Items for Assessment of Learning Outcomes

Science

Class 6

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CHAPTER I
FOOD: WHERE DOES IT COME FROM?

Learning Objectives

- Analyse the food items in order to identify the ingredients used in different food items.
- Identify the sources of ingredients which are used to prepare food items.
- Observe different food ingredients in order to recognize if their origin is from the part of the plant and recognize the respective part
- List the animal products in order to understand how we depend on them for our food.
- Categorize organisms into Herbivores, carnivores & omnivores based on their food habits or nutrition

Learning Outcomes

- Identifies materials and organisms, such as, plant fibres, flowers, on the basis of observable features, i.e., appearance, texture,

1. **Observe the given figure, out of the two which one has greater food value?**

(a) Boiled chana provides more energy and vitamins
(b) Sprouted chana provides more energy and vitamins
(c) Boiled chana provides more energy and fats
(d) Sprouted chana provides fats

2. **Identify the part of plant from which the given food item is obtained.**

(a) Leaf
(b) Root
(c) Stem
(d) Seeds

3. In the process of vegetative propagation new plants arise from parts of plants and not from seeds. Identify the part of plant from which the given plant can be obtained by vegetative propagation.

(a) Leaf
(b) Root
(c) Stem
(d) Seeds

Answers:

1 (b) **2 (c)** **3 (c)**

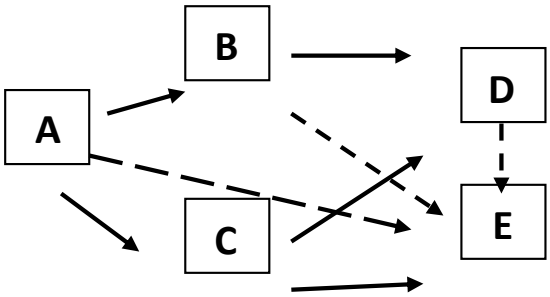
Learning Objectives

- Analyse the food items in order to identify the ingredients used in different food items.
- Identify the sources of ingredients which are used to prepare food items.
- Observe different food ingredients in order to recognize if their origin is from the part of the plant and recognize the respective part
- List the animal products in order to understand how we depend on them for our food.
- Categorize organisms into Herbivores, carnivores & omnivores based on their food habits or nutrition

Learning Outcomes

- Makes efforts to protect environment, e.g., minimising wastage of food, water, electricity and generation of waste; spreading awareness to adopt rain water harvesting; care for plants, etc.

1. In the given food web, what is the role of organism A ?



(a) Carnivores (b) Decomposers
(c) Herbivores (d) Omnivores

2. **In the given food chain, according to you it which level would you place a human being?**

Producers → Herbivores → Carnivores
(Level 1) (Level 2) (Level 3)

(a) Level 1 (b) Level 2
(c) Both Level 1 and level 2 (d) Both Level 2 and level 3

3. Out of the following members of the food chain, which one is the most important?

Herbivores ⟶ Carnivore ⟶ Top Carnivore

(a) Herbivore
(b) Carnivore
(c) Top carnivore
(d) All members of the food chain have equal importance .

Answers:

1 (c) **2 (d)** **3 (d)**

Learning Objectives

- Categorize organisms into Herbivores, carnivores & omnivores based on their food habits or nutrition.

Learning Outcomes

- Classifies materials, organisms and processes based on observable properties, e.g., materials as soluble, insoluble, transparent, translucent and opaque; changes as can be reversed and cannot be reversed; plants as herbs, shrubs, trees, creeper, climbers; components of habitat as biotic and abiotic; motion as rectilinear, circular, periodic etc.

1. Match the column 1 with column 2 and select the correct options from the codes given below:

	Column 1		**Column 2**
(A)	**Herbivores**	**(i)**	**bacteria**
(B)	**Omnivores**	**(ii)**	**crow**
(C)	**Carnivores**	**(iii)**	**tiger**
(D)	**Decomposers**	**(iv)**	**Deer**

(a) (A)-(iv); (B)- (ii); (C)-(i), (D)-(iii)
(b) (A)-(i); (B)- (ii); (C)-(iv), (D)-(iii)
(c) (A)-(iv); (B)- (ii); (C)-(iii), (D)-(i)
(d) (A)-(iv); (B)- (i); (C)-(ii), (D)-(iii)

2. Pea plant can be placed in which category of plants?

(a) Climber
(b) Shrub
(c) Tree
(d) Water plant

3. Classification of plants can be done on the basis of its -

(a) Leaf patterns
(b) Root system
(c) Shoot system
(d) All of the above

Answers:

1 (c) **2 (a)** **3 (d)**

CHAPTER II
COMPONENTS OF FOOD

Learning Objectives

- Improvise an activity to test the nutrients present in the given food items & critique their utility in adequate, inadequate & excess proportions.

Learning Outcomes

- Conducts simple investigations to seek answers to queries, e.g., what are the food nutrients present in animal fodder? Can all physical changes be reversed? Does a freely suspended magnet align in a particular direction?

1. Students take a sample of food. They add a few drops of iodine solution to it. The colour of the food sample turns blue black. This shows that the food sample contains:

(a) Carbohydrates
(b) Fats
(c) Proteins
(d) Vitamins

2. If we want to test the presence of fats in a food sample we may follow one of the following. Choose the correct statement:

(a) use a few drops of iodine solution
(b) use a few drops of copper sulphate solution
(c) press the food sample in layers of translucent sheet
(d) use a few drops of Benedict's solution

3. A student takes samples of carbohydrates in three test tubes and marks them A, B and C. Test tube A has cellulose solution, Test tube B has a starch solution and test tube C has sugar solution. She adds 10 drops of iodine solution in each. In which test tube do you think the student will observe positive results?

(a) Test tube A
(b) Test tube B
(c) Test tube C
(d) Test tubes A, B and C

Answers: 1 (a) 2 (c) 3 (b)

Learning Objectives

- Explain the function of each nutrient in order to discuss the importance of nutrients in good health.
- Hypothesize consequences of eliminating any one major nutrients in order to make a healthy food choice

Learning Outcome

- Relates processes and phenomenon with causes, e.g., deficiency diseases with diet; adaptations of animals and plants with their habitats; quality of air with pollutants, etc.

1. Which of the following food items are sources of sucrose, starch and cellulose respectively?

(a) Meat, fruit and potato (b) Spinach, corn and meat
(c) Table sugar, rice and grass (d) Fruits, eggs and wheat

2. The food items shown in the figure are rich in nutrient X .Read the given statements regarding the nutrient X

I. When we grow our body needs X to make new cells.
II. X is also needed to replace old and damaged cells.
III. X is a source of energy in our diet.
IV. In a balanced diet X should be in the maximum amount as compared to other nutrients.

Which of the above statements are correct?

(a) (I) and (IV)
(b) (III) and (IV)
(c) (II) and (III)
(d) (I) and (II)

3. 60% of an adult body is made up of water. Which of the following statements do not justify the importance of water?

(a) It serves as a solvent in which all chemical reactions take place in our body.
(b) It transports nutrients throughout the body.
(c) It helps our body to absorb nutrients from food
(d) It provides energy to our body.

Answers: 1 (c) 2 (b) 3 (d)

Learning Objective

- Design a balance diet plan in order to provide body sufficient nutrients it need to function properly.

Learning Outcome

- Applies learning of scientific concepts in day-to- day life, e.g., selecting food items for a balanced diet; separating materials; selecting season appropriate fabrics; using compass needle for finding directions; suggesting ways to cope with

1. An adolescent requires a diet which should contain:

(a) Body building food
(b) Energy giving food
(c) Protective food
(d) All of the above

2. Suppose you have a patient in your home who is recovering from a disease. What type of nutrients do you think you must add a little extra to their balanced diet, so that they recover faster?

(a) Fats
(b) Proteins
(c) Vitamins and minerals
(d) Both b and c

3. Your friend is suffering from Anaemia. What type of food nutrient will you recommend her to add to her diet so that she recovers faster?

(a) Calcium
(b) Iron
(c) Vitamin A
(d) Vitamin D

Answers: 1 (d) 2 (d) 3 (b)

Learning Objective

- Improvise an activity to test the nutrients present in the given food items & critique their utility in adequate, inadequate & excess proportions.

Learning Outcome

- Makes efforts to protect environment, e.g., minimizing wastage of food, water, electricity and generation of waste; spreading awareness to adopt rain water harvesting; care for plants, etc.

1. Units to measure Food energy is called:

(a) Calories.
(b) Litres.
(c) Kilograms
(d) Tons.

2. Two nutrients that are a source of energy and must be consumed in small amounts by people following sedentary lifestyle :

(a) Carbohydrates and minerals.
(b)Carbohydrates and fats.
(c) Vitamins and minerals
(d) Water and minerals.

3. A patient suffers from poor vision and bleeding gums. The nutrients that the person must eat to improve his health are:

(a) Vitamin C and Vitamin E respectively
(b) Vitamin A and Vitamin D respectively
(c) Vitamin C and Vitamin K respectively
(d) Vitamin A and Vitamin C respectively

Answers: 1 (a) 2 (b) 3 (d)

CHAPTER III

FIBRE TO FABRIC

Learning Objectives

- Examine various fabrics in order to predict what they are made up of.

Learning Outcomes

- Differentiates materials and organisms, such as, fibre and yarn; tap and fibrous roots; electrical conductors and insulators; on the basis of their properties, structure and functions

QUESTIONS

1. _____ are made up of Yarns.

a. Fabrics
b. looms
c. cocoons
d. Fibres

2. Which of the following fibre is obtained from plants?

a. Jute
b. Silk
c. Wool
d. Nylon

3. **When a student press one end of yarn with the thumb and scratch the other end of the yarn along its length with the nail of the finger then yarn splits up into thin strands. These thin strands are called _____.**

a. Fabrics
b. Cocoons
c. Nylon
d. Fibres

ANSWERS Q1 –a Q2- a Q3-d

Learning Objectives

- Classify the given fabrics as Natural or Synthetic based on their source.
- Describe the processing of cotton and jute fibres into yarn in order to conclude the required conditions to grow them.

Learning Outcomes

- Classifies materials, organisms and processes based on observable properties, e.g., materials as soluble, insoluble, transparent, translucent and opaque; changes as can be reversed and cannot be reversed; plants as herbs, shrubs, trees, creeper, climbers; components of habitat as biotic and abiotic; motion as rectilinear, circular, periodic etc.

