Modern Science

Teacher Manual

YBPL

5

SCIENCE - 5

CHAPTER - 1 : PLANT REPRODUCTION

A. 1. a, **2.** b, **3.** c, **4.** a, **5.** b, **B. 1.** monocot, **2.** large, **3.** plants, **4.** seedling, **5.** ginger, **C. 1.** T, **2.** F, **3.** T, **4.** F, **5.** T, **D. 1.** The growth of a baby plant from a seed is called germination. **2.** By stems, by roots, by leaves and by spores, **3.** If you cut the top portion of a carrot and plant it in the ground, new plant will grow from it. **4.** Rabi Crops : Rabi crops are grown from November to April. Kharif Crops : Kharif crops are grown from June to October. **5.** Seed coat, Cotyledons and embryo. **6.** Scattering of seeds away from the mother plant is called seed dispersal. **7.** The various stages of crop production are: a. The field is ploughed. This helps to get air into the soil. b. Manures are added to enrich the soil. c. Healthy seeds are sown. d. The crop is irrigated (watered). **HOTS : 1.** No, because mango plant grows from seeds. 2. Because some of them did not get proper air, water, sunlight and space to grow due to overcrowding. 3. He missed spraying of pesticides with fertilisers.

CHAPTER - 2 : ANIMALS LIFESTYLE

A. 1. a, **2.** a, **3.** b, **4.** c, **5.** a, **B. 1.** India, **2.** Scavengers, **3.** nose, **4.** special, **5.** flightless **C. 1.** c, **2.** h, **3.** a, **4.** g, **5.** e, **6.** b, **7.** d, **8.** f,

D. 1. The surroundings in which an animal lives and survives is called its habitat. **2.** Scales, shells, spines, wool, fur, feathers, **3.** In response to changes in weather, habitat or availability of food. Sometimes migration is due to the natural calamities such as earthquake, droughts, etc. **4.** In order to stay alive, animals have to breathe continuously. Oxygen is taken in during breathing. It helps to release energy from food. Carbon dioxide is given out during this process. **5.** Herbivores : Animals such as cow, goat and giraffe eat plants. They are called herbivores. Animals that eat only flesh of other animals are called carnivores. Human beings and animals such as dog, bear and crow eat both plants as well as animals. They are called omnivores. **6.** Insects breathe through special air holes called spiracles. The spiracles lead into network of tubes called trachea. Air enters the spiracles and then passes through the trachea. Oxygen from this air is absorbed by the tissues of the body. Carbon dioxide is removed from the body through the spiracles. **7.** Water animals use fins to move forward. Penguins and turtles use flippers for swimming. Frogs use their webbed feet to swim in water and they use their long hind legs to jump. Most animals that live on land move with the help of four limbs. Reptiles like lizard, crocodile and snake use different forms of locomotion. Lizards and crocodile have small legs that are used to crawl on ground. Snakes use scales present on underside of their body to crawl. Birds can

hop or walk on land, swim in water and fly in air. **HOTS : 1.** Useful it removes the death skin and allows the new cells to come to the top, **2.** Yes, because stick insect changes its colour according to surrounding. **3.** To hunt its prey, **4.** Because they do not have thick skin and fur on their bodies to protect them from cold.

CHAPTER - 3 : BONES AND MUSCLES

A. 1. c, **2.** b, **3.** a, **4.** b, **5.** c, **B. 1.** hard, **2.** fibres, **3.** cardiac, **4.** smooth,

5. Pivot joint, **C. 1.** F, **2.** F, **3.** F, **4.** F, **5.** T, **D. 1.** It protects the soft organs inside. It gives framework to the body. **2.** A joint is a place where bones meet. The bones are joined together by strong and tough fibres called ligaments.

3. Skeletal muscles help in movement. Muscles in the arm are examples of skeletal muscles. Skeletal muscles are the only type of muscles we can control directly. Muscles in the heart are example of cardiac muscles. We do not have any control over them. They work automatically. **4.** Heart and Lungs, **5.** Bones are the hard structures made of living cells and minerals. Bones have their blood supply and nerves. That is how they grow as we get older. Many bones in our body are hollow. Long bones of the body contains a jelly-like material, known as bone marrow. Bone marrow is the body's factory for producing

red blood cells and is used for storing fat. **HOTS : 1.** We would not have been to open or closed our mouth, talk or eat. **2.** No, because hinge joint can move in one direction only. **3.** We cannot bend or twist our body.

