



ÉCOLE GLOBALE

INTERNATIONAL GIRLS' SCHOOL

Dehradun

HOLIDAY HOMEWORK - CLASS XI B (Biology)

Unit -01/The Living World

1. The heterosporous pteridophytes show certain characteristics, which are precursor to the seed habit in gymnosperms. Explain.
2. Comment on the lifecycle and nature of a fern prothallus.
3. How are the male and female gametophytes of pteridophytes and gymnosperms different from each other?
4. In which plant will you look for mycorrhiza and coralloid roots? Also explain what these terms mean.
5. Gametophyte is a dominant phase in the life cycle of a bryophyte. Explain.
6. With the help of a schematic diagram describe the haplo-diplontic life cycle pattern of a plant group.
7. Provide appropriate technical term in the space provided.
 - a. Blood-filled cavity in arthropods _____.
 - b. Free-floating form of cnidaria _____.
 - c. Stinging organ of jelly fishes _____.
 - d. Lateral appendages in aquatic annelids _____.
8. Differentiate between:
 - a. Open circulatory system and closed circulatory system
 - b. Oviparous and viviparous characteristic
 - c. Direct development and Indirect development
9. Mention two similarities between
 - a. Aves and mammals
 - b. A frog and crocodile
10. Comment upon the habitats and external features of animals belonging to class, amphibia and reptilia.
11. Mammals are most adapted among the vertebrates. Elaborate.
12. 'Peat' is an important source of domestic fuel in several countries. How is 'peat' formed in nature?
13. Diatoms are also called as 'pearls of ocean', why? What is diatomaceous earth?

Unit 02/Morphology and Anatomy

1. Given below are a few floral formulae of some well known plants. Draw floral diagrams from these formulae.
 $\oplus K(5), C(5), A(5), G(2)$
 $\Phi K(5)C1+2+(2)A(9)+1G1$
 $\oplus K5C5A5+5G(5)$
2. Distinguish between families Fabaceae, Solanaceae, Liliaceae on the basis of gynoecium characteristics (with figures), Also write economic importance of any one of the above family.
3. Describe various stem modifications associated with food storage, climbing and protection.
4. The mode of arrangements of sepals or petals in a floral bud is known as aestivation. Draw the various types of aestivation possible for a typical pentamerous flower.
5. The arrangements of ovules within the ovary are known as placentation. What does the term placenta refer to? Name and draw various types of placentations in the flower as seen in T.S. or V.S.
6. What part of the plant would show the following:
 - a. Radial vascular bundle
 - b. Polyarch xylem
 - c. Well developed pith
7. What do hard wood and soft wood stand for?
8. Write the precise function of
 - a. Sieve tube
 - b. Interfascicular cambium
 - c. Collenchyma
 - d. Aerenchyma
9. Distinguish between the following:
 - a. Exarch and endarch condition of protoxylem
 - b. Stele and vascular bundle
 - c. Protoxylem and metaxylem
 - d. Interfascicular cambium and intrafascicular cambium
 - e. Open and closed vascular bundles
 - f. Stem hair and root hair
10. Explain the digestive system of Cockroach with the help of a labeled sketch.

11. Classify and describe epithelial tissue on the basis of structural modifications of cells.
12. Write down the common features of the connective tissue. On the basis of structure and function, differentiate between bones and cartilages.

Unit -03/Cell and Biomolecules

1. Comment on the cartwheel structure of centriole.
2. Differentiate between Rough Endoplasmic Reticulum (RER) and Smooth Endoplasmic Reticulum (SER).
3. Give the biochemical composition of plasma membrane. How are lipid molecules arranged in the membrane?
4. What are plasmids? Describe their role in bacteria?
5. What are histones? What are their functions?