QUESTIONS

1. Which one is obtained from the fleece of sheep or goat?

(a) Silk
(b) Nylon
(c) Wool
(d) Polyester

2. Select the incorrect match.

(a) Natural Fibre - Cotton
(b) Synthetic Fibre - Polyester
(c) Natural Fibre - Silk
(d) Synthetic Fibre - Wool

3. Which fibre is obtained from the given plant.

(a) Jute
(b) Silk
(c) Cotton
(d) Polyester

ANSWERS Q1- c Q2 – d Q3- c

Learning Objectives

- Explain the various processes of making yarn from fibres in order to create the fabric.

Learning Outcomes

- Explains processes and phenomenon, e.g., processing of plant fibres; movements in plants and animals; formation of shadows; reflection of light from plane mirror; variations in composition of air; preparation of vermicompost, etc.

QUESTIONS

1. **In _____ process, fibres from a mass of cotton are drawn out and twisted. This brings the fibres together to form a yarn.**
   (a) Spinning
   (b) Weaving
   (c) Knitting
   (d) Ginning

2. **The Process of arranging two sets of yarns together to make a fabric is called:**
   (a) Spinning
   (b) Weaving
   (c) Knitting
   (d) Ginning

3. **The process in which the fibres are separated from seeds by combing is :**
   (a) Ginning
   (b) Weaving
   (c) Knitting
   (d) Spinning

ANSWERS Q1 – a Q2 – b Q3 – a

Learning Objectives

- Outline the history of textile industry in our country

Learning Outcomes

- Applies learning of scientific concepts in day-to-day life, e.g., selecting food items for a balanced diet; separating materials; selecting season appropriate fabrics; using compass needle for finding directions; suggesting ways to cope with heavy rain /drought, etc.

QUESTIONS

1. **A fabric which has the capacity of absorbing sweat and makes the body cool and comfortable, is made by**
   (a) Silk
   (b) synthetic
   (c) wool
   (d) cotton

2. **Which of the followings were cultivated near the river Nile in ancient Egypt.**
   (a) Cotton and flax
   (b) Nylon and Polyester
   (c) Cotton and Nylon
   (d) Flax and Nylon

3. **Imagine that it is rainy day. What kind of Umbrella would you use?**
   (a) Dry up quickly
   (b) Non - durable
   (c) Expensive
   (d) Difficult to maintain

ANSWERS Q1-d Q2- a Q3-a

CHAPTER IV

SORTING MATERIALS INTO GROUPS

Learning Objectives

- List the objects around us in order to analyse the materials they are made up of.

Learning Outcomes

- Identifies materials and organisms, such as, plant fibres, flowers, on the basis of observable features, i.e., appearance, texture, function, aroma, etc.

QUESTIONS

1. Given object is made up of which material?

a) Metal
b) Plastic
c) Wood
d) Glass

2. Select the correct match.

a) Wood - Ring
b) Paper - Books
c) Plastic - Iron Nail
d) Cotton - Pen

3. A Plate is made up of which material?

a) Plastic
b) Glass
c) Steel
d) All of the above

ANSWERS Q1-c Q2- b Q3-d

Learning Objectives

- Observe the appearance of the materials in order to differentiate them as lustre and non-luster material.
- Plan and conduct an investigation in order to classify different kinds of materials by their observable properties.

Learning Outcomes

- Differentiates materials and organisms, such as, fibre and yarn; tap and fibrous roots; electrical conductors and insulators; on the basis of their properties, structure and functions

QUESTIONS

1. Which of the following will show luster.

(a) Freshly cut surface of a metal
(b) Freshly cut surface of a Non-metal
(c) Surface of all material
(d) Surface of Paper

2. Which of the following is the property of given material.

(a) Non-Sonorous
(b) Lustrous
(c) Non – Lustrous
(d) Soft

3. Suppose you have some materials like sponge, Candle, Aluminium, Copper. You need to Classify these materials into hard and soft. Which of the following is incorrect regarding classification of materials.

(a) Hard - Aluminium, Copper, Candle
(b) Soft - Sponge
(c) Lustrous - Aluminium, Copper
(d) Non-Lustrous - Sponge

ANSWERS Q1-a Q2- b Q3-a

Learning Objectives

- Examine the materials by compressing or scratching them in order to categorize them as hard and soft material.
- Observe the change in the shape of object added to water in order to categorize them as soluble and insoluble materials.
- Plan and conduct an investigation for various objects to classify them based on whether the object sink or float in water
- See through the objects in order to classify them into opaque, transparent and translucent.

Learning Outcomes

- Classifies materials, organisms and processes based on observable properties, e.g., materials as soluble, insoluble, transparent, translucent and opaque; changes as can be reversed and cannot be reversed; plants as herbs, shrubs, trees, creeper, climbers; components of habitat as biotic and abiotic; motion as rectilinear, circular, periodic etc.

QUESTIONS

1. An object will sink if its weight is

(a) Greater than up thrust on it
(b) Less than up thrust on it
(c) Equal to upthrust on it
(d) All of the above

2. Which of the following is insoluble in water?

(a) Salt
(b) Sugar
(c) Chalk powder
(d) Vinegar

3. Which of the following is opaque material?

(a) Mirror
(b) Glass
(c) Oiled paper
(d) All of these

ANSWERS Q1-a Q2- c Q3-a

Learning Objectives

- Plan and conduct an investigation in order to classify different kinds of materials by their observable properties.
- Plan and conduct an investigation for various objects to classify them based on whether the object sink or float in water

Learning Outcomes

- Conducts simple investigations to seek answers to queries, e.g., what are the food nutrients present in animal fodder? Can all physical changes be reversed? Does a freely suspended magnet align in a particular direction?

QUESTIONS

1. **Rani is making a clay boat. Which design will hold the many marbles?**
   (a) Less space and higher sides
   (b) Less space and lower sides
   (c) More space and lower sides
   (d) More and higher sides

2. **We can see the objects but not clearly:**
   (a) Transparent
   (b) Translucent
   (c) Opaque
   (d) None of the above

3. **Select the incorrect Match.**
   (a) Oily Paper Sheet - Translucent
   (b) Sugar and salt - Soluble in water
   (c) Wax – Floats on water
   (d) Wax – Soluble in water

ANSWERS Q1-d Q2- b Q3-d

CHAPTER V

SEPARATION OF SUBSTANCES

Learning Objectives

- Identify properties of given items and select a property that would help them easily separate the items from each other.
- Arrives at logical conclusion that certain specific methods can be employed to separate solid mixtures based on the size, colour or weight of the components

Learning Outcomes

- Classifies materials, organisms and processes based on observable properties, e.g., materials as soluble, insoluble, transparent, translucent and opaque; changes as can be reversed and cannot be reversed; plants as herbs, shrubs, trees, creeper, climbers; components of habitat as biotic and abiotic; motion as rectilinear, circular, periodic etc.

QUESTIONS

1. **In your classroom, table, chair, almirah and carpet are present are these four objects belongs to the same group? Identify the object which belong to different material.**
   (a) Table
   (b) chair
   (c) almirah
   (d) carpet

2. **Peanuts are separated from a mixture of pulses and rice by**
   (a) Winnowing
   (b) Sieving
   (c) filtration
   (d) Handpicking

3. **The process of spinning a mixture rapidly by a machine to separate their component is known as**
   (a) Sedimentation
   (b) decantation
   (c) evaporation
   (d) centrifugation

ANSWERS Q1-d Q2- d Q3-d

Learning Objectives

- Examine the solubility of salt in water in certain conditions in order differentiate the solution as saturated and unsaturated.

Learning Outcomes

- Conducts simple investigations to seek answers to queries, e.g., what are the food nutrients present in animal fodder? Can all physical changes be reversed? Does a freely suspended magnet align in a particular direction?

QUESTIONS

1. **Which of the following can be separated by filtration?**
   (a) Salt and sugar
   (b) sand and stones
   (c) sand and water
   (d) iron pieces and sand

2. **The process of separating grains from the stalk is called**
   (a) Threshing
   (b) winnowing
   (c) handpicking
   (d) filtration

3. **Which of the following technique will be used to separate a mixture of mud and water(muddy water)?**
   (a) Sedimentation
   (b) Decantation
   (c) Condensation
   (d) All of these

ANSWERS Q1-c Q2- a Q3-a

Learning Objectives

- Outlines methods that can be adapted in everyday life situations such as separation of husk from grains, separation of fine sand from coarse sand
- Carries out some of the improvised procedures of separation of insoluble solids from liquids in a given situation
- Explains how multiple processes can be employed when the mixture has a soluble and insoluble component

Learning Outcomes

- Explains processes and phenomenon, e.g., processing of plant fibres; movements in plants and animals; formation of shadows; reflection of light from plane mirror; variations in composition of air; preparation of vermicompost, etc.

QUESTIONS

1. **Butter is separated from milk by**
   (a) Sedimentation
   (b) Filtration
   (c) Churning
   (d) Decantation

2. **Filtration is a method to separate the components of**:
   (a) Solution
   (b) Mixture of a liquid and an insoluble substance
   (c) Both a) and b)
   (d) Vinegar and water

3. **Threshing is done by:**
   (a) Beating
   (b) Bullocks
   (c) Machines
   (d) all of these

ANSWERS Q1-c Q2- b Q3-d

Learning Objectives

- Outlines methods that can be adapted in everyday life situations such as separation of husk from grains, separation of fine sand from coarse sand.
- Arrives at logical conclusion that certain specific methods can be employed to separate solid mixtures based on the size, colour or weight of the components.

Learning Outcomes

- Applies learning of scientific concepts in day-to-day life, e.g., selecting food items for a balanced diet; separating materials; selecting season appropriate fabrics; using compass needle for finding directions; suggesting ways to cope with heavy rain / drought, etc.

QUESTIONS

1. Suppose you have a mixture of salt and sand. You add some water to this mixture. Then how will you separate salt from this mixture by the use of different processes?

(a) Decantation, filtration, evaporation and condensation
(b) Handpicking, evaporation and condensation
(c) Handpicking, Sieving and Evaporation
(d) Threshing, evaporation and condensation

2. Name the property which forms the basis of sieving.

(a) Difference in Weight
(b) Difference in Size
(c) Difference in colour
(d) Difference in shape

3. Pebbles can be separated from rice by :

(a) Filtration
(b) Sedimentation
(c) Evaporation
(d) Handpicking

ANSWERS Q1-a Q2- b Q3-d

CHAPTER VI

CHANGES AROUND US

Learning Objectives

- Organizes the observation to generalize amount various changes
- Illustrates with examples of changes to find out the factors that can bring about specific changes.
- Checks the effect of various factors on materials with the help of simple activities

Learning Outcomes

- Conducts simple investigations to seek answers to queries, e.g., what are the food nutrients present in animal fodder? Can all physical changes be reversed? Does a freely suspended magnet align in a particular direction?

