## CP FOR CHAPTER-6: LIFE PROCESSES.

| Number of period | Sub-Topics |
|---|---|
| 1 | Living, Nonliving, Molecular movements needed for life, Single-celled organism, Multi-celled organism, Basic rules for body design in multi-cellular organisms |
| 2 | Nutrition, Types of nutrition, metabolism, Autotrophic Nutrition, photosynthesis, Heterotrophic Nutrition, Holozoic Nutrition, Nutrition in Amoeba |
| 3 | Human Digestive System, Alimentary Canal, Associated Digestive Glands, Digestion of various food components along various parts of Alimentary canal |
| 4 | Respiration, Aerobic & Anaerobic Respiration, Breakdown of glucose by various pathways, formation of ATP. |
| 5 | Mechanism of Respiration in Human Beings, Mechanism of Respiration in aquatic and Terrestrial organism, breathing in plants. |
| 6 | Transportation in human being, Circulatory System, Components of Transport system in Human Beings, Blood vessels, Functions of the various blood Components, Blood Pressure |
| 7 | Human Heart, Double circulation |
| 8 | Lymph, Maintenance by platelets, Composition of lymph |
| 9 | Transportation in Plants, Components of transport system in a highly organized plants, Transport of water, Transport of food and other substances |
| 10 | Excretion, Excretion in Human Beings, Excretory System, Structure & function of Nephrons |
| 11 | Mechanism of urine formation, Artificial Kidney (Hemodialysis) |
| 12 | Excretion in plants. |
| 13 | Recapitulation of the Chapter |

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## ODM Teachers' Note

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|---|---|---|---|
| **Class** | X | **Subject** | BIOLOGY |
| **Period.** | 1 | **Chapter-6** | LIFE PROCESSES. |
| **Sub- Concepts** | Living, Nonliving, Molecular movements needed for life, Single-celled organism, Multi-celled organism, Basic rules for body design in multi-cellular organisms | | |
| **Teaching AidTo be used** | Smart Class, PowerPoint presentation, classroom objects, charts. | | |

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| **Learning Outcome.** | On completion of this topic, students will be able to<br>• Define living and nonliving.<br>• List the different types of organisms<br>• Categorize the single celled and multi-celled organisms.<br>• Identify the single celled, multi-celled organisms.<br>• List the categories living and non-living organisms. |
| **Sl. No** | **Step Wise (What to be done)** |
| 1.<br>**Introduction.** | ➢ Earth happens to be the only known planet having a life.<br>➢ There are beings who live, die and become part of nature again.<br>➢ The living organism can be differentiated from the inanimate entities on various parameters of life processes.<br>➢ The processes which together perform the function of maintenance of 'life' are called as life processes |
| 2**.** Living, Nonliving | ➢ Define Living and Nonliving<br>➢ Nonliving. |

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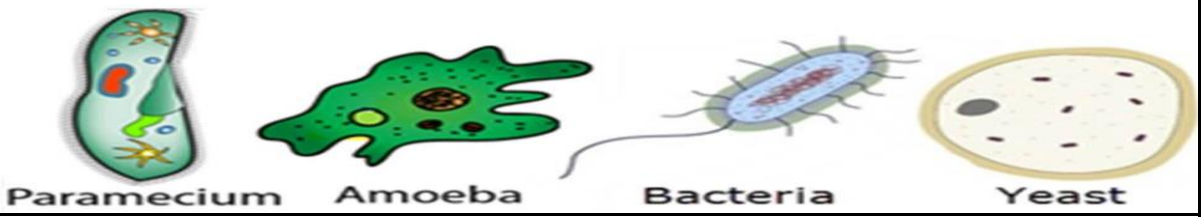
| 3. Molecular movements needed for life | ➢ Movement of constituent particles or molecules in a certain direction.<br>➢ It is essential because our cells in constant need of oxygen and nutrients. |
| 4. Single-celled organism, Multi-celled organism | ➢ Define Single-cell organism<br>➢ Multi-celled organism<br>  |
| **5.Home Assignment** | In box Question - 1,2,Pg No- 95 |