CHAPTER - 4 : THE NERVOUS SYSTEM

A. 1. b, **2.** a, **3.** b, **4.** b, **B. 1.** nervous system, **2.** Eyes, **3.** five, **4.** Tongue, **5.** three, **C. 1.** F, **2.** T, **3.** T, **4.** F, **5.** T, **D. 1.** Five senses that help us to know about our surroundings are called sense organs. The sense organs are our eyes, nose, skin, ears and tongue. The actions, which are quick, sudden and automatic and which seem to occur without thinking are called reflex actions. They are under the control of the spinal cord. **3.** Crebrum controls thinking, learning, talking, memory & our sense organs. Cerebellum controls voluntary muscles & body balance. Medulla controls involuntary balance. **4.** Care of ears:- a. Do not clean your ears with sharp objects. b. Keep the ears clean and dry. Care of eyes:- a) Sit upright while reading. b) Do not read in dim light. **5.** When we have cold, the nerve endings in the nose get blocked and smell does not reach there. That is why we cannot smell things when we catch cold. **6.** The tongue has different regions covered with tiny taste buds. These taste buds help us in identifying the taste of the food we eat. We have taste buds which can detect sweet, sour, salty and bitter taste. **HOTS : 1.** Because they are made of dead cells and do not contain nerves. As nerves

are responsible for pain sensation. **2.** To link every part of the body to the brain. **3.** By nervous system. **4.** Iris. Because eye colour is a manifestation of the pigment that is present in the iris.

CHAPTER - 5 FOOD AND HEALTH

A. 1. a, **2.** b, **3.** c, **4.** a, **5.** c, **B. 1.** proteins, **2.** energy-giving, 3. Roughage, **4.** Exercise, **5.** protective, **C. 1.** Milk, fish, **2.** Bread, rice, **3.** Oil, nuts, **4.** Common cold, Pneumonia, **5.** Obesity, Goitre. **D. 1.** The term 'healthy' means to be in good health. In order to stay healthy we need to eat proper food, do regular exercise, play, relax and also rest. We should eat food to provide our body with the nutrients necessary for growth, and not only for its taste. **2.** Communicable diseases are those that can spread from one person to another. Common cold, pneumonia, and tuberculosis are some communicable diseases. **3.** It helps in moving the food easily through our digestive system and in proper removal of the wastes from our body. 4. At the growing stage our body needs nutrients like carbohydrates, proteins, fats, vitamins, minerals and water. All these nutrients are present in milk and milk products, meat, vegetables, fruits and grain-cereals. Food contains these five main components: Carbohydrates, Fats, Proteins, Vitamins and Minerals. They also give us energy but more than that given by the carbohydrates. Our body needs protein for repair of worn-out cells and

tissues also, to build body tissues. Vitamins and minerals protect us and give strength to fight against diseases. These are called protective foods. 5. Vitamins that dissolve in fats are called fat-soluble vitamins. These vitamins are vitamins A, D, E and K. Vitamins that dissolve in water are called water soluble vitamins. These vitamins are vitamins B and C. **HOTS : 1.** Because it is rich in iodine and goitre is caused due to deficiency of iodine. **2.** No, because germs grow in it and it can cause diseases. **3.** We do not get complete nutrients for healthy growth.

CHAPTER - 6 : SAFETY AND FIRST AID

A. 1. a, 2. c, 3. c, 4. a. **B.** 1. safety, 2. First aid, 3. Rabies, 4. Road, **C.** 1. e, 2. c, 3. d, 4. b, 5. a. **D. 1.** Accidents usually happen due to our carelessness. **2.** a. Keep the floors of the bathroom and kitchen dry or you may slip and hurt yourself. b. Keep your toys, books or other belongings in their proper places. Do not scatter them on the floor. They can hurt someone. c. Do not plug too many electrical gadgets at the same time in the same socket through a multi-plug. It may result in a short circuit and start a fire. d. Never play on the stairs, terrace or other elevated places because falling down from there may cause severe injuries. e. Never play with sharp objects like knife, blades, etc. Playing with these objects can hurt you and cause tetanus. **3.** a) If you think a bone is broken, do not move that part of the body. In case, a bone in the hand is

