Key to
Navjeevan Practice Book

Standard
6

Teacher's Copy

General Science

NAVJEEVAN
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CONTENTS

Topic 1 : Natural Resources - Air, Water and Land

Classwork Assessment

(A) **(1)** ultraviolet **(2)** 0.3 **(3)** biotic, abiotic **(4)** ozone

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

(C) **(1)** Proportion of Land = 29% and Water = 71% on earth.

(2) As we go on higher altitudes, the air becomes rarer.

(3) Chemical formula of ozone is O_3.

(4) 16th September is celebrated as "Ozone Protection Day" all over the world.

(5) Carbon tetrachloride and Chlorofluorocarbons destroy the ozone layer.

(D) **(1)** Right

(2) Wrong - Water is a universal solvent.

(3) Wrong - Bedrock layer has more proportion of rocks.

(4) Wrong - The soil on the land is formed by natural process.

(E) **(1)** Ice **(2)** Formation of nitrates

(3) Fluorescent tubes **(4)** Flash photography

(F) (1)-(c), (2)-(d), (3)-(b), (4)-(a)

(G) **False:** 1, 2, 3, 4

(H) **(1)** Rivers, ponds, lakes, etc.

(2) Carbon monoxide, sulphur dioxide, etc.

(I) **(1)** Living things, atmosphere, lithosphere, hydrosphere.

(2) Microbes, worms and insects.

(3) Petrol, diesel, natural gas.

(4) Argon, Helium, Neon, Krypton, Xenon.

(5) Carbon tetrachloride, Chlorofluorocarbons.

Homework Assessment

(A) **(1)** Nitrogen **(2)** Carbon dioxide **(3)** Argon

(B) (1)-(f), (2)-(e), (3)-(d), (4)-(c), (5)-(b)

(C) **(1)** Nitrogen, oxygen, carbon dioxide, six inert gases, nitrogen dioxide, sulphur dioxide, water vapour and dust particles are the constituents of air.

(2) Carbon tetrachloride and chlorofluorocarbons are used in air conditioners and refrigerators.

(3) If there were no air on the earth, there would be no life since plants and animals would not be able to survive.

(D) **(1)** Mountaineers carry oxygen cylinders with them because air becomes rarer at higher altitudes. So, they don't get enough oxygen.

(2) We should grow more trees and bushes because they reduce the erosion of land and hence, soil gets conserved.

(E) **(1)** The ultraviolet rays coming from the sun are very harmful for living things. The ozone gas absorbs these rays, as a result, life on earth is protected. So, it is said that the ozone layer is a protective shell of the earth.

(2) No living thing can survive without water. Hence, it is said that water is life.

(3) Seawater is used in many industries, it is used to produce salt, seawater can be distilled to get pure water, sea waves create tidal energy which is useful in generating electricity. So, it is said that seawater is useful even though it is not potable.

(F) **(1)** Microbes present in the soil decompose the remains of plants and animals to produce humus. It provides nutrients to the soil and increases its fertility. It is also important for soil aeration and holding water in the soil. If microbes in the soil are destroyed, humus will not be formed and the soil will remain infertile, thus making it unsuitable for plant growth.

(2) If the number of vehicles and factories in our surroundings increase, then amount of smoke (pollutants) will increase in the air. This will result in air pollution, leading to many respiratory diseases and infections in human beings. Even animal life and plant life would get affected due to air pollution.

(3) If the total supply of potable water is finished, then no life will be possible on the earth.

Water plays an important role in the survival of living organisms.

(G) **(1)** The various constituents of air are nitrogen, oxygen, carbon dioxide, six inert gases, nitrogen dioxide, sulphur dioxide, water vapour and dust particles.

Uses of Gases in air :

(a) Nitrogen : **(i)** It helps living things to build the necessary proteins. **(ii)** It is useful in the production of ammonia. **(iii)** It is used in airtight packaging of foodstuffs.

(b) Oxygen : **(i)** It is necessary for respiration in living things. **(ii)** It is necessary for combustion.

(c) Carbon Dioxide : **(i)** Plants use it for producing their food. **(ii)** It is used in fire extinguishers.

(d) Argon : It is used in electric bulbs.

(e) Helium: It is used in obtaining low temperature and also for generating lift in airships.

(f) Neon: **(i)** It is used in decorative lights.

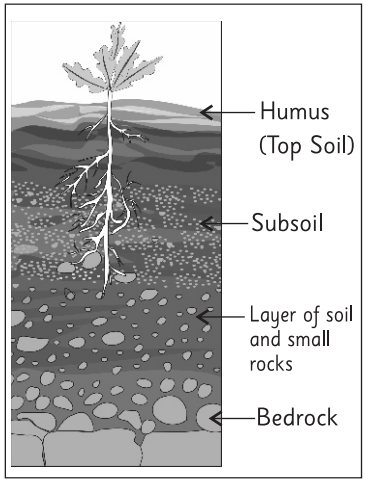
(ii) It is used for street lighting.

(g) Krypton : It is used in fluorescent tubes.

(h) Xenon : It is used in flash photography.

(2) (a) The soil on the land is formed by a natural process. (b) The abiotic components of soil are supplied through the weathering of the bedrock. (c) Due to the heat, cold, water, sunlight, wind and rain, the bedrock breaks down into pieces. (d) Stones, sand and soil are formed from these pieces.

(e) Microbes, worms and insects are found among them. (f) Rodents like mice and rats are found here. (g) The roots of trees growing on the land also help weathering of rocks. (h) The process of soil formation is slow and continuous. (i) It takes about a 1000 years for a 2.5 cm thick layer of mature soil to get formed.



Formation of Soil

(3) Air, water and land are important factors for sustaining life on earth. They fulfil the basic needs of food, clothing, and shelter of humans. Air is required by organisms for performing biological functions. Land is useful for farming and agriculture. We get food from land. Water is important for various life processes. Hence, air, water, and land are considered to be valuable natural resources.

(4) There is a shortage of water even though it occupies about 71% of the earth's surface because seas and oceans contain 97% water, which is salty. Frozen state of water is 2.7% and potable water is only 0.3%. As compared to this proportion, population growth, industrial growth and agricultural growth are very high, hence we face water shortage.

(5) Soil is an important element of the ecosystem that contains both biotic and abiotic constituents.

Biotic constituents : Earthworms, bacteria insects, fungi, microbes.

Abiotic constituents : Minerals, organic matter. water, stones, and sand.

Topic 2 : The Living World

Classwork Assessment

(A) **(1)** photosynthesis **(2)** oxygen, carbon dioxide
(3) excretion **(4)** responsiveness, stimuli
(5) dies

(B) **(1)** gills **(2)** nostrils **(3)** lungs **(4)** skin
(5) lungs **(6)** tiny pores present on the leaves
(7) spiracles **(8)** tracheae

(C) **(1)** Snake **(2)** Hat **(3)** Bird

(D) **(1)** False - Plants respire **(2)** True
(3) False- Lifespans of animals and plants are different.
(4) True

(E) **(1)** Gives birth to young ones
(2) Multicellular living thing **(3)** 50 years
(4) Lungs

(F) **(1)** Amoeba, Paramoecium, **(2)** Man, Guava plant
(3) Hen, Snake **(4)** Neem, Babul

(G) **(1)** vapour **(2)** water
(3) tiny pores **(4)** gum

(H) **(1)** hirada, behada **(2)** ox, earthworm
(3) mosquitoes, flies **(4)** nettle, colocasia

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

(J) **(1)** The sticky substance seen on the stems of babul (acacia) or drumstick is latex.
(2) Animals can move from one place to another but plants cannot.
(3) The different types of plants and animals have been able to

survive on the earth even today because of reproduction and the ability to adjust themselves to the surroundings.

Homework Assessment

(A) **(1)** unicellular **(2)** cells
(3) multicellular **(4)** locomotion

(B)

Stimulus	Response
(1) Beam of light	Closing the eyes.
(2) Pinprick	Withdrawing of the hand.
(3) Touching the leaves	Closing of the Mimosa leaves.
(4) Light from the lamps	Insects gathering around the lamps

(C) **(1)** Following are the similarities between plants and animals : (i) Both are living things (ii) Both respire (iii) Both excrete (iv) Both show movements (v) Both die (vi) Both show response to stimuli (vii) Both have proper cell structure.

(2)

	Plants		Animals
(i)	Plants have chlorophyll.	**(i)**	Animals do not have chlorophyll.
(ii)	Plants prepare their own food.	**(ii)**	Animals cannot prepare their own food.
(iii)	Plant growth is unlimited.	**(iii)**	Animal growth is for limited period of time.
(iv)	Plants cannot move from one place to another, but show certain movement.	**(iv)**	Animals can move from one place to another.

(3) Plants are used for household as well as industrial purposes. E.g., Fenugreek (methi), potato, okra (bhendi), apple, banana are used as food, while vasaka (adulsa), hirada, behada, asparagus are used as medicines. Plants also provide us with oxygen, and wood which is used to make paper and is a source of fuel. This way plant kingdom is useful to us.

(4) Trees like mango, banyan, and peepal grow big, have lot of branches and leaves. Their stem (trunk) is thick and wide. The trees of bamboo, coconut, and toddy have a thin trunk (stem) that grow to a great height. The leaves on these trees are only found on top of the trunk.

(5) Plants provide us with food, clean air, firewood, timber, medicines, oil, dyes, fibres, herbs, spices. Plants also give us shade and shelter. We also get food from animals (milk, meat, eggs). Animals are also used for carrying loads and as means of transportation too.

(D) **(a)** **(1)** Honeybees : **(i)** They give honey. **(ii)** They help in transferring pollen from one plant to another, which means they help in pollination.

(2) Sharks : **(i)** Skin of shark is used to make wallets, purses, shoes. **(ii)** Its teeth and jaws are used to make jewellery. **(iii)** It is used as food and in medicines too.

(3) Yaks : **(i)** They give milk. **(ii)** They are used as beasts of burden. **(iii)** Their dried droppings are used as fuel.

(4) Sheep : **(i)** They give wool. **(ii)** Meat is used as food.

