**Chapter 3: Human Body – Digestive and Excretory Systems**

**Key Terms**

* **Digestion:** The process by which food is broken down into a simpler form so it can be taken in or absorbed by the body.
* **Oesophagus (Food pipe):** The tube connecting the mouth to the stomach.
* **Stomach:** The organ where food is churned and broken down further.
* **Small intestine:** The long tube where digestion is completed and nutrients are absorbed into blood.
* **Large intestine:** The shorter, wider tube that absorbs water and forms faeces.
* **Rectum:** The end part of the large intestine that stores faeces.
* **Anus:** The opening through which faeces are removed from the body.
* **Excretion:** The process of removing waste from the body.
* **Kidneys:** Organs that filter waste from the blood to produce urine.
* **Ureters:** Tubes that carry urine from the kidneys to the urinary bladder.
* **Urinary bladder:** Organ that stores urine.
* **Urethra:** Tube through which urine leaves the body.
* **Peristalsis:** The wave-like contraction and relaxation of muscles in the food pipe to move food to the stomach.
* **Fibre:** Part of plant food that helps movement in the digestive system.

**In-Text Page Questions & Answers**

**Q: What is the process by which food is broken down into a simpler form so that it can be easily taken in or absorbed by our body?**  
A: This process is called digestion.

**Q: Which organ does digestion start in?**  
A: Digestion starts in the mouth.

**Q: Write True or False for each statement:**

1. The teeth help to break and chew food.  
   A: True
2. Saliva is produced in the food pipe.  
   A: False
3. The stomach churns food and mixes it with digestive juices.  
   A: True
4. Useful nutrients are absorbed in the large intestine.  
   A: False

**Q: What is peristalsis?**  
A: Peristalsis is the wave-like movement of muscles in the food pipe that pushes food down.

**Q: Why is it important to chew food well?**  
A: Chewing food breaks it into smaller particles and mixes it with saliva, making it easier to digest.

**Q: Why should we drink water every day?**  
A: Water helps in absorption of food and prevents constipation.

**Q: What is excretion?**  
A: Excretion is the process by which wastes are removed from our body.

**Q: Write two healthy habits related to digestion and excretion:**  
A: Eat food rich in fibre and drink lots of water every day.

**Case Study:**

**Q: What is the impact of polluted water on humans’ digestive and excretory systems?**  
A: Polluted water can cause diarrhoea, vomiting, and diseases such as typhoid.

**Q: What measures is the government of India taking to reduce water pollution?**  
A: Building new sewer treatment plants and repairing existing ones.

**Q: What steps can we take as individuals to avoid water pollution?**  
A: We should not throw waste into water bodies and try to minimize the use of household chemicals.

**End-of-Chapter Exercises & Answers**

**A. Multiple Choice Questions**

**1. In which of the following organs does digestion start in the human body?**  
a. Small intestine  
b. Blood vessels  
c. Stomach  
d. Mouth  
**Answer:** d. Mouth

**2. Which of the following organs helps in the absorption of nutrients in the body?**  
a. Small intestine  
b. Stomach  
c. Liver  
d. Urethra  
**Answer:** a. Small intestine

**3. Which of the following organs helps in the absorption of water?**  
a. Large intestine  
b. Stomach  
c. Urethra  
d. Oesophagus  
**Answer:** a. Large intestine

**4. Which of the following organs store urine?**  
a. Urethra  
b. Kidneys  
c. Ureter  
d. Urinary bladder  
**Answer:** d. Urinary bladder

**5. Which of the following is required for good bowel movement?**  
a. Saliva  
b. Fibre  
c. Nutrient  
d. Enzyme  
**Answer:** b. Fibre

**B. Assertion and Reasoning Questions**

**1. Assertion (A): Faeces are stored in the rectum for a short time. Reason (R): Rectum is the last organ of the digestive system.**  
a. Both A and R are True  
b. Both A and R are False  
c. A is True and R is False  
d. A is False and R is True  
**Answer:** a. Both A and R are True

**2. Assertion (A): Urine is formed inside the kidneys. Reason (R): It contains useful substances that are formed inside our body.**  
a. Both A and R are True  
b. Both A and R are False  
c. A is True and R is False  
d. A is False and R is True  
**Answer:** d. A is True and R is False

