d. During telophase
- Q3.** Mitosis is the process by which eukaryotic cells _____.
- a. grow
 - b. expose genes for protein synthesis
 - c. become specialised in structure and function
 - d. multiply
- Q4. Assertion :** Sexual reproduction always needs meiosis.
Reason : Gametes involved in sexual reproduction are always haploid.
- a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 - b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 - c. If Assertion is true but Reason is false.
 - d. If Assertion is false but Reason is true.
- Q5. Assertion :** Mitosis occurs in both unicellular and multicellular organisms.
Reason : Mitosis is a method of sexual reproduction in unicellular organisms.
- a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 - b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 - c. If Assertion is true but Reason is false.
 - d. If Assertion is false but Reason is true.

Subjective Type Questions-

- Q6.** Why do the chromosomes become short and thick in prophase?
- Q7.** Give a specific scientific term for each of the following:
- i. The period between meiosis I and meiosis II.
 - ii. Point at which two sister chromatids are held together.
 - iii. Phase in the cell cycle when protein and RNA are synthesised.
 - iv. Mitotic poison that does not allow the formation of spindle.
- Q8.** Distinguish between anaphase of mitosis from anaphase-I of meiosis.
- Q9.** Analyse the events during every stage of cell cycle and briefly explain in relation with chromosome number and DNA content.

Case based questions:

- Q10.** Study the given figure and answer the following questions:



(b)

- i. Identify the stages of labelled figures a and b.
 - a. Metaphase and Metaphase I
 - b. Metaphase and Anaphase
 - c. Metaphase II and Anaphase I
 - d. Anaphase I and Anaphase II
- ii. Which of the following occur in anaphase but not in anaphase-I?
 - a. Condensation of chromosomes
 - b. Poleward movement of chromosomes
 - c. Contraction of spindle fibres
 - d. Splitting of centromere.
- iii. Meiotic stage in which the homologous chromosomes separate while the sister chromatids remain associated at their centromeres.
 - a. Metaphase-I
 - b. Diplotene
 - c. Diakinesis
 - d. Anaphase
- iv. Name the stage that begins with the simultaneous splitting of centromere of each chromosome.
 - a. Prophase
 - b. Metaphase
 - c. Anaphase
 - d. Telophase

Chapter13: Photosynthesis in Higher Plants

Multiple Choice Questions:

- Q1.** In the Hatch and slack pathway the primary carbon dioxide acceptor is_____.
- a. Oxaloacetic acid
 - b. Phosphoglyceric acid
 - c. PEP
 - d. Rubisco
- Q2.** Which light range is most effective in photosynthesis?
- a. Blue
 - b. Green
 - c. Red
 - d. Violet
- Q3.** Energy required for ATP synthesis in PS II comes from-
- a. proton gradient
 - b. electron gradient
 - c. reduction of glucose
 - d. oxidation of glucose
- Q4. Assertion:** Photosynthetically C4 plants are less efficient than C3 plants.
Reason: The operation of C4 pathway requires involvement of only bundle sheath cells.
- a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 - b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 - c. If Assertion is true but Reason is false.
 - d. If Assertion is false but Reason is true.
- Q5. Assertion:** Submerged plants get carbon dioxide in the form of carbonates and bicarbonates.
Reason: Stomata are not present in submerged plants.
- a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 - b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 - c. If Assertion is true but Reason is false.
 - d. If Assertion is false but Reason is true.

Subjective type questions:

- Q6.** Give a comparison between the leaf in C3 and C4 plants.
- Q7.** Describe the structure of the chloroplasts.
- Q8.** Chlorophyll a is the primary pigment for light reaction. Write down the accessory pigments. Explain their role in the photosynthesis.
- Q9.** Explain:
- i. Chloroplasts are generally located at the outer margins of mesophyll cells.
 - ii. Photorespiration is considered as wasteful process.