(5) Earthworms : **(i)** They help in loosening the soil.
(ii) They improve soil fertility.

(6) Dogs : **(i)** They guard our homes. **(ii)** As pets.

(7) Bivalves : **(i)** Used as food. **(ii)** Shells are used to make decorative articles.

(8) Horses : **(i)** They help to pull carts. **(ii)** Used for riding. **(iii)** Also help in agriculture.

(9) Mice : **(i)** Used as the most common animal models for studying human diseases.

(b) **(1)** Ginger : **(i)** It is used in the treatment of cold. **(ii)** It is also used in cooking.

(2) Mango : **(i)** It is used to make juices, pickles, jams and jellies. **(ii)** Eaten as a fruit, either raw or ripe.

(3) Eucalyptus : **(i)** Its oil is used as medicine for cold. **(ii)** Its leaves are used for infections, fever and stomach upset.

(4) Babul : **(i)** Leaves of Babul tree can be used to treat mild dysentery and diarrhoea. **(ii)** Babul bark is used to clean the teeth.

(5) Teak : It is used to make furniture.

(6) Spinach : It is a green leafy vegetable, rich in vitamins, minerals, and nutrients.

(7) Aloe vera : **(i)** It is used as medicine. **(ii)** It is very good for skin diseases.

(8) Turmeric : **(i)** It is used in food. **(ii)** It is also used as medicine for cold and cough. **(iii)** It is used in cosmetics also.

(9) Holy basil : **(i)** It is used as medicine to cure cough and cold. **(ii)** It is also used in puja (worship) because it is considered as a sacred plant.

(10) Karanja : It is used for skin diseases.

(11) Moh : It is used as medicine.

(12) Mulberry : It is used as medicine.

(13) Grapevine : Grapes are obtained which are use as food.

(E)

Snakes	: Snakes use their muscles and their scales to move.
Tortoises	: Tortoises walk on the tips of their toes and move quite slowly.
Kangaroos	: Only animal to move by jumping. It uses its tail to balance its movement.
Eagles	: Eagles flap their wings and give themselves thrust to move through air and fly.
Chameleons	: Chameleons make many jerky movements for each step.
Frogs :	Most land frogs hop as means of movement.
Gulmohur	: It shows movement towards sunlight.
Sweet potato	: It's actually a root and shows movement accordingly.
Creeper	: It requires a support for its movement.
Dolphins	: They move by swimming.
Ants :	Their movements are highly co-ordinated and are being studied by scientists for finding patterns.
Rattlesnakes	: They move with their rattles held up to prevent damage.
Grasshoppers	: They use their two-winged legs and push with a spring motion.
Earthworms	: They use circular and longitudinal muscles to move through soil or along surfaces.

(F) Living things are made up of small units called cells. All the actions and processes in the bodies of living organisms are carried out with the help of microscopic cells. Cells are the basic structural and functional unit of life in living things. Hence, cellular structure is the main characteristic of living things.

Topic 3 : Diversity in Living things and their Classification

Classwork Assessment

(A) **(1)** perennial **(2)** biennial **(3)** annuals
(4) 1 to 1½ **(5)** herbs / creepers

(B) **(1)** Tree - hard strong stem - Mango.
(2) Herb - 1 to 1½ m height - Holy basil.
(3) Shrub - branches close to the ground - Lemon.
(4) Creeper - weak stem - Pumpkin.

(C) **(1)** Mango, Datura **(2)** Bread mould, Mushroom
(3) Coconut tree, Tamarind tree
(4) Orange, Hibiscus **(5)** Grapevine, Cucumber
(6) Sunflower, Jowar **(7)** Radish, Carrot
(8) Fern, Mango

(D) **(1)** Chrysanthemum **(2)** chick pea **(3)** Grape
(4) banyan **(5)** Guava **(6)** worms

(E) **(1)** True **(2)** False **(3)** True **(4)** False

(F) **(1)** It is necessary to classify all the living things in order to identify and study them.
(2) Parts of the plant are root, stem, leaf, flower and fruit.
(3) Roots hold the soil firmly and anchor the plant. Its main function is to absorb and transport water and nutrients from the soil.
(4) Herbs grow 1 to 1.5 metres tall. The stem of herbs are green and quite flexible compared to trees and bushes. Herbs live for few months and up to one year.
Examples, mint and oregano.
(5) The creeper has a green, flexible and soft stem. Creepers cannot stand tall. They usually creep on the ground. They live for one year or longer. Examples, pumpkin and bitter gourd.
(6) Toadstools and mushrooms are fungi.
(7) Plants are classified on the basis of their height, shape of stems, life cycle and habitat. Animals are classified on the basis of their cell structure, presence or absence of vertebral column, method of reproduction and habitat.
(8) The bodies of animals are protected by various coverings such as skin, fur, scales, hair, feathers, etc.

(G) (1) - (c), (2) - (a), (3) - (b)

(H) **(1)** amoeba **(2)** fish **(3)** toad **(4)** dog

(I) **(1)** scales **(2)** non-vertebrate animal
(3) amphibious animal **(4)** creeper

(J) **(1)** Jelly fish **(2)** Carrot **(3)** Sunflower **(4)** Orange

(K) **(1)** Plants which make their own food are called autotrophic plants.
Eg., Hibiscus, pomegranate, periwinkle.
(2) Some plants which use other plants for food are said to be heterotrophic plants. Eg., fungi, loranthus, dodder.
(3) Plants which consume insects as their food are called insectivorous plants. Eg., Pitcher Plant, Drosera.
(4) Animals are classified on the basis of their cell structure, vertebral column, method of reproduction, and habitat.

(L) **(1)** **Trees :** banyan, peepal, babul, gulmohur.
Shrubs : oleander, hibiscus, koranti, lantana.
Herbs : lemon grass, fenugreek.
(2) **Terrestrial animals :** horse, cat, bear.
Aquatic animals : fish, jellyfish, sea horse, bivalve.
Amphibious animals : frog, salamander, toad.

Homework Assessment

(A) **(1)** Shrub **(2)** Herb **(3)** Biennial plant
(4) Scales **(5)** Oviparous

(B) **(1)** Cockroach is an invertebrate animal because it has no vertebral column.

(2) Cow is a viviparous animal because it gives birth to young ones.

(3) The dodder plant does not contain chlorophyll. It is a parasitic plant that depends on the host (plant) for food. Hence, dodder is a heterotrophic plant.

(C) **(1)**

	A tree		A shrub
(i)	A tree grows very tall.	**(i)**	A shrub does not grow very tall.
(ii)	They have branches at some height above the ground.	**(ii)**	They have branches very close to the ground.
(iii)	Eg., tamarind, banyan.	**(iii)**	Eg., rose, hibiscus.

(2)

	Flowering plants		Non-flowering plants
(i)	Flowering plants bear flowers.	**(i)**	Non-flowering plants do not bear flowers.
(ii)	Flowers are the reproductive part of the plant.	**(ii)**	Spores and other parts of the plant reproduce new plant.
(iii)	Eg., Datura, Periwinkle.	**(iii)**	Eg., Bread mould, Mushroom.

(i)

(3)

	Vertebrates		Invertebrates
(i)	They have a vertebral column.	**(i)**	They do not have a vertebral column.
(ii)	Vertebral column helps in the movement of the body.	**(ii)**	They move with the help of organs of locomotion.
(iii)	e.g. monkey, parrot.	**(iii)**	e.g. cockroach, butterfly.

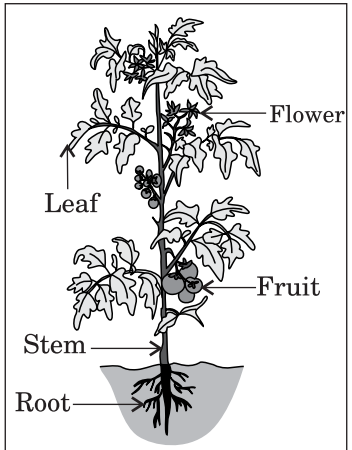
(D) **(1)** The stem of water hyacinth is soft and spongy due to presence of aerenchyma having large air cavities. Air is trapped in the cavities due to which water hyacinth floats on the surface of water.

(2) Cactus is mainly found in the deserts where the conditions are hot and dry. Hence, the cactus stem stores water due to which it is fleshy.

(3) Root, stem, leaf, flower and fruit are the parts of a plant.

(a) **The root :** (i) Roots hold the soil firmly and anchor the plant. (ii) The main functions of the root are to absorb and transport water and nutrients from the soil.
(iii) The roots of the carrot and radish also store food.

(b) **The stem :** (i) The stem carries out the functions of production, conduction and storage of food. (ii) In some plants, it performs the function of reproduction.
(iii) The stem gives support to the other parts of the plant.



Structure of a plant

(c) **The leaf :** (i) The leaf is flat. (ii) It plays an important role in the production of food. (iii) Leaves are mainly of two types - simple and compound.

(d) **The flower :** (i) This is the most attractive part of a plant. (ii) It is connected to the stem by a stalk which may be long or short. (iii) A flower has a typical colour and shape. (iv) The flower is an important means of reproduction.

(e) **The fruit :** (i) Fruits have different shapes. (ii) Fruits contain one or more seeds. (iii) The pods of beans and peas are actually fruits.

Topic 4 : Disaster Management

Classwork Assessment

(A) **(1)** 100 **(2)** 101 **(3)** 102 **(4)** 108

(B) **(1)** disaster **(2)** man-made, natural
(3) floods **(4)** earthquake

(C) **True -** (1), (4) **False** - (2), (3)

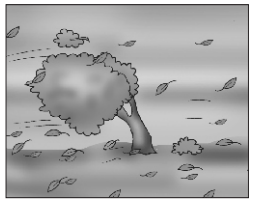
(D) **Man-made disaster :** fire, leakage of chemical gases, bomb explosion, war, forest fire.

Natural disaster : earthquake, storms, floods, tsunami, forest fire.

(B)

Earthquake

Flood



Storms

(F) **(1)** A sudden event that causes large scale damage to life, property and social aspects of a nation or society is called a disaster.

(2) There are two types of disasters :

(1) Man-made, (2) Natural.

