

SCIENCE 6 (NCERT SOLUTION)

CHAPTER 1.

FOOD: WHERE DOES IT COME FROM?

1. All living beings do not need the same kind of food. There is great variation in the food eaten by different living beings. For example, some animals eat only plants or plant products (herbivores) such as deer, cow, rat, etc. while some animals eat other animals as their food (carnivores) such as lion, tiger, etc. There are animals that eat plants as well as animals (omnivores) such as crow, bear, etc. We, the human beings, also eat a variety of food. We get our food from plants as well as animals.
2. 1. Moong – seeds, 2. Spinach – leaves, 3. Pumpkin – fruit 4. Carrot – root
5. Potato – underground stem
3. 1. Milk, curd, paneer, ghee – are all animal products
2. Spinach, cauliflower, carrot – are vegetables
3. Lions and tigers – eat other animals
4. Herbivores – eat plants and plant products
4. (a) carnivore (b) herbivore (c) plant (d) milk (e) sugarcane

CHAPTER 2.

COMPONENTS OF FOOD

1. The major nutrients in our food are carbohydrates, fats, proteins, vitamins and minerals.
2. (a) Carbohydrates and fats (b) Vitamins and minerals
(c) Vitamin A (d) Calcium
3. (a) Butter, ghee (b) Potato, rice (c) Carrot, cabbage (d) Pulses, soyabean
4. (a) (X), (b) (✓), (c) (✓), (d) (X)
5. (a) Rickets (b) Vitamin B₁ (c) Scurvy (d) Vitamin A

CHAPTER 3.

FIBRE TO FABRIC

1. **Natural fibres:** wool, cotton, silk, jute
Synthetic fibres: nylon, polyester
2. (a) (T) (b) (F) (c) (F) (d) (T) (e) (T) (f) (F) (g) (F)
3. (a) stems, fruits (b) silk, wool
4. Cotton is obtained from fruits of cotton plant called cotton bolls and jute is obtained from the stem of jute plant.
5. Doormats, ropes, seats of public transport, carpets, etc. are made of coconut fibres.
6. The process of making yarn from fibres is called spinning. In this process, fibres from a mass of fibres are drawn out and twisted. This brings the fibres together to form a yarn. Hand spindle (takli) and charkha were used to make the yarn some time ago. Nowadays, spinning is done by huge machines in factories on large scale. The yarn is then woven to make fabric.

CHAPTER 4.

SORTING MATERIALS INTO GROUPS

1. Table, chair, bed, door, wheel, bullock cart, etc.
2. Glass bowl, steel spoon
3. Book — paper, plastics
Tumbler — glass, plastics
Chair—wood, plastics
Toy—wood, paper, plastics, glass
Shoes—leather, plastics

4. (i) F (ii) F (iii) T (iv) T (v) F (vi) F (vii) T (viii) T
5. (a) Round shaped — basket ball, orange, globe, apple, earthen pitcher Other shapes — water, sugar
(b) Eatables — water, orange, sugar, apple
 Noneatables — basket ball, globe, earthen pitcher
6. Wood, cork, sponge, plastics, butter, oil, leaf, etc. are some items that can float on water. Some of them like cork, sponge, leaf, etc. can also float on oil.
7. (a) Baby—as it is living thing but others are furniture
(b) Boat—as others are names of flowers
(c) Sand—as others are metals
(d) Sand—as others are soluble in water

CHAPTER 5. SEPARATION OF SUBSTANCES

1. The components of a mixture are separated for the following reasons:
 - To obtain two different but useful components of a mixture (e.g., butter is a useful component which is separated from milk by churning).
 - To remove harmful components or impurities of a mixture (e.g., small pieces of stones and husk are separated from rice or dal before cooking).
 - To remove useless components of a mixture (e.g., tea leaves are separated from tea).
2. Winnowing is the method of separating husk from grains with the help of wind. It is used by farmers after threshing the crops.
3. By handpicking.
4. Sieving is a method of separating a mixture of various sized particles by passing them through a suitable sieve. Sieving removes bran and impurities present in the flour. Similarly, pebbles are separated from sand by using a larger sieve at a construction site.
5. **Hint:** Refer 'Activity-4'.
6. Yes, it is possible. **Hint:** Refer 'Activity-10' and use wheat flour in place of sand.
7. We can obtain clear water from a given sample of muddy water by using the process of sedimentation, decantation and filtration.
8. (a) threshing (b) straining (c) evaporation (d) decantation
9. (a) F (b) F (c) T (d) F
10. We should add ice to the lemonade after dissolving sugar. In this case, it would be possible to dissolve more sugar. If we add ice before dissolving sugar, then temperature of mixture falls down and very less sugar will dissolve in it.

