

Claridge Science - 6
CHAPTER 1: SOURCES OF FOOD

Formative assessment

1. **Oral Questions:**
 - (a) Cauliflower, pumpkin and broccoli.
 - (b) Milk, meat, egg and honey.
 - (c) Rice and water.
2. **Tick (3) the Correct answer:**
 - (a) (iii) Wheat, (b) (iii) fruit, (c) (i) insects, (d) (iii) crow
3. **Ring the odd one:**
 - (a) Onion, (b) Rajma, (c) Bear.

Summative Assessment

1. **Fill in the blanks:**
 - (a) Lion is a **carnivore** because it eats only meat.
 - (b) We get sugar from **sugarcane**.
 - (c) Parrot eats only **plant** products.
 - (d) Pulses are rich in **proteins**, while cereals are rich in **carbohydrates**.
 - (e) Milk is an **animal** product.
2. **Write (T) for true and (F) false**
 - (a) F, (b) T, (c) F, (d) F
3. **Answer the following questions:**
 - (a) If there be no plants on earth, basic food (carbohydrate) will not be available, because there will be no photosynthesis in absence of plants and there will be no life on earth.
 - (b) Sprouting is the initial stage of germination of seeds. The wet seeds just start growing when small growth appears on it, These sprouted seeds contain more vitamins and make a more nutritious food.
 - (c) The rearing of honeybees on large scale for producing honey is called apiculture and the habitat of honeybees is called Apiaries.
 - (d) The living organisms like **fungi** and **bacteria** feed on dead plants and animals are called the decomposers. Decomposers help to keep environment clean.

CHAPTER 2: COMPONENTS OF FOOD

Formative Assessment

1. **Oral Questions :**
 - (a) Two foods rich in carbohydrates are Rice and Potato.
 - (b) Vitamins are essential nutrients required in small quantities for normal functioning of body. These are protective nutrients.

- (c) Roughage is undigestible fibrous component of food which neither provides energy like carbohydrates nor builds the body like proteins. The roughage only adds to bulk of food and help to get rid of undigested food.
2. **Tick (3) the Correct answer:**
 (a) (i) fats, (b) (ii) fats, (c) (ii) scurvy, (d) (i) rickets
3. **Ring the odd one:**
 (a) Protein, (b) Goitre, (c) Beri-beri.
4. **Do it yourself.**
1. **Fill in the blanks:**
 (a) **Carbohydrates** and fats provide us energy.
 (b) **Carrots** is rich source of vitamin.
 (c) **Beri-beri** is caused due to deficiency of vitamin B.
 (d) The diet that contains all nutrients in the required proportion is called **balanced diet**.
 (e) Deficiency of vitamin 'C' causes a disease known as **Scurvy**.
2. **Write (T) for true and (F) false**
 (a) T, (b) F, (c) T, (d) F, (e) F.
3. **Match the following:**
- | | |
|------------------------|--|
| (a) Energy-giving food | (vii) Carbohydrates |
| (b) Body-building food | (v) Proteins |
| (c) Protective food | (i) Minerals and Vitamins |
| (d) Glucose | (ii) Simple sugar |
| (e) Starch | (iii) Complex sugar |
| (f) Fats | (viii) Protects delicate organs |
| (g) Proteins | (iv) Made up of amino acids |
| (h) Night-blindness | (vi) Caused due to deficiency of vitamin A |
| (i) Scurvy | (ix) Caused due to deficiency of vitamin C |
4. **Answer the following question:**
- (a) Kwashiorkor is caused in children due to deficiency of protein. The symptoms are stunted growth, the skin becomes dry and scaly and body swells the limbs become thin and bony. Protein deficiency also leads to disease known as Marasmus in which symptoms like kwashiorkor appear. The child may become very weak and may not be able to move. The digestion becomes very poor.
- (b) The over-eating of fat rich food leads to condition of overweight known as obesity. The person remains inactive and lazy due to which the fat gets accumulated in the body and cause obesity. These persons suffer from heart related problems.
- (c) The main components of food are nutrients, roughage (dietary fibre) and water. The nutrients are the substances that an organism require to growth, repair and maintenance of body. Nutrients required by human body are carbohydrates, proteins, fats, vitamins and minerals.

(i) **Carbohydrates:** The carbohydrates are main source of energy for our body and these are called energy giving food. Starch and sugar are main type of carbohydrates. cereals (wheat & rice), Potato, glucose, fruit juices, mango etc are. rich in carbohydrates.

(ii) **Proteins:** These are called body building foods. Proteins are necessary for growth and repair of body. Proteins are obtained from plants and also from animals. Good rich sources of proteins are beans (soyabean and peas) nuts (almond, cashew nuts, ground nuts), pulses (gram, moong) etc. Animal source of proteins are meat, fish, egg & milk.

(iii) **Fats:** Fats gives more energy than carbohydrates and also called energy-giving foods. Fats are obtained from plants as well as animals. Oils, butter, milk, ghee are common fats. Even though fats give more energy than carbohydrates, but comparatively difficult to digest and get accumulated as body -fat and cause obesity.

(iv) **Vitamins:** These are essential nutrients required by body in small quantities for normal functioning of the body. These are called protective foods. Each vitamin has particular function and occurs in particular food item.

(v) **Minerals:** Even though minerals do not give energy to the body, but play important role in proper functioning, normal growth and good health through metabolic activities.

(vi) **Roughage:** The fibrous undigestible material present in food items in the roughage. It neither provides energy nor builds our body. It adds bulk to food and can store good quantity of water and helps in getting rid of undigested food. Good source of roughage are corn, salad, fruits and vegetables etc.

(vii) **Water:** It is the most important constituent of food. All vital functions of body like transport of nutrients within the body, regulation of body temperature, absorptions of nutrients and metabolic activities are possible due to presence of water. In fact our body itself is 70% water. We get water from the food items also besides taking water in sufficient quantity as such.

(d) **Balanced Diet:** The diet containing adequate amount of all essential nutrients like carbohydrates, fats, proteins, vitamins roughage etc. is called Balance Diet. In fact balanced diet consists of cereals, pulses, fruits, vegetables, milk, fat etc-etc. in required quantities

(e) **Deficiency Diseases:** If the diet taken is not balanced one, the diseases due to lack of carbohydrates, or fats or proteins or minerals and vitamins are caused deficiency diseases.

(i) **Deficiency of Proteins:** causes kwashiorkor or Marasmus in which body growth is stunted, skin becomes dry and scaly and hair becomes

reddish and body becomes thin and bony.

(ii) Vitamin deficiency diseases are Night blindness (Vit.A), Beri-beri (Vit-B), Scurvy (vit. c), rickets (vit-D) etc.