(3) Taking steps to prevent disasters, making plans to face disasters and developing the capacity for these is called 'disaster management'.

(4) The main components of disaster management are:

(1) To prevent or reduce damage caused by natural or man-made disasters, (2) Emergency planning, (3) Management.

(G) **(1)** Causes of floods: (i) Choking of gutters and drainage lines, (ii) Heavy rain, (iii) High tide, (iv) Tsunami.

(2) Causes of forest fires: (i) Natural calamities like lightning strike falling on the trees, (ii) Man-made activities such as smoking or setting up factories or campsites near the forest area.

(3) Causes of landslides: Prolonged rainfall, erosion, deforestation, earthquakes, etc.

Causes of building collapse : Use of poor quality construction material, bad designs, weak foundations, faulty constructions.

(4) Causes of storms : (i) Formation of high and low air pressure belts in the atmosphere, (ii) Extreme heat with rain and wind.

(5) Causes of an earthquake are : (i) Movements in the interior of the earth, (ii) Mining activities, (iii) Construction of big dams, (iv) Constructing large buildings.

Homework Assessment

(A) **(1)** Storms **(2)** Floods

(B) **(1)** Use fire extinguishers, call the fire bridge and ambulance, pull the fire alarm.

(2) Call the ambulance, help the victims by giving them food, water, shelter and clothes.

(3) Give first aid, call the ambulance and police immediately, provide emotional support.

(4) Donate food and clothes to flood victims, provide them with temporary shelter.

(5) Provide shelter to innocent victims, give them first aid, provide emotional support.

(6) Help people take shelter in relief camps. Be alert and ask your family members and friends not to touch unattended objects.

(7) Help to clear the debris, make arrangements to send victims to the hospital by calling the ambulance.

(8) Donate food and clothes for the victims, helps in the evacuation of people to safer places.

(9) Provide shelter to the victims, donate food and clothes to the victims, help animals who are in need of help.

(10) Move or relocate the people who have been affected to a safer place, provide food and clothing to victims.

(11) Donate food, provide water to the victims including animals. Help in relocating the victims to other safer areas.

(12) Assist in rehabilitation services, provide shelter to victims.

(C) **(1)** Dog bite - (i) Wash the wound with a solution of potassium permanganate or other antiseptic. (ii) Cover the wound with a clean and dry cloth. (iii) Get a doctor's help and an injection of the anti rabies vaccine.

(2) Scratches / Bleeding - (i) Make him / her sit or lie down comfortably. (ii) Clean the bleeding part of the body with water and keep it above the level of the heart.

(3) Burns / Scalds - **(1) Minor burns :** (i) The injured part should be washed with water or held under water. (ii) Give the victim water to drink. (iii) Clean the wound using a cotton swab soaked in an antiseptic solution. (iv) Do not apply oily ointments. (v) Cover wound using dry dressings.

(2) Serious burns : (i) Give emotional support. (ii) Cover the wounds with sterilized cloth. (iii) Remove jewellery, shoes, etc. if easily possible. (iv) Do not touch or burst the blisters on the skin. (v) Do not try to remove the cloth if it is stuck to the burnt skin. (vi) If the patient is conscious, give water to drink but avoid tea or coffee or other stimulating drinks. (vii) Get medical aid at once.

(4) Snakebite - (i) Wash the wound with water. (ii) Give emotional support to the patient. (iii) Tie a cloth tightly above the wound. (iv) Get immediate medical help.

(5) Sunstroke - (i) Take the patient to a cool place or in the shade. (ii) Sponge the whole body with cold water.

(iii) Place a cloth soaked in cold water on the neck.
(iv) Give plenty of water or liquids like sherbets to drink.
(v) If the patient feels like vomiting, make her / him lie prone, i.e. on his / her abdomen with the head turned to one side. (vi) Get medical help or shift the patient to a hospital.

(D) Sarpa - mitra is the friend of snakes who is trained to protect and safeguard the snakes. He has the skills and expertise of handling the snakes. Whenever sarpa-mitras receive a call from citizens or people about a snake being sighted, they reach the place immediately to rescue the snake.

(E) **A first aid box should contain the following items :**

Antiseptic solution, ointment, elastic bandage, soap, alcohol wipes, adhesive tapes, adhesive bandages, sterile gauze pads (various sizes), safety pins, non-latex gloves, scissors, tweezers, gauze rolls, cold compress, antiseptic cream, digital thermometer, etc.

(F) **Disasters that can happen in school :**

Fire in the school, feeling the tremors of earthquake, a wall or slab in one of the classrooms can collapse, a severe injury while playing in the ground, getting an electric shock, short-circuit, etc.

Disasters on the way to school :

Bus accident, area near the house or school gets flooded, accident while crossing the road.

Natural or man-made disasters can happen anytime, anywhere.

It is important to be prepared to get out safely and help others in need in the event of a disaster in school or on the way to school.

Topic 5 : Substances in the Surroundings : Their States and Properties

Classwork Assessment

(A) **(1)** thermometer **(2)** Degrees celsius **(3)** mercury

(B) (1) - d, (2) - c, (3) - b, (4) - a

(C) **(1)** mercury **(2)** heat **(3)** gas **(4)** salt

(D) **(1)** spirit (rest all are solids)

(2) salt (rest all are liquids)

(3) oxygen (rest all are metals)

(4) rubber band (rest all are brittle substances)

(E) **(1)** A piece of iron, chalk. **(2)** Water, oil.

(3) Air, oxygen gas.

(F) **(1)** solid **(2)** liquid **(3)** gas **(4)** liquid

(5) solid **(6)** solid **(7)** solid **(8)** liquid

(G) **(1)** False **(2)** True **(3)** False

(4) True **(5)** True

(H) **(1)** It is used to make candles.

(2) It is used to make ice-cream and to keep it frozen.

(3) It is used in animal husbandry.

(4) It is used to make glass.

(I) **(1)** Yes, it changes the shape of the water because water is a liquid. Liquids do not have a definite shape, they always take the shape of the container.

(2) No, the shape of the stone does not change because stone is a solid, which does not dissolve in water.

(J)

(1) Water - liquid, fluidity
(2) Glass - solid, transparency, brittleness
(3) Chalk - solid, brittleness
(4) Iron ball - solid, metal, hardness, thermal conductivity
(5) Sugar - solid, soluble in water
(6) Salt - solid, soluble in water
(7) Flour - solid, insoluble in water
(8) Coal - solid, brittleness
(9) Soil - solid, density
(10) Pen - hardness, density
(11) Ink - liquid, fluidity, soluble in water
(12) Soap - solid, hardness, soluble in water

(K) **(1)** 100°C **(2)** silica **(3)** gaseous **(4)** solubility

(L)

(1) The change of a solid substance directly into a gas or vapour without first changing into a liquid is called sublimation.

(2) The temperature at which a substance starts freezing is called its freezing point.

(3) Camphor and naphthalene balls are substances of everyday use that sublimate.

Homework Assessment

(A)

(1) A sickle is strong and hard since it is made up of a metal like iron. Iron is hard, malleable and ductile and can be used for cutting sugarcane by making a sickle from it.

(2) The sheets used for roofing is made up of aluminium. Being malleable, aluminium can be hammered or rolled into sheets. Also, aluminium being lightweight and durable, protects against various environmental conditions.

(3) A screwdriver is made up of steel, because it is hard and durable. This serves the purpose of a screwdriver.

(4) A pair of tongs are made from a metal like iron or aluminium. These metals have a high melting point and do not melt in the flame. The handle of tongs is made up of a non-metal.

(5) Electric cables are made from metals like copper. This is because copper is a good conductor of electricity. It is also ductile, i.e. it can be drawn into wires.

(6) Silver and gold are most commonly used to make metals. Silver and gold are lustrous and shiny in appearance.

(7) Pots and pans are made up of metals like copper or aluminium because they are good conductors of heat.

(B)

(1) If nails are made of plastic, they won't be suitable for their usual purpose. If plastic nails are hammered, they will get deformed. Also, plastic nails won't have the strength like iron nails to hold things together.

(2) Metals produce a ringing sound. This property is called sonority of metals. If a bell is made up of wood, it will not ring (make sound) since wood does not have the property of sonority.

(3) Rubber being an insulator, heat is not transferred to our hands while holding the tongs. If there is no rubber on the pair of tongs, we won't be able to hold the tongs as it will get hot due to thermal conductivity.

(4) A knife made of wood will not be hard as a knife made of metal. Also, since the wooden knife won't be sharp, they cannot be used for cutting or chopping vegetables.

(5) Rubber possesses the property of elasticity. Due to this,

when it strikes an object, it will rebound and not cut the object like an axe made from a metal like iron.

(C) **(1)** Kerosene is a volatile compound. When it is left open in a dish, it results in continuous evaporation and the kerosene disappears.

(2) Coconut oil thickens in winter because it is very cold and the temperature drops significantly. So, coconut oil temperature goes below its freezing point.

(3) The particles of gases produced by the burning of incense sticks move rapidly and mix with the air. Air is everywhere and it keeps on moving. So, the fragrance of incense sticks lighted in one corner of a room spreads to the other corner.

(4) When a box of camphor is opened, it sublimates, i.e. gets converted from solid to gaseous state. The camphor particles in gaseous state start spreading all around.

(5) Both plastic and wood are electric insulators, i.e. they do not conduct electricity. Hence, the use of plastic or wood in electric boards makes it safe as people would not get a shock when they turn on /off the switch.

(6) Plastic is a non-conductor of heat. The cooker is made up of metals like aluminium which becomes hot when placed on the cooking gas. The presence of a plastic handle ensures that we don't feel the heat of the cooker when it is lifted.

(D) **The properties of metals are :**

(i) They are good conductors of heat and electricity.

(ii) They are malleable, i.e. can be beaten into sheets by hammering.

(iii) They are ductile, i.e. metals can be stretched and drawn into wires.

(iv) They are lustrous, i.e. have a shiny appearance.

(v) They possess the property of sonority, i.e. metals produce a ringing sound.

(vi) Every metal has a characteristic colour using which it is identified.