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**ODM Teachers' Note**

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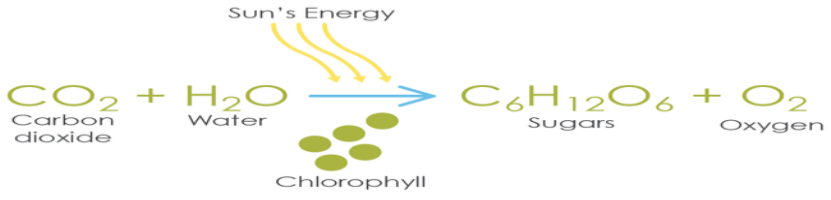
|---|---|---|---|
| **Class** | X | **Subject** | BIOLOGY |
| **Period.** | 2 | **Chapter-6** | LIFE PROCESSES. |
| **Sub- Concepts** | Nutrition, Types of nutrition, metabolism, Autotrophic Nutrition, photosynthesis, Heterotrophic Nutrition, Holozoic Nutrition, Nutrition in Amoeba | | |
| **TeachingAid To be used** | Smart Class, PowerPoint presentation, classroom objects, charts. | | |
| **Recapitulation.** | Testing previous knowledge –<br>1. What is nutrition?<br>2. What is metabolism and catabolism? | | |
| **Learning Outcome** | On completion of this topic, students will be able to<br>• Investigate how nutrition helpful for the organisms.<br>• Understand the role of autotrophs.<br>• Distinguish between autotrophs and heterotrophs.<br>• Analyze how autotrophs prepare their food.<br>• Demonstrate how plants prepare food? | | |
| **Sl. No** | **Step Wise (What to be done)** | | |
| 1. Nutrition, Types of nutrition, metabolism, Autotrophic Nutrition. | ➢ Define nutrition<br>➢ Modes of nutrition<br>➢ Energy producing<br>➢ Metabolism | | |
| 2. Autotrophic Nutrition, photosynthesis, Heterotrophic Nutrition. | ➢ Define Autotrophic nutrition<br>➢ Hetero trophic nutrition.<br>➢ Explain photosynthesis<br>➢ Difference between autotrophic and heterotrophic nutrition.<br>Autotrophs —Use→ Simple inorganic material —Convert into→ Complex high energy molecules of carbohydrates<br>  <br> | | |

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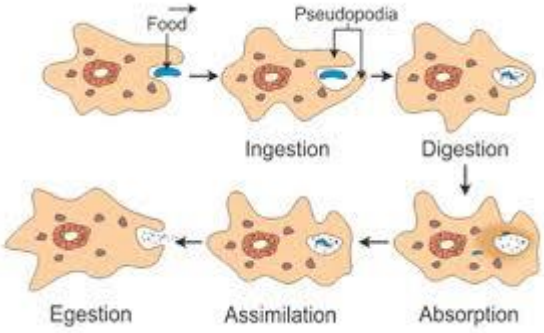
|---|---|
| 3. Holozoic Nutrition |  |
| 4. Nutrition in Amoeba. |  |
| **5.Home Assignment** | In box Question - 2,Pg No-101 and Exercise Question No- 7 |

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**ODM Teachers' Note**

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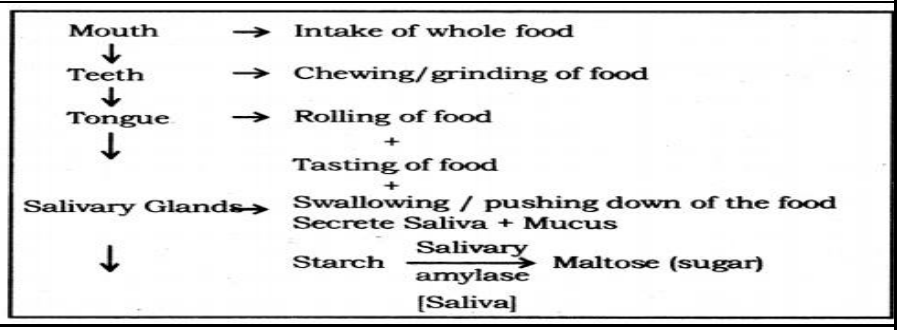
| **Class** | X | | **Subject** | BIOLOGY |
| **Period.** | 3 | **Chapter-6** | LIFE PROCESSES. | |
| **Sub-Concepts** | Human Digestive System, Alimentary Canal, Associated Digestive Glands, Digestion of various food components along various parts of Alimentary canal | | | |
| **Teaching AidTo be used** | Smart Class, PowerPoint presentation, classroom objects, charts. | | | |
| **Recapitulation** | Testing previous knowledge –<br>1. Explain the processes of photosynthesis.<br>2. What is holozoic mode of nutrition? | | | |
| **Learning Outcome** | On completion of this topic, students will be able to<br>• Define glands.<br>• Draw or construct the human digestive system and labeled different parts.<br>• Outline and analyses the process digestion in human beings.<br>• Analyze the different glands associated with human digestive system. | | | |
| **Sl. No** | **Step Wise (What to be done)** | | | |
| 1. Human Digestive System | ➢  | | | |
| 2. Alimentary Canal, Associated Digestive Glands | ➢ Alimentary Canal: It comprises of mouth, oesophagus, stomach, small intestine and large intestine.<br>➢ Associated Glands: Main associated glands are<br>○ Salivary gland<br>○ Gastric Glands<br>○ Liver<br>○ Pancreas | | | |