(iii) Mineral deficiency diseases are Anaemia (Iron), Goitre (Iodine), Bone and Tooth decay (calcium).

CHAPTER 3: LIVING ORGANISMS AND THEIR SURROUNDING

Formative Assessment

1. Oral Questions :

- (a) All living things are made up of cell which is basic unit of life. These organisms may be uni-cellular i.e. made of single cell or may be multi-cellular i.e. made of millions of cells. Each living being has definite shape and need energy to perform life activities, which they derive from nutrition. The living organisms respire and grow. The undigested component is excreted as waste. The living beings reproduce young ones of their own kind. All the living being have motion of one kind or other without any aid of external agency, but respond to external stimuli like cold, heat, light etc. Besides, all living beings have life cycle and all ultimately die. The life cycle may be few hours or many years.
 - (b) **Abiotic components of Habitat:** Abiotic components are non-living factors that influence the habitat and survival of the living organisms. These are (i) temperature, (ii) Air (O_2 & CO_2), (iii) Light, (iv) water, (v) Soil. Each factor affects the characteristics of a habitat typically in peculiar way.
 - (c) Amphibians live on land as well as in water. Common amphibians are frogs, toads, salamanders, crocodiles etc.
2. **Tick (3) the Correct answer:**
- (a) (ii) Cells, (b) (iii) Fish, (c) (i) Camel, (d) (ii) Xerophytes (e) (iv) all of these.
3. **Name these:**
- (a) The name where living organisms live— Habitat
 - (b) Favourable features present in plants and animals that help them to survive in their habitat —Adaptation.
4. **Ring the odd one:**
- (a) Snake , (b) Whales, (c) Ocean, (d) Opuntia.

Summative Assessment

1. Fill in the blanks:

- (a) Gills are present in **Fish** for respiration
- (b) Leaves are modified to spines in **Xerophyto** plants
- (c) Smog is formed when smoke mixes with **fog**.

(d) The temperature is measured by a device called **thermometer**.

(e) Cell wall is lacking in case of **animal cells**.

2. Write (T) for true and (F) false

(a) T, (b) F, (c) T, (d) F, (e) T.

3. Answer the following questions:

(a) The interaction between biotic and abiotic components of the habitat, an equilibrium is maintained in biological world. The plants and animals develop adaptation to live in different conditions of abiotic components like temperature, air, sunlight, water and soil. The living components (plants and animals) get nutrients (abiotic components) for survival. The cycle of nutrient continues between abiotic to biotic components and vice-versa. The nutrients from soil are taken up by plants to make food, which enters the food chain and ultimately reaches back to soil through herbivores, carnivores and decomposers.

(b) **Habitat:** The place where living beings live is called their habitat. The living beings are found almost everywhere on land, air, water or even underground. The organisms develop special characteristics to live under different conditions. These characteristics development is called adaptation. The plants like cacti and animals like camel adapt themselves to dry conditions of desert whereas hyacinth and fish live in ponds. Many organisms live in forest, in soil or in burrows.

(i) **Mountainous Habitat:** Mountains have low temperature, dry chilly winds and snow covered mountain peaks. The Himalayan ibex, snow leopard, snow bear etc. live in bitter cold whereas goats, sheeps, deer, wolf and yak live in grass covered plateaus and slopes. The plants like mosses, grasses, shrubs and wild flowers etc. survive in low mountains. The Lichens (algae & fungi) grow and develop on land surface which is not covered with snow. Birds, snakes, frogs etc. become less active during severe winter.

Thus we see that different characteristics develop in plants and animals at mountainous habitat.

(ii) **Aquatic Habitat:** The organisms living in water have aquatic habitat. The fish, whale, lobster, octopus are the aquatic animals. The fishes have gills for breathing, scales (fins) for movement. Some fish have air bladder to float easily. The fishes like dolphins and whales do not have gills but breathe through nostrils located on upper parts of their head.

The plants have poorly developed roots. Algae and sea weeds are floating plants and their leaves are covered with wax to prevent decay. The plants like hydrilla have long leaves so that they can make food with faint light that reaches them. The slender, spongy and flexible stems resist strong water currents.

- (c) **Abiotic Components:** The physical non-living components of the environment that influence the adaptations of the environment that influence the adaptations of living organisms are called Abiotic Components. The abiotic components are temperature, air, light, water and soil.
- (i) **Temperature:** Most of the plants and animals grow well in warm environment, but some survive in cold climate. But survival in extreme cold or hot place is almost impossible. The response to same conditions of temperature is different for different animals. For example the cows and buffaloes in India are used for milk and even though live at same place. But buffaloes cannot tolerate summer heat and cool themselves in ponds whereas cows have no such problem. Similarly the hot conditions of desert can be tolerated by animals like camel and plant like cacti and opuntia, but not by other animals and plants.
- (ii) **Air :** Living organisms need oxygen for respiration and plants need both CO_2 and O_2 for respiration and photosynthesis respectively. The equilibrium between CO_2 and O_2 is essential. The wind helps in dispersal of seeds for pollination. But it causes spread of pollutants & harmful bacteria and cause various diseases. The smoke and fog mixed together forms smog which cause eye-irritation, headache etc.
- (iii) **Light :** Green plants need sunlight to make food (carbohydrates). Flowers usually bloom at sunrise and close at sunset. But animals like earthworm, centipedes etc. do not like light. Most of living beings need light in one way or other and light acts as stimuli for various activities.
- (iv) **Water:** It is perhaps the most important component which is needed for sustaining life. The animals, humans, plants all need water. It is consumed as per the availability. Many animals have adapted for survival in dry and hot deserts, by developing water storing organs and the plants leaves have changed to spines to lose water.
- (v) **Soil:** Soil is formed from the rocks. The plants grow on soils. In absence of plants, the life on earth will not be possible. Different types of plants grow on different soils. The soil contains humus, water, minerals and micro-organisms. Some plants grow well in sandy soil and some others in swamp. Soil provides anchorage to plants and habitat for earthworm, bacteria and insects.
- (d) **Adaptations and Habitat (plants):** Plants grow and survive on soil. Depending upon the conditions of habitats, they have developed adaptations which can be described as below:
- (i) **Deserts:** The habitat of hot and dry places is called as Xeric habitat. Availability of water is meagre and it is hot in the day and cold at nights. The plants in such regions have long roots to draw water from deep. The stems become thick, fleshy and green and perform photosynthesis. To

minimise the losses of water by transpiration, the leaves change into spines and stomata are sunken.

(ii) **Forest or Grass lands:** The forests have moderate climate and good rainfall, so the plants grow well. Tall trees like oak and maple besides mosses and lichens are abundant. Any characteristic modification is not at all essential as the habitat is moderate.