(E) The picture shows a tub of water with two objects - a balloon that floats on the surface of water and an apple which sinks to the bottom of the tub. The density of the balloon is greater than that of water. Hence, it floats on it. On the other hand, the density of apple is more than water, hence it sinks.

Topic 6 : Substances in Daily Use

Classwork Assessment

(A) **(1)** biotic, abiotic **(2)** animal **(3)** sap **(4)** latex

(B) **(1)** Hydrocarbons **(2)** Cloth **(3)** Jute

(C) **(1)** cotton - (rest all are synthetic fibres),

(2) cement - (rest all are natural substances)

(3) coconut fronds - (rest all are man-made substances)

(4) nylon - (rest all are natural substances)

(5) boat - (rest all are made from nylon).

(D) **(1)** False **(2)** False **(3)** True **(4)** False

(E) **(1)** Soil - farming and agriculture

(2) Wood - fuel, furniture, construction.

(3) Nylon - clothes, fishing nets, ropes.

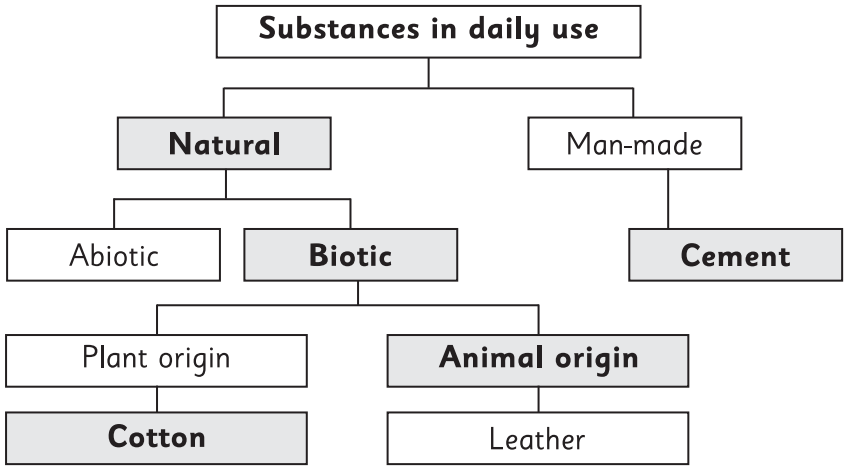
(4) Paper - notebooks, newspapers.

(5) Rubber - tyres of vehicles, erasers, rubber balls, toys.

(F) **(1)** man-made **(2)** processing **(3)** Nylon
(4) Synthetic silk **(5)** sulphur

(G) For construction : Sand, window, glass, bamboo, bricks, cement, water.
For clothes : Wool, cotton, silk
For food : Leafy vegetables, fruits, sugar
For cleaning : Soap

(H)



(I) **(1)** Leather, jute, wool and cotton are obtained from living beings (plants and animals). Water, soil, and metals are obtained from non-living things.

(2) Jute and cotton are obtained from plants. Leather and wool are obtained from animals.

(3) Due to increase in population, demand of substances increased. So to cope up with the demand and to reduce the load on the use of natural resources, the need for man-made materials arose.

Homework Assessment

(A) **(1)** soil, water. **(2)** plastic, paper.
(3) electrical cables, kitchen utensils **(4)** nails, pipes

(B) **(1)** Right **(2)** Right **(3)** Wrong
(4) Wrong **(5)** Right

(C) **(1)** Man-made substance **(2)** Natural substance
(3) Animal origin **(4)** Biotic **(5)** Iron

(D) **(1)**

	Natural substances		Man-made substances
(i)	Substances available in nature are called natural substances.	(i)	New substances produced by processing naturally available substances are called man-made substances.
(ii)	They are not manufactured in factories / industries.	(ii)	They are manufactured in factories / industries.
(iii)	E.g., cotton, wood, sand.	(iii)	E.g., plastic, brick, paper.

(2)

	Biotic substances		Abiotic substances
(i)	Substances obtained from living things are called biotic substances.	(i)	Substances that are not obtained from living things are called abiotic substances.
(ii)	E.g., cotton, silk.	(ii)	E.g., air, soil, water.

(E) **(1)** During summer, we sweat a lot. Cotton is a good absorber of sweat. It absorbs sweat from the body and keeps us cool. The pores in cotton clothes allow free air flow which also help to keep the body cool.
Hence, we must use cotton clothes in summer.

(2) Many natural materials are being used excessively to fulfil the needs of human beings. Hence, they are getting depleted at a fast rate. It takes a long time for these natural materials to get formed. Thus, we must observe economy in the use of materials so that they are not completely exhausted and available for the future generations as well.

(3) Paper is obtained from trees, which are an important valuable resource. Trees not only provide us with wood and paper but is an important habitat for various living organisms. The more paper we use or waste, more number of trees will have to be cut, which will result in a harmful effect on the environment. Hence, saving paper is the need of the hour.

(4) Population is increasing day-by-day. Man-made materials are less expensive, strong, durable and available in plenty. Hence, man-made materials have more demand.

(5) Humus is the top-most layer of soil formed by the decomposition of remains of plants and animals. Since the formation of humus takes place from plant and animal remains by the action of micro-organisms, it is a natural material.

(F) **(1)** Vulcanization is the chemical process in which the natural rubber is heated with sulphur for three to four hours to give hardness to it. Sulphur is added to give toughness to the rubber. The proportion of sulphur in the mixture is determined by the purpose for which the rubber is going to be used.

(2) Coniferous trees like pine are used to make paper. The bark of the logs of these trees is first removed and the wood is broken into small pieces. The mixture of these

pieces and some chemicals is kept soaking for a long time. It helps to form pulp. When the chemical process is completed, the fibrous substances from wood pulp are separated and some dyes are added. The pulp is then passed through rollers, dried to form paper and finally wound on reels.

(3) Lac is a unique gift of nature to mankind. It is the only natural resin of animal origin, secreted by a tiny lac insect on some trees. For obtaining lac, the lac insect is cultured and the technique is known as lac culture. The process of obtaining lac involves cultivating and harvesting these insects.

(4) The natural materials used to obtain fibres are cotton, hemp, wool, jute, silk, etc.

(5) A pearl is a precious jewel and the only gem made by a living animal. Pearls are formed when a tiny foreign particle of sand or rock accidentally enters an oyster's body. As a defence mechanism, the oyster produces a shiny coat on the particle, layer by layer. As the shiny layers get added, a pearl is formed.

Topic 7 : Nutrition and Diet

(A) **(1)** proteins **(2)** Cereals **(3)** iodine
(4) Chocolate **(5)** buttermilk

(B) **(1)** Vitamin C.

(2) Vitamin A, Vitamin B, Vitamin B_{12}, Vitamin D, Calcium, Phosphorus.

(3) **(a)** **Night blindness : (i)** Causes-deficiency of Vitamin A, **(ii)** Symptoms - Inability to see in dim light.

(b) **Scurvy : (i)** Causes - deficiency of Vitamin C, **(ii)** Symptoms - bleeding of gums.

(c) Rickets : (i) Causes - deficiency of Vitamin D, **(ii)** Symptoms - Softening of the bones, causing pain and fractures.

(d) Beriberi : (i) Causes - deficiency of Vitamin B_1, **(ii)** Symptoms - Nerve disorder.

(4) Deficiency of Vitamin B_{12}, B_9, Iron.

(5) Calcium and phosphorus.

(6) Eyes, skin.

(C) **(1)** amla (rest all are sources of Vitamin A)

(2) butter (rest all are sources of Vitamin C)

(3) meat (rest all are sources of Vitamin K)

(4) seafood (rest all are sources of sodium and potassium)

(D) **(1)** **Nightblindness :** Sources (food) : carrot, milk, butter, dark green vegetables, sweet potatoes, deep yellow fruits and vegetables.

(2) **Scurvy :** Sources (food) : amla, kiwi, oranges and other citrus fruits, cabbage, tomatoes, green leafy vegetables.

(3) **Rickets -** Sources (food) : milk, fish, eggs, butter and exposure to early morning sunlight.

(4) **Beriberi -** Sources (food) : milk, fish, meat, cereals, nuts, pulses.

(E) **(1)** False **(2)** False **(3)** True **(4)** True **(5)** False

(F) **(1)** rice, wheat **(2)** gram, moong **(3)** yoghurt, buttermilk **(4)** oil, ghee **(5)** roti, bread

(G) **(1)** peanuts - reddish pebbles / stones

(2) rice - small white stones

(3) ice-cream - washing soda, paper pulp

(4) chilli powder - brick powder, powdered pumpkin

(5) milk - water, urea, starch

(H) *[Students are expected to answer this question on their own.]*

(I) **(1)** Fats **(2)** Fats **(3)** Sodium and potassium **(4)** Water insoluble **(5)** Goitre

(J) **(1)** Nutrition is the process of taking food and water and using them to obtain energy for the purposes of growth and other body functions.

(2) A diet containing all nutrients in the right quantities is called a balanced diet.

(3) We need proteins for growth, repairing the wear and tear of the body and for other life processes.

Homework Assessment

(A) **(1)** nutrition **(2)** nutrients **(3)** fats, energy **(4)** right **(5)** nutritional **(6)** obesity

(B) (1) - (d), (2) - (c), (3) - (b), (4) - (a)

(C) **(1)** The main requirement of the body is energy to perform various body functions. This requirement is fulfilled by carbohydrates. Cereals such as rice, wheat, jowar, maize, oats, etc. are important carbohydrates. Hence, cereals are our staple food that contain the energy-giving nutrient- carbohydrates.

(2) Sprouted pulses contain a lot of proteins which is necessary for growth of the body and for repairing the wear and tear of the body. So, we should eat more sprouted pulses.

(3) Vegetables and fruits contain lots of vitamins, minerals and fibres. They improve the body's resistance to

diseases and help other life processes. So, we should eat more vegetables and fruits.

(4) Vitamin B and C are water soluble, so they are thrown out of the body through the water in the form of sweat and urine. Vitamin B and C are vital for various body processes and functions. So regular supply of Vitamin B and C is necessary.