QUESTIONS

1. **Which of these is not a physical change?**
   (a) Stretching a rubber band
   (b) Melting of butter
   (c) Burning of a piece of coal
   (d) Changing of water into water vapour

2. **Which of the following is a reversible change?**
   (a) Cooking of food
   (b) Melting of ice cream
   (c) Curdling of milk
   (d) Rusting of iron

3. **Consider the following sentences and choose the correct option.**
   (a) Making sugar solution is a physical change
   (b) A physical change is generally reversible
   (c) Grinding of wheat grain is a physical change
   (d) All of the above

ANSWERS Q1-c Q2- b Q3-d

Learning Objectives

- Classifies these changes based on interpretations into reversible and irreversible changes.

Learning Outcomes

- Classifies materials, organisms and processes based on observable properties, e.g., materials as soluble, insoluble, transparent, translucent and opaque; changes as can be reversed and cannot be reversed; plants as herbs, shrubs, trees, creeper, climbers; components of habitat as biotic and abiotic; motion as rectilinear, circular, periodic etc.

QUESTIONS

1. Which of the following is not a sign of reversible change?

(a) Change in state
(b) Change in property
(c) Change in appearance
(d) Change in Colour

2. Name the process in which a object becomes smaller or shrinks?

(a) Reversible change
(b) Chemical Change
(c) Contraction
(d) Expansion

3. Which of these is a reversible change?

(a) Changing of milk in to curd
(b) Growing of a plant
(c) Growing of a baby in to an adult
(d) Melting of ice

ANSWERS Q1-b Q2- c Q3-d

CHAPTER VII
GETTING TO KNOW PLANTS

Learning Objectives

- Compare the roots of different plants in order to classify them into tap roots and fibrous roots.

Learning Outcomes

- Differentiates materials and organisms, such as, fibre and yarn; tap and fibrous roots; electrical conductors and insulators; on the basis of their properties, structure and functions

1. Which of the following statements hold true for the root system shown in the given figure?

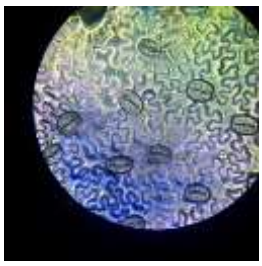
I. It is a fibrous root system
II. The branches that arise from the main root are called fibrous roots.
III. It is a tap root system
IV. Examples of this type of root system are wheat, rice and corn

(a) (I) and (III)
(b) (I) and (IV)
(c) (III) and (IV)
(d) (II) and (III)

2. By looking at a plant in the garden, Rohan came to know that it has fibrous roots. What led him to this conclusion?

(a) Arrangement of flowers on stem
(b) Arrangement of branches on the stem
(c) Type of fruits on the plant
(d) Type of venation in the leaves

3. A leaf is made up of large number of cells. It also has specialised tiny pores on its surface. Observe the picture and identify the function /s performed by these tiny pores:



(a) Gaseous exchange during photosynthesis
(b) Gaseous exchange during respiration
(c) Evaporation of water during transpiration
(d) All of these

Answers: 1 (b) 2 (d) 3 (d)

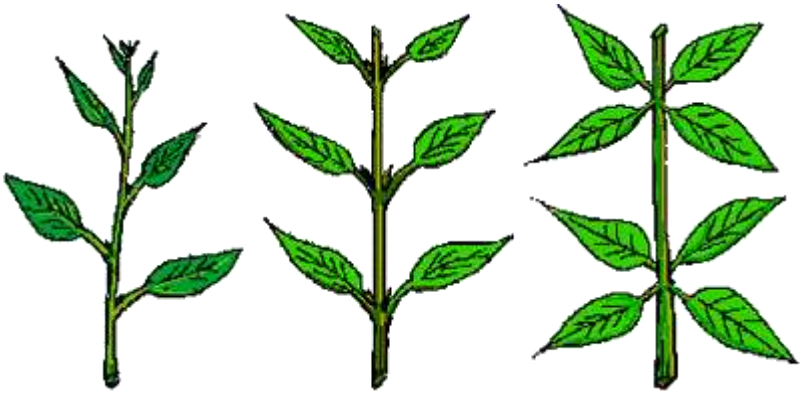
Learning Objectives

- Compare the features of Herbs, Shrubs & Trees in order to classify them considering their physical features / appearance
- Analyze the parts of a plant and their function to in order to classify them into root and shoot system
- List the characteristics of plants with weak stems in order to classify them into creepers and climbers.
- Recognize patterns on leaves of different plants in order to classify them into reticulate venation and parallel venation.
- Compare the roots of different plants in order to classify them into tap roots and fibrous roots.

Learning Outcomes

- Classifies materials, organisms and processes based on observable properties, e.g., materials as soluble, insoluble, transparent, translucent and opaque; changes as can be reversed and cannot be reversed; plants as herbs, shrubs, trees, creeper, climbers; components of habitat as biotic and abiotic; motion as rectilinear, circular, periodic etc.

1. Phyllotaxy is the arrangement of leaves on the stem. Identify the three types of phyllotaxy shown in the figures (X, Y and Z)



	X	Y	Z
(a)	Alternate	Opposite	Whorled
(b)	Opposite	Whorled	Alternate
(c)	Whorled	Alternate	Opposite
(d)	Opposite	Alternate	Whorled

2. Identify the habitat to the plants having the given features belong.

Plants with reduced roots, long and narrow stem having air spaces and large leaves having waxy upper surfaces.

(a) Desert

(b) Aquatic

(c) Tropical Rainforests

(d) Polar region

3. A teacher asks in her class to classify the following plants into two groups by observing their characteristics. Who among of the four students according to you has done the correct classification of these plants?

(a) plant 1 and plant 4 are grasses and Plant 2 and plant 3 are shrubs

(b) plant 1 and plant 4 are grasses and Plant 2 and plant 3 are trees

(c) plant 1 and plant 4 are dicots and Plant 2 and plant 3 are monocots

(d) plant 1 and plant 4 are prokaryotes and Plant 2 and plant 3 are eukaryotes

Plant 1

Plant 2

Plant 3

Plant 4

Answers: 1 (a) 2 (b) 3 (a)

Learning Objectives

- Examine the stems of different plants and design an activity to demonstrate water conduction through stem (from roots).
- Deduce the relation between leaf venation and the types of roots in a plant in order to identify the types of roots without pulling it out.

Learning Outcomes

- Conducts simple investigations to seek answers to queries, e.g., what are the food nutrients present in animal fodder? Can all physical changes be reversed? Does a freely suspended magnet align in a particular direction?

1. Students took a potted plant and covered a branch with polythene bag. After sometime water droplets appeared on the inner side of the branch. This shows the process of:

(a) Photosynthesis (b) Respiration
(c) Transpiration (d) Venation

2. While demonstrating an experiment the teacher took spirit in the test tube. Then she dipped the leaf in the spirit and boiled it. After washing the leaf, it was dipped in a iodine solution. The leaf showed blue black colour. What does this indicate? Choose the correct option.

(a) In the process of photosynthesis cellulose is formed
(b) The leaf is site of respiration
(c) Starch is present in leaves
(d) Spirit removes starch from the leaves on boiling

3. A student takes two twigs of a white *Petunia* flower. She dips one twig in plain water and the other in coloured water. What would be the observations after some time?

(a) Both flowers will remain white
(b) Flower in glass with plain water will remain white, while the flower with coloured water will get coloured.
(c) Both flowers will get coloured
(d) The flower in glass with plain water will get lighter colour, whereas the flower in coloured water will get darker colour

Answers: 1 (c) 2 (c) 3 (b)

Learning Objectives

- Examine the stems of different plants and design an activity to demonstrate water conduction through stem (from roots).
- Demonstrate the process of transpiration in order to describe the function of leaf
- Outline/list the function of root in plant with the help of activity

Learning Outcome

- Explains processes and phenomenon, e.g., processing of plant fibers; movements in plants and animals; formation of shadows; reflection of light from plane mirror; variations in composition of air; preparation of vermicompost, etc.

1. The roots of the plant absorb water from the soil. Identify the process by which the plants lose their excess water?

(a) Respiration
(b) Photosynthesis
(c) Transpiration
(d) Translocation

2. The roots in most of the plants have the following functions except:

(a) Absorption of water from the soil
(b) Anchor the plant to the soil
(c) Absorb minerals from the soil
(d) Support the leaves

3. The cells responsible for conduction of food in plant are:

(a) Lenticels
(b) Phloem
(c) Stomata
(d) Xylem

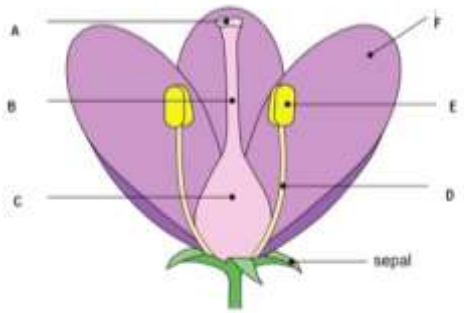
Answers: 1 (c) 2 (d) 3 (b)

Learning Objectives

- Apply knowledge of parts of plants to decipher features of plants / specimens provided
- Identify the different parts of the leaf in order to draw a labelled diagram.
- Recognize patterns on leaves of different plants in order to classify them into reticulate venation and parallel venation.
- Compare the roots of different plants in order to classify them into tap roots and fibrous roots.
- Illustrate the structure of a (typical) flower with at least 6 labeling & elaborate on each (Labeling)

Learning Outcome

- Draws labeled diagrams/ flow charts of organisms and processes, e.g., parts of flowers; joints; filtration; water cycle, etc.
  Flower is the reproductive unit of a plant. Observe the section of a flower given below and answer the following:



*Source-clipart.email

1. The part which receives pollen is labeled as:

(a) A (b) B (c) C (d) D

2. The part of the flower where seed formation takes place is labeled as:

(a) A (b) B (c) C (d) D

3. The part of the flower that makes and stores the pollen grains is labeled as:

(a) A (b) E (c) F (d) D

Answers: 1 (a) 2 (c) 3 (b)

Learning Objectives

- Examine the stems of different plants and design an activity to demonstrate water conduction through stem (from roots).