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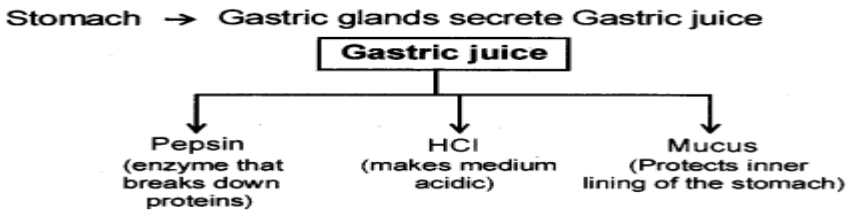
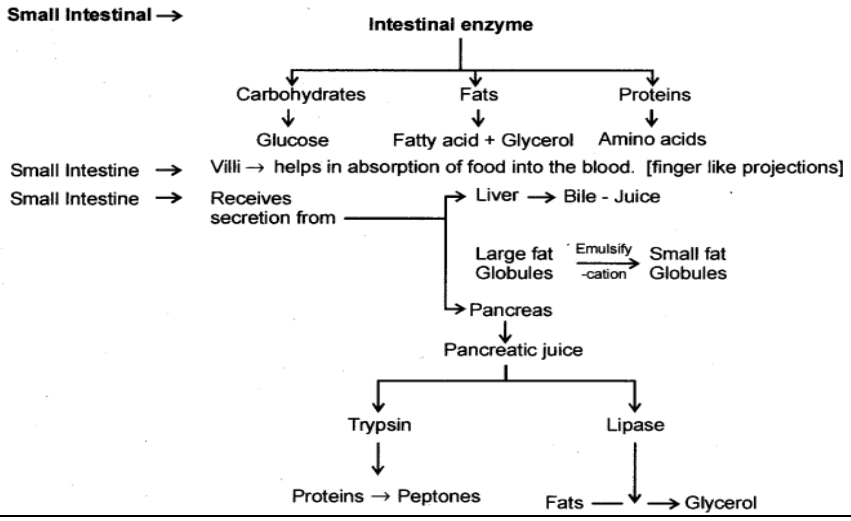
| 3. Digestion of various food components |  |
| 4. Digestion of various food components along various parts of Alimentary canal. |  |
| **5.Home Assignment .** | In box Question - 3,4Pg No- 101 and Exercise Question No- 5, 6 |

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**ODM Teachers' Note**

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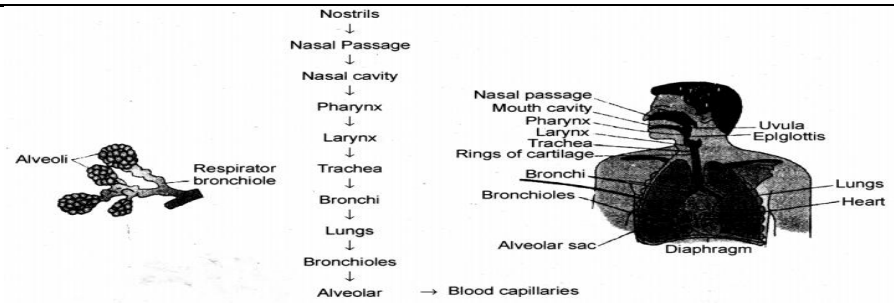
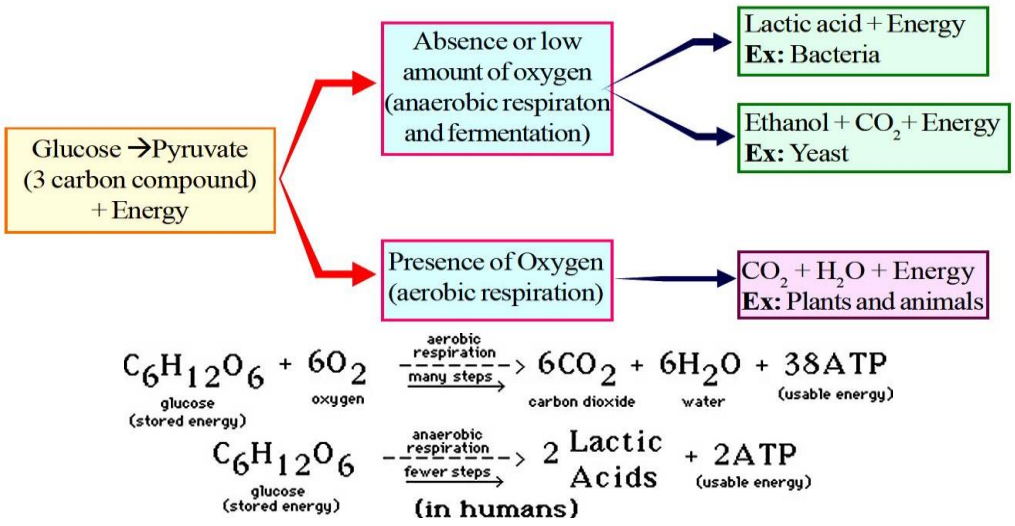
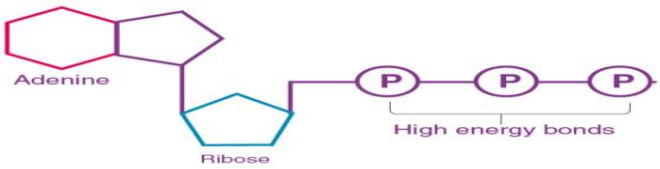
|---|---|---|---|
| **Class** | X | **Subject** | BIOLOGY. |
| **Period.** | 4 | **Chapter-6** | LIFE PROCESSES. |
| **Sub-Concepts** | Respiration, Aerobic & Anaerobic Respiration, Breakdown of glucose by various pathways, formation of ATP. | | |
| **Teaching Aid To be used** | Smart Class, PowerPoint presentation, classroom objects, charts | | |
| **Recapitulation.** | Testing previous knowledge –<br>1. Name the different parts of human digestive system.<br>2. How carbohydrates ,protein and fat digestion occurs in the body? | | |
| **Learning Outcome.** | On completion of this topic, students will be able to<br>• Identify and explain major steps of glucose break down in various organisms.<br>• Define respiration and also explain types of respiration<br>• List the types of respiration in various organisms.<br>• Categories the aerobic and anaerobic respiration. | | |