(iii) **Mountains:** These are special type of habitat characterized by low temperature and cold chilly winds. The plants of low mountains include mosses, grass, shrubs and wild flowers, which grow on low clumps and protected from wind and cold. Lichens (algae & fungi) cover that regions of mountain land which is not covered by snow. Important trees are alpine, firs, pines etc. Which have conical shape, so that snow does not stick on leaver, but falls down to ground.

(iv) **Aquatic Habitat:** Aquatic plant have poorly developed root system. The plants which float have air cavaties in their stems and leaves to help them float. The leaves of such plants are covered with waxy substance, so that decay is prevented. The submerged plants have thin and long leaves which can carry out photosynthesis even in faint sunlight they get below water. These plants have long, slender, spongy and flexible stems to resist the strong water currents.

(e) **Micro-organisms:** Some of the living organisms are so small that they cannot be seen by naked eyes and powerful microscopes are required to see. Such tiny organisms are called Micro-Organisms. They are present both in plants and animals.

Differences between plants and animals:

Plants	Animals
1. Plants make their own food.	1. Animals can not prepare their own food.
2. Plant do onot move from one place to another	2. Animals can move from one place to another
3. The plants grow till their death.	3. Animals grow upto certain age only and eventually die.
4. Growth in plants in not uniform.	4. Growth in animals in uniform.
5. Plants respond slowly to external stimuli.	5. Animals respond rather very quickly to external stimuli.
6. Plants grow internally an well as externally.	6. Animals have only internal growth.

CHAPTER 4: PLANTS FORMS AND FUNCTIONS

Formative Assessment

- Oral Questions:**
 - In xerophyte plants cactus and opuntia, the leaves are modified to spines.
 - Two functions of roots are (i) To absorb water and minerals and (ii) to provide anchorage to plant.
Two functions of stem are (i) carries minerals and water from root to other parts of plant. (ii) carries manufactured food from leaves to other parts of plant.
 - Tap root is main primary root with lateral branches. The main root is longer and grows vertically downwards. It is found in dicot plants like castor, pea, gram beans etc.
- Tick (3) the Correct answer:**
 - (ii) Lamina, (b) (iii) Lateral roots, (c) (iii) turmeric, (d) (iii) anthers, (e) (iv) turnip.
- Name these:**
 - The arrangement of veins in a leaf — Venation
 - Male part of the flower — anther
 - The green leaf like part in the outermost circle of flower — sepals.
- Ring the odd one:**
 - Lemon, (b) Ovary, (c) Flowers, (d) soil.
- Identify the pictures and write their names:** Do it yourself

Summative Assessment

- Fill in the blanks:**
 - The **anther** is the male reproductive part of a flower.
 - Onion is a modified **stem**.
 - The ovary is transformed into **fruit**.
 - The embryo has one or two leaves called **cotyledons**.
 - The designs made by veins in a leaf is called **venation**.
- Write (T) for true and (F) false**
 - T, (b) T, (c) T, (d) F, (e) T
- Match the following:**

(a) Fibrous roots	
(b) Tap roots	
(c) Colour and fragrance of petals	(ix) To attract insects and birds
(d) Sepals	(i) Usually green in colour
(e) Petals	(ii) Usually coloured and showy
(f) Pistil	(x) Produces seeds

- (g) Stamen
- (h) Leaf
- (i) Root
- (j) Stem
- (iii) Produces pollen grains
- (iv) Photosynthesis
- (vi) Anchorage
- (v) Acts like two way street

4. **Answer the following questions:**

(a) **Parts of Flowers:** The flowers of different plants vary in size, shape, colour and fragrance, but all have mainly the following parts:

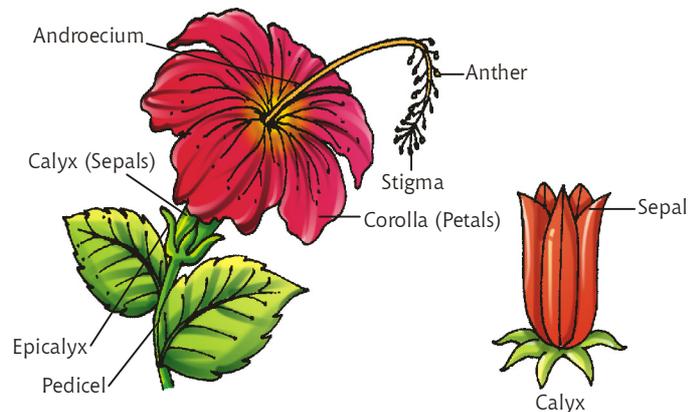
(i) **Pedicel and Thalamus:** The flower has stalk called pedicel which is joined to stem. The upper part of pedicel is wider and it is called thalamus. On the top of thalamus whorls of the flower are present.

(ii) **Calyx or sepals:** It is the first and the outermost whorl of a flower and consists of leaf like structures called sepals, which are generally green and take part in photosynthesis. The food prepared here is supplied to floral parts. The sepals (known also as calyx) protect the delicate inner part of flower.

(iii) **Corolla or Petals:** It is the second whorl of flower and its each segment is known as a petal. These are usually coloured and attractive and smelly to attract insects and birds which help in pollination.

(iv) **Androecium or Stamens:** It is the third whorl having one or two stamens. Each stamen has thin stalk of filament and two lobed head called anther which contain pollen grains. The pollen grains are small and take part in reproduction.

(v) **Gynoecium or Pistil:** It is the last (fourth) whorl of flower and composed of one or more female reproduction organs called carpels.



A flower of china rose

(b) **Cactus plant:** The plants growing in desert regions live in scarcity of water and to preserve water, the leaves get modified to spines to minimise transpiration. And the stem itself becomes green, so as to perform the photosynthesis and stems also become fleshy to store water. The leaves change into spines.