**C. Fill in the Blanks**

**1. From the mouth, the chewed food reaches the stomach via the \_\_\_\_\_\_. (oesophagus/kidneys)**  
A: oesophagus

**2. The liver secretes \_\_\_\_\_\_ (saliva/digestive juices) that helps in the digestion of food.**  
A: digestive juices

**3. The \_\_\_\_\_\_ (excretory/circulatory) system helps in removing wastes from our body.**  
A: excretory

**4. Waste from our body is removed by the \_\_\_\_\_\_ (kidneys/stomach).**  
A: kidneys

**5. Urine is formed inside the \_\_\_\_\_\_ (kidneys/ureters).**  
A: kidneys

**D. Match the Following**

| **Column A** | **Column B** |
| --- | --- |
| 1. Churning | b. Stomach |
| 2. Saliva | a. Enzyme |
| 3. Food pipe | d. Oesophagus |
| 4. Kidney | e. Urine |
| 5. Fibre | c. Roughage |

**E. Short Answer Questions**

**1. Define digestion.**  
A: Digestion is the process of breaking down food into a simpler form so that it can be absorbed by the body.

**2. What is the role of tongue in the digestive process?**  
A: The tongue helps in mixing saliva with food and pushes food into the food pipe.

**3. What happens to the undigested food?**  
A: It passes to the large intestine where water is absorbed and the rest is expelled as waste.

**4. Define excretion.**  
A: Excretion is the process of removing waste products from our body.

**5. Name two waste products of our body.**  
A: Faeces and urine.

**F. Long Answer Questions**

**1. Abhishek's teacher takes their class to the science lab and they see a model of human body there. The teacher asked Abhishek to identify the various parts of the digestive system and explain their functions. Help Abhishek in finding the answer.**  
A: The main parts of the digestive system and their functions are — mouth (chews food), food pipe (carries food to stomach), stomach (churns food), liver and pancreas (make digestive juices), small intestine (absorbs nutrients), large intestine (absorbs water), rectum (stores faeces), and anus (removes faeces).

**2. Arpit is curious about how his body works. He learnt in his class that the human body has a system to remove waste, but he forgot the correct order. Help Arpit by naming the organs of the excretory system in sequence and explaining their function.**  
A: The correct order is: kidneys (make urine), ureters (carry urine), urinary bladder (stores urine), urethra (removes urine out of the body).

**3. Swati was asked to give a class presentation on `Healthy Habits for Digestion'. She wants to ensure that she covers all the points. Help Swati by writing a short note on the topic.**  
A: Healthy habits for good digestion are: eat from a clean plate, chew food well, eat fibre-rich foods, drink enough water, avoid junk food, and wash hands before and after meals.

**Chapter 4: Plants in the Surroundings and Environment**

**Key Terms**

* **Root:** Part of the plant usually growing below the soil, absorbs water and minerals.
* **Taproot:** Main thick root from which thin roots grow (e.g., carrot).
* **Fibrous root:** Many thin, bushy roots instead of a main root (e.g., grass).
* **Stem:** Part of the shoot that supports the plant and transports food and water.
* **Leaf:** Makes food for the plant. Green due to chlorophyll.
* **Chlorophyll:** Green substance in leaves that helps them absorb sunlight.
* **Stomata:** Tiny openings on leaves for gas exchange.
* **Photosynthesis:** The process by which plants prepare their food using sunlight, carbon dioxide and water.
* **Transpiration:** The process by which plants release water vapor through leaves.