CHAPTER 6. CHANGES AROUND US

1. Yes.
2. No.
3. The changes listed as 2 and 3 can be reversed but 1, 4, 5 and 6 cannot be reversed.
4. Yes, it can be changed by rubbing it with an eraser.
5. Differences between reversible and irreversible changes can be explained with the help of following examples:
 - inflating and deflating a balloon is reversible but burning the same balloon is an irreversible change.
 - Making a ball and rolling out a chapati using dough is an example of reversible change because it can be changed back to dough. But baking the chapati on tawa is an example of irreversible change because baked chapati cannot be changed into dough.
 - Folding a paper to make a toy aeroplane is a reversible change because it can be unfold to get the same paper sheet. But cutting of paper sheet after drawing an aeroplane on it is an irreversible change because paper sheet cannot be got back in this case.
6. No, when POP is mixed with water, a chemical change occurs which is irreversible.
7. After wetting and drying, the cement becomes hard and cannot be changed into soft powder. Therefore, it is an irreversible change.

CHAPTER 7.

GETTING TO KNOW PLANTS

- (a) **Roots** absorb water and minerals from the soil.
(b) **Stem** holds the plant upright.
(c) **Stem** conducts water to the leaves.
(d) The number of petals and sepals in a flower is always **different**.
(e) If the sepals of a flower are joined together, its **stamens** are also joined together.
(f) If the petals of a flower are joined together, then the **stamens** are joined to the petals.
- Do yourself.
- Money plant, Climbers
- The stem conducts water and minerals from roots and food from leaves to all other parts of the plant.
- Tulsi, coriander, china rose
- Parallel venation 7. Taproot
- Yes. If a plant has taproot, its leaves have reticulate venation whereas the plant with fibrous roots has parallel venation in its leaves.
- Sepals, petals, stamens and pistil.
- Do yourself.
- Leaf, Photosynthesis 12. Pistil
- Joined sepals – Brinjal, Pea; Separated sepals – Mustard, Carrot

CHAPTER 8.

BODY MOVEMENTS

- (a) movement (b) skeleton (c) hinge (d) muscles
- (a) (F) (b) (F) (c) (F) (d) (T) (e) (T)
- Upper jaw – is an immovable joint
Fish – have a streamlined body, have fins on the body
Ribs – protect the heart
Snail – shows very slow movement
Cockroach – has an outer skeleton, can fly in the air
- (a) A ball and socket joint is a freely-movable joint in which the round end of one bone fits into the socket of other bone.
(b) Lower jaw.
(c) Elbow cannot move backwards because it has hinge joint which allows movement of bones in one direction and up to 180° only.

CHAPTER 9.

THE LIVING ORGANISMS AND THEIR SURROUNDINGS)

- The surroundings where an organism lives, is called its habitat.
- The leaves of cactus are modified into spines to reduce loss of water from the leaves through transpiration. Its stem becomes green to carry out photosynthesis. Also, it is covered with a thick waxy layer, which helps to retain water. Its roots go very deep into the soil for absorbing water.
- (a) adaptation (b) terrestrial (c) aquatic (d) abiotic (e) stimuli
- Plough, sewing machine, Radio, Boat.
- Moon, a nonliving thing shows two characteristics of living things. These are:
(a) It moves in the sky.
(b) It grows in the size.
- Butter, leather, wool, cooking oil, apple, rubber
- Common characteristics of living things are:
(a) All living things need food.
(b) All living things show growth.
(c) All living things respire to get energy.
(d) All living things respond to stimuli.
(e) All living things excrete to expel wastes from the body.
(f) All living things reproduce their own kind.
(g) All living things move.

- The speed is important for survival in grasslands both for prey and predator animals because to hunt efficiently, predators like lion have to run fast. On the other hand, as there are a few trees to hide, prey animals like deer have to run fast in order to save themselves.

CHAPTER 10.