- (c) **Leaf:** Leaf is thin, flat and broad outgrowth of the stem. It arises at the node of stem or branches. Leaves of different plants are different in shape, size but almost all leaves are green due to presence of chlorophyll. Some plants do not have green leaves. Parts of leaves are as described:
- (i) **Leaf base:** The end of lamina joining the petioles is the leaf base by which leaf remains attached to stem.
 - (ii) **Stipules:** The new born leaf has a pair of very small leaves at the base of petiole called stipules which protect the young leaf.
 - (iii) **Stipules:** The new born leaf has a pair of very small leaves at the base of petiole called stipules which protect the young leaf.
 - (iv) **Leaf apex and Margin:** The tip of leaf is called leaf apex and side of leaf is the margin.
 - (v) **Midrib and Veins:** The continuation of stem into the leaf or lamina forms midrib from which network of veins branches spreads throughout lamina. This keeps the leaf stiff and flat. This arrangement of veins is called venation. It transports water and minerals to leaf and carries the prepared food to all parts of plant.
- Leaves have different patterns in different leaves. Its pattern is net like on both sides of midrib, the venation is reticulate venation. When venation is parallel to midrib and to each other, the venation is called parallel venation.
- Functions of leaves:**
- (i) Manufacture of food by photosynthesis process with the help of CO_2 , H_2O and sunlight in presence of chlorophyll.
 - (ii) The water absorbed in excess by root hairs is transpired in the environment. This leads to cooling effect and plants can withstand hot and bright sunshine.
 - (iii) The exchange of gases O_2 and CO_2 occurs during respiration and photosynthesis through the stomata (pores) provided in the leaves.
 - (iv) The leaves help in storage of food when they become fleshy. For example Onion.
 - (v) The vegetative propagation is also performed by leaves through the small buds provided in notches. These buds grow and develop into new plants.
- (d) **Types of leaves:** There are two types of leaves: (i) Simple and (ii) Compound. Leaves having single or undivided lamina called simple leaves. It has an axillary bud. Mango, jamun, dahlia etc, are examples of simple leaves. A compound leaf is that in which a number of leaflets are born on a single stalk. The leaflets do not bear axillary buds in their individual axils. The stalk of compound leaf is called rachis. Rose, gram, neem etc. are examples of compound leaves.
- Additional functions are performed by leaves due to modification. In xerophytes, the leaves change into spines to minimise loss of water. Some

leaves become fleshy for storing the food. In cases of weak plants like pea, the leaves are modified into thin coiled thread like tendril to help in climbing. In insectivorous plants leaves are modified to trap insects.

- (e) **Fruits:** After pollination and fertilization, the ovary grows into fruit. It consists of two parts – the pericarp and the seed. The pericarp develops from the walls of ovary and seeds from ovules. The pericarp may or may not have three different layers. the outer layer or skin called epicarp, the middle layer mesocarp and the inner layer endocarp.

Function of Fruits:

- (i) Fruits enclose the seeds and protect them from injury and unfavourable conditions.
 - (ii) Many fruits like mango, pears, apples, chikoo store food.
 - (iii) Fruits are very good source of vitamins and minerals like iron, calcium etc.
 - (iv) When fruits are eaten by man or animal, this helps in seed dispersal.
- (f) **Classification of Plants:** On the basis of external characteristics the classification of plant is as below:
- (i) **Herbs:** Herbs are small plants with soft green stems and these may or may not have branches. Most herbs have life span of one or two years. Rice, mustard and Sunflower are annuals while radish, beet and carrot are biennials. Some herbs have weak stem and so cannot stand erect. These are called creepers. The marigold, petunia, sweet pea, potato, tomato, spinach and wheat are herbs.
 - (ii) **Shrubs:** The medium sized plants growing upto 7-8 feet and having many branches are called shrubs. The stem is hard and woody and branches grow in every direction. China rose, crepe, jasmine, rose etc. are shrubs and usually grown as hedge plants.
 - (iii) **Trees:** Trees are tall perennial plants with thick and hard woody stem called trunk. Branches grow from the stem after a certain height. Mango, keekar, guava, neem are examples of trees. The branches grow from nearly the top of stem. Trees of date palm and coconut do not have branches.
- (g) **Fertilization:** When pollen grains stick to the pistil, a tube begins to grow from each pollen grain. The tube starts growing downward through the pistil till they enter the ovary. Here the sperm cell (male sex cells) are released and then fuse with egg cells. This fusion of sperm cell and egg cell is called fertilization.
- After fertilization, in due course of time, the ova become seeds and ovary becomes fruits.

FORMATIVE - ASSESSMENT- I (CCE Patten) (page 43)

1. **Oral Questions:**
 - (a) Cauliflower, pumpkin and broccoli
 - (b) Vitamins are essential nutrients required in small quantities for normal functioning of body. These are protective nutrients.
 - (c) Abiotic components are non-living factors that influence the habitat and survival of living organisms. These are (i) temperature, (ii) Air (O_2 & CO_2), (iii) Light, (iv) water and (v) soil.
 - (d) Tap root is main primary root with lateral branches. Main root is longer and grows vertically down ward. It is usually found in dicot plants like castor, pea, gram, beans etc.
2. **Tick (3) the Correct answer:**
 - (a) (iii) fruit, (b) (i) fats, (c) (iii) fish, (d) (iii) leaf, (e) (ii) stamen.
3. **Ring the odd one:**
 - (a) Onion, (b) Snake, (c) Flowers.
4. **Name these:**
 - (a) Male part of flower —stamen.
 - (b) The arrangement of veins in a leaf —Venation

CHAPTER 5: ANIMALS: FORMS AND FUNCTIONS

Formative Assessment

1. **Oral Questions:**
 - (a) Four types of movable joints are:
 - (i) Ball and socket joints, (ii) Hinge joints (iii) Pivotal joints and (iv) Gliding joints.
 - (b) The body of earthworm is made of segments jointed end to end and at the undersurface of body there are large numbers of bristles called **setae** which actually help in movement of earthworm.
During movement the earthworm first extends its front part, keeping the rear part fixed to ground. Then it fixes its front end and releases its rear end and shortens the body by pulling rear end. This process is repeated to move. The crawling movement of earthworm is known as **Peristalsis**.
 - (c) Two muscles involved in bending and straightening of arms are (i) biceps muscles and (ii) triceps muscles respectively.
2. **Tick (3) the Correct answer:**
 - (a) (i) fish, (b) (i) skull region, (c) (iii) foot, (d) (iv) Shoulder
3. **Ring the odd one:**
 - (a) Biceps, (b) Tibia, (c) Fish, (d) Head.
4. **Identify the picture:** Do it yourself