(5) Vitamin C is very sensitive to heat and light, so it can easily get destroyed during cooking. Hence, Vitamin C rich foods should be eaten raw.

Topic 8 : Our Skeletal System And The Skin

Classwork Assessment

(A) **(1)** joint **(2)** melanin **(3)** Epidermis, dermis
(4) two **(5)** Wilhelm Conrad Roentgen

(B) (1) - (a), (2) - (b), (3) - (c)

(C) **(1)** Sternum **(2)** Ligaments
(3) Calcium **(4)** Blood vessels, nerve fibres

(D) **(1)** Wrong (Skin produces Vitamin D.)
(2) Wrong (Melanin protects the skin from ultraviolet rays.)
(3) Wrong (Bones are hard.) **(4)** Right
(5) Wrong (Spinal cord originates from the brain.)

(E) **(1)** Elbows **(2)** 33 bones **(3)** spine **(4)** ankle
(5) Femur

(F) **(1)** Joints are the places where two or more than two bones are connected to each other.
(2) The skull protects our brain.

(3) The cage like structure in the chest is called the rib-cage.

(4) In the chest, there is one vertical, flat bone called the sternum.

(5) The skin helps us to sense whether something is hot or cold, rough or smooth, etc.

(6) Dark skin with more melanin pigment will give greater protection from the sun's rays.

(G) **(1)** Melanin **(2)** Epidermis **(3)** Sweat **(4)** Skin

(H) **(1)** (c) Skeletal system **(2)** (b) Hinge joint

(I) **(1)** hard **(2)** Hinge **(3)** Ball and socket
(4) ball and socket

Homework Assessment

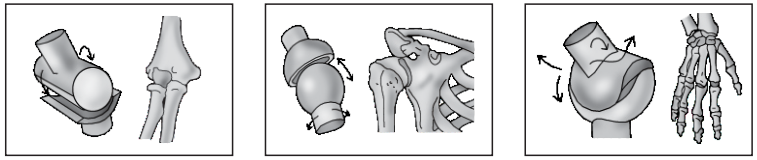
(A) **(1)** skin colour **(2)** shape, support **(3)** Fracture

(B) **(1)** Calcium imparts strength to the bones, so to keep our bones strong, we should eat more calcium-rich food.

(2) As we grow older, the proportion of fat beneath the skin reduces, however the previously taut skin does not shrink. This causes wrinkles on the skin of older people.

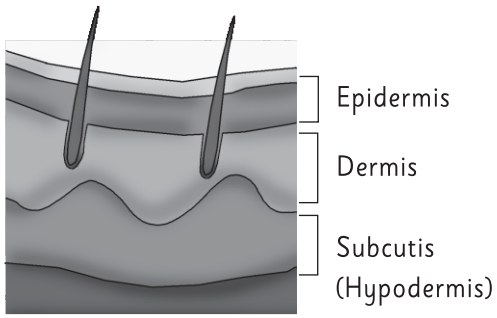
(3) Ball and socket joint is present in shoulder, so it moves in a 360° angle and so we can move our shoulder all around.

(C) **(1)** **Types of Joints**



Hinge joint Ball and socket joint Gliding joint

(2) Structure of the skin



(D) **(1)** (i) Protecting the internal parts of the body like muscles, bones, organ systems, etc.
(ii) It helps to preserve the moisture in the body.
(iii) It helps in synthesizing vitamin 'D'.
(iv) It releases sweat to regulate body temperature.
(v) It gives protection from heat and cold.
(vi) It acts as a sensory organ of touch.

(2) Sweat contains water and some salts. When this water evaporates, it removes heat from the skin, thus cooling it. This way sweating helps to lower the temperature of the body.

(3) To keep our bones strong and healthy, the following should be done: (i) We should eat foods rich in calcium and phosphorous. (ii) Take more vitamin 'D'.
(iii) Do regular exercise. (iv) Do not eat too much salt.
(v) Consume less caffeine.

(4) Following are the functions of the human skeletal system: (i) It gives proper shape to the body. (ii) It gives support, and helps in movement. (iii) It helps in production of blood cells. (iv) It helps in calcium storage and endocrine regulation. (v) It protects the internal organs like brain, lungs, heart.

(5) Following are the reasons due to which our bones might break : (i) When excessive force is applied on the bones. (ii) Due to calcium loss, bone breaks easily. (iii) Due to excessive use of alcohol and smoking.

(6) There are four types of bones : (i) Flat bones, (ii) Small bones (iii) Irregular bones (iv) Long bones

(E) **(1)** Joints occur where two bones meet. They make the skeleton flexible, without them the movement would be impossible.

(2) Without melanin pigment, person will get a disease called Albinism. Skin won't be protected from ultraviolet rays of the sun. Everyone will have light skin colour and there will be no difference in the skin colour.

(3) We would not be able to move freely or bend with flexibility.

Topic 9 : Motion and Types of Motion

Classwork Assessment

(A) **(1)** 60 minutes **(2)** circular motion
(3) speed **(4)** motion

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

(C) **(1)** True **(2)** False **(3)** True **(4)** True **(5)** False

(D) **(1)** Circular motion **(2)** Periodic motion
(3) Non-uniform linear motion **(4)** Circular motion

(E) **(1)** The different types of motion are uniform linear motion, non-uniform linear motion, oscillatory motion, random motion, periodic motion, circular motion.

(2) Speed is the distance travelled by an object in unit time.

(3) The motion in which a specific distance is covered in a particular period is called uniform linear motion.

(4) Change of place of an object is called displacement.

(5) When the distance traversed by an object along a straight line in unit time keeps on changing, the motion is called non-uniform linear motion.

(F) **(1)** **(a)** Soldiers marching in a parade.

(b) A train going in one direction with a constant speed.

(2) **(a)** A child coming down on a slide.

(b) Children coming back from school.

(G) **(1)** Periodic motion **(2)** Circular motion

(3) Non-uniform linear motion **(4)** Random motion

(5) Oscillatory motion **(6)** Non-uniform Linear motion

(H)

1 o	s	2 c	i	l	l	a	t	o	r	y
		i								
3 p	e	r	i	o	d	i	c			
		c								
		4 u	n	i	f	o	r	m		
		l								
5 l	i	n	e	a	r					
		6 r	a	n	d	o	m			

(I) **(1)** linear **(2)** non-uniform linear

(3) m/sec **(4)** cm/sec

(J) **(1)** Circular motion **(2)** Oscillatory motion

(3) Circular motion **(4)** Random motion

(5) Circular motion **(6)** Periodic motion

(7) Random motion

(K) **(1)** True **(2)** False **(3)** False **(4)** False

(L) **(1)** $\text{Speed} = \frac{\text{Distance travelled}}{\text{Time taken to travel the distance}} = \frac{1800}{10}$

$= 180$ km/hr

$\text{In M.K.S. system} = \frac{180 \times 1000}{60 \times 60} = \frac{180 \times 10}{36}$

$= 50$ m/sec.

(2) Distance = 200 km, Time = 5 hours

$\text{Speed} = \frac{\text{Distance}}{\text{Time}} \quad \frac{200 \text{ km}}{5 \text{ hr}} = 40$ km/hr.

In one hour, the bus covers a distance of 40 km.

(3) 100 cm = 1 metre,

Distance = 400 cm = 400/100 m = 4 m

Time = 2 sec

$\text{Speed} = \frac{\text{Distance Travelled}}{\text{Time taken to travel the distance}} = \frac{4 \text{ m}}{2 \text{ sec}}$

$= 2$ m/sec.

Homework Assessment

(A) **(1)** non- uniform linear, non- linear

(2) non-uniform linear **(3)** random

(4) non-uniform circular, uniform circular

(B) **(1)** A child coming down a slide is moving only in one direction. But its speed is continuously increasing. Hence, this motion is non-uniform. Therefore, a child coming down a slide shows non-uniform linear motion.

(2) The movements of trapeze artists show regular and precise movements in order to avoid a fall. When a moving object passes through a certain point at regular intervals of time, it is called periodic motion. Therefore, the movements of trapeze artists are said to be an example of periodic motion.

(3) The pendulum of a clock moves back and forth from a fixed position. Therefore, the motion of the pendulum in a clock is called oscillatory motion.

(4) Coins on the carrom board move in one direction only. Hence, the motion of the coins on the carrom board is called linear motion.

(C) (1)

	Oscillatory Motion		**Linear Motion**
(i)	The motion of a body that is oscillating, i.e. swinging back and forth is called oscillatory motion.	**(i)**	Motion in only one direction is called linear motion.
(ii)	E.g., Flapping of the wings by birds.	**(ii)**	E.g., Man walking in one direction.

(2)

	Linear Motion		**Random Motion**
(i)	Motion in only one direction is called linear motion.	**(i)**	The motion that changes its direction and speed continuously is called random motion.
(ii)	E.g., Man walking in one direction.	**(ii)**	E.g., Movement of a football player on the playground.

(3)

	Random Motion		**Oscillatory Motion**
(i)	The motion that changes its direction and speed continuously is called random motion.	**(i)**	The motion of a body that is oscillating i.e. swinging back and forth is called oscillatory motion.
(ii)	E.g., Movement of a football player on the playground.	**(ii)**	E.g., Flapping of the wings by birds.

(D) (1) Linear motion : A train or a moving vehicle on a road may travel in a straight line or in the same direction. This motion of an object is called linear motion. An object in linear motion shows displacement along a straight line. Motion in only one direction is called linear motion.

(2) Oscillatory motion : The swing always comes back from one end to the other end. It takes about the same time for each swing or oscillation. This movement of a swing is called oscillatory motion. The motion of a body which is oscillating, i.e. swinging back and forth is called oscillatory motion.

(3) Circular motion : The hands of a clock move in a circular manner. Similarly a fan, a giant wheel and a merry-go-round complete each round along a circular route. The motion of an object along a circular path is called circular motion.

(4) Random motion : A butterfly constantly flits from one flower to another. There is no definite direction to its motion. Such motion is called random motion. The motion that changes its direction and speed continuously is called random motion.

(5) Periodic motion : The minute hand of a clock completes one round in exactly 60 minutes every time, while a merry-go-round also completes every round in the same period of time. Such motion is called periodic motion. The motion in which the moving object passes through a certain point again and again after a fixed period is called periodic motion.