**In-Text Page Questions & Answers**

**Q: Fill in the blanks with a suitable word.**

1. Plants are important to maintain the \_\_\_ of nature.  
   A: balance
2. The stem gives \_\_\_ to the plant.  
   A: support
3. Rice plants have \_\_\_ roots.  
   A: fibrous
4. Roots of carrots are \_\_\_ as they store \_\_\_ in them.  
   A: thick and fleshy, food

**Q: True or False** (Page 54)

1. Grapevine has a weak stem.  
   A: True
2. Mango leaf has a broader leaf blade as compared to banana leaf.  
   A: False
3. Through the stomata of leaf, carbon dioxide is taken in for photosynthesis.  
   A: True
4. Iodine test is used to test for the presence of carbon dioxide inside a leaf.  
   A: False
5. Starch turns blue-black in the presence of iodine in a leaf.  
   A: True

**Q: What are the two types of roots?**  
A: Taproot and fibrous root.

**Q: What is the process by which green plants prepare their own food?**  
A: Photosynthesis.

**Q: What is the main function of stem?**  
A: To support the plant and carry water and food.

**End-of-Chapter Exercises & Answers**

**A. Multiple Choice Questions**

**1. Which part absorbs water and minerals from the soil?**  
a. Leaf  
b. Stem  
c. Root  
d. Flower  
**A:** c. Root

**2. Which part is also known as the kitchen of a plant?**  
a. Leaf  
b. Stomata  
c. Flower  
d. Leaf stalk  
**A:** a. Leaf

**3. Chlorophyll helps to absorb**  
a. Oxygen  
b. Carbon dioxide  
c. Nutrients  
d. Sunlight  
**A:** d. Sunlight

**4. The flat part of a leaf is called**  
a. Vein  
b. Midrib  
c. Leaf blade  
d. Leaf stalk  
**A:** c. Leaf blade

**5. Tiny pores on leaves are called**  
a. Veins  
b. Leaf stalk  
c. Stomata  
d. Midrib  
**A:** c. Stomata

**6. \_\_\_ is the food prepared by plants by the process of photosynthesis.**  
a. Glucose  
b. Oxygen  
c. Chlorophyll  
d. Minerals  
**A:** a. Glucose

**7. A potato plant stores extra food in its**  
a. Stomata  
b. Leaves  
c. Roots  
d. Stem  
**A:** c. Roots

**B. Assertion and Reasoning**

**1. Assertion (A): Stem helps in the transportation of water and minerals in the plant. Reason (R): It transports water and minerals from the leaves to the other parts of the plant.**  
a. Both A and R are True  
b. Both A and R are False  
c. A is True and R is False  
d. A is False and R is True  
**A:** c. A is True and R is False

**2. Assertion (A): Plants take in carbon dioxide through stomata during photosynthesis. Reason (R): Plants prepare their own food through photosynthesis.**  
a. Both A and R are True  
b. Both A and R are False  
c. A is True and R is False  
d. A is False and R is True  
**A:** a. Both A and R are True

**C. Choose the correct word to fill in the blank**

1. Tap roots have a thick main root.
2. A plant uses the food prepared by it for its growth.
3. Spinach stores food in its leaf.
4. The midrib is the main vein of the leaf.
5. The petiole attaches the leaf to the stem.

**D. Name the Following**

1. Many thin, bushy roots instead of one main root: Fibrous roots
2. A green substance present in leaves that helps them to absorb sunlight: Chlorophyll
3. Leaves take in this gas from air: Carbon dioxide
4. In plants, the extra food is stored in this form: Starch
5. Stem of banyan and mango tree: Trunk

**E. Short Answer Questions**

1. Name one plant that has taproot.  
   A: Carrot
2. Name one plant that has fibrous root.  
   A: Wheat
3. Name one root that we eat as a vegetable.  
   A: Radish
4. What are stomata? How do they help a plant?  
   A: Stomata are tiny openings on the leaf that help the plant take in carbon dioxide for photosynthesis and release oxygen and water vapour.
5. What are the functions of a leaf?  
   A: A leaf prepares food, stores food in some plants, and releases water vapour.
6. Name two plants that we use to make medicines.  
   A: Tulsi and neem.
7. What is transpiration?  
   A: Transpiration is the process by which plants lose water as vapour through stomata in leaves.

**Chapter 5: Adaptation in Plants**

**Key Terms**

* **Habitat:** The place where a living organism lives.
* **Adaptation:** Traits that help a plant or animal survive in its habitat.
* **Terrestrial plants:** Plants that grow on land.
* **Aquatic plants:** Plants that grow in water.
* **Deciduous trees:** Trees that shed their leaves during dry season.
* **Evergreen trees:** Trees that keep their leaves green all year.
* **Breathing roots:** Roots that grow above the soil to help plants in swampy areas get oxygen.