broken, make a sling using a cloth. This will give support to the arm and prevent movement. Take the patient to a doctor. b) An elastic bandage can be wrapped around the joint to prevent it from moving. Soak the sprained joint in cold water, the first day. From the second day onwards it can be soaked in warm water 2 or 3 times a day. This will help it to heal. Ointments such as iodex or relaxal can be lightly rubbed over the sprained joint. c) Wash the wound thoroughly with soap and water and put an antiseptic cream. The patient should be taken to a doctor to give anti-rabies vaccine. **4.** Heart and Nervous system. **5.** a. Before crossing the road, check properly that no vehicle is coming from either direction. b. Cross the road at the zebra crossing. If there is no zebra crossing, then make sure that there is no traffic from either side. If possible, use a subway or pedestrian bridge to cross the road. It is the safest way of crossing the road. c. Never play on the road. d. Read the road signs properly and try to understand the information they impart. **6.** a. In case of leakage of cooking gas, open all doors and windows to let the gas escape. Do not light a matchstick or a candle. Never switch on or off any electrical appliance before the gas escapes, as it may ignite fire. b. Wear cotton clothes while cooking. Do not wear nylon clothes as they catch fire easily. c. Never wear loose hanging clothes while in kitchen. d. Fire caused by petrol should be put out by throwing sand instead of water. Petrol being lighter than water floats on water and continues to burn. e. Never

throw water over a fire caused by electricity, since water is a good conductor of electricity and you may get an electric shock. Small fires can be extinguished by throwing sand over them. Fire extinguishers can be used to put out big fires. f. Fire crackers should be lighted with proper attention and precautions, that too in the presence of elders. g. Never play with matchsticks, candles and diyas. **HOTS : 1.** So that any one would not sink in the pool. **2.** They are playing on the road. They should play in an open area or in a play ground. **3.** Carpet catches fire, Amit would throw some water to stop the spread of fire.

CHAPTER - 7 : MATTER–SOLID, LIQUID AND GAS

Gear up : Do yourself. **A. 1.** b, **2.** b, **3.** b, **4.** a, **5.** a, **B. 1.** Solids, **2.** Liquids, **3.** chemical, **4.** physical, **5.** solute, **C. 1.** F, **2.** F, **3.** T, **4.** T, **5.** F, **D. 1.** Anything that has mass and occupies space is called matter. Matter is made up of very tiny particles called molecules. **2.** Any change in matter in which no new substance is formed is termed as a physical change. It may involve a change in the state of matter and it can usually be reversed. It is not a permanent change. For example: water (liquid) on cooling becomes ice (solid), and on heating becomes steam (gas). **3.** Do yourself, **4.** Burning of wood is a chemical change because it forms a new substance, ash, and we cannot get back the wood. Rusting of iron, digestion

of food, etc. are few examples of chemical changes. **5.** Liquids that dissolve in water are called miscible liquids. **HOTS : 1.** No. The molecules of salt will occupy the empty spaces between the water molecules. **2.** The smell diffuses into the air and spread. **3.** Do yourself.

CHAPTER - 8 : SIMPLE MACHINES

A. 1. c, **2.** b, **3.** a, **4.** b, **5.** b. **B. 1.** Machines, **2.** third, **3.** heavy, **4.** second, **5.** wedge. **C. 1.** b, **2.** d, **3.** e, **4.** a, **5.** c, D. 1. **Fulcrum:** The point on which a lever turns or is supported. **Load:** The weight on which force is applied. **Effort:** The push or pull that moves the lever or the force applied. **2.** When the fulcrum is between the load and the effort it is called a first-class lever. A second class lever has the load between the fulcrum and the effort. In a third class lever, the effort is between the fulcrum and load. **3.** Using screws, two things can be interlocked, in such a way that can't be forced to separate. 4. A wedge is an object with at least one slanting side ending in a sharp edge. The sharp edge is used to cut materials. Examples of a wedge include axe, razor. **HOTS : 1.** No. **2.** With the help of long rod or lever. **3.** An axle is attached to the centre of a wheel. The wheel and axle must move together to form a simple machine.

CHAPTER - 9 : ROCKS AND MINERALS

A. 1. c, 2. a, 3. c, 4. c, 5. c, 6. c, 7. c. **B.** 1. igneuous, 2. non-metallic, 3. fuel, 4. alloy, 5. sedimentary, 6. metallic. **C.** 1. c, 2. d, 3. e, 4. b, 5. a. **D. 1.** Rocks are grouped under three types: Igneous rocks, Sedimentary rocks and Metamorphic rocks. Igneous— granite, pumice sedimentary— sandstone, shale, Metamorphic— slate, marble. **2.** Inside the earth, heat and pressure change the form of some igneous and sedimentary rocks. These are called metamorphic rocks. **3.** Metallic minerals give us metals. Metals are extensively used in making cycles, scooter, cars, buses and aeroplanes. Our cooking pots and pans are made up of metal. The tawa on which we roast our chapattis is made up of a metal called iron. Non-mettalic minerals give us non-metals. a. Chlorine is used for water purification. b. Coal is used for cooking. c. Petrol is used to run vehicles. **4.** Petroleum is used for vehicles. **5.** a. Sandstone : It is a common sedimentary rock. It mainly consists of small grains of minerals and is made up of sand particles deposited close together. Sandstone is often used as building stone. b. Shale : Shale consists of fine grains of mud and clay. It exists in various colours like black, red and green. It is used for making bricks, tiles, cement, etc. **6.** Coal is used for cooking. **7.** Rocks are used as building material : Houses, schools, roads, bridges are all made up of different kinds of rocks. Some rocks are used in their original form while some rocks are

