

HOTS XI

Higher Order Thinking Skills –Class XI

Chapter1-The Living World

1. Give an example of genus with a single species . (1)
2. Classify whole moong dal and brookenmoong dal into living nonliving in terms of growth and respiration? (2)
3. Latin names of plants and animals are difficult to pronounce and remember. Why do we then use them? (2)

Chapter-2 –Biological Classification

1. Polluted water bodies have usually very high abundance of plants like Nostoc and Oscillatoria. Give reasons. (1)
2. Suppose you accidentally find an old preserved permanent slide without a label. In your effort to identify it, you place the slide under microscope and observe the following features:
Unicellular, well defined nucleus, biflagellate- one flagella lying longitudinally and the other transversely .
What would you identify it as ? To which kingdom does it belong? (2)
3. Biological classification is a dynamic and ever evolving phenomenon which keeps changing with our understanding of life forms. Justify the statement taking any two examples. (3)
Ex.1- Two kingdom classification was developed but it was found inadequate later.
Ex. 2. R H Whittaker proposed 5 kingdom classification based on cell structure, thallus organization, nutritional modes, reproduction as well as the phylogeny.

Chapter -3 Plant Kingdom

1. Why are bryophytes called the amphibians of the plant kingdom? (1)
2. In which plant will you look for mycorrhiza and coralloid roots?
3. The male and female reproductive organs of several pteridophytes and gymnosperms are comparable to floral structures of angiosperms. Make an attempt to compare the reproductive parts in the table given below: (2)

Pteridophytes& Gymnosperms	Angiosperms
Strobila / cones	a
Archegonia	b
Anthridia	c
spores	d

4. Give three features that have led to the dominance of vascular plants ? (3)

Chapter -4 Animal Kingdom

1. Why are echinoderms considered closer to chordates than any other phylum? (1)

2. Endoparasites are found inside the host body. Mention the special structures possessed by these to enable them to survive in those conditions. (2)

3. Fill up the blank spaces appropriately. (2)

Phylum	Excretory organ	Circulatory organ	Respiratory organ
Arthropoda	a	b	trachea
c	Nephridia	closed	skin
vertebrata	d	closed	lung

4. On a morning walk with your friend you came across an animal which looks like a snake. But on watching it closely, your friend says it is an earthworm. What helped him in identifying it as an earthworm? (3)

Chapter 5 Morphology Of Flowering Plants

Q1. Three students describes the floral characters of a plant belonging to family Liliaceae. One of them described correctly and others two were wrong. Who was correct?

Student A: Trimerous, Actinomorphic, Polyandrous, Superior ovary, Axile placentation

Student B: Tetramerous, Actinomorphic, Polyandrous, Superior ovary, Axile placentation

Student C: Trimerous, Zygomorphic, Polyandrous, Superior ovary, Axile placentation

Q2. Give the technical terms for the following

- A sterile stamen.
- Stamens are united in one bunch
- Stamens are attached to Petals.

Chapter 7 Structural Organisation In Animals

Q.1. Pawan bites by an ant on finger and after few minutes the finger swells up. How does it occur? Which cells are responsible for it?

Q.2. In stomach HCl is secreted by a gland. Explain the nature of gland.

Q.3. Cardiac muscle tissues have both character of skeletal and smooth muscles, how? Explain.

Q.4. Explain mouth parts of cockroach with diagram.

Q.5. Malpighian tubules are proto structure of nephron. How?

Q.6. Differentiate between male and female cockroach.

Chapter 8 Cell And Its Structure

Q1 What are the shortcomings of Scheleiden&Schwan theory? Who modified it and how?

Q2 Differentiate between structure of flagella and centriole?

Q 3 Why nucleolus is larger in actively working cell?

Chapter 9 : Biomolecule

Q 1 What do you mean by PUFA?

Q2. Identify the secondary protein and quaternary proteins in following examples.

Trypsin, Haemoglobin protein, Myosin protein, Actin protein, Albumin, globulin.