Summative Assessment

1. **Fill in the blanks:**
 - (a) **Fish** have streamlined body which helps them in their movement.
 - (b) The skull is a part of **axial** skeleton
 - (c) Snakes crawl with the help of **Ventral scales**.
 - (d) The joint where our neck joins the head is a **gliding** joint.
 - (e) The **fore** limbs of birds are modified into wings.
 - (f) Amoeba shows locomotion with the help of **pseudopodia**.
 - (g) Fish swim in water with the help of **fins** and tail.
2. **Write (T) for true and (F) false**
 - (a) T, (b) F, (c) T, (d) T, (e) T, (f) F.
3. **Answer the following questions:**
 - (a) **Skeletal system:** To support and protect body organs from injury, a strong and rigid structure made of bones is needed which is called skeletal system. The human skeletal system comprises of skull, backbone, rib cage and limbs (arms & legs) Human skeletal system can be classified as follows:
 - (i) **The Axial Skeleton-** The of head, neck and trunk make the axial skeleton. It has skull, back bone and rib cage.
 - (ii) **The Appendicular Skeleton:** Two pairs of girdle and the bones of arms and leg are its parts. It has shoulder bones, bones of arms & legs and the hip bones.
 - (b) **Back bone or spinal column:** The spinal column forms an axis which supports other parts of the body. It consists of separate bones called vertebrae with fibrous discs in between. The skull is at the top. cervical vertebrae (neck bones) are made of seven bones. The twelve thoracic vertebrae are at the back of chest. The spine protects the delicate spinal cord. A large number of movable joints help in man to bend backward, forward and sideways. Main function of backbone is to make body erect.
 - (c) **Joints:** The points at which the bones meet are called joints. the proper movement of body is possible due to these joints. the bones are held together at proper place by strong cords called ligaments besides tendons which are attached to muscles. Tendons are bond of parallel fibres which have great strength. They transform muscle power to body movements. The cartilage present at joints prevents the rubbing of bones.
Type of Joints: The main categories of joints are:
 - (i) Movable joints, (ii) Immoveable joints and (iii) Partially movable joints.**Movable Joints:** These joints allow varying degree of movements. The bones of movable joints are held together bundles of tough, flexible connective tissues called **ligaments**. The space between bones is filled by **synovial fluid** which acts like lubricant and helps the bones of the joints to move easily. These freely movable joints are also called synovial joints. These are further classified as:

(i) **Ball and socket joint:** In such joints the rounded end of one bone fits into hollow space of other bone. Movement is possible in all direction
Examples: Shoulder and Hip joints.

(ii) **Hinge Joints:** The movement is possible in the plane like door hinge.
Examples. Fingers, the knee, the elbow etc, the wrist is a double hinge joint.

(iii) **Pivoted Joints:** This joint allows movement in many places e.g. up and down, to sides and other plane. It is present between first and second vertebrae.

(iv) **Gliding Joints:** This movement is due to sliding nature of cartilages.
Example back bone, ankle and wrist.

Partially Movable Joints: These joints allow only partial movement as in case of vertebral column where vertebra meet another vertebra. The joints where ribs meet the chest bones are also partially movable joints.

(d) **Muscles:** A muscle is a tough and elastic tissue that makes the body parts move and help in performing different activities for maintaining a strong and healthy body.

Types of muscles: The muscles are classified as (i) skeletal (voluntary or striated), (ii) Smooth (involuntary) and (iii) cardiac muscles.

(i) **Skeletal Muscles:** These muscles can be controlled at will or consciously. These muscles have alternate light and dark cross band called striations. Such muscles are joined to bones by tough connective tissues called tendons. These muscles give a proper shape to body. The muscles move the body by pulling only, because they cannot push the tissue to which they are attached.

(ii) **Smooth or involuntary Muscles:** These muscles are present mostly in internal organs of the body. Such muscles do not have striations. Smooth muscles move slowly and automatically in a natural and rhythmic pattern of contraction and relaxations. These muscles are not under control of brain.

(iii) **Cardiac Muscles:** Such type of muscles are found only in heart. It has characteristics of both voluntary and involuntary muscles. Like voluntary muscles cardiac muscles have striations and like involuntary muscles they contract and relax automatically.

Performing of functions by muscles:

(i) Muscles move by contracting i.e. by getting shorter.

(ii) Muscles can only pull. They cannot push.

On contraction, the muscles become shorter, stiffer and thicker and pull the bones. Most of the muscles which are attached to bones, work in pairs. When one muscle contracts, its partner on the other side relaxes. Exception to it are (i) eyelid muscles for blinking and (ii) diaphragm muscles for breathing which do not partners.

(6) **Match the following:**

- | | |
|----------------------|-----------------------------|
| (a) The first stage | (v) Cloth from plant fabric |
| (b) The second stage | (iii) Animal fibre |
| (c) Queen of fibres | (iv) Silk |
| (d) Synthetic fibre | (ii) Nylon |
| (e) Plant fibre | (i) Jute |

Summative Assessment

1. **Fill in the blanks:**

- (a) Fibres are twisted to form **yarn**.
- (b) Fabric is woven from **long threads** of yarns at right angles.
- (c) **Coconut fibres** have rough surface.
- (d) **Wool** is obtained from the hairs of sheep.
- (e) The gin was invented in **India**.

2. **Write (T) for true and (F) false**

- (a) T, (b) F, (c) T, (d) T, (e) T.

3. **Answer the following questions:**

- (a) Fibres are mainly classified as: (i) Natural, (ii) Artificial and (iii) Mixed.
These are further classified as described below:
 - (i) **Natural fibres** are obtained from plants as well as animals. Examples of plant fibres are: Cotton, Jute, Flax and coconut. the examples of animal fibres are wool and silk.
 - (ii) **Synthetic or Artificial fibres** are manufactured by chemical reactions. The examples are: Rayon, Nylon, polyester, Terylene, acrylin etc.
 - (iii) Mixed fibres are made by combination of either natural and artificial fibres or by one natural fibre with another natural fibre. the examples are Terylene with cotton or silk or wool and cotton with silk or cotton with wool.
- (b) **Mixed Fibres:** The mixed fibres are made by mixing either two or more different natural fibres or by mixing natural fibres with artificial fibres. Examples are:
Natural + Natural fibres are cotton + silk and cotton + wool.
Natural + Artificial fibres are Terylene + cotton, terylene + wool and terylene + silk.
- (c) **Uses of Cotton:** Cotton is used for manufacturing textiles, rayon and paper industries. Unspun cotton is used as fillers in mattresses, pillows and quilts. It has very good water absorption capacity and so used as mops on large scale and cleaned and sterilized cotton is used as absorbent in hospitals.
- (d) **Spinning and Weaving:** The joining of small fibres together to form long and strong threads is done by spinning. These threads are bound on reels and made into clothes by weaving which is done by crosswise placing of threads on the loom.

- (e) **Principle of loom:** The threads are woven into cloth on the machine called loom, A line of thread is laid lengthwise over the loom and then another thread is placed crosswise above and below this line of thread. In a loom, the crosswise thread is attached to a shuttle which moves the thread forward and backward over the lengthwise thread. The lengthwise yarn and crosswise yarn are called warp and weft respectively.