used to make bricks, cement, tar and concrete. **HOTS : 1.** Electrical. **2.** Because chalk is a soft rock, it can break easily. **3.** Gemstones are precious rocks. These are found in the form of crystals. When polished, they appear beautiful and shiny; thus are used in making jewellery. **4.** No, because it is light in weight and has porosity. Only hard rock is used for making kitchen tiles.

CHAPTER - 10 : VOLCANOES, EARTHQUAKES AND TIDAL WAVES

A. 1. b, 2. a, 3. a, 4. a, 5. a. **B.** 1. earth, 2. volcano, 3. tsunami, 4. tidal waves. **C.** 1. b, 2. e, 3. c, 4. a, 5. d. **D. 1.** A volcano is an opening in the earth's crust that allows magma to reach the earth's surface. **2.** The three types of volcanoes are : active volcanoes, dormant volcanoes and extinct volcanoes. **3.** An earthquake is a vibratory motion of the ground surface. It is caused by sliding of tectonic plates one over the other. **4.** An earthquake always causes destruction of lives and property. The undersea earthquake can cause disaster-like tidal waves. They cause harm to the lives in water. The earthquake also causes landslides and fires. They disrupt the transport and communication system. **5.** Tidal waves are massive, sudden, unexpected and very large ocean waves. These are caused by a sudden displacement (movement of water). **HOTS : 1.** Because falling of buildings and trees block the roads which affect transport system. Due to

this, communication wiring system also get disturbed or broken. **2.** To run out in an open area is a good idea. **3.** Because buildings, trees and crops fall down or destroyed. All the stored food get spoilt due to this and new sources are also blocked. **4.** Lava forms pumice. Ash from lava is use as fertilizers. Black soil from lava is used to grow cotton. Asphalt from lava is used for building roads.

CHAPTER - 11 : AIR AND WATER

A. 1. a, 2. a, 3. c, 4. b. **B.** 1. air, 2. five, 3. Soluble, 4. Soluble. **C.** 1. T, 2. F, 3. F, 4. T, 5. T. **D. 1.** a. Sedimentation : Water with insoluble impurities is left undisturbed. After some time, the insoluble impurities settle down at the bottom. This process is called sedimentation. b. Decantation : In sedimentation the impurities settle down at the bottom and you can see clean water above. This clean water is slowly poured into a separate container. This process is called decantation. **2.** Insoluble impurities are removed from water by three methods—sedimentation, decantation and filtration. **Sedimentation:** Water with insoluble impurities is left undisturbed. After some time, the insoluble impurities settle down at the bottom. This process is called sedimentation. **Decantation:** In sedimentation the impurities settle down at the bottom and you can see clean water above. This clean water is slowly poured into a separate container. This process is

called decantation. **Filtration:** In the process the impure liquid is passed through a filter paper. The filter paper works as the sieve which is used to strain tea leaves from tea at home. is called filtration. **3.** Soluble impurities are separated by evaporation and distillation. a. Evaporation : It is the process of changing water into vapour on heating. When water evaporates it leaves all the dissolved impurities behind. b. Distillation : Distillation is the process by which we get pure water, free of all minerals, salts and other impurities. By evaporation and condensation we get pure distilled water. Water is first heated, and then it evaporates. The water vapour is cooled and it condenses into water and collected in another flask. **4.** a. Filling up fountain pens, b. Filling up a syringe, c. Drinking through a straw, d. Using droppers. **5.** Distilled water is used : a. In batteries, cars, invertors, b. In science laboratories, c. To make medicine. **HOTS : 1.** Because it is an environment-friendly fuel and do not cause pollution. **2.** Because it removes useful minerals from water also. **3.** Because animals and humans give carbon dioxide in the atmosphere.