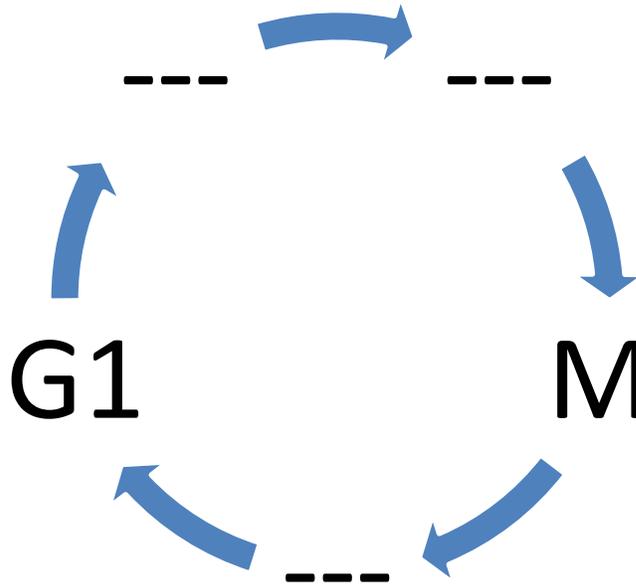
Q3 What is histone protein. Where it is found in cell. Mention the function of it in eukaryotic cell.

Chapter 10 : Cell Cycle

Q1 How do cell stop dividing?

Q2 Which stage of meiotic division last for years in some vertebrates. Explain some features of this stage

Q3 Complete the following figure for Cell Cycle.



Chapter 11: Transport in Plants

Q1. What is meant by Apoplast pathway? Why does it occur in cortex and not in endodermis?

Q2. How does the absorption and loss of potassium ions in the guard cells bring about the opening and closing of stomata?

Q3. What are the two types of interaction of water molecules that allow water to travel upwards in the plants? What other physical process aids in water transport to the top of the trees? Explain.

Chapter 12

Q1. It is observed that deficiency of a particular element showed its symptoms initially in older leaves and then younger leaves.

- Does it indicate that the element is actively mobilized or relatively immobile?
- Name two elements which are highly mobile and two which are relatively immobile.
- How is the aspect of mobility of elements important to horticulture and agriculture?

Q2. How are plants grown in glass containers to judge essential elements?

Q3. A farmer adds azotobacter culture to the soil before sowing maize. How does it increase the yield of maize?

Chapter 13

Q1. Tomatoes, carrots and chillies are red in colour due to the presence of one pigment? Is it a photosynthetic pigment?

Q2. Which property of the pigment is responsible for its ability to initiate the process of photosynthesis? Why is the rate of photosynthesis higher in the red and blue region of spectrum of light?

Q3. Why not photorespiration does take place in C4 plants?

Chapter 14

Q1. Why less energy is produced during anaerobic respiration?

Q2. What is the importance of FoF1 particles in ATP production during aerobic respiration?

Q3. Define respiratory quotient and mention the value for the proteins and fats.

Chapter 15

Q1. Plant Growth Substances have practical applications. Name the PGS we should use

a) To increase yield of sugarcane.

b) Promote the lateral shoot growth

c) Cause sprouting of potato tuber

d) Inhibit seed germination

Q2. Can you alter the rate of growth in an organism? If yes how?

Q3. What is "Bioassay"?

Chapter 16 Digestion and Absorption

1. Certain drugs are absorbed through layer of buccal cavity from the floor. What is the terminology for this kind of absorption?
2. In case of dysentery people feel a sense of weakness. What may be reason for this?
3. If the pancreatic duct of person is locked. How would it effect the digestion of fats in the duodenum?
4. HCl and proteolysis enzymes produced by stomach do not digest its own wall. Why?

Chapter 17 Breathing and Exchanger of gases

1. What is the role of oxyhaemoglobin after the release of molecular oxygen in the tissue?
2. Differentiate between haemoglobin of human and earthworm?
3. Why cartilaginous rings on trachea are C-shaped?
4. Define partial pressure of gases?
5. If deoxygenated blood in the lungs has $PCO_2 = 46$ mmHg, what should be the alveolar PCO_2 for CO_2 to diffuse into alveoli from blood.
6. A blood vessel in kidney has $PO_2 = 90$ mmHg, while that in the tissue is 76 mmHg. What will be the direction of diffusion of O_2 .
7. What is chloride shift? What is its importance?
8. Arrange in increasing order of their volume: TV, IRV, RV, ERV, VC, TLC.
9. Discuss the role of "Carbonic Anhydrase".
10. Discuss Bohr's effect.

CHAPTER-18 BODY FLUIDS AND CIRCULATION

1. Define a portal vein? Explain the functions of such a vein in our digestive system.
2. Explain why the blood of earthworm is less efficient oxygen carrier than that of man?
3. Why is swelling of feet or leg caused when a person stands immobile for a long time?

CHAPTER-19-EXCRETORY PRODUCTS AND THEIR ELIMINATION

1. What stimulates the release of aldosterone? How does aldosterone increase the blood pressure and regulate GFR?
2. What is stimulus for the cells of JGA to release renin?
3. Why tubular secretion an important step in urine formation?
4. Give the technical term for each of the following-
 - a. Inflammation of glomeruli of kidney.
 - b. Formation of insoluble masses of crystallized salts.
 - c. Accumulation of urea in the blood.
 - d. The process of artificial removal of urea from blood.