CHAPTER 7: CLASSIFICATION OF MATERIALS

Formative Assessment

1. **Oral Questions:**

- (a) Important properties of materials are: Appearance or lustre, hardness, solubility in water, floatation or sinking in water, transparency, conductivity, combustibility, attraction towards magnetism, diffusion, concept of electricity, roughness, elasticity, volatility, colour, shape, smell (odour), taste and ductility.
- (b) **Solubility of solid, liquids and gases in water:**
- (i) **Solids:** Some solids are soluble in water whereas most are insoluble. Common salt, sugar, glucose, tartaric acid etc. are insoluble. When molecules of substance mix with water molecules so intimately that they cannot be distinguished, they are said to have become soluble.
- (ii) **Liquids:** Most of the liquids like oil, kerosene, nitrobenzene etc. are immiscible in water and are insoluble. Whereas liquids like alcohol, vinegar, nitric acid, lemon juice mix with water intimately and called soluble or miscible with water.
- (iii) **Gases:** Most of the gases are insoluble in water, but oxygen, carbon dioxide are slightly soluble in water. The solubility of gases decreases with increase in temperature. Dissolved oxygen is used by aquatic animals whereas dissolved carbon dioxide is a source of food for aquatic plants.
- (c) **Classification of objects:** The objects are classified on the basis of their uses instead of their properties, because of convenience. For scientific studies; the classification is done on the chemical or physical properties of substances. For life-science studies; the classification is done on the basis of living and non-living.

2. **Tick (3) the Correct answer:**

- (a) (iv) aluminium, (b) (i) Water, (c) (ii) frosted glass
(d) (ii) Gold, (e) (iv) all of these.

3. **Ring the odd one:**

- (a) glass, (b) sand, (c) sand, (d) stone, (e) Wood.

4. **Identify the pictures:** Do it yourself.

Summative Assessment

1. **Fill in the blanks:**
 - (a) The liquids which mix with water are said to be **soluble** in water.
 - (b) Substances which allow the transfer of heat through them are called **good conductors**.
 - (c) Most of the gases are **insoluble** in water.
 - (d) Materials that can be burnt in air are called **combustible**.
 - (e) Materials that shine are called **lustrous**.
 2. **Write (T) for true and (F) false**
 - (a) T, (b) F, (c) F, (d) T, (e) T.
 3. **Match the following:**

(a) A substance through which one can see	(vi) transparent
(b) A substance which does not allow heat energy to flow through	(v) Bad Conductors
(c) A substance which readily burns on heating in air	(iv) combustible
(d) Collection of two or more substance having one or more physical properties	(iii) Grouping
(e) Materials which are soluble in water	(ii) Salt and sugar
(f) Materials with rough surface	(i) Stone and Rocks
 4. **Differentiate between:**
 - (a) **Solid and liquid:**

Matter that occupies a definite **space** and has definite **shape** is called solid whereas matter that occupies definite **space** but does not have definite **shape** is called liquid.
 - (b) **Elasticity and roughness:**

Certain substances change their shape in length or volume on application of external force but regain original status on withdrawal of external force. This property is called as Elasticity.

The roughness or smoothness is the property which gives a sense of its texture (or feeling) on touching the substance.
 - (c) **Volatility and ductility:**

The property of substances to change in vapour state is called its volatility and substance is characterised as volatile.

Certain substances (particularly metallic substances) can be drawn into wires. These substances are classified as ductile and this property is called ductility.
 5. **Answer the following questions:**
 - (a) **Classification:** There is large variety of things around us and to understand properly, we organize these things into groups on the basis of certain common characteristics or properties.
-

The process of grouping of things according to some common properties is called classification. The basis of classification may be the use, size, colour, shape, hardness, texture, solubility etc-etc.

The classification enables us to make systematic study and also to choose right material to make or use for certain purposes.

- (b) **Conduction of Heat:** The materials that allow heat energy to flow through them are called good conductors of heat, whereas the substances that do not allow the heat to pass through are called bad conductors. The metals are good conductors whereas wool, rubber, air, plastic etc. are bad conductors.

Most of the liquids and gases are bad conductors of heat. The cooking vessels are made of metals because they are good conductors of heat, but handles of those vessels are made of plastic or wood which are bad conductors of heat. Similarly sweater made of wool traps the air in its fibres and the trapped air does not allow body heat to flow out and so we feel sweater as warm. On the other hand, the mercury a liquid is good conductor because it is a metal.

- (c) **Diffusion:** Diffusion is a physical process in which one substance gets mixed up with another substance. For example molecules of potassium permanganate diffuse in water. Solids generally diffuse in each other, whereas diffusion in liquids and gases is rather easy. Soluble solid also diffuse in solvent.

Examples of Diffusion in different cases are:

- (i) Gas to Gas Smell of scent spreads in room through air.
(ii) Gas to liquid Ammonia gas diffuses in water.
(iii) Solid to Gas Naphthalene balls sublime in air and its smell spreads in room.
(iv) Liquid to Gas A drop of liquid perfume evaporates and fills the entire room.

- (d) **Solubility of solids, liquids and gases in water:**

(i) **Solids:** Molecules of some solids so intimately mix with water that they cannot be distinguished and we say that solid is soluble in water. Examples: Sugar and salt.

(ii) **Liquids:** Some liquids like alcohol, vinegar, lemon juice etc. are totally soluble in water whereas many liquids like oils, nitrobenzene, benzene, kerosene etc. do not dissolve in water.

(iii) **Gases:** Most of gases are insoluble in water like nitrogen, hydrogen and carbon monoxide. Some gases like oxygen and carbon-dioxide are slightly soluble whereas ammonia and hydrogen chloride gases are quite soluble in water.

- (e) **Classification of Items:**
- (i) Wood : It is bad conductor of heat and electricity and combustible and solid and opaque.
 - (ii) Glass: Transparent, fragile, bad conductor of electricity.
 - (iii) Paper : Combustible, flexible, opaque, tasteless, odourless.
 - (iv) Iron: Maleable, opeque, non-combustible, good conductor of electricity and heat.
- (f) **Magnetic Properties and its application:**
- Some substances like iron, cobalt, nickel and steel are strongly attracted towards magnet. the property of attraction towards magnet is called magnetism and substances are called magnetic substances. Other substances not attracted by magnet are called as non-magnetic materials.
- The magnets are extensively used in electric generators and motors, in lifting cranes, loud speakers, electromegnets, magnetic brakes in railways and many other electrical and electronic equipments.