MOTION AND MEASUREMENT OF DISTANCES

- Modes of transport used on land are bus, car; on water are ship, boat; and in air are aeroplane, helicopter.
- (i) 100 (ii) 5000 (iii) oscillatory (periodic) (iv) periodic (v) rotatory and translatory (multiple motion)
- Because of varying from person to person, a pace or a footstep cannot be used as a standard unit of length.
- $1 \text{ mm} < 1 \text{ cm} < 1 \text{ m} < 1 \text{ km}$
- The height of the person is 1.65 m. It means he is 165 cm or 1650 mm tall.
- As $1000 \text{ m} = 1 \text{ km}$, $3250 \text{ m} = 3250 \div 1000 = 3.250 \text{ km}$. Thus, distance between Radha's home and her school is 3.250 km.
- The actual length of the knitting needle
= marking of other end – marking of first end
= $33.1 \text{ cm} - 3.0 \text{ cm} = 30.1 \text{ cm}$.
- Wheels of a moving bicycle and blades of a switched on ceiling fan both have rotatory motion about their centre-point (axis). But a ceiling fan is at rest with respect to ceiling and wall while a bicycle is in motion (translatory) with respect to the path and surroundings.
- The length between two markings on an elastic measuring tape can be increased easily. Therefore, measurements taken by an elastic tape are not considered to be standard. Hence, we would never tell someone about the exact measurement with full confidence.
- Motion of a pendulum, motion of a child on a swing, strings of a guitar or the surface of drums being played, etc. are all examples of periodic motion.

CHAPTER 11.

LIGHT, SHADOWS AND REFLECTIONS

- OPAQUE OBJECTS MAKE SHADOWS
- | Objects | Luminous | Nonluminous |
|-------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Opaque | A piece of red hot iron, a lighted fluorescent tube, a lighted touch, kerosene stove, sun, firefly | A piece of rock, a sheet of aluminium, a mirror, moon, a wooden board, a CD, an umbrella, a wall, a sheet of carbon paper, a sheet of cardboard |
| Transparent | The flame of the gas burner | Air, water, a sheet of polythene, a sheet of plane glass |
| Translucent | | A sheet of cellophane
Smoke, fog, a wire mesh |
- Yes, a cylindrical object can give a circular shadow if it is held in one any and a rectangular shadow if held in another way.
- No, as we (human beings) are nonluminous, without any light source reflection from our body or face does not take place. Thus, we will not be able to see a reflection of ourselves in the mirror if we hold up a mirror in front of us in a completely darkroom.

CHAPTER 12.

ELECTRICITY AND CIRCUITS

- (a) Switch (b) Two
- (a) T (b) F (c) F
- In the given arrangement, a part of circuit is made of wood or plastic (handle of screwdriver) which is bad conductor of electricity. This is the reason of not glowing the bulb.
- Join one end of key (switch) with the positive terminal of dry cell and other end with the lower end of bulb to complete the circuit.
- Switch is a simple device that is used to break and complete the electric circuit when required. It is used to ON or

OFF the flow of current without disturbing the connection of appliances in the circuit. Some electrical gadgets that have switches built into them are TV, radio, table fan, audio and video player systems, etc.

- No, as a safety pin made of metal is a good conductor of electricity but an eraser made of rubber is a bad conductor of it, so the bulb would not glow on using an eraser instead of a safety pin.
- No, as both the terminals (positive and negative) are connected with the same terminal of the bulb.
- The object tested using conduction tester is a conductor because glowing of bulb shows that it passed the current through itself.
- Rubber is an insulator that prevents the flow of current from circuit to a conducting material. Hence, an electrician takes the precaution wearing by rubber gloves when he repairs an electric switch.
- Plastic and rubber are bad conductors of electricity so they are used to cover the handles of screwdrivers and pliers used by electricians.