CHAPTER-20 LOCOMOTION AND MOVEMENT

1. Why is cartilage pliable, while bone is rigid?
2. Name the following-
 - a) The cup shaped bone in the hind limb.
 - b) Autoimmune disease that affects the neuromuscular junction.
3. Name three organ systems of the body that are involved in locomotion in human beings?

CHAPTER- 22 CHEMICAL CO-ORDINATION AND INTEGRATION

- Q1. Why is oxytocin called as birth hormone? (1)
- Q.2 What will happen if thyroxin is injected into a tadpole of frog? (1)
- Q.3 Why does the effect of noradrenalin last longer? (1)
- Q.4 Why is thymus called 'throne of immunity' ? (2)
- Q.5 Name the two hormone of hypothalamus that influences the middle lobe of pituitary. Mention their functions. (3)

ANSWERS

Chapter1-The living world

Ans1 : Genus- Homo

Ans2. Whole moong dal is living because it has seed in dormant stage. On getting conditions for germination, it germinates and develops into plant. It also respire. Broken moong dal is non living because internal growth is absent in it. Respiration is also absent.

Ans3 : Plants and animals are named differently in different parts of the world. In order to avoid confusion it is universally accepted to name plants and animals in latin.

Chapter-2 –Biological classification

Ans1: They are chemoautotrophs which oxidise nitrates, nitrites and NH_3

Ans2 : Dinoflagellates. They belong to the kingdom Protista.

Ans3 : The phylogenetic system of classification is dynamic because its sources are fossil records of organisms.

Chapter -3 Plant kingdom

Ans1 : They are found in damp, moist places as they require water for fertilization.

Ans2 : Cycas

Ans3 : a- Flowers b- carpel c- stamen d- seeds

Ans4 : 1. Development of deep roots capable of penetrating the soil.

2. Development of water proofing material like cutin on leaves to reduce water loss.

3. Development of strong woody material to anchor and support above ground.

Chapter -4 Animal kingdom

Ans1 : Because like chordates they are also deuterostomes where the anal region develops earlier than the mouth part.

Ans2 : Hooks and suckers, dorsoventrally flattened body, high reproductive potential, indirect development

Ans3 : a-Malphigian tubules, b-open, c-Annelida, d-kidneys

Ans 4: Body elongated and metamerically segmented, presence of prostomium, characteristic mode of locomotion.

Chapter 7 Structural Organisation In Animals

Ans.1. Mast cell release heparin which swells the fingers.

Ans.2.HCl secreted by oxyntic cells. Oxyntic cells are unicellular and present mucosa of stomach.

Ans.3. Cardiac muscle is a type of involuntary muscle found in heart. Cardiac muscle exhibits striations which is characteristics of striated muscles, while it does not work will of animal so it is involuntary characters.

Ans.4. refer diagram given in ncert fig.7.15 page no.112 and explanation.

Ans.5.Malphigian tubules are present at the junction of midgut and hindgut of cockroach.

They help in removal of excretory products from haemolymph. In higher animals it resembles to nephron.

Ans.6.

S.No.	Male cockroach	Female cockroach
1	Larger in size	Smaller in size
2	Narrow abdomen	Broad abdomen
3	Anal style present	Absent
4	Brood pouch absent	Present
5	Testes and associated organs are present	Ovaries and associated organs are present
6	Wings extend beyond the tip of abdomen	Wings extend up to abdomen
7	Chromosome number $2n= 33$	$2n= 34$

Chapter8 : CELL AND ITS STRUCTURE

Ans 1 They did not explain the arise of new cells .Rudolph Virchow modified it and stated that cells arise from the pre existing cells.

Ans 2Structure of flagella : nine plus Two arrangement ; sub tubules are in doublet

Structure of Centriole : Nine plus Zero arrangement of sub tubules are in triplet.

Ans 3 Nucleolus are involved in actively synthesizing RNA. That will ultimately result in protein formation.

Chapter9 : BIOMOLECULE

Ans 1Poly Unsaturated Fatty Acid

Ans 2 Secondary Protein: Myosin protein, Actin protein, Albumin, globulin, Trypsin

Tertiary Protein: (Hemoglobin protein)

Ans 3 Basic proteins rich in lysine, found in nucleoplasm. Binds with negatively charged DNA forming Octamers called nucleosome.