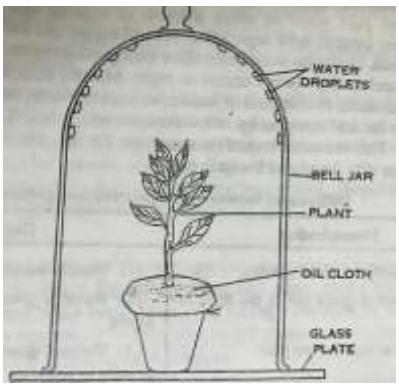
Learning Outcome

- Constructs models using materials from surroundings and explains their working, e.g., pinhole camera, periscope, electric torch, etc.

1. In an experiment ring of bark including phloem was removed from the stem of a potted plant and the xylem was left intact. This resulted in swollen tissue at upper part of the cut because-

(a) Water is collected in this swollen part.
(b) The food that is manufactured by leaves is not able to reach the roots hence it collects in the tissue
(c) The upper part just swells due to unknown reasons.
(d) Swelling was due to formation of tumor caused by the cut.

2. Observe the given experimental set up and identify the phenomenon observed in it.



(a) Respiration
(b) Photosynthesis
(c) Transpiration
(d) Translocation

3. In the above experiment what did you observe to come to the conclusion regarding the name of the phenomenon observed?

(a) Bell jar was inverted

(b) There was a plant

(c) Presence of water droplets on the inner surface of bell jar

(d) Absence of water droplets on the outer surface of bell jar

Answers:

1 (b) **2 (c)** **3 (c)**

Learning Objectives

- Apply knowledge of parts of plants to decipher features of plants / specimens provided
- Outline/list the function of root in plant with the help of activity

Learning Outcome

- Applies learning of scientific concepts in day-to-day life, e.g., selecting food items for a balanced diet; separating materials; selecting season appropriate fabrics; using compass needle for finding directions; suggesting ways to cope with heavy rain /drought, etc.

1. Suppose the pistil of a flower is damaged for some reasons. What do you think will happen?

(a) The flower will die
(b) The flower will not be able to make seeds
(c) The flower will lose its colour
(d) The flower will not be effected at all

2. If you include radish and carrots in your diet. Which part of the plant are you consuming?

(a) Leaves
(b) Root
(c) Shoot
(d) Seed

3. If you cut a branch of a croton plant and place it in water. You keep changing the water regularly. What do you expect to observe in the plant after a few days?

(a) The branch will die in a few days
(b) The branch will become hard
(c) Roots will appear in the branch
(d) The branch will loose its color

Answers: 1 (b) 2 (b) 3 (c)

CHAPTER VIII
BODY MOVEMENTS

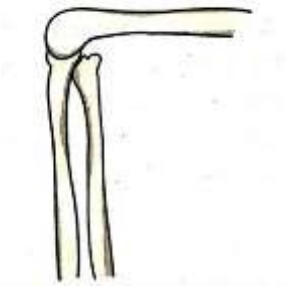
Learning Objectives

- Identify the type of joints in human body & their extent of movement /motion

Learning Outcome

- Identifies materials and organisms, such as, plant fibres, flowers, on the basis of observable features, i.e., appearance, texture, function, aroma, etc.

1. Identify the type of joint shown in the picture:



(a) Ball and socket joint
(b) Fixed joint
(c) Hinge joint
(d) Pivotal joint

2. Ball and socket joint is located in our body at:

(a) Elbow
(b) Fingers
(c) Knee
(d) Shoulder

3. Identify the joint that is movable in the head:

(a) Joints in our skull
(b) Joint between upper jaw and skull
(c) Joint between neck and head
(d) There are no movable joints

Answers: 1 (c) 2 (d) 3 (c)

Learning Objectives

- Predict the classes that different organisms belong based on their movement

Learning Outcome

- Classifies materials, organisms and processes based on observable properties, e.g., materials as soluble, insoluble, transparent, translucent and opaque; changes as can be reversed and cannot be reversed; plants as herbs, shrubs, trees, creeper, climbers; components of habitat as biotic and abiotic; motion as rectilinear, circular, periodic etc.

1. Organisms that show slithering moments belong to the group:

(a) Amphibians
(b) Pisces
(c) Protozoa
(d) Reptiles

2. A group of organisms have hollow bones and a streamlined body. Identify the group:

(a) Aves
(b) Amphibians
(c) Mammals
(d) Reptiles

3. Both Earthworms and Snakes move by moving their bodies on the ground. But both of them differ in their gait as:

(a) Snakes have both muscles and bones
(b) Earthworms have bones only
(c) Snakes have muscles only
(d) Earthworms lack streamlined body

Answers: 1 (d) 2 (a) 3 (a)

Learning Objectives

- Compare the characteristics features of body movements of various organisms
- Predict the possible reasons for animals showing different gaits

Learning Outcome

- Relates processes and phenomenon with causes, e.g., deficiency diseases with diet; adaptations of animals and plants with their habitats; quality of air with pollutants, etc.

1. The boats have been designed by looking at the fishes. Name the part of the boat that has the same function as the tail of the fish.

(a) Anchor (b) Paddle
(c) Rudder (d) Sail

2. Most of the animals have an even number of legs because:

(a) Even numbers are most preferred by nature
(b) Body which has two identical halves can be balanced only by even number of legs
(c) Even numbers are lucky
(d) There is no definite reason

3. Cockroach has three pairs of legs, one pair of wings and one pair of antenna. Antenna helps the cockroach to:

(a) Climb
(b) Fly
(c) Smell
(d) Walk

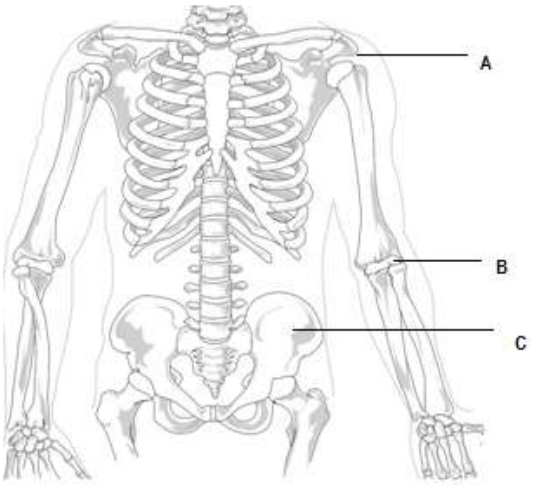
Answers: 1 (c) 2 (b) 3 (c)

Learning Objectives

- Compare and contrast between bones in different parts of human body
- Identify the structure and function of skeletal system

Learning Outcome

- Draws labeled diagrams / flow charts of organisms and processes, e.g., parts of flowers; joints; filtration; water cycle, etc.



1. In the above figure, Name the type of joint present at A:

(a) Ball and socket joint
(b) Fixed joint
(c) Hinge joint
(d) Pivotal joint

2. In the above figure, identify the type of movement that occurs at point B:

(a) Movement in all directions
(b) Movement of opening and closing a door
(c) Backward, forward, right and left movement
(d) No movement at all

3. Name the bone marked C:

(a) Carpels
(b) Femur
(c) Pelvic bone
(d) Sternum

Answers: 1 (a) 2 (b) 3 (c)

CHAPTER IX

THE LIVING ORGANISMS- CHARACTERISTICS AND HABITATS

Learning Objectives

- Differentiate between the terrestrial & aquatic habitats based on their abiotic factors.

Learning Outcome

- Differentiates materials and organisms, such as, fibre and yarn; tap and fibrous roots; electrical conductors and insulators; on the basis of their properties, structure and functions.

1. Diversity of organisms found in different habitats is due to the difference/differences in the:

(a) Average temperature
(b) Soil type
(c) Humidity
(d) All of the above

2. Fresh water as well as ocean fishes cannot survive even the slightest variations in salt concentration because-

(a) If a fresh water fish reaches salt waters, they lose water and shrink.
(b) If a fresh water fish reaches salt waters, they absorb water and shrink.
(c) If a fresh water fish reaches salt waters they absorb water and bloat.
(d) None of the above.

3. Which of the following habitats have more dissolved oxygen concentration in them?

(a) Cold water aquatic systems
(b) Warm water aquatic systems
(c) Both of the above have same oxygen concentration
(d) It is difficult to predict

Answers: 1 (d) 2 (a) 3 (a)

Learning Objectives

- Summarize the key features of living organisms that contribute to their survival in their habitats

Learning Outcome

- Classifies materials, organisms and processes based on observable properties, e.g., materials as soluble, insoluble, transparent, translucent and opaque; changes as can be reversed and cannot be reversed; plants as herbs, shrubs, trees, creeper, climbers; components of habitat as biotic and abiotic; motion as rectilinear, circular, periodic etc.

1. Select the incorrect match

(a)	Dolphin	Aquatic
(b)	Birds	Arboreal
(c)	Reptiles	Terrestrial
(d)	Frogs	Ocean water

2. Match the following columns:

	COLUMN 1		**COLUMN 2**
(i)	Snakes	1.	Mountain habitat
(ii)	Camels	2.	Live in burrows
(iii)	Snow leopard	3.	Ship of desert
(iv)	Deer	4.	Grasslands

Identify the correct match:

(a) (i) 1, (ii) 2, (iii) 3, (iv) 4
(b) (i) 1, (ii) 3, (iii) 2, (iv) 4
(c) (i) 2, (ii) 3, (iii) 1, (iv) 4
(d) (i) 2, (ii) 3, (iii) 4, (iv) 1

3. We can classify different animals living in aquatic habitats on the basis of-

(a) Depth of water body
(b) Salinity of water body
(c) Temperature of water body
(d) All of the above

Answers: 1 (d) 2 (c) 3 (d)

Learning Objectives

- Devise an experiment to show the importance of abiotic factors for the growth & sustenance of life on earth

Learning Outcome

- Conducts simple investigations to seek answers to queries, e.g., what are the food nutrients present in animal fodder? Can all physical changes be reversed? Does a freely suspended magnet align in a particular direction?