(E) (1) Oscillatory motion is seen in the birds flying in the sky.

(2) When we ride the bicycle we experience different kinds of motion. The wheels of the bicycle shows circular motion. At the same time, the bicycle moves forward in linear motion. The handle shows non-random motion. If the speed of the bicycle is uniform, the bicycle chain shows periodic motion.

(3) Oscillatory motion can be seen in musical instruments such as sitar, guitar, tabla, drum, dhol, violin, etc.

(4) A spinning top, blades of fan, merry-go-round in the parks, planets revolving around the sun, windmill, mixer grinder, etc. are examples of circular motion.

Topic 10 : Force and Types of Force

Classwork Assessment

(A) (1) muscular force, gravitational force, frictional force

(2) motion, force **(3)** decreases

(4) Force, direction, moving **(5)** against

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

(C) (1) Muscular force **(2)** Muscular force

(3) Electrostatic force **(4)** Muscular force

(D) (1) True **(2)** True **(3)** False **(4)** False

(E) (1) Motor car (all others are muscular forces)

(2) Grinding stone (all others are mechanical forces)

(3) Aluminium (all others produce static electricity when they are rubbed)

(F) (1) Coins will move, muscular force

(2) Object will move, magnetic force

(3) Ball will move, gravitational force

(G) (1) (a) When a car gets stuck in mud, its wheels turn without moving forward since the surface of the mud is smooth and friction is reduced.

(b) A wooden plank is placed under the wheels so that friction increases, which helps the wheels to come out of the mud.

(2) (a) Roads during monsoons are covered with water. This reduces the friction between the surface of the road and wheels of the vehicle.

(b) Hence, there is a possibility of the vehicle slipping, resulting in an accident.

(H) **(1)** mechanical force **(2)** muscular force
(3) frictional force **(4)** spring balance
(5) frictional force

(I) **(1)** The different types of forces are muscular force, mechanical force, gravitational force, magnetic force, frictional force and electrostatic force.

(2) A stationary object is set in motion.

(3) The forces acting upon an aeroplane taking off into the sky are muscular force, frictional force, and gravitational force.

(J) **(1)** Wrong **(2)** Right **(3)** Right **(4)** Wrong

(K) **(1)** electrostatic **(2)** gravitational
(3) gravitational

(L) **(1)** gravitational force
(2) gravitational force, mechanical force, muscular force
(3) muscular force, mechanical force.
(4) muscular force, gravitational force

(M) **Down :** **(1)** muscular, **(2)** magnetic
Across : **(1)** magnet, **(3)** mechanical, **(4)** gravity

(N) **(1)** **(a)** A body in motion can only be stopped by applying force on it. **(b)** The rubber pads of the brakes rub against the rim of the bicycle wheel and the force applied stops the cycle.

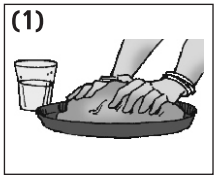
(2) **(a)** A spin bowler uses his fingers to impart motion to only one side of the ball. **(b)** Hence, he applies force to set the ball in motion in a particular direction.

(3) **(a)** The shape of a body changes by applying external force. **(b)** Therefore, the force applied by the fingers changes the shape of the spring.

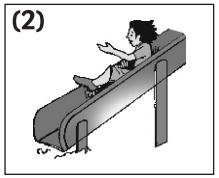
Homework Assessment

(A) (1) - (d), (2) - (a), (3) - (b), (4) - (c)

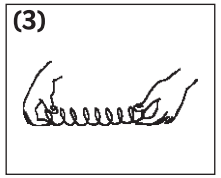
(B)



muscular force



gravitational force



muscular force

(C) **(1)** **Muscular force :** Eg. Riding bicycle, playing hockey, doing exercises. In the given examples all the actions have movements with the help of the bones and muscles in the body. In all the above actions, muscular force is used. So, the force applied with the help of muscles is called muscular force.

(2) **Gravitational force :** If an object is thrown upward by applying force, it reaches a certain height and comes down again. This happens because the earth pulls all the objects towards itself.

The force applied by the earth to pull objects towards itself is called gravitational force.

(3) **Mechanical force :** Some machines work on fuel or electricity. Others require gravitation. e.g. when a car starts, the engine generates mechanical force that helps the car to move. Hence, movement of a car occurs due to mechanical force generated by the engine on the tyres. The force exerted by means of a machine is called mechanical force.

(4) **Electrostatic force :** Eg. Spread small pieces of paper on a table. Rub a piece of thermocol or an inflated balloon against silk cloth and bring it near these pieces.

These pieces of paper attract the thermocol or balloon due to formation of static electricity. It is the weakest force amongst all. Static electricity is produced on materials like rubber, plastic and ebonite due to friction.

The force exerted by such electrically charged materials is called electrostatic force.

(5) **The force of friction :** Eg. : Take two pieces of smooth paper and two of sandpaper and rub them against each other and observe it.

The smooth surfaces of paper can be easily rubbed against each other because the force of friction between them is less, while rough surfaces cannot be easily rubbed against each other. Sandpapers are rough papers. Rough papers have more force of friction between them.

So, a force which acts between a moving object and the surface along which it moves is called frictional force.

(6) **Magnetic force :** The force exerted by a magnet on an object is called magnetic force. For example, when a magnet is brought close to the iron filings, they get attracted to it.

(D) **(1)** **(a)** Cranes in goods yard have strong magnets.

(b) These magnets exert magnetic force which is used to lift heavy loads.

(2) **(a)** Tyres of motor vehicles have patterns of grooves on their surface so that there is sufficient friction between the wheels and the surface of the road.

(b) It provides better grip and prevents the vehicle against slipping off the surface of the road.

(3) **(a)** Powder sprinkled on the carrom board reduces the frictional force between the surface of the board and the coins. **(b)** Hence, the coins move smoothly on the board.

(4) Due to oiling, surface becomes smooth and friction reduces. This minimises the wear and tear of the machines. So, to reduce the friction and to keep machines in a good condition for a long period, machines are oiled from time to time.

(5) The ramp at a railway station has a rough surface to increase the friction between our feet and the ground when we walk. This ensures proper grip while walking. Thus, we do not fall, trip or slip while walking on the ramp.

(6) When we throw an object upwards, at that time we use muscular force. At a certain point, muscular force becomes zero and earth pulls all the objects towards itself. So, due to gravitational force of the earth, an object thrown upwards comes down after reaching a point.

(E) **(1)**

	Muscular Force		**Mechanical Force**
(i)	It is a force applied by muscles of the body.	**(i)**	It is a force applied by machines.
(ii)	Movements of the muscles produce the force to do work.	**(ii)**	Working of machines generate the force to do work.
(iii)	Eg., lifting a book or bag.	**(iii)**	Eg., Force applied by an electric motor to rotate the fan blades.

(2)

	The force of friction		Gravitational force
(i)	It is the force that acts between a moving object and the surface along which it moves.	**(i)**	It is the force applied by earth on any object.
(ii)	Frictional force acts in a direction opposite to the motion of the body.	**(ii)**	The force attracts the object towards the earth and hence acts downwards.
(iii)	Frictional force can be reduced or increased by modifying the nature of the surface.	**(iii)**	Gravitational force depends upon the mass of the object.

(F) **(1)** The chisel marks increase the friction, and grinding becomes easier and better.

(2) Many actions such as lifting, pulling, riding a bicycle or stopping it, pushing a load, squeezing or bending, driving vehicles all the given things can be done by applying force.

(3) The gravitational force acting on an object is called the weight of that object.

(4) Potter's wheel, pulley, inclined plane, etc., run on muscular force.

Topic 11 : Work and Energy

Classwork Assessment

(A) **(1)** work, force, displacement

(2) motion, potential, kinetic **(3)** chemical, light

(4) heat, light **(5)** energy **(6)** equal

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

(C) **(1)** wind (others are conventional sources of energy)

(2) a book kept on a table (others are examples of kinetic energy)

(3) petrol (others are non - conventional sources of energy)

(4) Putting off the light when going out (others are the examples of the wastage of electricity)

(5) Sun (others are conventional energy sources.)

(D) **(1)** Mechanical, heat, light, sound, chemical

(2) solar, wind, hydel

(3) petrol, diesel **(4)** sun, wind, water

(E) **(1)** True **(2)** False **(3)** True **(4)** True

(F) **(1)** Kinetic energy is used when a ball that has been thrown up comes down.

(2) A match stick contains chemical energy.

(3) While cycling, our body produces heat which results in sweat.

(4) The energy the does not produce smoke and carbon gases such as carbon dioxide or carbon monoxide is called green energy.

(5) When the position of an object changes and the initial

and final position of an object is different, we can say that displacement has taken place.

(6) For measuring work, the magnitude of the force applied on an object and the displacement of the object should be taken into account.

(7) The various forms of energy are mechanical energy, heat energy, light energy, chemical and sound energy.

(8) Solar panels → Solar energy ; Solar cooker, heater and dryer → heat energy; Solar lamp → light energy.

(9) When we perform physical activity, the energy stored in the body is used. At the same time, the temperature of the body rises and we begin to sweat. Hence, we get tired.

(10) Energy in cooking gas is stored in the form of chemical energy. During combustion, this chemical energy is converted into heat energy.

(G) **(1)** energy **(2)** solar cells

(3) muscular **(4)** heat **(5)** potential

(H) **(1)** Nuclear fuel

(2) Electrical energy

(3) Coal

(4) Non-conventional source

(5) Magnetic energy

(C) **(1)** Electrical energy into heat and light energy.

(2) Electrical energy into heat energy.

(3) Electrical energy into sound energy.

(4) Electrical energy into sound energy.

(D)

z	s	q	p	y	m	w	n	e
p	o	t	e	n	t	i	a	l
l	l	s	u	h	v	n	x	i
t	a	o	j	e	v	d	z	g
q	r	u	l	a	b	a	d	h
k	i	n	e	t	i	c	q	t
r	w	d	h	k	l	w	y	f

(K) **(1)** Energy is measured in terms of the magnitude of force and displacement. Greater force is required to move a heavy object compared to a lighter object. Hence, energy required to move a heavy object is more than the energy required to move a lighter object.