Chapter 10 : CELL CYCLE AND CELL DIVISION

Ans 1 When cell enters in G_0 Cycle

Ans 2 Diplotene of meiosis

Ans 3 G_0 , S, G_2

Chapter 11: Transport in Plants

Ans 1. Passive absorption of water: A force develops during water absorption in the shoot system where transpiration is occurring. The transpiration then creates a tension in xylem due to loss of water from its aerial parts. Tension spreads in all the xylem channels of the root. This may be due to:

1. Rate of water absorption.
2. Amount of water absorbed.
3. The shoot may continue to absorb water even in the absence of root.

Apoplast pathway: water moves from soil to cell wall of root hair cell, endodermis, pericycle, xylem parenchyma and xylem channels. Water in the xylem channel is under more negative pressure so it draws water from soil through intervening apoplast along the gradient. It takes place through the cell wall.

It does not occur in endodermis because; endodermis cells contain Casparian strips which are water resistant.

Ans. 2 Role of potassium ions in transpiration: Levitt explained the mechanism of stomata action. In light starch produced during photosynthesis is converted into organic acids which cause a low concentration of potassium ions. When the concentration of organic acid is increased in guard cells, this increases the concentration of cell sap followed by subsequent absorption of water.

In dark photosynthesis stops, accompanied by an increased concentration of CO_2 , the organic acids are converted into starch. The water comes out of guard cells it reduces the turgor pressure and stomata get closed.

Ans. 3 The water molecules attract each other by mutual force. This force is called cohesive force. The attraction between the walls of xylem elements and other water molecules is known as adhesion. Root hair absorbs water from the soil, movement of water from soil to root hair results from the pressure exerted by cortical cells of the root into the xylem vessels, resulting to raise the water column in ascending parts of the plant and is called root pressure. As a result of transpiration water is drawn in the intercellular spaces from mesophyll cells which consequently draw water osmotically from the nearby cells and thus a diffusion pressure deficit is developed. Due to this the adjacent cells take water from xylem of vein of leaf. This xylem is connected with the xylem of root through stem xylem. A tension is set up in the water column of the xylem and the whole column is physically pulled up.

Chapter 12

Ans.1 A) This is actively mobilized.

B) Highly mobile elements: Nitrogen and magnesium. Relatively immobile: Calcium and Boron.

C) The symptoms of deficiency of mobile elements are more pronounced in the older leaves and symptoms of deficiency of relatively immobile elements appear first in younger leaves. So this information can be utilized in horticulture as well as agriculture to get a broad idea of deficiency elements in plants.

Ans.2 In the solution culture the plants are grown in pure nutrient media with only required elements. The glass containers are covered with black paper to protect roots from direct light. In other glass containers plant is allowed to grow artificially with same nutritive culture that contains all essential elements except one and its essentiality is to be judged. They are compared with the control plant grown in balanced nutrient medium. When there is any change in morphological features compared with normal plant this may be due to deficiency of specific element.

Ans.3 Azotobacter provides nitrogen fixing bacteria which converts free nitrogen into nitrate and nitrites it increases soil fertility.

Chapter 13

Ans.1 The pigments are chromoplasts; these are fat soluble carotinoid pigments like carotenes and xanthophylls. These are called accessory pigments; they absorb light and transfer energy to Chlorophyll a.

Ans.2 The wave length of light: the visible light lies between the wave lengths of UV and IR. The most efficient is red light for photosynthesis. Green lights less effective. Maximum photosynthesis takes place in red and blue regions of spectrum of light. Chla and b absorb mostly blue and red light.

Ans.3 The reason is that they have a mechanism that increases the concentration of CO₂ at the enzyme site. It occurs when C₄ acid from mesophyll cell is broken down in bundle sheath cells and releases CO₂, hence increasing CO₂ concentration intra cellular. It also ensures that RUBISCO acts as carboxylase to minimize oxygenase activity of it.

Chapter 14

Ans.1 Following are the reasons:

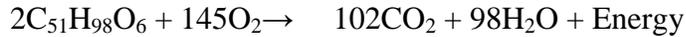
- Incomplete breakdown of respiratory substrate.
- Some of the products of anaerobic respiration can be oxidized further to release energy which shows that anaerobic respiration does not liberate the whole energy contained in the respiratory substrate.
- NADH₂ does not produce ATP as electron transport is absent.
- Oxygen is not utilized for securing electrons and protons.

Ans.2 ATPsynthetase consists of F₀F₁ particles. F₀ acts as channel through which H⁺ passes. F₁ contains the site for synthesis of ATP.