Case-Based Questions:

- Q10.** Succulents like *Bryophyllum*, *Kalanchoe*, *Sedum*, etc., are xerophytes and grow under semi arid conditions. In such plants, stomata are closed during the day to conserve the water that would be lost under dry conditions. Stomata open at night and the atmospheric carbon dioxide is fixed into organic acids like malic acid, oxaloacetic acid, etc. This process of conversion of carbon dioxide into organic acid is called acidification. This carbon dioxide fixed during the night is released during the day by the process of deacidification and is used for photosynthesis. Land plants on the other hand, take carbon dioxide from the atmosphere in the gaseous form which is utilized for photosynthesis. This carbon dioxide enters through

stomata. However, when these land plants are submerged in water, plants close their stomata and hence, entry of carbon dioxide is also stopped. In such plants therefore, photosynthesis cannot occur in submerged land plants.

Read the above passage carefully and answer the following questions:

- i. Pick out the plant that does not grow in arid condition-
 - a. Cactus
 - b. *Bryophyllum*
 - c. Sugarcane
 - d. Calyinum
- ii. Succulents have their stomata closed during day. This helps in_____.
 - i. Preventing transportation
 - ii. Fixing atmospheric carbon dioxide
 - iii. Conserving water
 - iv. Light reaction
- iii. The carbon dioxide that is fixed at night is released during the day by the process of_____.
 - a. Acidification
 - b. Deacidification
 - c. Carboxylation
 - d. Decarboxylation
- iv. Can photosynthesis occur in land plants which are totally submerged in water?
 - a. Yes
 - b. Maybe
 - c. No
 - d. Sometimes
- v. Oxygen is not produced during photosynthesis by_____.
 - a. *Cycas*
 - b. *Nostoc*
 - c. *Chara*
 - d. Green sulfur bacteria

Chapter-14: Respiration in Plants

Multiple Choice Questions:

- Q1.** The ultimate electron acceptor of respiration in aerobic organism is_____.
- a. Cytochrome
 - b. Oxygen
 - c. Hydrogen
 - d. Glucose
- Q2.** Electron transport systems located in mitochondrial_____.
- a. outer membrane
 - b. inner membrane space
 - c. inner membrane
 - d. matrix
- Q3.** Which of the following exhibits the highest rate of respiration?
- a. Growing shoot apex
 - b. Germinating seed
 - c. Root tip
 - d. Leaf bud
- Q4. Assertion:** *Kreb's cycle is amphibolic.*
Reason: It involves both anabolism and catabolism.
- a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 - b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 - c. If Assertion is true but Reason is false.
 - d. If Assertion is false but Reason is true.
- Q5. Assertion:** Anaerobic respiration causes fatigue in humans.
Reason: With the rest, the fatigue disappear.
- a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 - b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 - c. If Assertion is true but Reason is false.
 - d. If Assertion is false but Reason is true.

Short answer type questions:

- Q6.** Differentiate between aerobic respiration and fermentation.
- Q7.** Draw a well labelled diagram of TCA Cycle showing all the steps.
- Q8.** Explain the major steps of the *Kreb's cycle*. Mention the site of *Kreb's cycle* where it occur in the cell?
- Q9.** Summarize the chemiosmotic theory of ATP synthesis with the help of well labeled diagram.

Case-Based Questions:

- Q10.** Fermentation is a form of anaerobic respiration that is carried out by some microorganisms. It is different from anaerobic respiration because it may occur outside the living cells also. Earlier, fermentation was considered as a strictly chemical process. The fact that it is directly associated with living organisms, was established by Pasteur in 1870. Pasteur also observed that rate of fermentation is higher under anaerobic conditions than aerobic conditions.

The inhibition of anaerobic breakdown of sugar into carbon dioxide and ethyl alcohol, due to presence of oxygen is called Pasteur effect. This effect was further confirmed by Meyerhof and Warburg.