(2) When the branch is bent, force is applied and displacement of the branch takes place. Potential energy is stored in the branch which is bent. This stored energy helps the branch to go back to its original position. Therefore, force is applied while bending a branch of a tree.

(L) **(1)** The substances in the fireworks are packed with chemical energy. When firecrackers burst, they give out heat, light and sound simultaneously. Hence, chemical energy is converted into light, heat and sound energy.

(2) **(a)** Electrical energy is converted into kinetic energy. In a water heater, electricity is used to heat the rods or the coils which are surrounded by water.

(b) Chemical energy is converted into kinetic energy. The burning of petrol which has chemical energy is used to set the car in motion.

(c) Kinetic energy is converted into electrical energy. Wind turbines convert the kinetic energy in wind to produce electricity.

(3) Energy is the capacity to do work. We can see the work that is being done but not the energy behind it. We cannot see energy because it is invisible. Energy does not have any physical shape, structure, form, and appearance.

Homework Assessment

(A) **(1)** work **(2)** more **(3)** physical
(4) energy **(5)** chemical

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

(C)

	Potential energy		**Kinetic energy**
(i)	The stored up energy which has the potential to do work is called potential energy.	**(i)**	Energy possessed by an object due to its motion is called kinetic energy.
(ii)	It should be converted into kinetic energy to do work.	**(ii)**	It can be used to do work.
(iii)	Eg., winding up clockwork.	**(iii)**	Eg., rolling object.

(D) **(1)** Energy transformation is a process in which one type of energy is converted into another form.

For example, water evaporates due to heat from the sun. This results in the formation of water vapour which condense to form clouds that give rain. The potential energy of water in the clouds is converted into kinetic energy.

(2) Due to industrialisation, urbanisation, and population growth, energy resources like coal, petroleum, etc. are being indiscriminately used. However, there are limited reserves of energy resources such as coal, petrol, diesel, natural gas, and crude oil. Hence, we should save energy and use non-conventional energy resources as far as possible.

(3) Non-conventional energy resources are those which are inexhaustible and continuous and can be used in different forms again and again. These energy resources have not been used traditionally. Examples of non-conventional energy resources include wind energy, tidal energy, solar energy, hydroelectric power and atomic energy.

(4) The reserves of conventional energy resources like coal, petrol, etc. are limited. Due to excessive demand from households and industries, there is a possible danger of the conventional energy resources getting exhausted. Therefore, we should maximise the use of non-conventional energy resources that are inexhaustible and continuous.

(5) After physical exercises, we breathe in more oxygen as the cells require it. This means more breakdown of food (glucose). Since the energy stored in the body is used after physical exercises, there is a need to replenish this lost energy.

Hence, we feel hungry after physical exercises.

Topic 12 : Simple Machines

Classwork Assessment

(A) **(1)** Fulcrum, load, effort **(2)** Load, fulcrum, effort

(3) Effort, fulcrum, load

(B) **(1)** Beam balance, crowbar

(2) Bottle opener, wheel barrow

(3) Fishing rod, pair of tongs

(C) **(1)** 3rd order **(2)** 1st order **(3)** 2nd order

(4) 1st order

(D) **(1)** False **(2)** True **(3)** False **(4)** True

(E) **(1)** **Inclined Plane :** a staircase, a slide.

(2) **A Pulley :** the wheel of a flagpole, a crane.

(3) **A Lever :** nutcracker, scissor, an opener

(4) **A Wedge :** an axe, a knife.

(F) **(1)** The machines that have only one or two parts and a simple and easy structure are called simple machines. The examples of simple machines are bottle opener, nail cutter, etc.

(2) The machines made up of two or more simple machines is called a complex machines. They have many parts which carry out processes for completing a task. Bicycle, car engine, etc. are examples of complex machines.

(3) A lever is a simple machine made of a beam and fulcrum. The orders of the level are determined on the position of the effort, the fulcrum and the load.

(G) **(1)** A traveller's bag has wheels so that it can be easily dragged due to reduced friction between the ground and wheels. The presence of wheels on a traveller's bag minimises the effort to be applied on the bag that carries the load.

(2) We use various machines that have many parts which carry out several processes. These parts rub against each other when they are used. The parts of machines are also affected by rust, weather, and corrosion. Due to wear and tear of parts, machines may get damaged or may become useless. Hence, machines have to be maintained.

(3) A complex machine is one that is created using two or more simple machines. A bicycle consists of several machines like screw, axle, wheel, lever, pulley which perform different tasks and together bring about the functioning of the bicycle.

(H) **(1)** Winding roads built along mountain sides work on the principle of the inclined plane. Hence, the effort required to go up these roads is much less and it becomes easier to travel.

(2) **(i)** **See-saw :** It is a 1st order of lever. In this, fulcrum is in the middle and load and effort are on either sides of the fulcrum.

(ii) **Wheelbarrow :** It is a 2nd order of lever. In this, load is in the middle and fulcrum on one side and effort on the other side.

(iii) **Lemon squeezer :** It is a 2nd order of lever. In this, load is in the middle and fulcrum is on one side and effort on the other side.

(iv) Tongs : It is a 3rd order of lever. In this, effort is in the middle, while fulcrum and load are on either sides.

(3) Due to excessive use, the tip of needle or the edge of a knife both use their sharpness. The area at the tip of the needle and edge of the knife increases. Since pressure is inversely proportional to cross-sectional area, more pressure is to be applied for the needle to penetrate, the cloth and for the knife to cut the fruit.

Homework Assessment

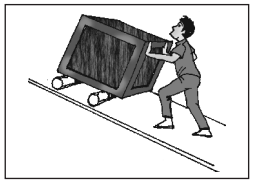
(A)

	Type of lever	Position of load	Examples
(1)	First order	Effort-fulcrum-load	(1) beam balance (2) crowbar
(2)	Second order	Fulcrum-load-effort	(1) bottle opener (2) wheel barrow
(3)	Third order	Fulcrum-effort-load	(1) fishing rod (2) pair of tongs

(B) **(1)** Inclined plane **(2)** lever **(3)** lever
(4) wheel **(5)** lever

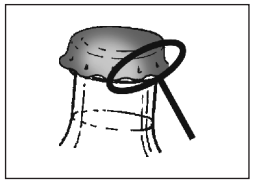
(C) (1)-(c), (2)-(d), (3)-(a), (4)-(b)

(D)

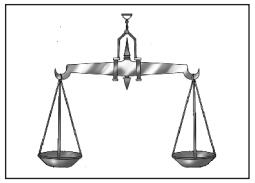


Inclined plane

Pulley



Bottle opener



Beam balance

(E) **The advantages of using a machine are :**

(i) Perform tasks more easily.

(ii) Get more work done in less time and effort.

(iii) Increases the speed of work.

(iv) Achieve better accuracy.

(F) Some tasks that can be done using a lever are :

(i) Cutting paper with a scissor.

(ii) Removing a large stone.

(iii) Removing the cap from a soda or cold drink bottle.

(iv) Lifting the car with a jack to replace the tyre.

Topic 13 : Sound

Classwork Assessment

(A) **(1)** vacuum **(2)** social **(3)** noise pollution
(4) health **(5)** decibel

(B) **True :** 1, 2, 3, 4

(C) (1)-(d), (2)-(c), (3)-(b), (4)-(a)

(D) **(1)** solid **(2)** medium **(3)** noise
(4) robin and woodcock **(5)** vacuum

(E)

Nature of sound	Unpleasant	Pleasant
Speaking		✓
Whispering		✓
Aeroplane sounds	✓	
Horns of Vehicles	✓	
Railway Engine	✓	
Rustling of leaves		✓
Neighing of a horse	✓	
Ticking of a clock	✓	

(F) **(1)** The larynx, also known as voice box, is located in the throat.

(2) The science of sound, resonance, including the production, propagation and effects of sound is called acoustics.

(3) Sound is said to be propagated when sound waves spread in all directions from a source of sound.

(4) An empty space from where air is partially removed is called vacuum.

Homework Assessment

(A) **(1)** The silencer of a motorcycle controls the noise. If the silencer of motorcycle is broken, it must be repaired or replaced immediately by taking the motorcycle to a mechanic.

(2) If a factory in the surroundings is producing continuous noise, a complaint for it can be filed with the local government authority by the people for the hardships faced by them.

(B) **(1)** The kind of continuous, disagreeable, irregular and loud noise that may have adverse effects on the health is called noise pollution.

(2) The rapid back and forth movement of an object to produce sound is called vibration.

(3) Following measures will be taken to control noise pollution :

(i) As far as possible, we should avoid blowing the horn.

(ii) The volume of the TV or radio in the house should be restricted to those watching the programmes.

(iii) Vehicles should be maintained properly to reduce the unnecessary sounds they produce.

(iv) Factories, airport, railway stations and bus stands should be located at a proper distance, away from residential areas.

(4) Propagation of sound takes place in solids in the form of waves. It can be demonstrated from the examples mentioned below:

(i) Take a hollow solid plastic pipe and place your ear near one end of the pipe. Ask your friend to say something from the other end. You will be able to hear the sound of your friend. This shows that sound travels through solids in the form of waves.

(ii) Knocking of the door is another example which clearly shows that sound is propagated through solids.

(iii) The stethoscope used by the doctor to listen to the heart beats also shows that propagation of sound takes place through a solid in the form of waves.

(5) To produce sound (noise), vibration of the object should occur. In this case, if the loud noise caused due to the metal dish has to be stopped, the plate should be lifted from the floor immediately. Placing the hand on the plate will also stop the noise.

Topic 14 : Light and the Formation of Shadows

Classwork Assessment

(A) **(1)** non-luminous objects **(2)** artificial sources of light **(3)** Honey mushroom **(4)** Light **(5)** Stars

(B) **(1)** True **(2)** False **(3)** True **(4)** False **(5)** True

(C) **(1)** Electric bulb (rest all are natural sources of light)

(2) Sun (rest all are artificial sources of light)

(D) **(1)** Right **(2)** Wrong **(3)** Right **(4)** Right **(5)** Right

(E) (1)-(c), (2)-(d), (3)-(b), (4)-(a)

(F) **(1)** star **(2)** a burning candle **(3)** seven **(4)** inverted **(5)** opaque **(6)** transparent, through

(G) **Luminous objects :** a burning candle, a light bulb, a torch.