**In-Text Page Questions & Answers**

**Q: Write the names of any two plants generally found in the following habitats:**

* Mountains  
  A: Pine, Fir
* Desert  
  A: Cactus, Acacia
* Plains (low rainfall)  
  A: Mango, Ashoka
* Plains (heavy rainfall)  
  A: Rubber, Teak

**Q: Why are trees in mountains cone shaped?**  
A: To help snow slide off easily.

**Q: Why do desert plants have spines and thick stems?**  
A: To reduce water loss and store water.

**Q: How do floating plants stay on the surface of water?**  
A: They have light and spongy stems and loose roots.

**Activity:**

**Q: Why does the leaf turn blue-black when iodine is added?**  
A: The leaf contains starch, and iodine turns starch blue-black.

**Q: Why did the leaf that was kept in the dark not change color with iodine?**  
A: Because no starch was made without sunlight.

**End-of-Chapter Exercises & Answers**

**A. Multiple Choice Questions**

1. Plants that absorb water and minerals from the soil are:  
   a. Leaf b. Stem c. Root d. Flower  
   **Answer:** c. Root
2. Plants prepare food by the process of:  
   a. Respiration b. Photosynthesis c. Transpiration d. Germination  
   **Answer:** b. Photosynthesis
3. Taproot plants are:  
   a. Wheat b. Grass c. Pea d. Rice  
   **Answer:** c. Pea
4. The green substance in leaves is called:  
   a. Chlorophyll b. Carotene c. Oxygen d. Water  
   **Answer:** a. Chlorophyll

**B. Assertion and Reasoning**

1. Assertion (A): Stem transports water and minerals in plants.  
   Reason (R): Stem transports water from the leaves.  
   a. Both A and R are True  
   b. Both A and R are False  
   c. A is True and R is False  
   d. A is False and R is True  
   **Answer:** c. A is True and R is False
2. Assertion (A): Plants take in carbon dioxide through stomata.  
   Reason (R): They prepare their own food through photosynthesis.  
   a. Both A and R are True  
   b. Both A and R are False  
   c. A is True and R is False  
   d. A is False and R is True  
   **Answer:** a. Both A and R are True

**C. Fill in the Blanks**

1. Taproot plants have a thick main root.
2. A plant uses the food prepared by it for growth.
3. Spinach stores food in its leaves.
4. Midrib is the main vein of a leaf.
5. Petiole attaches the leaf to the stem.

**D. Short Answer Questions**

1. Name one plant with taproot.  
   A: Carrot
2. Name one plant with fibrous root.  
   A: Rice
3. Name one root that we eat as a vegetable.  
   A: Turnip
4. What are stomata and how do they help a plant?  
   A: Tiny openings on leaves that help take in carbon dioxide for photosynthesis and release oxygen.
5. What are the function of leaves?  
   A: Leaves prepare food, release water vapour, and store food in some plants.
6. Name two plants used to make medicines.  
   A: Tulsi and neem
7. What is transpiration?  
   A: The release of water vapour from plant leaves through stomata.

**E. Long Answer Questions**

1. Carrots and radishes are roots that store food and are eaten as vegetables.
2. Stem supports the plant and carries water and food to all parts.
3. Photosynthesis is the process by which green plants make food using sunlight, CO₂, water, and chlorophyll.

**Chapter 6: Adaptation in Animals**

**Key Terms**

* **Adaptation:** Traits that help animals survive in their environment.
* **Habitat:** The place where animals live.
* **Terrestrial animals:** Animals that live on land.
* **Aquatic animals:** Animals that live in water.
* **Amphibians:** Animals that live both on land and in water.
* **Hibernation:** Sleeping through winter.
* **Aestivation:** Sleeping through hot summer.
* **Herbivores:** Animals that eat plants.
* **Carnivores:** Animals that eat meat.
* **Omnivores:** Animals that eat both plants and meat.