| Sl. No | Step Wise (What to be done) |
|---|---|
| 1. Respiration. |  |
| 2. Aerobic & Anaerobic Respiration | $C_6H_{12}O_6$ (Glucose) $\xrightarrow{\text{presence of } O_2}$ $6CO_2 + 6H_2O + \text{Energy}$<br><br>$C_6H_{12}O_6$ (Glucose) $\xrightarrow{\text{absence of } O_2}$ $C_2H_5OH + CO_2$ (Ethanol)<br><br>$C_6H_{12}O_6$ (Glucose) $\xrightarrow{\text{lack of } O_2}$ $CH_3CHOHCOOH$ (Lactic acid) |
| 3. Breakdown of glucose by various pathways |  |
| 4. formation of ATP. |  |
| **5.Home Assignment** | In box Question - 2 ,Pg No-105 and Exercise Question No-8 |

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**ODM Teachers' Note**

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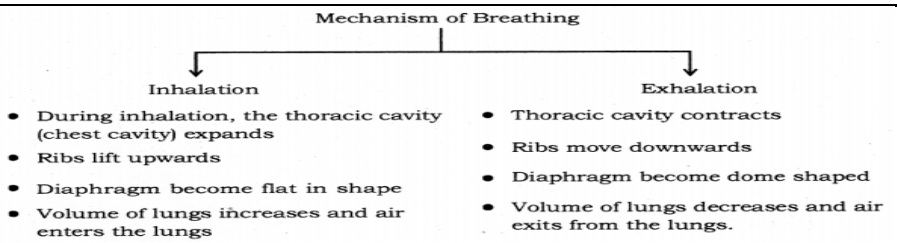
|---|---|---|---|
| **Class** | X | **Subject** | BIOLOGY. |
| **Period.** | 5 | **Chapter-6** | LIFE PROCESSES. |
| **Sub-Concepts** | Mechanism of Respiration in Human Beings, Mechanism of Respiration in aquatic and Terrestrial organism, breathing in plants | | |
| **Teaching Aid To be used** | Smart Class, PowerPoint presentation, classroom objects, charts | | |
| **Recapitulation .** | Testing previous knowledge –<br>1. what is aerobic and anaerobic respiration.<br>2. Name one organism which can live without oxygen.<br>3. In which type of respiration, aerobic or anaerobic, more energy is released?<br>4. Name the substance whose build up in the muscles during vigorous physical exercise may cause cramps. | | |
| **Learning Outcome .** | On completion of this topic, students will be able to<br>• Identify and explain the mechanism of respiration.<br>• Define gaseous mechanism.<br>• List the different types of organisms and how respiration occurs in them.<br>• Categories the types of respiration occurs in different organisms. | | |

| Sl. No | Step Wise (What to be done) |
|---|---|
| 1. Mechanism of Respiration in Human Beings |  |
| 2. Mechanism of Respiration in aquatic | ➢ Respiration through gills<br>➢ General body surface. |
| 3. Mechanism of Respiration in Terrestrial organism. | ➢ general body surface<br>➢ skin<br>➢ tracheal tubes |
| 4. breathing in plants | ➢ Unlike animals and humans, plants do not have any specialized structures for gaseous exchange<br>➢ They have stomata (present in leaves) and lenticels (present in stems) which are involved in the exchange of gases.<br>➢ Compared to animals, plant roots, stems, and leaves respire at a very lower rate. |
| **5.Home Assignment** | In box Question - 3,4 ,Pg No- 105 and Exercise Question No- 9 |