CHAPTER 13. FUN WITH MAGNETS

- (i) bar magnet, horseshoe magnet, cylindrical or ball-ended magnet
(ii) magnetic materials (iii) magnetic (iv) natural magnet (v) two
- (i) F (ii) F (iii) T (iv) F (v) T (vi) F (vii) F
- A pencil sharpener has a blade made of iron due to which it is attracted towards a magnet.
- | Column I | Column II |
|----------|-------------------|
| N – N | <i>Repulsion</i> |
| N – S | <i>Attraction</i> |
| S – N | <i>Attraction</i> |
| S – S | <i>Repulsion</i> |
- A magnet has maximum magnetic strength near its poles. A freely suspended bar magnets always takes rest in north-south direction.
- Poles of a bar magnet are located near its ends.
- To identify the north pole of a bar magnet, tie a thread in its middle and suspend it freely. Wait still it comes to rest. As we know that the freely suspended bar magnet always comes to rest indicating north pole in north direction and south pole in south direction, so the end which points in north direction is the north pole.
- Hint:** Refer 'Activity-8'.
- Hint:** Refer 'Answer C-3'.
- Boat gets attracted towards the magnet–Boat is made of magnetic material
Boat is not affected by the magnet–Boat is made up of non-magnetic material
Boat moves towards the magnet if north pole of the magnet is brought near its head–Boat is fitted with a magnet with south pole towards its head
Boat moves away from the magnet when north pole is brought near its head–Boat is fitted with a magnet with north pole towards its head
Boat floats without changing its direction–Boat has a small magnet fixed along its length

CHAPTER 14. WATER

- (a) Evaporation (b) Condensation (c) Drought (d) Flood
- (a) Condensation (b) Evaporation (c) Condensation (d) Evaporation
(e) Evaporation
- (a) F (b) F (c) T (d) F (e) T
- An anghiti or a heater heats up the uniform quickly when it is spread near it. Thus, water evaporates rapidly with increasing the temperature and uniform dries up soon.
- Water vapour present in air comes in contact with cold bottle and gets condensed to form water droplets. These water droplets form a puddle of water around the bottle.
- Human beings release water vapour with the exhaled air. When people breathe out on glasses, water vapour coming out makes the glasses wet.
- The water vapour that evaporates from waterbodies mixes with the air and after rising up higher, condenses into tiny

- droplets of water. These droplets of water form the clouds.
8. When it does not rain for a long time in a particular region, it leads to drought.

CHAPTER 15. AIR AROUND US

1. **Hint:** Refer 'Answer C-1'.
2. Oxygen
3. **Hint:** Refer 'Activity-2'.
4. **Hint:** Refer 'Activity-7'.
5. A lump of cotton wool has a lot of air spaces inside it. When the lump of cotton wool is kept in water, air comes out in the form of bubbles and hence the cotton wool shrinks.
6. Atmosphere
7. Carbon dioxide gas
8. Winnowing, flying of kite, playing with a pinwheel (firki), burning of fire and breathing are possible due to presence of air.
9. All living things (plants and animals) take up oxygen present in the air. This oxygen combines with food during respiration and carbon dioxide gas is released into the atmosphere. Now, green plants take in carbon dioxide from atmosphere to complete the process of photosynthesis and liberate oxygen into the atmosphere. Thus, plants and animals help each other to maintain the balance of gases in the atmosphere.

CHAPTER 16. GARBAGE IN, GARBAGE OUT

1. (a) The garbage that contains plastics, metals and glass.
(b) Do yourself.
2. (a) No, each one of us can play its part in the management of garbage. We can set up a central compost pit for composting kitchen and plant and animal waste in our locality, can keep separate bins for compostable and noncompostable wastes and also can ensure proper disposal of waste generated from different sources.
(b) Yes, if we create as less waste as possible and reuse as many things as possible, this will reduce the problems relating to disposal of garbage.
3. (a) **Hint:** The left over food can be given to animals.
(b) Banana leaf platter because it can be set into composting.
4. (a) As paper is recyclable, all kinds of paper pieces can be recycled.
(b) Do yourself.
5. (a) and (b) Do yourself.
(c) Today, whatever article we buy from market, it is nicely packed in some kind of material. Packaging makes the product attractive and saves it from jerks. But on the other hand, it increases waste. However, there are certain articles that cannot be sold unpacked such as medicines, cosmetics, glassware, etc. Generally, cardboard, papers plastic sheets, thermocol sheets, etc. are used as packaging materials. We throw them as waste though they can be used for some other purposes also. To reduce the amount of garbage, articles should be packed in reusable materials and we should try to use such items that have less packaging.
6. Compost is better than chemical fertilisers because it provides humus containing all the nutrients to the soil. This improves the quality of soil and makes it porous and airy. On the other hand, the regular use of chemical fertilisers makes the soil acidic or basic and kills the useful bacteria of the soil. They are easily soluble in water, therefore, easily flow to nearby waterbody and cause soil and water pollution.