Non-luminous objects : a book, a wax cloth, a pencil, a pen, a tyre.

(H) **(1)** We see reflection in those objects that reflect light rays. These are mirrors, glass panes, a new steel dish, still water in a lake or pond, and mostly objects which have a shiny surface.

(2) The man-made objects or materials which emit light are called artificial sources of light.

(3) Light travels in a straight line. This is called the linear propagation of light.

(4) The rays of light falling on an object from a source of light are thrown back from the surface of that object. This is called reflection of light.

(5) A sundial is an instrument that indicates time with the help of the extent and direction of shadow of an object formed in sunlight.

(6) The largest sundial in India is located at Jantar Matar, in Jaipur, Rajasthan.

Homework Assessment

(A)

Transparent	Opaque	Translucent
glass	wooden door	tinted glass
water	tea kettle	oil paper
	a notebook	white plastic
	cardboard of a notebook	wax paper
	cloth	

(B) **(1)** glass (rest all are opaque substances)

(2) wooden door (rest all are translucent substances)

(3) stars (rest all are non-luminous substances)

(4) planet (rest all are luminous substances)

(5) notebook (rest all are transparent substances)

(C) **(1)** A shadow is a dark part (area) formed behind an opaque object where light is obstructed by it and does not reach.

(2) Following things are necessary for the formation of a shadow: relative distances between (i) the source of light, (ii) the object, (iii) the surface or the screen on which the shadow is formed.

(3) An object is real and has a definite size and shape. On the other hand, reflection is the virtual image of an object caused due to bouncing back of light from the surface of the object. The reflection of light falling on the surface causes this difference.

(4) A large mirror can be used to light up a dark room. For this, place a big mirror on the wall opposite the window. Light entering from the window will get reflected in all directions by the mirror. A light coloured wall paint will increase the brightness and help in reflection as well.

(5) A pinhole camera is a simple camera without a lens. Light from the object passes through the pinhole and reaches the bottom of the camera screen. Light from the bottom of the object reaches the top of the camera screen. This is how the image formed on the diaphragm of the pinhole camera appears to be inverted.

(6) The Newton's disc is a special disc made by the British scientist Sir Isaac Newton. One side of the disc was divided equally into seven parts of seven colours - red, orange, yellow, green, blue, indigo, and violet. The disc was fitted on a stand and rotated fast. As the disc rotated, the seven colours disappeared and only white was seen. This showed that sunlight is made of seven colours.

Topic 15 : Fun with Magnets

Classwork Assessment

(A) **(1)** north **(2)** 3, 6 **(3)** like, opposite
(4) induced magnetism
(5) magnetic material or iron **(6)** north-south

(B) **(1)** True **(2)** False **(3)** False **(4)** False
(5) True

(C) **(1)** Magnetic materials. **(2)** Non-magnetic materials.
(3) Disc magnet, horseshoe magnet.

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

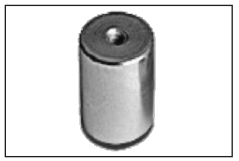
(E) **(1)** Magnetic belt **(2)** Magnetic compass
(3) Shutter magnet and catches

(F) **(1)** Right **(2)** Wrong **(3)** Wrong
(4) Right **(5)** Wrong

(G)

Horseshoe magnet

Bar magnet



Cylindrical magnet

Mariner's compass (i.e. magnetic needle)

Ring shaped magnet

(H) **(1)** The material to which objects made from iron, nickel, cobalt, etc., get attracted is called a 'magnet'. This property of a material is called magnetism.

(2) The materials that stick to a magnet are called magnetic materials. Examples : Nickel, cobalt, iron, etc.

(3) The materials that do not stick to a magnet are called non-magnetic materials. Examples : Plastic, wood, etc.

(4) The bar of soft or pure iron that protects a magnet is called a magnetic keeper.

Homework Assessment

(A) **(1)** Michael Faraday **(2)** magnet keeper
(3) Magnetite **(4)** poles **(5)** poles

(B) **(1)** Using a compass we can find the north pole of a magnet.

(i) Take a magnetic compass and place it close to your magnet without touching it.

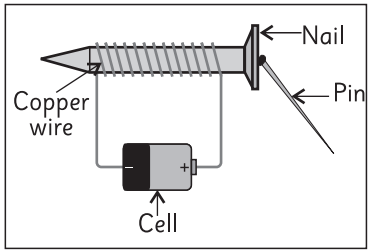
(ii) Watch carefully at where the compass needle points. The point that normally points to the north pole of Earth should point to one end of the magnet.

(iii) That end is actually the south pole of a magnet and vice versa.

(2) Take a paper and, place a bar magnet on it. Sprinkle iron filings on the paper. Gently tap the paper. We can see beautiful design of iron filings and it gets attracted towards the magnet. Thus, iron filings attracted to a magnet show the magnetic field.

(3) Bring magnet near the material, if it gets attracted to magnet then it is a magnetic material and if it does not get attracted to a magnet then it is non-magnetic material.

(C) **(1)** Wind the copper wire around the nail as shown in the figure. Join both the ends of the wire to the cell. Now take the pin near the head of the nail.



Pin sticks to the nail. Now stop the electric current and see what happens. The pin sticking to the nail fall off. This happens because magnetism is produced in the nail due to the electric current. When it is put off, the magnetism disappears. Such a magnet is called an electromagnet. This magnetism is temporary.

(2) Following are the properties of a magnet :

(i) A magnet always settles in the north south direction.

(ii) The magnetic force is concentrated at the two ends or poles of a magnet.

(iii) If a magnet is divided into two parts, two independent magnets are formed. It means that the two poles of a magnet cannot be separated from each other.

(iv) A magnetic material acquires magnetism when placed near a magnet. This magnetism is called induced magnetism.

(v) There is repulsion between like poles of a magnet, while there is attraction between the opposite poles.

(3) (i) Cranes with magnets are used to shift (move) large objects from one place to another in factories, garbage depots, and ports.

(ii) Automatic closing of the refrigerator door is due to a magnet.

(iii) A magnet is used in an electric bell.

(iv) The ATM, debit cards, and credit cards have a strip of magnetic material.

(v) Magnets are used in mariner's compass that helps find the right direction.

Topic 16 : The Universe

Classwork Assessment

(A) **(1)** Local Group **(2)** ice and dust particles
(3) Uranus **(4)** Jupiter **(5)** variable

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

(C) **(1)** Wrong. (Mercury is the planet closest to the sun.)
(2) Wrong. (Jupiter is the stormy planet.)
(3) Right

(D) **(1)** The different types of galaxies according to their shapes are spiral, elliptical, barred spiral, irregular.
(2) The galaxy includes celestial bodies such as cluster of stars, nebulae, clouds of gases, clouds of dust, dead stars, newly born stars, etc.
(3) The celestial bodies that form the solar system are sun, planets, asteroids, comets, meteors, etc.
(4) The special characteristic of Mars is that it is reddish in colour since the soil on Mars contains iron.
(5) Different types of stars are sunlike stars, red giant, super nova, binary or twin, variable stars.

(E) **(1)** Nebula **(2)** Jupiter **(3)** Venus
(4) Jupiter **(5)** Mercury, Venus **(6)** Comet
(7) Andromeda **(8)** Venus

Homework Assessment

(A) **(1)** Mandakini **(2)** Galaxy
(3) Andromeda **(4)** Hubble **(5)** Pluto

(B) **(1)** False **(2)** True **(3)** True **(4)** True

(C) **(1)** **Mercury :** (i) This planet is closest to the sun. (ii) It is visible in the morning and in the evening. (iii) A number of depressions which look like volcanic craters but are actually caused by meteoric falls can be seen on the surface of Mercury. (iv) Mercury is the fastest moving planet.

(2) **Venus :** (i) It is the brightest planet in the solar system. (ii) It is seen in the sky in the east before the sunrise and in the west after the sunset. (iii) It rotates around itself from east to west. (iv) It is the hottest planet.

(3) **Earth :** (i) It is the third planet of the solar system.
(ii) No planet other than the earth has life on it.
(iii) As the earth is a magnet, there is a magnetic field around the earth. (iv) It diverts the harmful rays from the sun towards the polar regions of the earth.

(D) **(1)** A comet is a celestial body that revolves around the sun. Comets are classified into two main groups.

These are :

(i) **Short period comets :** These take less than 200 years to complete one revolution around the sun.

(ii) **Long period comets :** These take more than 200 years to complete one revolution around the sun.

(2) Meteors are rocky pieces originating from the asteroid belt. The small, rocky pieces get completely burned due to friction with air after they enter the earth's atmosphere.

Meteorites : These are meteors which do not burn completely and fall to the surface of the earth.

(3) The characteristics of planet Neptune are :

(i) It is the eighth planet of the solar system.

(ii) A season on Neptune lasts for about 41 years.

(iii) On this planet, winds blow at extremely high speed.

(4) The moon rotates around earth at the exact same speed as it rotates around its own axis.

Hence, the same side of the moon constantly faces the earth's surface. This is known as synchronous rotation and the reason why we see only one side of the moon.

(E) **(1)** Generally, the surface temperature of stars ranges from 3500°C to 50,000°C. The colour of stars changes according to their temperature.

Stars radiating different colours such as white, blue, yellow, and reddish can be seen in the sky.

(2) Saturn is considered to be a peculiar planet because of the rings around it.

(3) Comets are easily visible when they are close to the sun because of the shorter distance and the heat of the sun.

(F)

	Stars		**Planets**
(i)	Stars twinkle at night in the sky.	**(i)**	Planets do not twinkle in the sky.
(ii)	Stars have their own light.	**(ii)**	Planets do not have their own light.
(iii)	Eg. Sun	**(iii)**	Eg. Earth, Jupiter