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**ODM Teachers' Note**

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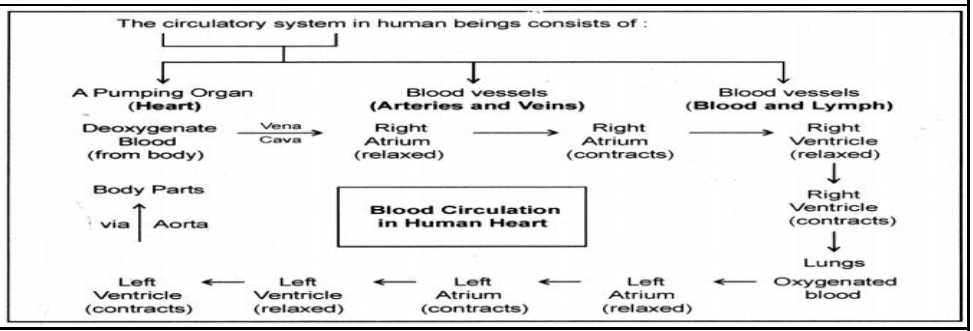
|---|---|---|---|
| **Class** | X | **Subject** | BIOLOGY. |
| **Period.** | 6 | **Chapter-6** | LIFE PROCESSES. |
| **Sub-Concepts** | Transportation in human being, Circulatory System, Components of Transport system in Human Beings, Blood vessels, Functions of the various blood Components, Blood Pressure | | |
| **Teaching Aid To be used** | Smart Class, PowerPoint presentation, classroom objects, charts | | |
| **Recapitulation .** | Testing previous knowledge –<br><br>1.Describe the process of respiration in *Amoeba*. State whether it is anaerobic respiration or aerobic respiration.<br><br>2.State the three common features of all the respiratory organs like skin, gills and lungs.<br><br>3. Describe the process of respiration in fish.<br><br>4. Why is the rate of breathing in aquatic organisms much faster than in terrestrial organisms | | |
| **Learning Outcome .** | On completion of this topic, students will be able to<br>• Identify and explain major steps of circulatory system.<br>• Define transportation.<br>• List the components of circulatory system<br>• Categories arteries and veins | | |

| Sl. No | Step Wise (What to be done) |
|---|---|
| 1. Transportation in human being | ➢ Transportation<br>➢ Modes of transportation |
| 2. Circulatory System |  |
| 3. Components of Transport system in Human Beings, | ➢ Blood<br>➢ Blood vessels<br>➢ Arteries<br>➢ Veins |
| 4. Functions of the various blood Components, Blood Pressure | ➢ RBCs<br>➢ WBCs<br>➢ Platelets<br>➢ Blood clotting |
| **5.Home Assignment** | In box Question - 1, Pg No- 110 and Exercise Question 10 |

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**ODM Teachers' Note**

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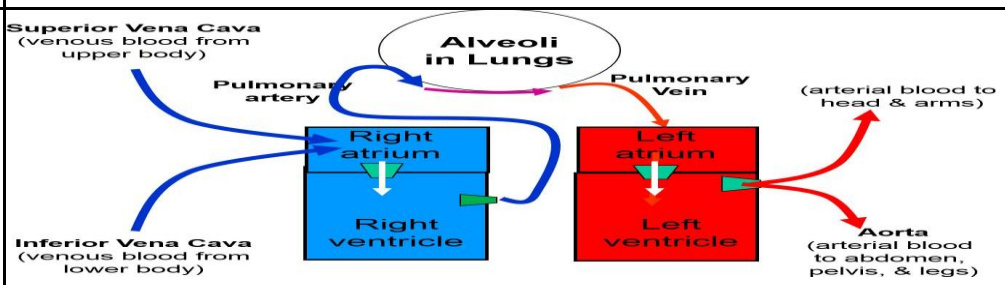
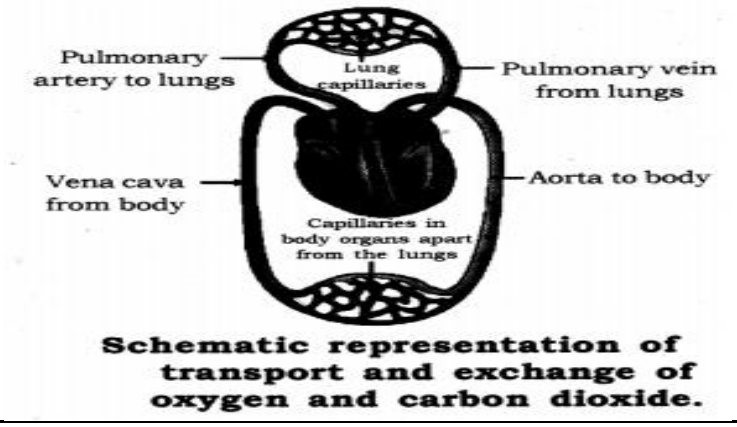
|---|---|---|---|
| **Class** | X | **Subject** | BIOLOGY. |
| **Period.** | 7 | **Chapter-6** | LIFE PROCESSES. |
| **Sub-Concepts** | Human Heart, Double circulation | | |
| **Teaching Aid To be used** | Smart Class, PowerPoint presentation, classroom objects, charts | | |
| **Recapitulation .** | Testing previous knowledge –<br>1.why do capillaries have very thin walls?<br>2. List the three kinds of blood vessels of human circulatory system and write their functions in tabular form.<br>3.why is the circulation of blood in fishes called single circulation? | | |
| **Learning Outcome .** | On completion of this topic, students will be able to<br>• Identify and explain double circulation<br>• Define double circulation.<br>• **What are the components of the transport system in human beings? What are the functions of these components?**<br>• Name one animal having single circulation of blood and another having double circulation. | | |