Read the above passage carefully and answer the following questions:

- i. Choose the correct sentence.
 - a. Fermentation is anaerobic respiration.
 - b. Fermentation is the aerobic respiration.
 - c. Fermentation is a form of anaerobic respiration.
 - d. Fermentation is a form of aerobic respiration.
- ii. Name the scientist who established that fermentation was associated with living organisms.

a. Meyerhof.	b. Pasteur
c. Fleming.	d. Warburg
- iii. Pasteur effect is _____.
 - a. Inhibition of anaerobic breakdown of sugar due to presence of oxygen.
 - b. Increasing rate of anaerobic breakdown of sugar due to presence of oxygen.
 - c. Decrease in rate of anaerobic breakdown due to presence of oxygen.
 - d. Increase in rate of anaerobic breakdown due to presence of oxygen.
- iv. The correct equation for fermentation is _____.
 - a. $2C_2H_5OH + 2CO_2 \rightarrow C_6H_{12}O_6$
 - b. $2C_2H_2O_4 + O_2 \rightarrow 4CO_2 + 2H_2O$
 - c. $C_6H_{12}O_6 \rightarrow 2C_2H_5OH + 2CO_2$
 - d. $C_6H_{12}O_6 + 6CO_2 \rightarrow 6CO_2 + 6H_2O$
- v. Where fermentation process takes place in the cell?

a. Mitochondria	b. Ribosomes
c. Cytoplasm	d. Vacuole

Chapter-15: Plant Growth And Development

Multiple Choice Questions:

- Q1.** Elasticity in plant growth means that _____.
 a. Plants roots are extensible
 b. Plant growth is dependent on the environment
 c. Stems can extend
 d. Roots can extend
- Q2.** The plant hormone used to destroy weeds in a field is _____.
 a. 2, 4D b. IBA c. IAA d. NAA
- Q3.** Who coined the term 'kinetin'?
 a. Skoog and Miller b. Darwin
 c. Went d. Kurosawa
- Q4. Assertion:** Plant have hormones called phytohormones.
Reason: They increase the rate of reaction and thus accelerate growth and other related changes.
 a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 c. If Assertion is true but Reason is false.
 d. If Assertion is false but Reason is true.
- Q5. Assertion:** All non- meristematic cells face senescence.
Reason: Meristems are potentially immortal.
 a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 c. If Assertion is true but Reason is false.
 d. If Assertion is false but Reason is true.

Subjective type questions:

- Q6.** Why is abscisic acid also known as stress hormone?

- Q7.** Define plant growth hormones. How do they differ from growth regulators?
- Q8.** Explain different phases of growth with the help of a diagram.
- Q9.** Explain:
- Exogenous application of auxin fails to enhance growth in intact plant.
 - Vitamins are not plant growth hormones.
 - Gibberellins do not enhance the growth of isolated plant parts.

Case-Based Questions:

Q10. A friend presented Geeta with a bouquet of lovely yellow roses. Geeta put them in a vase with water but was worried that they would die after a few days. She wanted to prolong the vase life of these beautiful flowers. Her teacher advised her to add a little quantity of cytokinin to the water. Geeta added the chemical available and then read about cytokinin. She found out that it was discovered by Miller and Skoog and has many functions like promotion of cell division cell, cell enlargement, morphogenesis, counter action of apical dominance, delay of senescence, accumulation and translocation of solutes.

Read the above passage carefully and answer the following questions:

- Cytokinin is
 - fertilizer
 - plant growth hormone
 - growth regulator
 - enzyme promoting growth
- How did addition of cytokinin help Geeta?
 - it kept flower fresh for a longer time.
 - it did not let the scent of roses diminish.
 - it prevented rotting of stems.
 - it prevent rotting of leaves.
- Which of the following is not true?
 - Cytokinin helps in cell enlargement.
 - Cytokinin helps in delaying senescence.
 - It helps in growth of apical buds.
 - It promotes cell division.
- Cytokinin was first discovered in _____.
 - Wheat
 - Maize
 - Corn
 - Rice
- Cytokines are _____.
 - Adenine derivatives
 - Guanine derivatives
 - Cytidine derivatives
 - Thymine derivative

Chapter-17: Breathing and Exchange Of Gases

Objective type Questions:

- Q1.** Which of the following is an occupational respiratory disorder?
- Anthrax
 - Silicosis
 - Botulism
 - Emphysema
- Q2.** Lungs are made up of air filled sacs, the alveoli. They do not collapse even after forceful expiration because of _____.
- expiration reserve volume
 - inspiratory reserve volume
 - residual volume
 - tidal volume
- Q3.** The partial pressure of oxygen in the alveoli of the lungs is _____.
- equal to that in the blood
 - more than that in the blood
 - less than that in the blood
 - less than that of carbon dioxide
- Q4. Assertion:** Mammals have developed a complex respiratory system.
Reason: Mammalian skin is impermeable to gases.
- If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 - If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 - If Assertion is true but Reason is false.
 - If Assertion is false but Reason is true.

- Q5. Assertion:** Extra oxygen consumption in human body is called oxygen debt.
Reason: The extra oxygen is required by the body to oxidise the accumulated lactic acid produced during strenuous exercise.
- If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 - If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 - If Assertion is true but Reason is false.
 - If Assertion is false but Reason is true.

Subjective type questions:

- Q6.** Write the various modes of transportation of carbon dioxide in the blood.
Q7. Differentiate between vital lung capacity and total lung capacity.
Q8. Explain the transport of O_2 and CO_2 between alveoli and tissue with diagram.
Q9. Explain the location, structure and functions of lungs.

Case-Based Questions:

- Q10.** Haemoglobin is a red colored iron containing pigment present in the RBCs. Oxygen can bind with haemoglobin in a reversible manner to form oxyhaemoglobin. Each haemoglobin molecule can carry a maximum of 4 molecules of oxygen. Binding of oxygen with haemoglobin is primarily related to partial pressure of oxygen. Partial pressure of carbon dioxide, hydrogen ion concentration and temperature are the other factors which can interfere with this binding. A sigmoid curve is obtained when percentage saturation of haemoglobin with oxygen is plotted against pO_2 . This curve is called the oxygen dissociation curve and is highly useful in studying the effect of factors like pCO_2 , hydrogen ion concentration, etc. on binding of oxygen with hemoglobin.

Read the above passage carefully and answer the following questions:

- ___ of O_2 and CO_2 is carried in a dissolved state through the blood plasma.
 - 3% and 8%
 - 70% and 20%
 - 3% and 9%
 - 3% and 7%
- Oxyhaemoglobin dissociates into oxygen and deoxyhaemoglobin at _____.
 - low oxygen pressure in tissue.
 - high oxygen pressure in tissue.
 - equal oxygen pressure inside and outside tissue.
 - all times irrespective of oxygen pressure.
- The oxygen hemoglobin dissociation curve will show right shift in case of ___.
 - high pCO_2 .
 - high PO_2 .
 - low pCO_2 .
 - less H^+ concentration.
- The urge to inhale in human being is _____.
 - rising pCO_2 .
 - rising pO_2 .
 - falling pCO_2 .
 - falling pO_2 .

Chapter-18: Body Fluids And Circulation

Multiple choice Questions:-

- Q1.** Bundle of His is a network of _____.
 - no fibers distributed in ventricles.
 - no fibers found throughout the heart.
 - muscle fibers found only in the ventricle wall.
 - muscle fibers distributed throughout the heart walls.
- Q2.** A human RBC is placed in 1.5% salt solution. It will
 - swell up.
 - shrink.
 - humane unaffected.
 - burst.
- Q3.** Mark among the following a cell which does not exhibit phagocytosis activity.
 - Monocytes
 - Neutrophil
 - Basophil
 - Macrophage
- Q4. Assertion:** The cardiac output of an ordinary man and of an athlete is the same.

Reason: It is impossible to alter the stroke volume as well as heart rate.

- If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- If Assertion is true but Reason is false.
- If Assertion is false but Reason is true.

Q5. Assertion: Blood group 'O' have anti- A and anti- B antibodies.

Reason: It does not have any antigen.