CHAPTER - 12 : SOIL EROSION AND CONSERVATION

A. 1. b, 2. c, 3. a, 4. c, 5. a, 6. b, 7. a. **B.** 1. soil, 2. three, 3. solid, 4. soil erosion, 5. terrace farming, 6. subsoil, 7. flood. **C.** 1. e, 2. c, 3. a, 4. b, 5. d. **D. 1.** Because we need food to live. We get this food from plants and animals. Plants

need soil to grow. **2.** a. Building bunds and dams : Lands have a gentle or steep slope to it. Water always flows out to the low-lying area. Building small bunds or dam walls at the point from where water flows out, helps collect water downstream. Embankment or walls are built along river sides, where possible, to hold river water in. b. Growing cover crops : Farmers use several methods to slow down erosion. Between two major crops, (after harvesting the first crop and before sowing the next crop) the field lies fallow. At this time wind and water may erode the topsoil. Farmers often grow fodder or other useful crops at that time. These crops are grown to cover the empty fields so they are called cover crops. Cover crop prevents water from carrying topsoil away. Farmers also plant trees around farmland to block wind. c. Terrace Farming : Farmers in hilly mountains regions cut the slopes of hills into steps or terraces. Water gathers on the terraces rather than rushing down the slope. This prevents soil being carried away. It also makes farming easy. **3.** Bedrock is a layer of broken rock below subsoil. **4.** Water, wind and other natural forces carry away the topsoil. These forces also move bits of rock and soil to new places. This movement changes the shape of the land. This process is called soil erosion. **5.** There are three main types of soil–sandy soil, clayey soil and loam. Sandy soil does not hold moisture. Thus, with water all other essential nutrients also flow away. Due to this, it needs regular addition of fertilizers. Clayey soil is usually rich in

nutrients because it can hold moisture. But it forms hard lumps when wet. It also develops cracks in hot weather causing harm to the roots of the plants. Loam can hold moisture and rich in nutrients. It has good qualities of both sandy and clayey soil. Hence, it is best suited for plant growth. **6.** These are three causes of soil erosion. a. Running water, b. Wind, c. Deforestation. **HOTS : 1.** Soil supports growth of plants by providing nutrients and water. Due to this, plants support the life of humans and animals. 2. Herbivores eat grass. Thus, over grazing causes soil erosion. 3. Plants depend on soil and animals and humans depend on plants.

CHAPTER - 13 : THE MOON

A. 1. a, 2. b, 3. a, 4. c, 5. b **B.** 1. atmosphere, 2. 3,84,400, 3. moons, 4. lunar eclipse, 5. sputnik. **C.** 1. F, 2. T, 3. F, 4. F, 5. T. **D. 1.** The different shapes of the moon, as seen from the earth, are called the phases of the moon. When the side of the moon facing us gets no sunlight at all, we cannot see the moon. We call this a new moon. a. As the moon moves along its orbit, a small portion of the side facing us gets sunlight, and we can see the crescent moon. b. In a week, we can see half of the moon. c. After three more days we see three-quarters of the moon. This is the gibbous moon. d. In two weeks, the entire side facing us gets sunlight. We can then see the full moon. e. After this, the phases reverse. **2.** Humans have been successful in placing their

own satellites around the earth. These satellites are sent up in rockets. They revolve around the earth, and are used for various purposes. They are known as artificial satellites. Sputnik-1 was the world's first artificial satellite. It was launched on 4 October, 1957 by the Russians. It orbited the earth for six months. India launched its first satellite Aryabhatta in 1975. **3.** Sometimes, the moon comes in between the sun and the earth. It then blocks the light of the sun and casts a shadow on the earth. The people in the shadow, can either not see the sun at all, or can see it only partially. We call this a solar eclipse. If the sun is completely blocked by the moon, it is a total solar eclipse. If it is only partially blocked off, it is called a partial solar eclipse. **4.** The moon does not have any water, and its surface is covered with a layer of dust. It has mountains and huge round pits called craters on its surface. The mountains and craters can be seen from the earth through a telescope. There is no atmosphere surrounding the moon. So there is no wind, no clouds and no rain. It becomes boiling hot during the day. On the earth, the atmosphere absorbs a part of sunlight, so it does not become very hot during the day.
HOTS : 1. No, There is no life on the moon. It does not have any water, and its surface is covered with a layer of dust. There is no atmosphere surrounding the moon. So there is no wind, no clouds and no rain. **2.** Then life will exist on the moon. **3.** No moon on Diwali and Full moon on Holi.