Ans.3 It is ratio of volume of CO₂ evolved and volume of O₂ consumed.

$$R.Q. = \frac{\text{Volume of CO}_2 \text{ evolved}}{\text{Volume of O}_2 \text{ consumed}}$$

For proteins: R.Q. remains 0.9 and the R.Q. for fat is 0.7



$$R.Q. = 102 / 145 = 0.7$$

Chapter 15

Ans.1 a) Spraying gibberellins

b) Application of auxins

c) Ethylene

d) ABA

Ans. 2 Yes, we can alter the rate of growth by making variations in the factors affecting growth, these are light and temperature. A plant grows quicker during the night than during the day.

During the night retarding or inhibiting action of light is absent and rate of growth of a plant gradually increases until dawn while during the day the rate of growth gradually decreases until about sunset.

Ans.3 It is evaluation of the effect of a substance on a living organism under controlled conditions. Two bioassays used to examine auxin activity in plants are:

1. The Avena Curvature Test

2. Root growth inhibition test.

Chapter 16 (Digestion and Absorption)

1. Sublingual.

2. During dysentery a lot of salts are lost from the body which leads to weakness.

3. If the pancreatic duct is blocked, pancreatic juice along with digestive enzyme, particularly, lipase, will not reach the duodenum and fat digestion will decrease.

4. Gastric epithelium/ goblet cells secrete thick mucus and protect surface from damage.

Chapter 17 (Breathing and Exchanger of gases)

1. Combines with carbon dioxide to form carbamino-haemoglobin.

2. Human: RBC; Earthworm : dissolved in plasma(location based)

3. For shock absorption and expansion / contraction while breathing in / out.

4. Pressure exerted by the molecules of a gas in a mixture of gases.

5. Less than 46mmHg.

6. O₂ will diffuse from blood into the tissues of kidney.

7. Diffusion of Cl⁻ from blood plasma into RBC. To maintain ionic balance & electrochemical neutrality.

8. TV < ERV < RV < IRV < VC < TLC.

9. CO₂ + H₂O $\xrightarrow{\text{CARBONIC ANHYDRASE}}$ H₂CO₃ (Carbonic acid)

H₂CO₃ \rightleftharpoons H⁺ + HCO₃⁻

10. Increase in concentration of CO₂ shifts its dissociation curve towards right.

CHAPTER-18 BODY FLUIDS AND CIRCULATION

1. Main blood vessel in which subsidiary venules join to transfer the secretion at the target site. Hepatic portal vein plays vital role in the digestive system the impurities and to detoxify the harmful materials.

2. In human being haemoglobin is present in the RBC , but in earthworm it is present in plasma. So it attains less surface area to bind to oxygen.

3. Because blood has to pass into the heart against the gravity so it leaks into interstitial spaces.

CHAPTER-19-EXCRETORY PRODUCTS AND THEIR ELIMINATION

Ans1-Angiotensin-II

Ans2- Glomerular blood pressure falls.

Ans3-maintains ionic balance and pH of body fluids.

Ans4-a. Glomerulo-nephritis

b. Renal calculi

c. Uremia

d. HemoDialysis

CHAPTER-20 LOCOMOTION AND MOVEMENT

Ans1. bones have calcium.

Ans2. a-Patella.

b-Myasthenia gravis

Ans3. Skeletal ,muscular

CHAPTER- 22 CHEMICAL CO-ORDINATION AND INTEGRATION

Ans1.It induces the vigorous contraction of the smooth muscles of the uterus that lead to the birth of the child.

2. Ans. It will quickly metamorphose into adult frog.

3. Ans. Since noradrenalin is removed slowly from the blood as compared to adrenalin , it affects last longer.

4. Ans. Since the T lymphocytes of immune system undergone maturation and proliferation in the thymus and contribute to the immunity of the body it is called throne of immunity.

5. Ans. (1) Melanocytes stimulating –release hormone .Stimulate the function of MSH.

(2) Melanocyte stimulating-inhibiting hormone.It inhibits the release of MSH.

VBQ XI
VALUE BASED QUESTIONS

CLASS XI

Chapter1-The living world

1. Mango may have different names in different parts of the country or the world. But for botanists it is *Mangifera indica*.

(a) Why do people give vernacular names to species? (1)

(b) As a student of biology what do you feel are the advantages of giving scientific names to the Mango? (2)

2. A student of taxonomy was puzzled when told by his teacher to look for a 'key' to identify a plant. He went to his friend to clarify what 'key' the teacher was referring to. What would the friend explain to him? What are the values exhibited by he and his friend?