1. **Reema grows a plant in a pot with manure and soil. Before leaving for Shimla, she puts the pot in an open, sun facing window. When she returns she is surprised to see that her plant has died. What could be the probable reason?**
   (a) Plant did not get enough sunlight
   (b) Plant was not watered regularly
   (c) Plant got no air
   (d) The information is not sufficient

2. **Rohan puts a potted plant in his open window. After some days he observes that the plant stem has bent towards the outer side of the window that receives maximum sunlight. What can you conclude from this?**
   (a) The plant stem is attracted towards sunlight
   (b) The plant stem needed some support
   (c) The plant stem is attracted towards oxygen
   (d) The plant was not cared for

3. **An experiment was conducted in which two potted plants were taken. Both plants were kept at the same place and given equal amount of water each day. But one plant was kept covered by a cardboard box for one week. At the end of the week it was seen that the pot that was kept covered showed very little growth as compared to the other plant. What does this show?**
   (a) Plants need air to grow
   (b) Plants need water to grow
   (c) Plants need sunlight to grow
   (d) Plants need air and water to grow

Answers: 1 (b) 2 (a) 3 (c)

Learning Objectives

- Summarize the key features of living organisms that contribute to their survival in their habitats
- Infer reasons for effects produced on inhabitants, as an extension of their features meant for survival in their habitats
- Critique the idea that the absence of any one feature characteristic of a habitat, might not affect the balance of the habitat

Learning Outcome

- Relates processes and phenomenon with causes, e.g., deficiency diseases with diet; adaptations of animals and plants with their habitats; quality of air with pollutants, etc.

1. Birds are adapted for flight. Identify the incorrect adaptation that facilitate flight in birds:

(a) Heavy bodies
(b) Hollow bones
(c) Strong shoulder bones
(d) Strong muscles

2. The correct relation among the following is-

(a) Desert:: short legs
(b) Grasslands:: dark and bright colored fur
(c) Cold mountain region:: fur on feet and toes
(d) Water:: pair of legs

3. A lion has its eyes placed in the front of its face because:

(a) Both eyes are visible in a photograph
(b) The lion can see the master in a ring
(c) They can have correct idea about their prey
(d) They can escape when they see a predator

Answers: 1 (a) 2 (c) 3 (c)

Learning Objectives

- Structure evidence of features contributing towards diversity of life within a single habitat, into one note, taking into consideration specific habitats

Learning Outcome

- Explains processes and phenomenon, e.g., processing of plant fibres; movements in plants and animals; formation of shadows; reflection of light from plane mirror; variations in composition of air; preparation of vermicompost, etc.

1. Camel shows many adaptations to survive in the desert. Which of the following statements does not hold true regarding this?

(a) Camel has a hump where fat is stored
(b) It can stay without water for a long time
(c) It excretes small amount of water in the form of urine
(d) It looses water by excessive sweating

2. The adaptations that help fishes to survive in water is/are:

(a) Presence of blowholes
(b) Presence of fins
(c) Streamlined body
(d) All of the above

3. Submerged aquatic plants show the following adaptations except:

(a) Floating seeds
(b) Hard wood stem
(c) Highly divided leaves
(d) Ribbon like leaves

Answers: 1 (d) 2 (d) 3 (b)

CHAPTER X
MOTION AND MEASUREMENT OF DISTANCES

Learning Objectives

- Compare the measurement of length for an object using a scientific instrument and an unscientific instrument in order to differentiate between standard and non-standard units of measurement
- Distinguish between rest and motion in order to classify objects as in motion or at rest.

Learning Outcomes

- Differentiates materials and organisms, such as, fibre and yarn; tap and fibrous roots; electrical conductors and insulators; on the basis of their properties, structure and functions.

1. Which of the following thing cannot be identified without scientific Measurement:

(a) Size
(b) Colour
(c) Length
(d) Quality

2. The teacher ask the students to measure the length of the desk, make a mark exactly in the middle of it. Then which of the instrument students use to give immediate answer.

(a) Scientific instrument
(b) Unscientific instrument
(c) Both of above
(d) None of these

3. A boy sitting the bus and bus is in motion. Then what is the state of boy with respect to bus and with respect to surroundings?

(a) Motion, Rest
(b) Rest, Motion
(c) Rest, Rest
(d) Motion, Motion

Answers Q1 (c) Q2 (b) Q3 (b)

Learning Objectives

- Distinguish between rest and motion in order to classify objects as in motion or at rest.

Learning Outcomes

- Classifies materials, organisms and processes based on observable properties, e.g., materials as soluble, insoluble, transparent, translucent and opaque; changes as can be reversed and cannot be reversed; plants as herbs, shrubs, trees, creeper, climbers; components of habitat as biotic and abiotic; motion as rectilinear, circular, periodic etc.

1. **The list of some objects given as: a flying sparrow, a moving car, a house, a factory. Arrange these in the table as below:**

Objects at rest	Objects in motion

2. **In case of a moving body-**
   (a) Displacement > Distance
   (b) Displacement < Distance
   (c) Displacement ≤ Distance
   (d) Displacement ≥ Distance

3. **A man moves on a straight road from point A to point B from north to south covers 30m and then turn towards east moves 25m. The total distance cover by the man is**
   (a) 55m
   (b) 45m
   (c) 65m
   (d) 50m

Answers: Q1 Objects in motion: a flying sparrow, a moving car, **Objects at rest :** a house, a factory **Q2 (c) Q3 (a)**

Learning Objectives

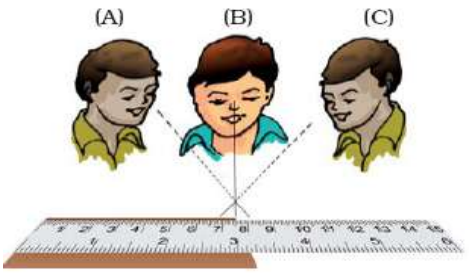
- Check out the procedures to find the errors associated with finding measurements using standard measurement devices.

Learning Outcomes

- Conducts simple investigations to seek answers to queries, e.g., what are the foods nutrients present in animal fodder? Can all physical changes be reversed? Does a freely suspended magnet align in a particular direction?

1. Correct position of the eye for taking measurement from positions 'A' 'B' and 'C is

(a) A
(b) B
(c) C
(d) All the above



2. Arrange the following lengths in their increasing magnitude: 2 metre, 2400 centimetre, 10000 millimetre, .02 km

(a) 2400 centimetre < .02 km < 10000 millimetre < 2 metre
(b) 2400 centimetre > .02 km > 10000 millimetre > 2 metre
(c) 2400 centimetre < .02 km < 2 metre < 10000 millimetre
(d) 2 metre < 10000 millimetre < .02 km < 2400 centimetre

3. Four children A, B, C and D measure the length of a table which was about 1 m. Each of them used different ways to measure it.

i) A measured it using a 2 m long measuring tape.
ii) B measured it with a 10 cm scale from her geometry box.
iii) C measured it using her hand span.
iv) D measured it with a 0.5-metre-long thread.

Which one of them would get the most accurate length:

(a) i
(b) ii
(c) iii
(d) iv

Answers Q1 (b) Q2 (d) Q3 (a)

Learning Objectives

- Construct a device by choosing appropriate materials in-order to measure length of given objects.
- Summarize the rules associated with the measurement of length.
- Check out the procedures to find the errors associated with finding measurements using standard measurement devices.
- Compare the measurement of length for an object using a scientific instrument and an unscientific instrument in order to differentiate between standard and non-standard units of measurement.
- Apply scientific inquiry to measure the length of an object in order to approximate the length of a curved line.

Learning Outcomes

- Measures physical quantities and expresses in SI units, e.g., length.

1. Choose the smallest unit of length:

(a) mm
(b) cm
(c) m
(d) km

2. The most convenient unit for measuring the thickness of the coin is:

(a) centimetre
(b) kilometre
(c) metre
(d) millimetre

3. The length of the curved line is measured by

(a) measuring rod
(b) measuring tape
(c) vernier scale
(d) thread

Answers Q1 (a) Q2 (a) Q3 (d)

Learning Objectives

- Sequence different modes of transport from earliest to the most recent in order to suggest possible modification required in current scenario.

Learning Outcomes

- Applies learning of scientific concepts in day-to-day life, e.g., selecting food items for a balanced diet; separating materials; selecting season appropriate fabrics; using compass needle for finding directions; suggesting ways to cope with heavy rain / drought, etc.

1. Arrange the modes of transport in the correct order starting from the earliest modes of transport to the most recent:

i) Steam engine train ii) bullock cart iii) car iv) horse v) spacecraft vi) aeroplane

(a) (i) (ii) (iii) (v) (vi) (iv)
(b) (ii) (i) (iii) (vi) (v) (iv)
(c) (v) (ii) (iii) (i) (vi) (iv)
(d) (iv) (ii) (i) (iii) (vi) (v)

2. Which of the following vehicles runs on internal combustion engine?

(a) Motorcycles and scooters
(b) Boat and ships
(c) Car, bus and truck
(d) all of the above

3. Invention of…….. made great change in modes of transport.

(a) Horse
(b) Wheel
(c) Aeroplane
(d) None of these

Answers Q1 (d) Q2 (d) Q3 (b)

CHAPTER XI
LIGHT, SHADOWS AND REFLECTIONS

Learning Objectives

- Distinguishes objects based on the following features- emission of light by them and visibility through them.
- Distinguish between shadows & reflections.

Learning Outcomes

- Differentiates materials and organisms, such as, fibre and yarn; tap and fibrous roots; electrical conductors and insulators; on the basis of their properties, structure and functions

1. Read the following sentences carefully, and choose the incorrect one:

(a) An object which gives out its own light is called a luminous object.

(b) An object which does not give out its own light is called a non-luminous object.

(c) A luminous object can be seen because the light given out by it enters our eyes.

(d) None of the above

2. The sun in the early morning can cause a building to form a shadow. This shadow will be:

(a) fat (b) long

(c) thin (d) short

3. In a science quiz competition, Payal asked a question where she had to choose the statement which was/ were incorrect?

a) When the distance between the object and the source of light is decreased the shadow becomes larger.

b) When the distance between the object and the source of light is increased the shadow becomes smaller.

c) When the distance between the object and the screen is decreased the shadow becomes smaller.

d) None of the above

Answers: Q1 (d) Q2 (b) Q3 (d)

Learning Objectives

- Concludes that there should be a source of light, opaque object and a surface for shadows to form.
- Summarizes the characteristics of image formed by a pinhole camera.
- Makes conclusion about the nature of reflection shown by a plane mirror.