- If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- If Assertion is true but Reason is false.
- If Assertion is false but Reason is true.

Subjective type questions:

Q6. Differentiate between P-wave and T-wave.

Q7. Draw a standard ECG and explain the different segments in it.

Q8. Define the Rh- incompatibility in humans.

Q9. Explain the ABO and Rh grouping of human blood.

Case-Based Questions:

Q10. Blood of human beings differ in certain aspects. Various types of grouping of blood has been done. The ABO and Rh- are widely used all over the world. ABO grouping is based on the presence or absence of two surface antigens on the RBCs namely A and B. Similarly the plasma of different individuals contain two natural antibodies. The distribution of antigens and antibodies in the four groups of blood A, B, AB and O are given in the table.

Read the above passage carefully and answer the following questions:

- _____ indicates presence of both antigen A and antigen B on RBCs.
 - Blood Group A.
 - Blood Group AB.
 - Blood Group B.
 - Blood Group O.
- Person with 'AB' blood group are called as "universal recipient". This is due to_____.
 - Presence of antibody, anti-A and anti-B, on RBCs.
 - Absence of antibody, anti-A and anti-B, in plasma.
 - Absence of antigens A and B on the surface of RBCs.
 - Absence of antigens A and B in plasma.
- In a certain road accident patient with an unknown blood group needs immediate blood transfusion. His one doctor friend at once offers his blood. What was the blood group of the donor?
 - Blood Group AB.
 - Blood Group O.
 - Blood Group A.
 - Blood Group B.
- Which one of the following blood cells is involved in antibody production?
 - B-Lymphocytes.
 - T- Lymphocytes.
 - RBC
 - Neutrophils.
- Which blood group is "Universal Donor"?
 - Blood Group A.
 - Blood Group B.
 - Blood Group O.
 - Blood Group AB.

Chapter-19: Excretory Products and Their Elimination

Objective type Questions:

Q1. In mammals, which blood vessel would normally carry largest amount of urea?

- Renal Vein
- Dorsal Aorta
- Hepatic Vein
- Hepatic Portal Vein

Q2. In which part of the uriniferous tubule, absorption of glucose occurs?

- Collecting tube
- Henle's loop
- Distal convoluted tubule
- Proximal convoluted tubule

Q3. Which of the following are uricotelic animals?

- Rohu and frog
- Camel and frog

c. Lizard and crow

d. Earthworm and eagle

Q4. Assertion: In vertebrates, the liver is also referred to as accessory excretory organ.

Reason: Liver helps kidney in the secretion of urine.

- If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- If Assertion is true but Reason is false.
- If Assertion is false but Reason is true.

Q5. Assertion: Malpighian tubules are excretory organs in most of the insects.

Reason: These help in a excretion of urea and creatinine.

- If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- If Assertion is true but Reason is false.
- If Assertion is false but Reason is true.

Subjective type questions:

Q6. How does ANF cause a decrease in the blood pressure?

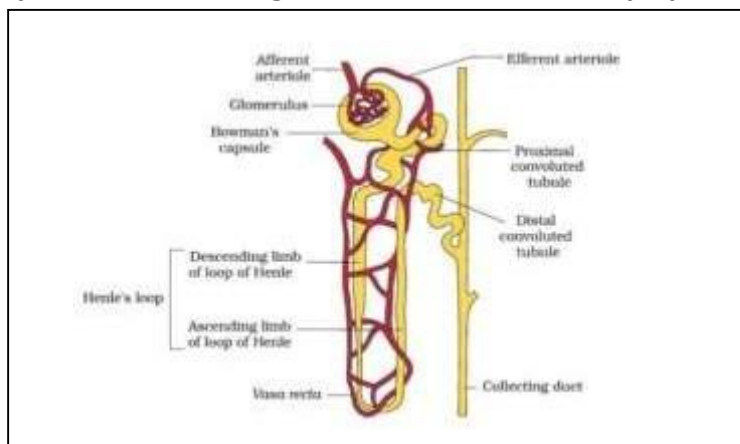
Q7. Write the significance of the sebaceous gland.