Chapter-2 –Biological classification

1. Mohan has observed that the water logged areas in his neighbourhood produces a particular odour.

(a) Name the gas that is produced by the marshy areas and the microorganisms responsible for that. (1)

(b) Could this gas be an environmental threat? Why? (2)

2. Some people in the village fell sick after eating mushrooms which they collected from the forest. What could be the cause for their sickness? What advice would you give them to avoid such incidences in future. (3)

3. An epidemic of chicken pox in the village made people panic and do special offerings to the deity. As a student of biology how would you make them realize that the disease is not caused due to the displeasure of the gods? (3)

Chapter -3 Plant kingdom

1. A hill station city had abundance of different species of lichens a few years back. Since it has turned a busy tourist spot very few lichens are found there.

(a) What could be the possible reason for this? (1)

(b) What measures are to be taken to conserve lichens? (2)

2. Your younger brother is fascinated by the fact that plants are found in the marine ecosystem. How would you explain to him about the uses of plants found in the seas? (5)

Chapter -4 Animal kingdom

1. In order to eradicate mosquitoes Housing colony members were asked to keep the surroundings dry, not to let water standing anywhere and cover the drainage. It was found that the strategy worked and there was decline in the number of mosquitoes. What according to you is the reason for the decline in the number of mosquitoes? (3)

2. Ravi's younger brother of class III stated that bats are like birds as they are able to fly. How will you contradict him and make him understand that bats are mammals and not birds. (3)

Chapter 5: MORPHOLOGY OF FLOWERING PLANTS

1. Omprakash used to go to vegetable market with his grandfather, a retired biology teacher. Grandfather told Omprakash that chilies, brinjal and tomato belong to the same family of plants and asked him to find out similarity in these plants. Read the above passage and answer the following questions:-

- I. Identify the family to which these plants belong.
- II. What are the characteristic features of the family?
- III. What value is reflected in grandfather's behavior?

2. Pointing towards a sunflower plant, father asked Kailash, a biology student to show him flower of this plant. Kailash pluck flowering twig and pointed towards the big yellow structure at the tip of the twig. Father laughed and clarified that it is not a single flower but a group of several flowers arranged in a disc like structure. Read the above passage and answer the following questions:-

- I. What is inflorescence?
- II. Define racemose and cymose inflorescence?
- III. What message is delivered by father of Kailash.

3. Ishwer was reading a chapter on function of different parts of a green plant. His mother asked him about the functions of roots. He replied that roots are meant for anchorage and absorbing water and minerals from soil. Then mother showed him radish, carrot and turnip and asked him about the additional functions that the roots perform. Read the above passage and answer the following questions:-

- I. What is the special function of roots in above examples?
- II. What other secondary functions roots are known to perform?
- III. What value is displayed by his mother.

CHAPTER 7: STRUCTURAL ORGANISATION IN ANIMALS

1. After a rainy day, earthworms were crawling on the moist soil of the fields. Father cautioned Rakesh to be careful so that earthworms are not crushed under his feet. Rakesh asked the reason and father replied that earthworms are farmer's friends. Read the above passage and answer the following questions:

- a) Why the earthworm regarded as farmers friend? Give two reasons.
- b) Which habit of earthworm help in increasing soil fertility?
- c) Name the term used for increase in soil fertility by earthworm?

2. Anil a science student, told his younger brother that he came to know from his teacher that earthworm is farmers friend .he wanted to show the earthworms to the his younger brother and so, on a sunny day ,they went to the field to locate the earthworms. To their surprise, no earthworm was seen on the ground .He asked the reason from his biology teacher, the next day who explained the cause of their absence on the sunny day?

- a) Why the earthworm not seen in the sunny days?
- b) Where can you locate earthworm?
- c) What was the reason of Anil's curiosity about earthworms?

3. Biology teacher told in the class that cockroaches are of ancient lineage and resembled to those insects who flourished in carboniferous period. Ramesh discussed this with the uncle who was a professor of zoology. His uncle explained that due to their remarkable adaptability, they are still surviving. Read the above passage and answer the following questions:

- a) How old the evolutionary history of cockroach?
- b) Which adaptation in cockroach helps them in their survival? List few of them?
- c) What value is reflected in the discussion between Ramesh and his uncle?

Chapter 8: CELL AND ITS STRUCTURE

1. A student purchased unripe tomatoes from the market which were green in color. After a few days he noticed that the color has been changed to red. Next day he asked his teacher about the reason. What could be the possible reason according to you?
2. A student got injured some day. He took the medicine from the doctor and got cured. He wonders that how medicine got to know where to act. He asks the doctor about the reason. What could be the possible reason according to you?
3. A student collected a water sample from a water body and took it to the bio lab. There he observed the microorganism present in it. He observed one organism with small extensions all over the body and one organism with few long extensions over the body. According to the above information, what are these extensions and explain about them.