Learning Outcomes

- Explains processes and phenomenon, e.g., processing of plant fibres; movements in plants and animals; formation of shadows; reflection of light from plane mirror; variations in composition of air; preparation of vermin compost, etc.

1. Student can see objects in a brighter room because:

(a) The object give off light to the air.
(b) The object reflect the light falling on them.
(c) The object send the light away from our eye.
(d) Our eye give off light to the objects.

2. 'The light travels along a straight path' is the principle of

(a) Pinhole camera
(b) Periscope
(c) Shadow
(d) None of these

3. Which of the following is not a characteristic of a virtual image formed in plane mirror?

(a) It cannot formed on the screen.
(b) It is inverted
(c) It is same size as the object
(d) It is laterally inverted

Answers Q1 (b) Q2 (a) Q3 (b)

Learning Objectives

- Represents working of a pinhole camera diagrammatically
- Makes conclusion about the nature of reflection shown by a plane mirror.

Learning Outcomes

- Constructs models using materials from surroundings and explains their working, e.g., pinhole camera, periscope, electric torch, etc.

1. Name the type and nature of the image formed in the pinhole camera

(a) Virtual and inverted
(b) Virtual and erect
(c) Real and inverted
(d) Real and erect

2. A plane mirror can form an inverted image of the object.

(a) True
(b) False

3. A device containing two plane mirrors which gives us a higher view than normal

(a) stethoscope
(b) Microscope
(c) Periscope
(d) Telescope.

Answers Q1 (c) Q2 (a) Q3 (c)

Learning Objectives

- Evaluates criteria for formation of shadows and makes judgment about situations like, shadow of an airplane flying at a higher altitude and shadow of a bird flying nearer to the ground.

Learning Outcomes

- Applies learning of scientific concepts in day-to-day life, e.g., selecting food items for a balanced diet; separating materials; selecting season appropriate fabrics; using compass needle for finding directions; suggesting ways to cope with heavy rain / drought, etc.

1. Raj observed the shadow of a tree at 8:00 am, 12:00 noon, 4:00 pm. Which of the following statement is closest to his observation about the shape and size of the shadow?

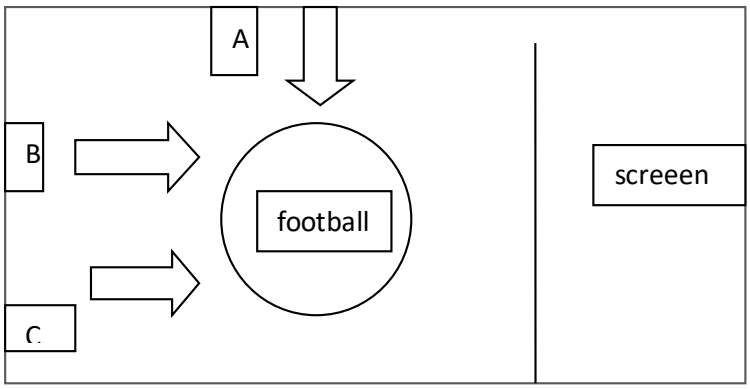
(a) The size of the shadow of the tree changes but the shape remains the same.
(b) The shape of the shadow of the tree changes but the size remains the Same.
(c) Both the size and shape of the shadow of the tree change.
(d) Neither the shape nor the size of the shadow changes.

2. Three birds are on the tree: parrot (green), crow (black) and a pigeon (white) in the sunlight. What would be the colour of the shadow of these birds?

(a) Green, black, and white
(b) All white
(c) All black
(d) None of these

3. Torch A, B, and C shown in figure are switched on the one side of the football. Which of the torch does not form shadow on the screen?

a) A b) B c) D d) none of these



Answers Q1 (C) Q2 (c) Q3 (a)

CHAPTER XII
ELECTRICITY AND CIRCUITS

Learning Objectives

- Distinguish between complete and incomplete circuit with a well labelled figure.

Learning Outcomes

- Differentiates materials and organisms, such as, fibre and yarn; tap and fibrous roots; electrical conductors and insulators; on the basis of their properties, structure and functions

1. The path of the current through which it flows is called

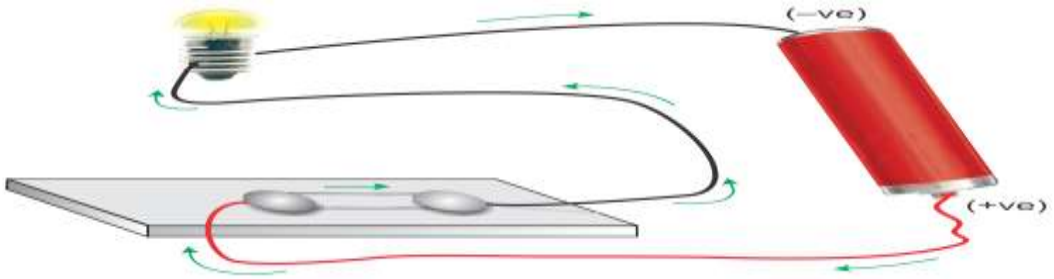
(a) closed circuit
(b) Open circuit
(c) Broken circuit
(d) Normal circuit

2 The direction of flow of current from_____ to _____ terminal of battery.

(a) Negative to positive
(b) Negative to negative
(c) Positive to negative
(d) Positive to positive

3. A student made a circuit as shown in figure. Then he checks the observation. After that student reverse the connection of the battery (+ve terminal with bulb and –ve with pin). His observation in both the cases

a) In first case bulb glow and not in second
b) In first case bulb will not glow and glow in second
c) Glow in both cases
d) Does not glow in both case



Answers Q1 (a) Q2 (c) Q3 (c)

Learning Objectives

- Test items to classify them as conductor and insulator in order to examine the role of conductors and insulators in day-to-day life.

Learning Outcomes

- Classifies materials, organisms and processes based on observable properties, e.g., materials as soluble, insoluble, transparent, translucent and opaque; changes as can be reversed and cannot be reversed; plants as herbs, shrubs, trees, creeper, climbers; components of habitat as biotic and abiotic; motion as rectilinear, circular, periodic etc.

1. The torch bulb does not glow in a complete circuit. Which of the following is included to incomplete the circuit.

(a) paper clip
(b) Aluminium foil
(c) Mica sheet
(d) Pencil lead

2. Match the column A with column B

Column A	Column B
a. coins, keys	i) making switches
b. metal, graphite	ii) making wire
c. copper, aluminium	iii) insulators
d. rubber, wood	iv) conductors

3. Non-metal like _____ and _____ are conducts electricity

(a) Wood and paper
(b) Graphite and carbon gas
(c) Glass and rubber
(d) None of these

Answers Q1 (a) Q2 (a – iv, b – i, c – ii, d – iii) Q3 (b)

Learning Objectives

- Analyze the flow of current in a simple electric circuit with battery, bulb and wires to identify necessary condition to ensure flow of current.

Learning Outcomes

- Conducts simple investigations to seek answers to queries, e.g., what are the food nutrients present in animal fodder? Can all physical changes be reversed? Does a freely suspended magnet align in a particular direction?

1. Cell is a device which:

(a) converts chemical energy into electrical energy
(b) electrical energy into light energy
(c) electrical energy into magnetic energy
(d) None of these

2. A bulb has:

(a) two terminals and one filament
(b) two terminals and two filaments
(c) multiple terminals and single filament
(d) single terminal and single filament

3. A simple device that either breaks the circuit or completes it to stop or start to flow current is:

(a) Cell
(b) Current
(c) Switch
(d) None of these

Answers Q1 (a) Q2 (a) Q3 (c)

Learning Objectives

- Describe the structure and function of the electric cell
- Distinguish between complete and incomplete circuit with a well labelled figure
- Analyze the flow of current in a simple electric circuit with battery, bulb and wires to identify necessary condition to ensure flow of current.

Learning Outcomes

- Explains processes and phenomenon, e.g., processing of plant fibres; movements in plants and animals; formation of shadows; reflection of light from plane mirror; variations in composition of air; preparation of vermin compost, etc.

1. What is the function of electric cell?

(a) Provides potential difference
(b) Provides circuit
(c) Act as switch
(d) None of these

2. The coloured plastic covering in an electric wire makes the electric wire:

(a) Long lasting
(b) More attractive
(c) Resistance to corrosion
(d) Safe to touch

3. Name the object from the given below by using which an electric circuit containing a cell and a torch bulb is completed: matchstick, iron nail, eraser, glass bangle

(a) matchstick
(b) Iron nail
(c) Eraser
(d) Glass bangle

Answers Q1 (a) Q2 (d) Q3 (b)

Learning Objectives

- Infer why metals like copper and aluminium are used for making wires for domestic & industrial purposes.

Learning Outcomes

- Makes efforts to protect environment, e.g., minimising wastage of food, water, electricity and generation of waste; spreading awareness to adopt rain water harvesting; care for plants, etc.

1. Aluminium and copper wires are used for electricity transmission because they have

(a) low cost
(b) low conductivity
(c) high conductivity
(d) none of these

2. Which one of the following material is used for making wires for electricity transmission:

i) silver ii) gold iii) iron iv) copper

(a) silver
(b) gold
(c) iron
(d) copper

3. Name the wire which is used as safety device

(a) live wire
(b) neutral wire
(c) earth wire
(d) all of the above

Answers Q1(c) Q2 (d) Q3 (c)

CHAPTER XIII

FUN WITH MAGNETS

Learning objectives

- Classify the given substances as magnetic & nonmagnetic based on their ability to be attracted by magnets along with examples.

Learning Outcomes

- Classifies materials, organisms and processes based on observable properties, e.g., materials as soluble, insoluble, transparent, translucent and opaque; changes as can be reversed and cannot be reversed; plants as herbs, shrubs, trees, creeper, climbers; components of habitat as biotic and abiotic; motion as rectilinear, circular, periodic etc.

1. Classify the temporary and permanent magnets from the following: Current carrying wire, iron, horse shoe magnet, mixtures of iron, Cobalt or nickel with other elements.

(a) Temporary - Current carrying wire, iron, horse shoe magnet Permanent - mixtures of iron, cobalt or nickel with other elements.