CHAPTER : 14 - WATER

A. 1. c, 2. c, 3. b, 4. a, 5. b, 6. a, 7. d, **B.** 1. 97, 2. potable, 3.condensation, 4. water cycle, 5. tidal waves, 6. 60, 7. 0° C, 100° C. **C.** 1. T, 2. F, 3. T, 4. F, 5. T, 6. F, 7. T, **D.** 1. 6.8 to 7, 2. 3% of total water on earth, 3. Agriculture, 4. Water turbines, 5. Epidemic **E. 1.** The different sources of water are ocean, seas, rain, snow, river, lakes, ponds, wells and springs. **2.** The water changes from liquid to vapour state below the boiling point. This is known as evaporation. **3.** A change in state from gaseous to liquid is called condensation. **4.** The different uses of water are agricultural needs, industrial needs and personal domestic needs. **5.** Rain water harvesting is done by following methods : (a) Water is collected from the clean roofs of the buildings through pipes and then stored in rainwater tanks. This water will be filtered for future use. (b) Rainwater can also enter groundwater reserves directly from the roadsides. Water seeps directly into the soil from roof tops through pipes entering into pits in the ground. This helps to recharge or refill the groundwater. **6.** Epidemic is a disease affecting thousands of people at the same time. **F. 1.** Our country depends a lot on agricultural. Farmers rely on water to sustain their agricultural crops, e.g. wheat paddy, etc. Many a times, rainfall is not sufficient to water these crops, and farmers have to use artificial watering systems, referred to as irrigation. **2.** When the

temperature of air increases, it expands i.e. its particles move away from one another). This makes the air lighter and it rises in the atmosphere, taking water vapour with it. As the air rises, it begins to cool. The water vapour condenses on dust particles present in the atmosphere to form millions of tiny droplets. Tiny ice crystals will be formed instead if it is very cold. This cluster of tiny water droplets floating in air is what we call a cloud. **3.** Water continuously moves from the earth to the atmosphere and from the atmosphere back to the earth again. This circulation of water in nature is called water cycle. Water cycle takes place in three steps: (a) Water is converted into water vapours by many processes like evaporation, transpiration, etc. (b) The water vapour rises up, becomes cooler and condenses to form tiny droplets which float in air as clouds. (c) Many droplets come together to form large drops which fall down as rain. **4.** Some places have heavy rainfall during the monsoon seasons. Sometimes, the rains are so heavy that the rivers start overflowing their banks resulting in **floods**. The water also floods agricultural and residential land causing immense damage to crops, livestock, houses and roads. Electric lines, water supply and the communication networks also get affected. At the same time, there are places where there may be no rainfall for several years. This results in a severe shortage of water, as lakes and ponds dry up and plants die. Such a condition is known as **drought**. **5.** Some ways by which we can conserve water are as follows: (a)

Avoiding wastage of water and recycling water in places like factories and even homes. (b) Planting trees and other vegetation as they help in absorption of water by the soil. (c) Reducing water pollution by treating sewage and industrial wastes before disposing them. (d) Rainwater harvesting is an important method to conserve water by collecting rainwater. It involves collection of water from surfaces on which rain falls and subsequently storing it for future use. **HOTS : 1.** , **2.** We find droplets on the underside of a plate that is put on a hot bowl of soup as some water from the hot soup evaporated and then condensed as droplets on the underside of the plate as the plate was relatively colder. **3.** An alternate way to dispose off waste is to classify into biodegradable and non-biodegradable. Recycle the non-biodegradeble waste and compost. The biodegradable waste which could be used as a manure later.

CHAPTER : 15 - AIR

A. 1. b, 2. c, 3. b, 4. a, 5. a, 6. b, 7. a, **B.** 1. atmosphere, **2.** photosyn-thesis, 3. hydrilla, 4. 78%, 5. 0.03, 6. lungs, 7. respiration, **C.** 1. c, 2. d, 3. e, 4. b, 5. a, **D.** 1. Air, 2. Atmosphere, 3. Fuels, 4. Dust, 5. Nostrils, 6. Lungs, 7. Wind mills, **E. 1.** A thick blanket of air, called the atmosphere, surrounds our earth. **2.** The main constituents of air are nitrogen, oxygen, carbondioxide, inert gases (mainly organ) and water vapour. **3.** Most