**In-Text Page Questions & Answers**

**Q: Why do animals need to adapt?**  
A: Animals need to adapt to get food, shelter, and protect themselves and their young in their habitats.

**Q: What are the adaptations of desert animals?**  
A: They drink lots of water at once, have thick pads under their feet, and some aestivate during hot months.

**Q: How do polar animals stay warm?**  
A: They have thick layers of fat called blubber and thick fur.

**Q: What adaptations help aquatic animals?**  
A: They have fins or limbs for swimming, gills for breathing, and streamlined bodies.

**Q: What makes amphibians special?**  
A: Amphibians like frogs have webbed feet for swimming, moist skin for breathing in water, and lungs to breathe on land.

**End-of-Chapter Exercises & Answers**

**A. Choose the correct option**

1. Terrestrial animals live in/on:  
   a. Land b. Water c. Air d. Both land and water  
   **Answer:** a. Land
2. Porcupines have:  
   a. Spines b. Spiracles c. Moist skin d. Shells  
   **Answer:** a. Spines
3. Most of the \_\_\_\_\_\_ have moist skin to help them breathe in water.  
   a. Amphibians b. Aerial animals c. Terrestrial animals d. Aquatic animals  
   **Answer:** a. Amphibians
4. Lions are:  
   a. Herbivores b. Scavengers c. Carnivores d. Omnivores  
   **Answer:** c. Carnivores
5. \_\_\_\_\_\_ birds have strong beaks and claws.  
   a. Parasitic b. Herbivorous c. Amphibian d. Omnivorous  
   **Answer:** d. Omnivorous

**B. Assertion and Reasoning Questions**

1. Assertion (A): Eagles have strong and sharp talons.  
   Reason (R): They help them to fly.  
   a. Both A and R are True  
   b. Both A and R are False  
   c. A is True and R is False  
   d. A is False and R is True  
   **Answer:** c. A is True and R is False (Talons help catch prey, not flying)
2. Assertion (A): Humans are herbivores.  
   Reason (R): They eat both plants and flesh of other animals.  
   a. Both A and R are True  
   b. Both A and R are False  
   c. A is True and R is False  
   d. A is False and R is True  
   **Answer:** d. A is False and R is True (Humans are omnivores)

**C. Write T for True and F for False. Correct the False statements.**

1. Animals that live on land are called aquatic animals.  
   **Answer:** False. They are called terrestrial animals.
2. Dogs are terrestrial animals.  
   **Answer:** True
3. Crow is an example of an omnivorous bird.  
   **Answer:** True
4. Desert animals drink a lot of water at a time.  
   **Answer:** True

**D. Name the Following**

1. Animals that live in water: Aquatic animals
2. A thick layer of fat under the skin of penguin: Blubber
3. Fish use it for breathing: Gills
4. The inactivity shown by some animals during winter months: Hibernation
5. Carnivorous birds use it to catch prey: Talons

**E. Match the Following**

| **Column A** | **Column B** |
| --- | --- |
| 1. Cow | d. Herbivore |
| 2. Bear | c. Omnivore |
| 3. Whale | a. Aquatic animal |
| 4. Tiger | b. Terrestrial animal |

**F. Short Answer Questions**

1. Define adaptation.  
   A: Adaptation means special features of animals that help them survive in their surroundings.
2. What do you understand by hibernation?  
   A: Hibernation is a long sleep animals take during cold winter months.
3. What is aestivation?  
   A: Aestivation is a long sleep animals take during hot summer months.
4. Write one method of protecting animals.  
   A: Protect animals by not cutting down their homes, such as trees.

**G. Long Answer Questions**

1. Name any three animals found in deserts and their adaptations.  
   A: Camels (store water and have padded feet), lizards (dry skin), and scorpions (nocturnal to avoid heat).
2. Write three adaptations of aquatic animals.  
   A: They have fins to swim, gills to breathe underwater, and streamlined bodies.
3. Name the category and adaptations of frogs and toads.  
   A: Amphibians. They have webbed feet, moist skin for breathing in water, and lungs for breathing on land.
4. How should Ruhi take care of her new pet dog?  
   A: Provide healthy food, clean water, shelter, regular baths, and veterinary care when sick.