(b) Temporary - Current carrying wire, iron. Permanent - mixtures of Iron, cobalt or nickel with other elements, horse shoe magnet

(c) Both of above

(d) None of these

2. We can use the magnet to separate:

(a) rubber band from the pieces of aluminium foil

(b) Piece of copper wire from the glass beads

(c) Steel staples from the sand

(d) Steel pins from the iron fillings

3. Which of the following is a natural magnet?

(a) Iron

(b) Cobalt

(c) nickel

(d) Magnetite

Answers Q1 (b) Q2 (c) Q3 (d)

Learning objectives

- Outline the events responsible for the discovery of natural magnets.
- Suggest an activity to determine the poles of a magnet
- Analyze what happens when two magnets are placed together in order to conclude the property of magnet.

Learning Outcomes

- Conducts simple investigations to seek answers to queries, e.g., what are the food nutrients present in animal fodder? Can all physical changes be reversed? Does a freely suspended magnet align in a particular direction?

1. How many north and south poles are present in the magnet which is cut into 6 pieces without loss of magnetism?

(a) six
(b) Twelve
(c) Zero
(d) two

2. A free turning magnet will always rest in:

(a) north – east direction
(b) North – south direction
(c) South – west direction
(d) East - west direction

3. Magnetic strength of bar magnet is

(a) Concentrated at the one of the pole of magnet
(b) Concentrated at the both of the pole of magnet
(c) Distributed uniformly throughout the magnet
(d) Concentrated at the centre of the magnet

Answers Q1 (b) Q2 (b) Q3 (b)

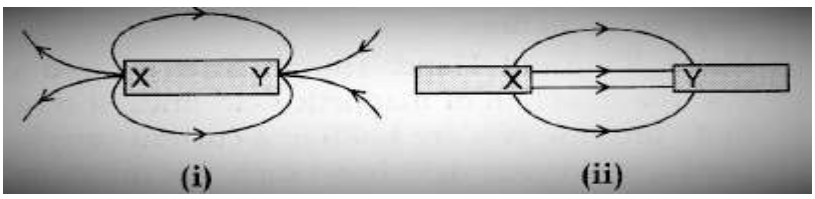
Learning objectives

- Create a direction finder in order to find the direction.
- Make a magnet in order to demonstrate how artificial magnets can be created
- Create a direction finder in order to find the direction.

Learning Outcomes

- Constructs models using materials from surroundings and explains their working, e.g., pinhole camera, periscope, electric torch, etc. Applies learning of scientific concepts in day-to-day life, e.g., selecting food items for a balanced diet; separating materials; selecting season appropriate fabrics; using compass needle for finding directions; suggesting ways to cope with heavy rain / drought, etc.

1. Study the magnets X and Y in fig (i) and (ii) given below:



(a) in fig (i) X – north Y – south , in fig (ii) X – north Y – south
(b) in fig (i) X – south Y – south , in fig (ii) X – north Y – north
(c) in fig (i) X – north Y – north , in fig (ii) X – south Y – south
d) in fig (i) X – south Y – north , in fig (ii) X – south Y – north

2. Choose the wrong statement:

(a) Heat can destroy magnetic properties of a magnet.
(b) Magnets are made up of different materials and different shapes.
(c) There is a maximum attraction in middle of a magnet.
(d) Magnetite does not show magnetic properties.

3. Electric bell is an example of _____magnet.

a) Bar magnet
b) Cylindrical magnet
c) Electromagnet
d)Horseshoe magnet

Answers Q1 (a) Q2 (d) Q3 (c)

CHAPTER XIV

WATER

Learning Objectives

- List down all the sources of water in order to conclude the major source of water.

Learning Outcomes

- Identifies materials and organisms, such as, plant fibres, flowers, on the basis of observable features, i.e., appearance, texture, function, aroma, etc.

QUESTIONS

1. Which of the followings are sources of water.

(a) River
(b) Ocean
(c) Lake
(d) All of the above

2. Which of the following is largest source of water.

(a) Ocean
(b) Sea
(c) River
(d) Tanks

3. Which of the following is potable water.

(a) Ocean water
(b) Sea water
(c) Ground water
(d) River water

ANSWERS Q1-d Q2- a Q3-c

Learning Objectives

- Attribute the natural calamities like drought & floods to disturbance in water cycle
- Predict what will happen if rain doesn't happen in order to explain the significance of rain.

Learning Outcomes

- Relates processes and phenomenon with causes ,e.g., deficiency diseases with diet; adaptations of animals and plants with their habitats; quality of air with pollutants, etc.

QUESTIONS

1. **Suppose, if it does not rain in a region for a year then what would happen? Choose the correct statement regarding the same.**
   (a) The level of water in ponds goes down.
   (b) The soil becomes dry
   (c) Drought
   (d) All of these

2. **Heavy rain may lead to :**
   (a) Rise in the water level of River
   (b) Drought
   (c) Level of water in ponds goes down
   (d) The soil continuous to lose water

3. **Which of the following statement is false:**
   (a) Water evaporates into air from ponds, rivers, sea but not from the soil
   (b) Floods cause damage to crops
   (c) Floods cause damage to animals and human beings
   (d) It is difficult to get food in drought conditions.

ANSWERS Q1-d Q2- a Q3-a

Learning Objectives

- Argue the important role played by trees /plants in water cycle

Learning Outcomes

- Explains processes and phenomenon, e.g., processing of plant fibres; movements in plants and animals; formation of shadows; reflection of light from plane mirror; variations in composition of air; preparation of vermicompost, etc.

QUESTIONS

1. **Where does the energy come from that powers the water cycle?**
   (a) Plants
   (b) Animals
   (c) Electrical outlets
   (d) The sun

2. **What will be effect on the amount of water on earth as time passes, water goes through the water cycle again and again?**
   (a) Increases
   (b) Decreases
   (c) Stays the same
   (d) Goes up and down

3. **Name the process by which plants lose water.**
   (a) Condensation
   (b) Transpiration
   (c) Translocation
   (d) Photosynthesis

ANSWERS **Q1-d** **Q2- d** **Q3-b**

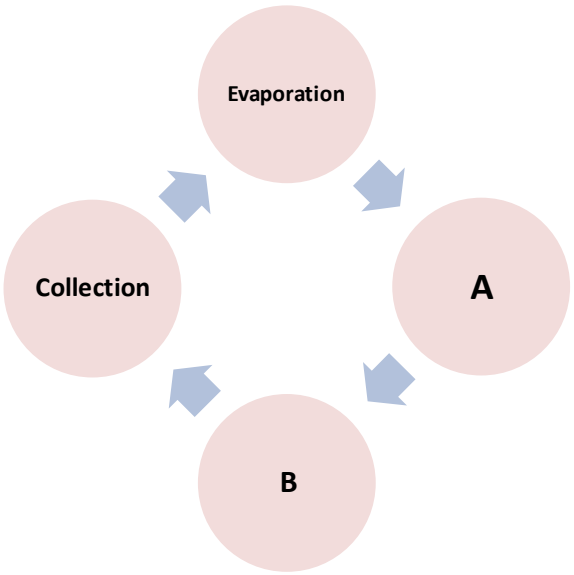
Learning Objectives

- Create a model of the water cycle in order to explain the processes that take place during water cycle.

Learning Outcomes

- Draws labeled diagrams / flow charts of organisms and processes, e.g., parts of flowers ; joints; filtration; water cycle, etc.

QUESTIONS



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1. Which process is not involved in the process of water cycle?

(a) Transpiration
(b) Evaporation
(c) Respiration
(d) Condensation

2. Which of the following is correct for part A in above flow chart of water cycle.

(a) Condensation
(b) Precipitation
(c) Run off water
(d) Respiration

3. Identify part B in above flow chart of water cycle.

(a) Condensation
(b) Precipitation
(c) Run off water
(d) Respiration

ANSWERS Q1-c Q2- a Q3-d

Learning Objectives

- Create a model of the water cycle in order to explain the processes that take place during water cycle.

Learning Outcomes

- Constructs models using materials from surroundings and explains their working, e.g., pinhole camera, periscope, electric torch, etc.

QUESTIONS

1. **What is the correct term for moisture that falls to the ground from clouds?**
   (a) Condensation
   (b) Hibernation
   (c) Evaporation
   (d) Precipitation

2. **The process of conversion of water into vapours is:**
   (a) Dehydration
   (b) Evaporation
   (c) Condensation
   (d) Transpiration

3. **Once water makes it, all the way through the water cycle. The water---------**
   (a) Starts to cycle over again
   (b) Has finished that cycle and moves onto a different cycle
   (c) Disappears
   (d) Stays in the stage at which it finished

ANSWERS Q1-d Q2- b Q3-a

Learning Objectives

- Compute the amount of water required per person annually
- Attribute the natural calamities like drought & floods to disturbance in water cycle
- Infer the problems may arise due to heavy rainfall in order to suggest possible measures that can be taken.
- Predict what will happen if rain doesn't happen in order to explain the significance of rain.
- Evaluate the consequences of mismanagement of water or excessive usage of ground water.

Learning Outcomes

- Applies learning of scientific concepts in day-to-day life, e.g., selecting food items for a balanced diet; separating materials; selecting season appropriate fabrics; using compass needle for finding directions; suggesting ways to cope with heavy rain / drought, etc.

QUESTIONS

1. **How can dams cause draught?**
   (a) By reducing rainfall levels
   (b) By reducing water levels down stream
   (c) By flooding land behind the dam wall
   (d) None of the above

2. **How is climate change likely to affect the number of occurrences of drought?**
   (a) Draughts will reduce
   (b) It's unlikely to change to any great amount
   (c) Draught will become more common as extreme weather becomes more common
   (d) None of the above

3. **Which is a better response to drought?**
   (a) Food aid
   (b) Development aid
   (c) Water aid
   (d) None of the above

ANSWERS **Q1-b** **Q2- c** **Q3-c**

Learning Objectives

- Infer the problems may arise due to heavy rainfall in order to suggest possible measures that can be taken.
- Evaluate the consequences of mismanagement of water or excessive usage of ground water.
- Devise the possible strategies for individual / community level Rain water Harvesting techniques.

Learning Outcomes

- Makes efforts to protect environment, e.g., minimizing wastage of food, water, electricity and generation of waste; spreading awareness to adopt rain water harvesting; care for plants, etc.