Chapter 9: BIOMOLECULES

1. One day Suresh was not well. He visited a hospital where the doctor checked him and diagnosed the viral fever after blood investigation. He prescribed three antibiotic doses per day after meal and also said to take a B-complex at morning before meal.
 - 1) Name the contents of B-complex
 - 2) Why did the doctor recommend B-complex to Suresh?
2. Reeta sent his 12-year-old son Muneesh to buy vegetable oil from the market. He reached the market and asked the shopkeeper to give the vegetable oil. The bottle of the oil has a label consisting of: Minimum Cholesterol, High PUFA, Zero sugar level.
 - 1) What do you mean by PUFA? Mention its significance for health.
3. Why do doctors not prescribe vegetable ghee to the patient of cardiovascular diseases?

Chapter 10: CELL CYCLE

1. A girl chased a lizard. Due to fear, the lizard released its tail. The tail again grows after some time. Which kind of division is involved probably in this process? Whether this division is present in human beings, if yes, then where?
2. A child asked his teacher that I am not similar to my sister. Though both of us are born from the same parents, why? What could be the possible answer of the teacher?
3. Why are we not similar to our previous generations. What is the reason behind this change?

CHAPTER 11: TRANSPORT IN PLANTS

1. Why during the rainy season the doors and windows are difficult to close and open. Give the phenomenon behind this, give its definition.
2. During making of pickles in home high salt concentration is applied. Why? Name the phenomenon.

CHAPTER 12: MINERAL NUTRITION

1. Although carnivorous plants contain chlorophyll than why do they eat insects?.
2. A farmer grows some leguminous crop after the main crop, even though he is not interested to get the seeds of legume. Then why is he doing so?

CHAPTER 13: PHOTOSYNTHESIS IN HIGHER PLANTS

1. Why do farmers prefer to make green house in cold regions?
2. Comment on the statement that life cannot be sustained if all the green plants are to be removed from the earth.

CHAPTER 14: RESPIRATION IN PLANTS

1. During anaerobic respiration very less quantity of energy is released as compared to aerobic respiration. What happens in humans during heavy exercise?
2. No one till date is able to taste of cyanide. What happens when a person eats cyanide?

CHAPTER 15: PLANT GROWTH AND DEVELOPMENT

1. In metro cities there is lack of space for gardens. Suggest a technique by which plants can be grown without need of soil and land space.
2. These days the fruits we bring from market are to be washed thoroughly and some need to be dipped in water for sometime before eating, why?

ANSWER

Chapter1-The living world

Ans1 : (a) They are common names based on some characteristics of the organisms.They are easier to learn and speak.

(b) They are universally accepted as they are based on some nomenclature principles.It is also easy with regards to the relationship and comparison to other species.

Ans2: His friend would explain that a key is a scheme for identification of animals and plants which is based on contrasting characters.The values exhibited are inquisitiveness, cooperation, and helpfulness.

Chapter-2 –Biological classification

Ans1. : (a) Methane-Methanogens

(b) Yes, because methane gas is a green house gas which causes global warming.

Ans2 : The mushrooms that the villagers ate must be poisonous. Not all mushrooms are edible , some are poisonous. Avoid colourful toadstools and eat only white coloured Agaricus.

Ans3 : I would explain to them that chicken pox is caused by viruses which are obligate parasites . They are found to be living only inside a host cell. Preventive measures would help them in controlling the spread of the disease.

Chapter -3 Plant kingdom

Ans1 : (a) Lichens are called as pollution indicators. They are extremely sensitive and perish when the environment gets polluted.

(b) The environmental degradation especially air pollution should be prevented in order to conserve lichens.

Ans2 : a. Algae are the primary producers of marine ecosystem. Half of total CO₂ fixed on earth is carried out via photosynthesis by algae.

b. Some marine algae like Sargassum, Laminaria etc. are used as food.

c. Brown algae produces algin

d. Red algae produces Agar and carrageen

e. Some water holding substances are also produced by some sea water algae.

Chapter -4 Animal kingdom

Ans1 : Mosquito belongs to class Insecta, phylum Arthropoda . Its development is indirect with distinct stages like egg, larva, pupa and adult. It breeds in water and so if water is not provided it cannot complete its life cycle . This leads to the decline in the number of mosquitoes.

Ans2 : Bats have external ears, body covered with hairs and mammary glands. They have skin instead of feathers and mouth with teeth instead of beak. They do not lay eggs but give birth to young ones.