Q8. Describe the structure of a human kidney with the help of a well labelled diagram.

Q9. Describe the working and principle of dialysis machine. Under what conditions, a patient is put on this machine?

Case-Based Question:

Q10. In humans, the excretory system consists of a pair of kidneys one pair of ureters, a urinary bladder and a urethra. Kidneys are reddish brown, bean shaped structures situated between the levels of last thoracic and the third lumbar vertebra close to the dorsal inner wall of abdominal cavity. Each kidney has nearly 1million complex tubular structure called nephrons, which are the fundamental units. Each nephron has two parts- the glomerulus and the renal tubule. Glomerulus is a tuft of capillaries formed by the afferent arteriole- a fine branch of renal artery. Blood from the glomerulus is carried away by an efferent arteriole.



Read the above passage carefully and answer the following questions:

- Inner side to the hilum is a broad funnel shaped cavity space is present, it is known as _____.
 - Renal pelvis.
 - Renal tubule.
 - Renal pelvis.
 - DCT.
- Blood from tuft of capillaries is carried away by.
 - Afferent arteriole.
 - Branch of renal artery.
 - Efferent arteriole.
 - PCT
- When kidney of a person is damaged he or she invariably suffers from _____.
 - RBC pass through the glomerulus.
 - sufficient erythropoietin is not produced.
 - haemoglobin is not synthesised sufficiently.
 - iron and vitamin B12 are not able to bind to hemoglobin.
- Which of the following is true for excretion in humans?
 - Glucose and amino acids are reabsorbed in PCT by simple diffusion.

- b. DCT is impermeable to water.
- c. On an average, 25 to 30 gram of urea is excreted out per day.
- d. Maximum reabsorption occurs in the loop of Henle.

Chapter-20: Locomotion and Movement

Objective type Questions:

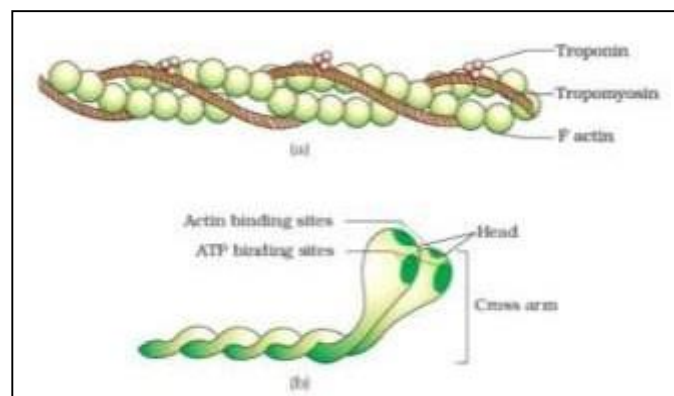
- Q1.** Which of the following hormones can play a significant role in osteoporosis?
 a. Estrogen and parathyroid hormone
 b. Aldosterone and prolactin
 c. Parathyroid hormone and prolactin
 d. Progesterone and aldosterone
- Q2.** The pivot joint between atlas and axis is a type of _____.
 a. Fibrous joint
 b. synovial joint
 c. saddle joint
 d. cartilaginous joint
- Q3.** ATPase of the muscle is located in _____.
 a. Actinin.
 b. Troponin.
 c. Myosin.
 d. Actin.
- Q4. Assertion:** Calcium is required for skeletal muscle contraction.
Reason: Calcium influx releases acetylcholine at neuro muscular junction.
 a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 c. If Assertion is true but Reason is false.
 d. If Assertion is false but Reason is true.
- Q5. Assertion:** Inflammation of a skeletal joint may in immobilise the movements of the joint.
Reason: Uric acid crystals in the joint cavity and ossification of articular cartilage lead to this.
 a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 c. If Assertion is true but Reason is false.
 d. If Assertion is false but Reason is true.