CHAPTER 8: SEPARATION OF MIXTURES

Formative Assessment

1. **Oral Questions:**
 - (a) **Filtrate:** The process of separating the insoluble and suspended particles from the liquid by using filters is called filtration and the clean liquid so obtained is called filtrate.
 - (b) Sedimentation and Decantation processes are used to treat river or pond or subsoil water, before supply to city-people as drinking water.
 - (c) Separation of soluble components from mixture is done as described below:
Method No 1: The entire mixture is placed and water and stirred to dissolve soluble matter and filtered. The soluble matter goes into solution and insoluble substances remain behind on filter media (paper, cloth, seiveck). Soluble matter is recovered by evaporating water.
Method No. 2: If the mixture contains megnetec substances, They are separated by using magnets and then process of dissolving & filtration followed by evaporation is adopted.
2. **Tick (3) the Correct answer:**
 - (a) (ii) Corn from husk, (b) (ii) Decantation, (c) (iv) A salt- peppor mixture (d) (iv) a nitrogen-oxygen mixture, (e) (iii) stainless steel.
3. **Ring the odd one:**
 - (a) evaporation, (b) condensation, (c) water, (d) sand

Summative Assessment

1. **Fill in the blanks:**
 - (a) Alum helps in the sedimentation of **suspended** particles.
 - (b) **Ultra-violet** rays can kill harmful micro-organisms in water.
 - (c) The material from which home water filter is made is **ceramic (china clay)**.
 - (d) The process which helps the suspended particles in river water settle down when water is held still for long time is called **sedimentation**.
 - (e) The liquid that passes through the filter paper is called **Filtrate**.
2. **Write (T) for true and (F) false**
 - (a) F, (b) T, (c) F, (d) T, (e) F.
3. **Answer the following questions:**
 - (a) **Pure Substance:** A pure substance is that cannot be separated into other kinds of matter by any physical process, because all the molecules of pure substance are similar to each other. The substances in crystalline form is generally pure and possess definite characteristic properties like melting and boiling points and its density. Whereas impure substance does not have definite melting and boiling points. Thus purity of substance can be determined by finding out its m. p. b. p. and relative density.
 - (b) **Separation of salt, sand and iron filings from mixture:**
First of all iron filings are separated by using a **powerful magnet**. Then the remaining mixture of salt and sand is stirred with water so that **salt present gets dissolved**. The solution is now filtered to separate insoluble sand on filter paper and the filtrate so obtained is **evaporated** to get salt.
 - (c) The most important physical properties which are characteristic of a pure substance are its definite melting points, boiling points and relative density. By finding out these, we can confirm whether the given substance is pure or not.
 - (d) **Salt from sea water:** The sea water contains salts of other elements besides common salt. The sea water is collected in shallow pits (called pans) near sea and allowed to evaporate in sun. The water evaporates leaving behind the impure salt, which is collected and sent to factories for purification and then packed for actual consumption.
 - (e) **Heterogeneous and Homogeneous Substances:**
The particles of heterogeneous mixture can be easily seen whereas in case of homogeneous mixtures, the component particles cannot be seen. Therefore the components of heterogeneous mixtures (substances) can be separated conveniently by using one or more physical methods. However, it is not easy to separate components of homogeneous mixtures, but special methods are adopted for that purpose.

Examples of Heterogeneous Substances (Mixtures):

(i) Water toil, (ii) Heap of wheat containing stone pieces, husk, dust and other grains, (iii) Ironfiling + sulphur, (iv) chalk in water, (v) soil.

Examples of Homogeneous Mixtures:

(i) Solution of salt and sugar in water, (ii) Pure air ($O_2+N_2+CO_2$ +etc.)
(iii) Cold drinks (sugar + colour + flavour etc.)

Formative Assessment -II (CCE Pattern)

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1. Oral Questions:

- (a) **Movable joints n Human Body** are (i) Ball and socket joints, (ii) Hinge joints, (iii) Pivotal joints, (iv) Gliding joints
- (b) Jute Fibres require low land and plenty of water. In India it is cultivated in Assam, West Bengal and Bihar during rainy season and harvested at flowering stage. The stem of harvested plant is submerged in water for few days. The stems rot and fibres are separated by hand, dried in sun and tied in bundles. The fibre is then spun and woven into textile. However the fibre weakens on bleaching.
- (c) Three types of fibres are (i) Natural, (ii) artificial (synthetic) and (iii) Mixed.
- (d) The objects (substances) are classified on the basis of their characteristic physical and chemical properties or as living and non-living. But for convenience, the classification is mainly done on the basis of their end user.
- (e) The liquid that passes through filters is called filtrate.
- 2. Tick (3) the Correct answer:**
- (a) (i) fish, (b) (ii) cotton, (c) (ii) frosted glass, (d) (iii) stainless steel, (e) (ii) corn from husk.
- 3. Ring the odd one:**
- (a) iron, (b) Rayon.
- 4. Do it yourself.**

Summative Assessment -I (CCE Pattern)

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1. Fill in the blanks:

- (a) **Beri-Beri** is caused due to deficiency of vitamin B.
- (b) Gills are present in **Fish** for respiration.
- (c) The skull is part of **axial** skeleton.
- (d) Most of the gases are **insoluble** in water.
- (e) The liquid that passes through filter paper is called **filtrate**.
- 2. Write (T) for true and (F) false**
- (a) F, (b) F, (c) T, (d) T, (e) F.
- 3. Match the following:**
- | | |
|-------------------|------------------------|
| (a) carbohydrates | (v) Energy giving food |
| (b) Protein | (i) Body-building food |

- (c) Materials which are soluble in water (ii) Sugar and salt
 (d) A substance through which one can see. (iii) Transparent
 (e) Hen, duck (iv) Egg-yielding animals.
4. **Answer the following questions:**
- (a) See Ans, of Q.No. 3 (d) of Summative Assessment chap. 1 (Sources of Food).
 (b) See Ans, of Q.No. 4 (b) of Summative Assessment chap. 2 (Components of Food).
 (c) See Ans, of Q.No. 4 (g) of Summative Assessment chap. 4 (plants-Forms & Function).
 (d) See Ans, of Q.No. 3 (a) of Summative Assessment chap. 5 (Animals-Forms & Function).
 (e) See Ans, of Q.No. 3 (d) of Summative Assessment chap. 8 (Separation of Mixtures).