| Sl. No | Step Wise (What to be done) |
|---|---|
| 1. Human Heart | ➢ Oxygen- rich blood<br>➢ Carbon dioxide-rich blood<br>➢ Auricle<br>Ventricle Systemic Vein →Sinus Venosus →Right Auricle →Right Ventricle →Pulmonary Artery →<br>Lungs →Pulmonary Vein →Left Auricle →Left Ventricle →Trunchus Arteriosus →Systemic Circulation |
| 2. Human Heart |  |
| 3. Double circulation | ➢ Pulmonary circulation.<br>➢ Systemic circulation |
| 4. Double circulation |  <br>**Schematic representation of transport and exchange of oxygen and carbon dioxide.** |
| **5.Home Assignment** | In box Question - 2 Pg No-110 and Exercise Question No-11 |

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**ODM Teachers' Note**

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|---|---|---|---|
| **Class** | X | **Subject** | BIOLOGY. |
| **Period.** | 8 | **Chapter-6** | LIFE PROCESSES. |
| **Sub-Concepts** | Lymph, Maintenance by platelets, Composition of lymph | | |
| **Teaching Aid To be used** | Smart Class, PowerPoint presentation, classroom objects, charts | | |
| **Recapitulation .** | Testing previous knowledge –<br>1. draw a sectional view of the heart and label on it:<br>aorta, right ventricle, pulmonary vein<br>2. State the differences between artery, vein and capillary. | | |
| **Learning Outcome .** | On completion of this topic, students will be able to<br>• Identify and explain major composition of lymph.<br>• Define lymph.<br>• Difference between lymph and blood?<br>• **What do you mean by 'lymph'. Mention its function.**<br>• **How does tissue fluid differ from plasma?** | | |

| Sl. No | Step Wise (What to be done) |
|---|---|
| 1. Lymph, | ➢ Lymph<br>➢ Lymph vessels |
| 2. Maintenance by platelets | ➢ platelets |
| 3. Composition of lymph | ➢ Blood plasma composition<br>➢ Tissue fluid composition |
| 4. Function of lymph | ➢ Middle man<br>➢ Maintenance of blood volume<br>➢ Fat<br>➢ Waste<br>➢ Germs<br>➢ |
| **5.Home Assignment** | what is lymph? |

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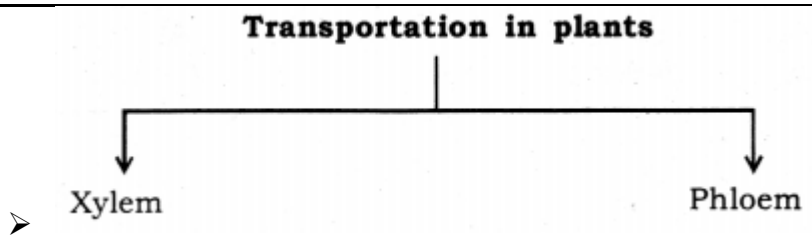
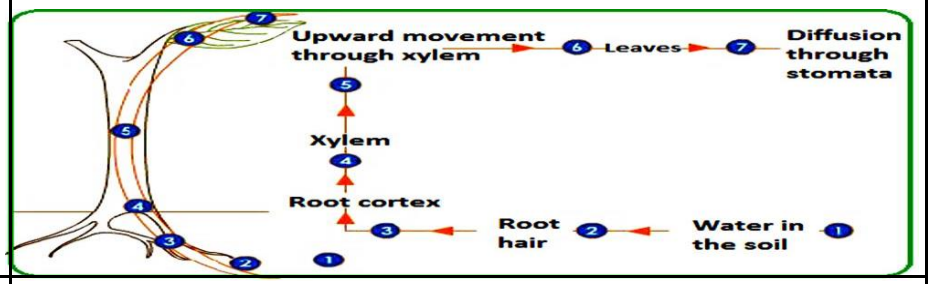
**ODM Teachers' Note**