Subjective type questions:

- Q6.** Enumerate four functions of skeletal system.
- Q7.** Write the significance of occipital bones of skull.
- Q8.** Describe isotonic and isometric contractions.
- Q9.** Explain the difference between hinge joint and, ball and socket joint with the help of a diagram.

Case-Based Questions:

- Q10.** Myosin filament is a polymerized protein. Many monomeric proteins called meromyosin constitute one thick filament. Myosin molecule consist of two heavy chains coiled around each other forming double helix. One end of each of these chains is projected outwardly. It is known as cross bridge. This end is folded into a globular protein mass called myosin head. Twolight chains are associated with each other head. Myosin head has a special ATPase activity. It can split ATP to produce energy. Myosin contributes 55% of muscle protein. Actin filament also are complex type of contractile protein. It consists of three different components i.e. F actin, Troponin and Tropomyosin.



Read the above passage carefully and answer the following questions:

- i. How many chains are associated with the myosin head?
 - a. 2 heavy meromyosin.
 - b. 2 light meromyosin.
 - c. 4 light meromyosin.
 - d. 4 heavy meromyosin.
- ii. Which of the following protein is called as backbone of actin filament?
 - a. F actin.
 - b. G actin.
 - c. T actin.
 - d. Tropomyosin.
- iii. In humans during muscle contraction, the_____.
 - a. actin filaments shorten.
 - b. A, I and H bands shorten.
 - c. A band remains the same.
 - d. sarcomere does not shorten.
- iv. The contractile protein of skeletal muscle involving ATPase activity is____.
 - a. Troponin.
 - b. Tropomyosin.
 - c. Myosin.
 - d. Alpha Actin.
- v. Calcium is important in skeletal muscle contraction because it_____.
 - a. binds to troponin to remove the masking of active sites on actin for myosin.
 - b. activates the myosin ATPase by binding to it.
 - c. detaches is the myosin head from the actin filament.
 - d. prevents the formation of bonds between the myosin cross bridges and the actinfilament.

Chapter-21: Neural Control And Coordination

Objective type Questions:

- Q1.** Chemicals which are released at the synaptic junctions are called_____.
 - a. Hormones.
 - b. Neurotransmitters.
 - c. Cerebrospinal fluid.
 - d. Lymph.
- Q2.** Node of Ranvier occurs where_____.
 - a. nerve is covered myelin.
 - b. neurolemma is discontinuous.
 - c. neurolemma and myelin sheath are discontinuous.
 - d. myelin sheath is discontinuous.
- Q3.** Stimulation of a muscle fibre by a motor neuron occurs at_____.
 - a. the neuromuscular junction.
 - b. the transverse tubules.
 - c. the myofibril.
 - d. the sarcoplasmic reticulum.
- Q4. Assertion:** All motor neurons are efferent neurons.
Reason: Motor neurons conduct nerve impulses from the spinal cord to the brain.
 - a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 - b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 - c. If Assertion is true but Reason is false.
 - d. If Assertion is false but Reason is true.
- Q5. Assertion:** The imbalance in concentration of Na^+ , K^+ and proteins generates resting potential.
Reason: To maintain the unequal distribution of Na^+ and K^+ , the neuron use electrical energy.
 - a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 - b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 - c. If Assertion is true but Reason is false.
 - d. If Assertion is false but Reason is true.

Subjective type questions:

- Q6.** Write the importance of the myelin sheath present around the axon.
- Q7.** How are cerebrum and cerebellum different in terms of functions?
- Q8.** Draw a labelled diagram of human brain.
- Q9.** Describe the phenomena of release and transport of a neurotransmitter.

Case-Based Questions:

Q10. The brain is the central information processing organ of our body, and act as the command and control system. It is divided into three major parts: forebrain, midbrain and hindbrain. The forebrain consists of cerebrum, thalamus and hypothalamus. Cerebrum forms the major part of the human brain. A deep cleft divides the cerebrum longitudinally into two halves, which are termed as left and right cerebral hemispheres. The hemispheres are connected by a tract of nerve fibers called corpus callosum. The layer of cells which covered the cerebral hemisphere is called cerebral cortex and is thrown into prominent folds. The cerebral cortex is referred to as the gray matter due to its grayish appearance. The neuron cell bodies are concentrated here giving the color. The cerebral cortex contains motor areas, sensory areas and large regions that are neither clearly sensory nor motor in function.