aquatic animals like Fish, have special organs for respiration called gills. Gills help to take in oxygen and give out carbon dioxide. **4.** Air pollution is the contamination of air by undesirable substances known as pollutants. **5.** All living things need oxygen for respiration. Plants take in oxygen through stomata present on the underside of their leaves and tender parts of their stems. Oxygen is also needed for combustion or burning. Combustion is required to produce heat for cooking and other purposes. **6.** Amphibians like Frog, Newt, and Salamander need breathing systems for both air and water. Crocodile and Alligator swim through water with part of their snout above the water surface to breathe easily through nostrils. **7.** Aquatic plants like Hydrilla also breathe in oxygen dissolved in water through their stomata. **8.** Birds have an efficient respiratory system as they need high level of oxygen during flight. Birds have a pair of lungs with air sacs that remain open all the time, so that air can easily pass through them. **F. 1. To show that air contains carbon dioxide gas.** Take a small sample of limewater in a test-tube. With the help of air pump, bubble air through it for sometime. Limewater turns milky. **To show that air contains water vapour.** Place ice-cold water and a few ice-cubes in a beaker and place it on a table. After sometime you will find water droplets on the outer surface of the beaker. This is due to the condensation of water vapour present in the air. **2.** We all need air to survive. Air contains

oxygen and carbon dioxide useful to plants and animals. Plants use carbon dioxide of the air to make their food by a process called photosynthesis. Oxygen is used by both plants and animals for reparation (photosynthesis and resperation are vital processes that supports life. **3.** (a) Air Supports life. (b) Air supports combustion. (c) Air helps birds to fly. (d) Aquatic plants and animals take in dissolved air. (e) Oxygen is used in oxygen cylinders for medical purposes. (f) Moving air is called wind. Wind helps in sailing parachutes, yacht, gliders, etc. **4. To show the presence of air in soil.** Take a jar, some soil, and a jug of water. Take some soil in a jar and pour water into it. Can you see bubbles coming out? What does it suggest? You will observe the bubbles show the presence of air in the soil. Now you can conclude that the animals living inside the soil take in air present in soil. **5.** Air is all around us. We cannot see the air but feel its presence. When we switch on the fan, the air present in the room starts moving and you can feel it. Many processes such as storm, flying kite, swaying of trees, winnowing, etc. show the presence of air or wind around us. **6. In Plants :** Plants have tiny pores called stomata, found on the underside of a leaf. Air containing carbon dioxide and oxygen enters the plant through these openings where it gets used in photosynthesis and respiration. **In Animals :** All animals need to respire, be it a cockroach, a fish, or an elephant. It is just that they use different organs and mechanisms for respiration. **7.** Land animals and plants breathe air

(oxygen). Green plants take in air (carbon dioxide) which is formed as a result of respiration to prepare their food by the process of photosynthesis. Oxygen evolved during photosynthesis is used by living beings in respiration. Thus, plants help in maintaining the balance of carbon dioxide and oxygen in nature. **HOTS : 1.** It is good to sleep under a tree during the day as photosynthesis occurs during the day and releases oxygen from the tree while during night only CO_2 is released as only respiration occurs. **2.** Although carbon carbon dioxide leads to global warming, it is still considered very important for out survival because plants need CO_2 for the process of photosynthesis by which plants make food that is used by both plants and animals for survival. **3.** He keeps the mask to prevent himself from air pollution.

CHAPTER : 16 - MANAGING WASTES

A. 1. a, 2. c, 3. c, 4. d, 5. b, 6. a, 7. a, 8. c, **B.** 1. d, 2. c, 3. e, 4. b, 5. a, **C.** 1. Waste, 2. , 3. biodegradable, non-biodegradable, 4. non-biodegradable, 5. recycling, 6. raw materials, 7. non-biodegradable, 8. Recycling, **D.** 1. Waste, 2. Liquid waste, 3. Sewage, 4. Degradation, 5. Reuse, **E. 1.** Anything that is of no use to us, forms waste (garbage). **2.** Composting is clean, cheap and safe. It considerably reduces the amount of garbage to be disposed. The manure thus obtained is also rich in nutrients. **3.** Careless disposal of plastics bags chokes

drains, hinders the absorption of water by soil, and can even kill animals such as cows, if they eat them by mistake. Today, the non- biodegradable nature of plastics and the widespread use and careless disposal of plastic products have made them a threat to the environment and public health. **4.** Biodegradable wastes are the wastes that rot by the action of decomposers. Non-biodegradable wastes are the wastes that do not rot by the action of decomposers. **5.** Composting is a method of waste management in which a pit is dug, and the biodegradable wastes are thrown in and covered with soil. The bacteria and fungi present in the soil decompose the wastes and restores the nutrients to yield manure or compost. **6.** Degradation is the processes by which substance are broken down by tiny organisms called decomposers. **7.** Reuse and recycle topic only. **8.** Every year some 45,000 tons of plastic waste are dumped into the world's oceans. One of the results of this is that up to one million seabirds and one hundred thousand marine mammals are killed each year by plastic trash such as fishing gear, six-pack yokes, sandwich bags, and styrofoam cups. **HOTS : 1.** We need to recycle paper even when it is biodegradable because paper is made from trees. More new paper means more cutting of trees which is harmful for the environment. **2.** Earthworms are found in the soil they help in increasing soil fertility. They are called farmer's friends.