| | | | |
|---|---|---|---|
| **Class** | X | **Subject** | BIOLOGY. |
| **Period.** | 9 | **Chapter-6** | LIFE PROCESSES. |
| **Sub-Concepts** | Transportation in Plants, Components of transport system in a highly organized plants, Transport of water, Transport of food and other substances | | |
| **Teaching Aid To be used** | Smart Class, PowerPoint presentation, classroom objects, charts | | |
| **Recapitulation .** | Testing previous knowledge –<br>1. **What are the functions of lymph in our body?**<br>**2. How is plasma different from blood and serum?** | | |
| **Learning Outcome .** | On completion of this topic, students will be able to<br>• Identify and explain major components of transportation in plants.<br>• Define transportation.<br>• List the substances that transport in plants<br>• Explain the factors responsible for the ascent of sap in plants .<br>• what do you understand by the force of adhesion and cohesion in the ascent of sap?<br>• what is translocation in plants? | | |

| Sl. No | Step Wise (What to be done) |
|---|---|
| 1. Transportation in Plants, |  |
| 2. Components of transport system in a highly organized plants, | ➢ Xylem<br>➢ phloem |
| 3. Transport of water | ➢ Ascent of Sap<br>➢ Root Pressure<br>➢ Capillary Action<br>➢ Adhesion-cohesion of Water Molecules<br>➢ Transpiration Pull |
| 4. Transport of food and other substances |  |
| **5.Home Assignment** | In box Question - 3,4 Pg No- 110 and Exercise Question No-12 |

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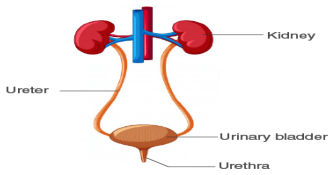
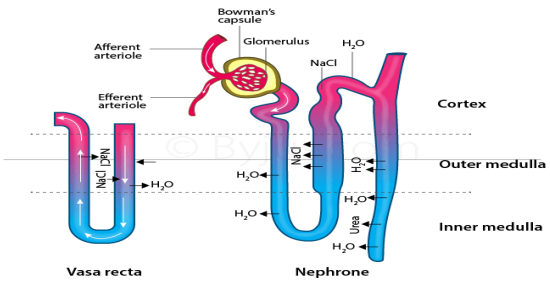
|---|---|---|---|
| **Class** | X | **Subject** | BIOLOGY. |
| **Period.** | 10 | **Chapter-6** | LIFE PROCESSES. |
| **Sub-Concepts** | Excretion, Excretion in Human Beings, Excretory System, Structure & function of Nephrons | | |
| **Teaching Aid To be used** | Smart Class, PowerPoint presentation, classroom objects, charts | | |
| **Recapitulation** . | Testing previous knowledge –<br>**1.**What is "translocation"? Why it is essential for plants.<br>2. How does food pass in the phloem.<br>3. what forms the continuous water conducting channels in the plants?<br>4. why does water diffuse into the root hair passively? | | |
| **Learning Outcome** . | On completion of this topic, students will be able to<br>• Identify and explain major steps of excretion.<br>• Define excretion.<br>• Explain the structure and function of nephron.<br>• Draw a neat labelled diagram of the human excretory system.<br>• Describe the mechanism of urine formation in human excretory system. Draw a labelled diagram to illustrate your answer. | | |

| Sl. No | Step Wise (What to be done) |
|---|---|
| 1. Excretion | ➢ Waste materials<br>➢ Ammonotelism<br>➢ Ureotelism<br>➢ uricotelism |
| 2. Excretion in Human Beings | ➢ The excretory system in humans includes<br>➢ a pair of kidneys,<br>➢ a pair of ureters,<br>➢ a urinary bladder and<br>➢ urethra. |
| 3. Excretory System |  <br>Human Excretory System |
| 4. Structure & function of Nephrons |  <br>Structure of a Nephron |
| **5.Home Assignment** | In box Question - 1Pg No- 112 . |