MULTIPLE CHOICE QUESTIONS

1. The higher level of floods and droughts are led by

(a) Sand storms
(b) Lower precipitation
(c) Higher precipitation
(d) None of the above

2. The purification and removal of bacteria, solid materials and other impurities from used water is classified as

(a) Distillation
(b) Cloud seeding
(c) Reclamation
(d) Membrane filtration

3. Which is the first state in India to make roof top compulsory to all the houses for rain water harvesting?

(a) Tamil Nadu
(b) Kerala
(c) Assam
(d) Goa

ANSWERS Q1-c Q2- d Q3-a

CHAPTER XV
AIR AROUND US

Learning objectives

- Conduct experiments in order to prove the presence of air around us.
- Execute an improvised plan to test the presence of CO_2, oxygen, water vapour, nitrogen, dust and smoke in air.
- Prove the presence of air in water and soil in order to explain how oxygen becomes available to animals and plants.

Learning Outcomes

- Conducts simple investigations to seek answers to queries, e.g., what are the food nutrients present in animal fodder? Can all physical changes be reversed? Does a freely suspended magnet align in a particular direction?

1. Which of the statement is incorrect?

(a) All living things are required air to breathe.

(b) We can feel air but cannot see it.

(c) Moving air makes possible to fly a kite.

(d) Air is present everywhere but not in soil.

2. Mountaineer carry oxygen cylinder with them because

(a) There is no oxygen on high mountains

(b) There is deficiency of oxygen on the mountains at high altitude

(c) Oxygen is used for cooking

(d) Oxygen keeps them warm at low temperature

3. <u>Statement A</u>: Nitrogen is used in protein synthesis
<u>Statement B</u>: Proteins are required by living organisms to grown and repair their body parts

(a) Statement A is correct only
(b) Statement B is correct only
(c) Both the statement is correct
(d) Both the statement are incorrect

Answers Q1 (a) Q2 (b) Q3 (c)

Learning objectives

- Outline the causes & effects of Air pollution
- Prove the presence of air in water and soil in order to explain how oxygen becomes available to animals and plants.

Learning Outcome

- Relates processes and phenomenon with causes, e.g., deficiency diseases with diet; adaptations of animals and plants with their habitats; quality of air with pollutants, etc. Explains processes and phenomenon, e.g., processing of plant fibres; movements in plants and animals; formation of shadows; reflection of light from plane mirror; variations in composition of air; preparation of vermin compost, etc.

1. The air over industrial cities has usually higher amount of one of the following components than normal air. This component is :

(a) Oxygen
(b) Argon
(c) Carbon dioxide
(d) Nitrogen

2. Reena took a lump of dry soil in a glass and added water to it till it was completely immersed. She observed bubbles coming out. The bubbles contain

(a) Water vapour
(b) Air
(c) Only oxygen gas
(d) None of these

3. State whether the following statements are true or false.
Statement 1: Plant consume oxygen for the respiration.
Statement 2: Air does not occupy any space.

(a) True, true
(b) False, false
(c) True, false
(d) False, true

Answers Q1 (c) Q2 (b) Q3 (c)

Learning objectives

- Depict the composition of air using pie chart
- Illustrate Oxygen cycle using well labelled figure
- Critique the importance of air for the sustenance of life on earth

Learning Outcomes

- Draws labelled diagrams / flow charts of organisms and processes, e.g., parts of flowers; joints; filtration; water cycle, etc. Applies learning of scientific concepts in day-to-day life, e.g., selecting food items for a balanced diet; separating materials; selecting season appropriate fabrics; using compass needle for finding directions; suggesting ways to cope with heavy rain / drought etc

1. Match the right composition of air with percentage of its various components:

p)	**Nitrogen**	**i)**	**21%**
q)	**Oxygen**	**ii)**	**1%**
r)	**Carbon dioxide, water vapour, other gases and dust particles**	**iii)**	**78%**

(a) p – iii, q – i, r - ii
(b) p – i, q – ii, r - iii
(c) p – iii, q – ii, r – i
(d) None of these

2. When we heat water, we find bubbles coming from it. This shows that

(a) Water contains air
(b) Air contains water
(c) Water itself converts into bubbles
(d) Water contains dissolve minerals

3. The components of air which are harmful to living beings are

(a) Nitrogen and carbon dioxide
(b) Dust and water vapour
(c) Dust and smoke
(d) Smoke and water vapour

Answers **Q1 (a)** **Q2 (a)** **Q3 (c)**

Learning objectives

- Critique the importance of air for the sustenance of life on earth

Learning Outcomes

- Makes efforts to protect environment, e.g., minimising wastage of food, water, electricity and generation of waste; spreading awareness to adopt rain water harvesting; care for plants, etc.

1. Air plays an important role in water cycle because:

(a) Air moves over the oceans
(b) Air moves over the land
(c) Air moves to evaporate water which then condenses on cooler layers
(d) Air is everywhere

2. Nitrogen is used:

(a) In preserving tinned foods

(b) As a refrigerant

(c) In electric bulb

(d) All are correct

3. The atmospheric layer nearest the earth's surface is the

(a) Troposphere

(b) Stratosphere

(c) Ionosphere

(d) Mesosphere

Answers Q1 (c) Q2 (a) Q3 (a)

CHAPTER XVI
GARBAGE IN, GARBAGE OUT

Learning Objectives

- Compare distinguishing features between compostable waste and non-compostable waste, in connection with properties of the end product

Learning Outcomes

- Differentiates materials and organisms, such as, fibre and yarn; tap and fibrous roots; electrical conductors and insulators; on the basis of their properties, structure and functions.

1. Which of the following remains in the soil without composting for millions of years?

(a) Cloth
(b) Fruits
(c) plastic
(d) Paper

2. Rahul dug two hole in his back yard. In one hole he put all his kitchen water and leaves from his garden. In the other hole he put the plastic bags that came with milk, chips, groceries etc. He covered both holes with soil and left them for one month. He drizzled some water in both of them regularly. What would be his observations after one month?

(a) Both pits had black coloured manure in them
(b) Pit with kitchen and garden waste had manure in it
(c) Pit with plastic waste had manure in it
(d) No change was seen in both the pits.

3. Why is it recommended to use cloth bags instead of paper bags? (Choose more than one option)

(a) Cloth bags are easy to stitch
(b) Only fancy people use paper bags
(c) Cloth bag is more durable than paper bag
(d) We need to cut trees to make paper

Answers: 1 (c) 2 (b) 3 (d)

Learning Objectives

- Hypothesize on the reasons for layering the composting pit with different types of materials
- Infer reasons for success or failure of vermicomposting, considering steps involved and resultant products, etc.

Learning Outcomes

- Relates processes and phenomenon with causes, e.g., deficiency diseases with diet; adaptations of animals and plants with their habitats; quality of air with pollutants, etc.

1. Earthworms are called farmer's best friend because:

(a) They make soil porous
(b) They incorporate organic matter into the soil
(c) They add nutrients to the soil
(d) All of the above

2. Vermicomposting enriches the soil. However its main advantage is protection of environment. Select the correct justification from the following:

(a) Earthworms purify air
(b) Earthworms clean the water sources
(c) Earthworms recycle the agricultural waste
(d) All of the above

3. While making compost, it is recommended that the pit is layered with soil. It has one of the following advantages:

(a) Provides a boost of microbes to the compost
(b) Increases moisture
(c) Removes odor
(d) Adds color

Answers: 1 (d) 2 (c) 3 (A)

Learning Objectives

- Infer reasons for success or failure of vermicomposting, considering steps involved and resultant products, etc.

Learning Outcomes

- Explains processes and phenomenon, e.g., processing of plant fibres; movements in plants and animals; formation of shadows; reflection of light from plane mirror; variations in composition of air, preparation of vermicompost, etc.

1. Arrange the following steps of vermicomposting in the correct order:

1. **Add red worms**
2. **Harvest the compost**
3. **Add green leaves, pieces of dried stalks, husk, pieces of newspaper and water**
4. **Make a pit and spread a chicken mesh at the bottom and sides**
5. Layer with sand

(a) 5,4,2,3,1
(b) 1,3,2,4,5
(c) 4,3,5,1,2
(d) 3,4,5,2,1

2. Red worms lack teeth. Name the structure that helps them in grinding their food:

(a) Gizzard
(b) Liver
(c) Intestine
(d) Stomach

3. Identify the most common reason due to which vermicomposting mostly fails:

(a) Due to very hot climate
(b) Due to inappropriate moisture content
(c) Due to very cold climate
(d) All of the above

Answers: 1 (c) 2 (a) 3 (b)

Learning Objectives

- Discuss the waste management system in your community in order to explain the process of garbage disposal by 'Safai Karamcharis'.

Learning Outcomes

- Applies learning of scientific concepts in day-to-day life, e.g., selecting food items for a balanced diet; separating materials; selecting season appropriate fabrics; using compass needle for finding directions; suggesting ways to cope with heavy rain / drought,
  etc.

1. Garbage disposal is one of the major problems that many communities are facing. What can you do at your end to tackle this problem?

(a) Reduce waste generation
(b) Recycle materials
(c) Reuse whatever we can
(d) All of the above

2. Leaves falling from trees should be disposed by:

(a) setting them on fire
(b) making manure by boiling and drying them
(c) making compost by vermicomposting
(d) any of these methods

3. Recyclable Materials must be collected in:

(a) Red bins
(b) Blue bins
(c) Yellow bins
(d) White bins

Answers: 1 (d) 2 (c) 3 (b)

Learning Objectives

- Investigate their own trash consumption in order to formulate alternatives to offset trash production in their household.
- Design a method to ensure effective disposal of garbage, in connection with knowledge of different types of wastes, their properties, etc.

Learning Outcomes

- Makes efforts to protect environment, e.g., minimising wastage of food, water, electricity and generation of waste; spreading awareness to adopt rain water harvesting; care for plants, etc.

1. When we see people in a community not following the norms of proper garbage disposal, what does that indicate?

(a) People are not aware of the consequences
(b) People think that keeping their home clean is more important
(c) People believe that sanitation of roads and parks is the responsibility of the government
(d) All of the above

2. World is seeing a technology boom, but disposal of electronic waste like mobiles and computers add hazardous pollutants to the soil. Identify the correct pollutant.

(a) Calcium
(b) Carbon dioxide
(c) Mercury
(d) Moisture

3. Plastic pollutants are piling in our environment rapidly. What is the best way to dispose plastic?

(a) Burn plastic
(b) Dump plastic
(c) Recycle plastic
(d) Tear plastic in small pieces before disposing

Answers: 1 (d) 2 (c) 3 (c)

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"Live as if you were to die tomorrow. Learn as if you were to live forever"

- Mahatma Gandhi

2021

राज्य शैक्षिक अनुसंधान और प्रशिक्षण परिषद्
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