CHAPTER 9: A STUDY OF CHANGES AROUND US

Formative Assessment

1. **Oral Questions:**
- (a) **Periodic Change:** Changes that occur repeatedly at a regular interval of time and whose occurrence can be predicted are called 'periodic change'. For example; earth rotation and revolution, phases of moon, beating of heart, occurrence of tides etc.
- (b) **Chemical Change:** A change in which composition and chemical properties of the substances get changed and one or more new substance is formed, are chemical changes. Example: Photosynthesis, burning of coal, fermentation of fruit juices, rusting of iron, cooking of food etc.
- (c) (i) **Natural changes:** Examples of natural changes are: change of seasons, tides in sea, ageing of plants, formation of clouds and occurrence of rains, melting of ice on mountains, ripening of fruits, flowering of plants etc.
 (ii) **Man-made changes:** Examples of changes done and controlled by man are: Drying of clothes, burning of fuel, switching on and off the electrical appliance, tearing of a paper, cutting of vegetables, preparation of food etc.
2. **Tick (3) the Correct answer:**
- (a) (i) it increases (b) (ii) both irreversible and chemical change
 (c) (i) physical change, (d) (iv) burning.
3. **Ring the odd one:**
- (a) Boiling water, (b) Freezing of water, (c) Formation of curd.
4. **Do it yourself**

Summative Assessment

1. **Fill in the blanks:**
 - (a) The slaking of lime is an **exothermic chemical change**.
 - (b) A **saturated** solution does not dissolve more solute.
 - (c) **Solubility** of a substance changes on heating.
 - (d) Souring of milk is a **Chemical change**.
 - (e) Germination of seed is a **slow natural** change.
2. **Write (T) for true and (F) for false**
 - (a) F, (b) T, (c) F, (d) T, (e) T, (f) T.
3. **Answer the following questions:**
 - (a) **Physical and chemical change:** In Physical change only physical properties like colour, volume, physical state or texture change whereas chemical properties do not change. The substance regains its original condition on reversing the external agency. No new substance is formed in physical change. In chemical change, the composition and chemical properties change and one or more new substances are formed. This change cannot be reversed by reversing the condition.
 - (b) **Various Methods to bring changes in substance:** Heating cooling, application of pressure, mixing of substances, chemical reactions etc. are some of the ways which are used to bring about changes.
 - (i) **Heating;** Some objects simply heat up and no change occur. A few other expand on heating and change in size and shape occur. Some substances burn on heating and many more melt or evaporate on heating. Generally the changes occurring due to simple heating are reversible. But a few substances decompose on heating and bring about formation of new substances by chemical processes. Solids, liquids and gases expand in varying degrees on heating.
 - (ii) **Application of Pressure:** Pressure has very little effect on solids and liquids, but gases are greatly affected by pressure. Solids simply deform in shape. Ductile and malleable solids are given the desired shape by application of pressure.
 - (ii) **Mixing:** By mixing, we can bring about physical as well as chemical changes. Mixing sugar or salt with water gives solution and it is a physical change. The mixing of quick lime with water brings about chemical change with release of heat energy. A heterogeneous mixture can be obtained by mixing sand + salt + iron filings etc-etc.
 - (c) **Reversible and Irreversible Change:** If a change can be reversed by reversing the condition, it is reversible change. For example; on heating ice melts to water and on cooling water freezes to ice. Thus melting of ice is reversible change. The reversible change is denoted by two parallel arrows

pointing in opposite directions. Other examples of reversible changes are: (i) glowing of electric bulb, (ii) Magnetizing the iron rod etc.

Irreversible change is that in which original substance is not obtained by just reversing or changing the conditions. For example; burning of candle or paper, cooking of food, fall of leaves from tree, ripening of fruits etc.

- (d) Saturated solution is that in which no more solute can be dissolved. The given solution acquires maximum concentration of solute. For example; salt goes on dissolving in water upto certain limit (about 35%) and if more salt is added, it does not dissolve, but settles down. This condition is called saturation and the solution so obtained is **saturated Solution**.
- (e) Endothermic & Exothermic changes, both are accompanied by change in thermal conditions. In endothermic changes the substances get cooled as in case when ammonium chloride is dissolved in water. In exothermic change the substances get heated up as in case when quick lime is slaked with water.
- (f) **Study of changes** is done under following classification:
(i) Natural and Man-made (ii) Slow and fast, (iii) Desirable and Undesirable, (iv) Periodic and Non-periodic. (v) Reversible and Irreversible, (vi) Physical and Chemical and (vii) Exothermic and Endothermic, Various cases are studied and systematically the data are tabulated and explained.
- (g) **Solute, Solvent and Solution:** The liquid (water) in which a substance (salt) is dissolved to make homogeneous mixture, is called solvent (water) and the substance (salt) dissolved is known as solute and the ultimate homogeneous mixture is called as solution.

CHAPTER 10: ELECTRIC CURRENT AND CIRCUITS

Formative Assessment

- Oral Questions:**
 - Heaters, Induction Heaters, Refrigerators, Television, Fan, Electric Iron, Geysers, Motor pump.
 - The substances that do not allow the electrical current to pass through them are called insulators, For example; Rubber, wood, plastic, glass, air etc.
- Tick (3) the Correct answer:**
 - (ii) filament, (b) (iv) battery, (c) (ii) Insulator, (d) (iv) plastic.
- Ring the odd one:**
 - Cooking stove, (b) metal, (c) Plastic.
- Name these:**

(a) Materials which conduct electricity	Conductor
(b) Materials which conduct almost no electricity	Insulator
(c) The wire which carries away the current to power house	Neutral Wire
- Do it yourself:**

Summative Assessment

1. **Fill in the blanks:**
 - (a) A device, that is used to break an electric circuit is called a **Switch**.
 - (b) In a dry cell, the positive terminal is made of **Carbon (graphite)**.
 - (c) Electric current pass through **Conductors**.
 - (d) An electric **circuit** is a continuous path along which the current flows.
 - (e) The dry cell was invented by **George Lech Lanche**.
2. **Write (T) for true and (F) for false**
 - (a) T, (b) T, (c) F, (d) F, (e) F.
3. **Match the following columns:**

(a) A material through which an electric current flows	(iii) Conductor
(b) The energy which flows in a circuit	(v) Electric current
(c) The path along which electric current flows	(i) Electric circuit
(d) A device which converts chemical energy into electrical energy.	(iii) Electric cell
(e) A material which does not allow electric current to pass through it	(iv) Insulator
(f) Combination of cells	(vii) Battery
(g) Conductor of electricity	(vi) human body
4. **Differentiate between:**
 - (a) **Heat energy and light energy:**
 - (i) heat energy can pass through opaque metal sheets, but light energy cannot.
 - (ii) Heat energy is used for heating whereas light energy is used seeing the things.
 - (iii) light energy is transmitted by radiation process, whereas heat can be transmitted by conduction, convection and radiation.
 - (b) **Complete Circuit and Incomplete circuit:**

The completed circuit is closed circuit and current flows through it where as incomplete circuit is open circuit and the current does not flow through it.
5. **Answer the following questions:**
 - (a) **Simple Dry cell:** All types of electric cell have positive and negative terminals. A dry cell consists of zinc casing (negative terminal) and a carbon rod (positive terminal) with brass cap at the centre. The space between carbon rod and zinc casing is filled with jelly like substance made of ammonium chloride and storch. The carbon rod is surrounded by mixture of manganese dioxide and carbon