CHAPTER 5: MORPHOLOGY OF FLOWERING PLANTS

1.
 - i. Solanaceae
 - ii. Persistent Calyx, Obliquely Placed Ovary and Swollen Placenta
 - iii. Grandfather wanted to arouse interest of his grandson in biology

2.
 - I. it is an axis bearing a cluster of flowers in a particular manner.
 - II. in racemose type of inflorescence, the main axis possess terminal bud which grows indefinitely giving rise to lateral and axillary flowers. In cymose type, the main axis terminates into a flowers and further growth takes place by lateral branches which arises below the terminal flower.
 - III. Being a student of biology, one should observe things critically.

3.
 - i. storage of food
 - ii. support (Stilt root), respiration (pneumatophores), photosynthesis (*Trapa*).
 - iii. She enriched Ishwar's knowledge about secondary functions of root.

CHAPTER 7: STRUCTURAL ORGANISATION IN ANIMALS

1. A) Earthworm makes the soil porous by burrowing into it. Porous soil allow better aeration and quick absorption of water. Worm brings the fresh subsoil to the in finally divided form. It provide ideal medium for the germination of seeds.

B) Burrowing habits.

C) Vermicomposting.

2. a) Earthworm keep the skin moist by secreting mucous to remain alive .On the sunny days, earthworms are unable to secrete mucous fast enough to make up for the lost evaporation and hence remain in burrows in the soil.

b) In moist soil which is rich in humus.

c) Anil, being a science student, wanted to gain scientific knowledge about earthworms and also to share this knowledge with youngsters.

3. a) it is about 350 million year ago.

b) Flattened body's slip into narrow spaces; arrangement and shapes of the legs for swift running, omnivorous laying of their eggs in oothecaeis major adaptation of cockroaches.

c) Ramesh desire to have clear understanding about animals and their adaptations.

CHAPTER 8: CELL AND ITS STRUCTURE

1. Green color is due to the chloroplast and later on this chloroplast changed into the chromoplast.

2. Every cell membrane has some receptor over it . Which perceives the drugs and this stimulate cascade effects in cell and disease is cured.

3. Short extensions are cilia; long extensions are flagella.

CHAPTER 9 :BIOMOLECULE

1. Vitamine(B1, B5 , B6, B12). It detoxifies the effect of antibiotic by destroying the free radicals generated by antibiotics.

2. Poly unsaturated fatty acid. It has minimum risk of cardiovascular disease because it does not store in blood vessels.

3. It has saturated fatty acid which store in body caused cardio vascular problem

Chapter10 : CELL CYCLE

2. Mitosis. This division is present in human beings in somatic cell.

3. Reason is meiosis is involved and there is recombination of gametes

4. Meiosis and recombination

5.

CHATER 11: TRANSPORT IN PLANTS

1. The phenomenon is "Imbibition". In which a special type of diffusion occurs where the water is absorbed by the solids and increase their volume.

2. High salt concentration is applied to extract the extra water from the vegetables and inhibit the growth of microorganisms. The phenomenon is known as exosmosis.

CHAPTER 12: MINERAL NUTRITION

1. Carnivorous plants contain chlorophyll and carry out photosynthesis but they eat insects to full fill the need of nitrogen.

2. He is doing so because the roots of legumes contain the bacteria rhizobium which will fix the nitrogen from the atmosphere and improve the fertility of soil.

CHAPTER 13: PHOTOSYNTHESIS IN HIGHER PLANTS

1. At low temperatures the rate of photosynthesis decreases which limits the growth of

plants. In green house the heat from sunlight is captured and temperature is maintained optimum for photosynthesis. This provides condition for growth of desired plants.

2. Green plants are the primary producer of the biosphere; absorb the eCO_2 from atmosphere and makes carbohydrates. In meanwhile O_2 is released for the respiration

CHAPTER 14: RESPIRATION IN PLANTS

1. During heavy exercise the lactic acid is produced which cause fatigue and cramps but after rest lactic acid s converted to pyruvic acid which pass into the aerobic respiration.

2. Cyanide acts as Electron Transport Chain poison. It prevents transfer of electrons from Cty. A3 to oxygen, breaking the ETC.

CHAPTER 15: PLANT GROWTH AND DEVELOPMENT

4. The technique which can be used is hydroponics, in which nutrient solution is used for growing plants.

In market these days the fruits are artificially ripened using chemicals like carbide. These chemicals produce ethylene which increases the rate of ripening of the fruits. So, the fruits sure to by washed to remove these chemicals.