Read the above passage carefully and answer the following questions:

- i. Left cerebral hemispheres and right cerebral hemispheres are connected by____.
 - a. Cerebral cortex.
 - b. Neurosecretory cells.
 - c. Tract of nerve fibers.
 - d. Limbic lobe.
- ii. Myelin sheath is also known as_____
 - a. Grey matter.
 - b. White matter.
 - c. Corpus callosum.
 - d. Dura matter.
- iii. The capability of an individual to maintain a stable, relatively constant internal environment is called_____
 - a. homeostasis.
 - b. hemostasis.
 - c. chemical coordination.
 - d. neural coordination.
- iv. The human hind brain comprises three parts, one of which is_____
 - a. Cerebellum.
 - b. Hypothalamus.
 - c. Spinal.
 - d. Corpus callosum.

Chapter-22: Chemical Coordination And Integration

Multiple Choice Questions:

- Q1.** Cortisol is secreted from_____
 - a. Pancreas.
 - b. Thyroid.
 - c. Adrenal.
 - d. Thymus.
- Q2.** This hormone is not involved in sugar metabolism_____
 - a. Glucagon
 - b. Insulin
 - c. Cortisol
 - d. Aldosterone
- Q3.** Artificial light, extended work- time and reduce- sleep time disrupt activity of_____
 - a. Thymus gland.
 - b. Adrenal gland.
 - c. Pineal gland.
 - d. Posterior pituitary gland.
- Q4. Assertion:** After ovariectomy, menstrual cycle in women may be stopped.
Reason: Ovarian hormones induce menstrual cycle.
 - a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 - b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 - c. If Assertion is true but Reason is false.
 - d. If Assertion is false but Reason is true.
- Q5. Assertion:** Type-I diabetes is caused by destruction of beta cells of islets of Langerhans.
Reason: Insulin can be taken as pills.
 - a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 - b. If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 - c. If Assertion is true but Reason is false.
 - d. If Assertion is false but Reason is true.

Subjective type questions:

- Q6.** Write the site of secretion of thyroxine and calcitonin.
- Q7.** Define hyperthyroidism and explain why one of its symptoms is weight loss.
- Q8.** Explain why hypothalamus is a super master endocrine gland?

Q9. The endocrine glands and hormone producing diffused cells/ tissues located in different parts of our body constitute the endocrine system. Many glands and hormones are a part of this system.

Case-Based Questions:

Q10. Seema was losing weight rapidly. She was often suffering from diarrhoea, muscle weakness, nervousness and fatigue. On advice of a doctor she got her blood tested for cell counts and haemoglobin. All the parameters were within normal range. her urine test was also normal. She was worried and consulted an endocrinologist. He suggested some more blood tests and diagnosed a hormonal disorder.

Read the passage carefully and answer the following questions:

i. Which of the endocrine glands of Seema is not functioning properly?

- a. Adrenal.
- b. Pancreas.
- c. Thymus.
- d. Thyroid.

ii. According to you, Seema was suffering from_____.

- a. Diabetes mellitus.
- b. Simple Goitre.
- c. Hyperthyroidism.
- d. Addison's disease.

iii. Which of these diseases is not related to the glands in question?

- a. Cretinism.
- b. Myxoedema.
- c. Goitre.
- d. Acromegaly.

iv. Which of the following minerals is required for the normal functioning of above gland?

- a. Calcium.
- b. Iodine.
- c. Phosphorus.
- d. Potassium.

v. A temporary endocrine gland in the human body is_____.

- a. Pineal gland.
- b. Corpus luteum.
- c. Corpus allatum.
- d. Corpus cardiacum.