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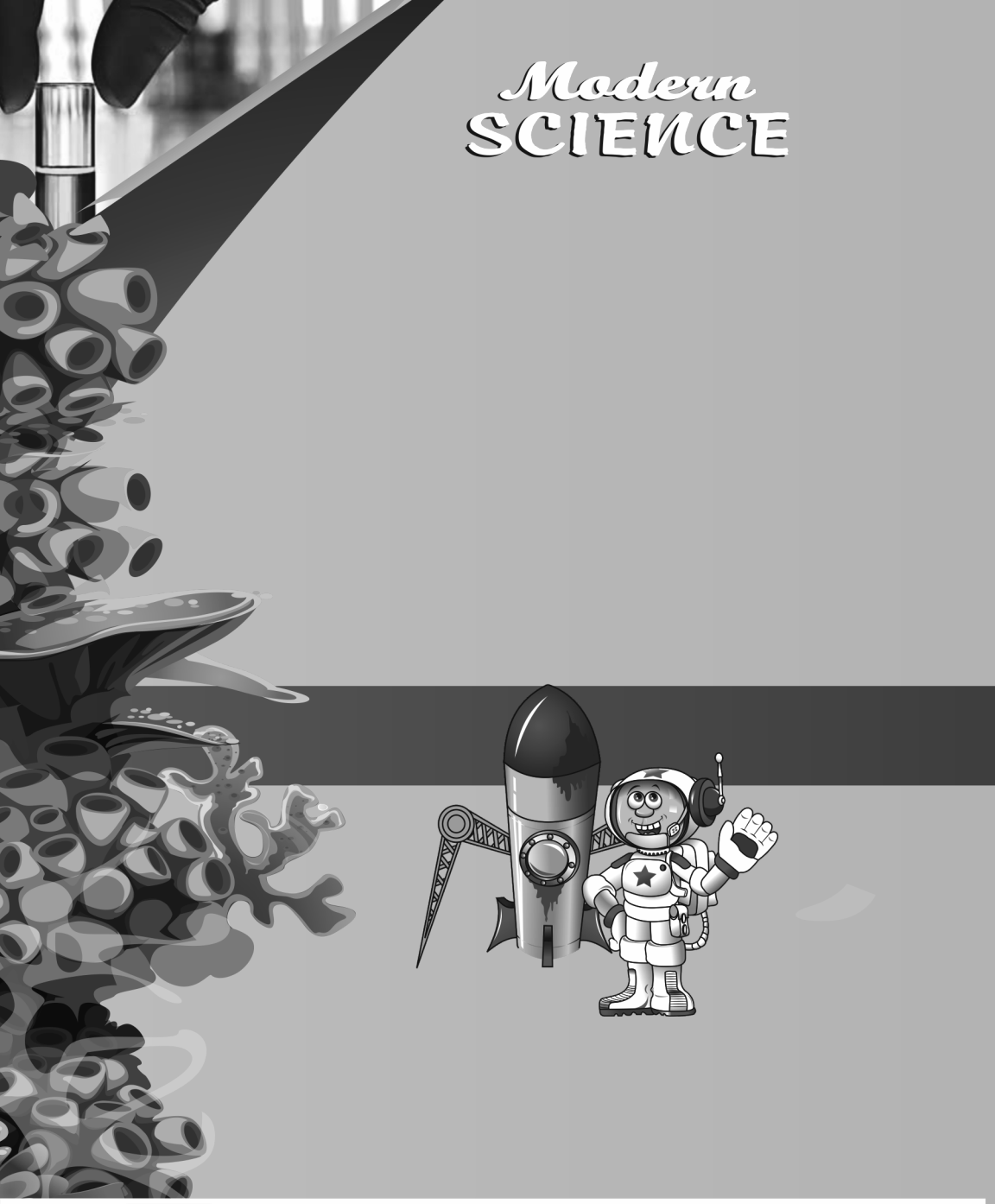

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