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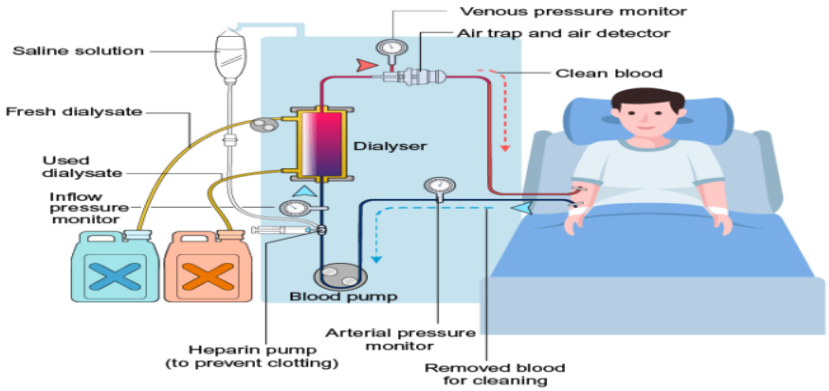
|---|---|---|---|
| **Class** | X | **Subject** | BIOLOGY. |
| **Period.** | 11 | **Chapter-6** | LIFE PROCESSES. |
| **Sub-Concepts** | Mechanism of urine formation, Artificial Kidney (Hemodialysis) | | |
| **Teaching Aid To be used** | Smart Class, PowerPoint presentation, classroom objects, charts | | |
| **Recapitulation** . | Testing previous knowledge –<br>1.why should ammonia be excreted as soon as it is formed?<br>2. Name two organisms which excrete urea.<br>3. How do most of the unicellular organisms excrete? | | |
| **Learning Outcome** . | On completion of this topic, students will be able to<br>• Identify and explain the mechanism of urine formation.<br>• Define hemodialysis.<br>• What is meant by dialysis? What type of patients are put on dialysis?<br>• Explain the principle of dialysis with the help of a labelled diagram.<br>• Differentiate between ammoniotelic and uricotelic organisms. | | |

| Sl. No | Step Wise (What to be done) |
|---|---|
| 1. Mechanism of urine formation | ➢ Glomerular filtration<br>➢ Reabsorption<br>➢ Tubular secretions |
| 2.micturation | ➢ Urge for micturition occurs when urinary bladder comes to have 300-400 ml of urine<br>➢ Total amount of urine excreted per day is about 1.6-1.8 litres. |
| 3. Composition of urine. | ➢ Water96%<br>➢ Organic substances 2.5%<br>➢ Inorganic solutes 1.5% |
| 4. Artificial Kidney (Hemodialysis) |  |
| **5.Home Assignment** | In box Question - 3 Pg No-112 and Exercise Question No-13. |

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**ODM Teachers' Note**

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|---|---|---|---|
| **Class** | X | **Subject** | BIOLOGY. |
| **Period.** | 12 | **Chapter-6** | LIFE PROCESSES. |
| **Sub-Concepts** | Excretion in plants | | |
| **Teaching Aid To be used** | Smart Class, PowerPoint presentation, classroom objects, charts | | |
| **Recapitulation** . | Testing previous knowledge –<br>1.Name the constituent present in glomerular filtrate.<br>2. From where do the ureters arise?<br>3. Name an anticoagulant used in dialysis.<br>4. why do the excretory products pass from the blood to the dialyzing fluid? | | |
| **Learning Outcome** . | On completion of this topic, students will be able to<br>• Explain the processes of excretion in plants.<br>• Define excretion.<br>• What are the methods used by plants to get rid of excretory products?<br>• Name the waste products stored in the old xylem of many plants.<br>• Name any two waste products produced by the plants. | | |

| Sl. No | Step Wise (What to be done) |
|---|---|
| 1. Excretion in plants | Excretion of Oxygen, $CO_2$ and $H_2O$ → Through stomata (Transpiration) |
| 2. Excretion in plants | ➢ Other wastes may be stored in leaves, bark etc. which fall off from the plant.<br>➢ Plants excrete some waste into the soil around them.<br>➢ Gums, resin → In old xylem<br>➢ Some metabolic wastes in the form of crystals of calcium oxalates in the leaves of colocasia and stem of Zamikand. |
| 3. Excretion in plants | ➢ Tannins<br>➢ Latex<br>➢ Root excretion |
| 4. Excretion in plants |  <br>Different forms of excretory products in plants |
| **5.Home Assignment** | In box Question - 2 Pg No-112 . |

ODM EDUCATIONAL GROUP
Changing your Tomorrow

**ODM Teachers' Note**

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|---|---|---|---|
| **Class** | X | **Subject** | BIOLOGY. |
| **Period.** | 13 | **Chapter-6** | LIFE PROCESSES. |
| **Sub-Concepts** | | | |
| **Teaching Aid To be used** | Smart Class, PowerPoint presentation, classroom objects, charts | | |
| **Recapitulation .** | Testing previous knowledge –<br>3. | | |
| **Learning Outcome .** | On completion of this topic, students will be able to<br>• Identify and explain major human activities which are threat to our environment<br>• Define ozone and explain the function of ozone<br>• List the threats to earth's ozone layer and measures to prevent its depletion<br>• Categories the waste materials which we produce and discuss the simple steps individuals can take to protect our environment.<br>• Be aware of Conservation of ecosystem. | | |

| Sl. No | Step Wise (What to be done) |
|---|---|
| 1. | ➢ |
| 2. | |
| 3. | ➢ |
| 4. | ➢ |
| **5.Home Assignment** | |