6. Schematically represent primary, secondary and tertiary structures of a hypothetical polymer say for example a protein.
7. Formation of enzyme-substrate complex (ES) is the first step in catalysed reactions. Describe the other steps till the formation of product.
8. What are different classes of enzymes? Explain any two with the type of reaction they catalyse.
9. Nucleic acids exhibit secondary structure. Describe through Watson-Crick Model.
10. Differentiate between Mitosis and Meiosis

Unit -04/Plant Physiology

1. Differentiate between Apoplast and Symplast pathways of water movement. Which of these would need active transport?
2. When a freshly collected Spirogyra filament is kept in a 10% potassium nitrate solution, it is observed that the protoplasm shrinks in size:
 - a. What is this phenomenon called?
 - b. What will happen if the filament is replaced in distilled water?
3. Define Uniport, Symport and Antiport. Do they require energy?
4. It is observed that deficiency of a particular element showed its symptoms initially in older leaves and then in younger leaves.
 - a. Does it indicate that the element is actively mobilized or relatively immobile?
 - b. Name two elements which are highly mobile and two which are relatively immobile.
 - c. How is the aspect of mobility of elements important to horticulture and agriculture?

5. How are the terms 'critical concentration' and 'deficient' different from each other in terms of concentration of an essential element in plants? Can you find the values of 'critical concentration' and 'deficient' for minerals – Fe & Zn.

6. Name the most crucial enzyme found in root nodules for N₂ fixation? Does it require a special pink coloured pigment for its functioning? Elaborate.

7. Some of these terms/chemicals are associated with the C4 cycle. Explain.
- Hatch slack pathway
 - Calvin cycle
 - PEP carboxylase
 - Bundle sheath cells
8. What conditions enable Rubis CO to function as an oxygenase? Explain the ensuing process.
9. Why does the rate of photosynthesis decrease at higher temperatures?
10. RuBP carboxylase, PEPcase, Pyruvate dehydrogenase, ATPase, cytochrome oxidase, Hexokinase, Lactate dehydrogenase. Select/choose enzymes from the list above which are involved in
- Photosynthesis
 - Respiration
 - Both in photosynthesis and respiration
11. The rice seedlings infected with fungus *Gibberlla fujikuroi* is called foolish seedlings? What was the reason behind it?
12. What is the mechanism underlying the phenomenon by which the terminal/apical bud suppresses the growth of lateral buds? Suggest measures to overcome this phenomenon.
13. Name a hormone which
- is gaseous in nature
 - is responsible for phototropism
 - Induces femaleness in flowers of cucumber
 - Is used for killing weeds (dicots)
 - Induces flowering in long day plants

Unit -05/Human Physiology

1. Trypsinogen is an inactive enzyme of pancreatic juice. An enzyme, enterokinase, activates it. Which tissue/ cells secrete this enzyme? How is it activated?
2. What are three major types of cells found in the gastric glands? Name their secretions.
3. How is the intestinal mucosa protected from the acidic food entering from stomach?
4. How are the activities of gastro-intestinal tract regulated?
5. Describe the enzymatic action on fats in the duodenum.
6. A person had roti and dal for his lunch. Trace the changes in those during its passage through the alimentary canal.
7. Complete the missing terms
 - a. Inspiratory Capacity (IC) = _____ + IRV
 - b. _____ = TV + ERV
 - c. Functional Residual Capacity (FRC) = ERV + _____
8. Differentiate between
 - a. Inspiratory and expiratory reserve volume
 - b. Vital capacity and total lung capacity
 - c. Emphysema and occupational respiratory disorder
9. Explain the transport of O₂ and CO₂ between alveoli and tissue with diagram?
10. For completion of respiration process, write the given steps in sequential manner
 - a. Diffusion of gases (O₂ and CO₂) across alveolar membrane.
 - b. Transport of gases by blood.
 - c. Utilisation of O₂ by the cells for catabolic reactions and resultant release of CO₂.
 - d. Pulmonary ventilation by which atmospheric air is drawn in and CO₂ rich alveolar air is released out.
 - e. Diffusion of O₂ and CO₂ between blood and tissues.