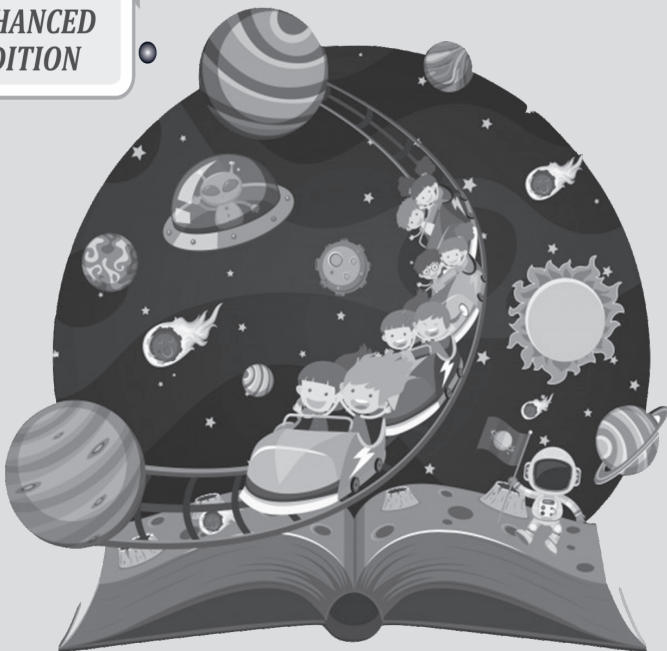


DISCOVERY

SCIENCE

Teacher Manual.

NEP 2020
ENHANCED
EDITION



CHAPTER 1**Plant's Life**

- A**
- (c) Both (a) and (b)
 - (a) Plants
 - (b) Seed coat
 - (c) Cotton
 - (b) man
- B**
- seed coat
 - Plants
 - dispersal
 - crop
- C**
- True
 - True
 - False
 - False
- D**
- (b) Pea
 - (d) Seedling
 - (e) Coconut
 - (a) Rice
 - (c) Wheat
- E**
- The thick layer of outer covering which protects the seed is called seed coat. It has a small hole on one side. This hole is used to take in water and also protects the baby plant inside the seed. The seed grow to become new plant when they get water, air, sunlight in proper amount. This process of seed producing a new plant is called germination.
 - The roots, stems and leaves of the plants can be grown up to new plants. This method is known as vegetative propagation.
F Plants from Roots- Radish, Carrot
F Plants from Underground Stem- Potato, Onion
F Plants from Stem – Rose, Sugarcane
F Plants from Spores – Mushroom, Moss
 - The process by which seed air scattered away from mother plant is called seed dispersal.
 - Seeds need sufficient amount of sunlight, air and water to grow into new plant. That is why nature helps in scattering the seeds and ensures that they do not grow too close to each other. Dispersal of seeds reduces the competition of nutrients for growth of seeds.
Seeds can be dispersed by wind, water, birds and animals. All these are known as dispersal agents.
 - In India, some crops are grown in the rainy season i.e., from June to October, they are called kharif crops. For example- rice, maise and cotton. These crops depend on the monsoon rains.
Whereas some crops are grown during winter season i.e., from November to April they are called rabi crop. These crops do not depend upon the monsoon rains. For example wheat, gram and peas.

HOTS

Tea is grown in Assam because the crop gets sufficient water for its growth due to favourable climate whereas in Rajasthan there is shortage of water. Since it receives very less rainfall.

Let's Enjoy

Do it yourself.

CHAPTER 2 Health and Hygiene

Just Do More (Pg 18)

1. The substances needed by the body for healthy growth are called nutrients.
2. Sugar, potatoes, cereals like rice, wheat etc. are rich sources of carbohydrates.

EXERCISE

- A**
- | | |
|---------------------------|-----------------|
| 1. (a) carbohydrates | 2. (c) Soyabean |
| 3. (c) Amla | 4. (b) Fungi |
| 5. (b) Improper nutrients | |
- B**
- | | | | |
|--------|--------|--------|--------|
| 1. (e) | 2. (f) | 3. (c) | 4. (b) |
| 5. (a) | 6. (d) | | |
- C**
- | | |
|-----------------|-----------|
| 1. Minerals | 2. water |
| 3. communicable | 4. anamia |
| 5. Vitamin C | |
- D**
- | | | |
|-----------|---------|---------------------|
| 1. Potato | 2. Egg | 3. Green vegetables |
| 4. Beans | 5. Fish | |
- E**
1. Following are the different components of food:

Carbohydrates – They give us lot of energy to work and play. They are rich in sugar and starch. Sugar, potatoes, cereals like rice, wheat etc. are rich sources of carbohydrates.

Vitamins – They keep us fit and healthy. They improve our ability to fight against diseases. They are also called protective food. Green leafy vegetables and fresh fruits are rich sources of vitamins.

Minerals – They strengthen the bones and maintain a normal heart beat. They are needed by our body for proper growth. Fruits, whole grams, greeny vegetables etc. are rich in minerals.

Proteins- They help the body to grow. They are called body building food. They make and repair cells in our body. Fish, chicken, meat, milk, pulses etc. has highest protein content.

Fats – They also provide energy to our body. They give structure

to cells in our body. Cooking oil, butter, ghee, nuts, eggs etc. are main sources of fats.

Water – It act as a medium for transportation of nutrients inside our body.

Roughage – They are fibrous food. It helps to get rid of undigested food. For eg. salad.

2. A balanced diet always make balance in our body. A balanced body gives high output for any work. Different age group need different types of food. Growing children need more of body building food like proteins, old people should eat light food. Men or women doing heavy work need more energy giving food.
3. Roughages are the fibrous food. It helps us to get rid of the undigested food easily and retain water in our body. Dalia and salads are the best sources of roughage.
4. The diseases that can be spread from one person to another are called communicable disease. They are caused by very small organism called germs. Eg. plague, typhoid etc.

Whereas diseases that do not spread from one person to another. These are caused due to lack of nutrients in diet and are also called deficiency diseases. For example anaemia, beri-beri etc.

5. Different nutrients that are required by our body are:

F Carbohydrates

F Fats

F Vitamins

F Minerals

F Proteins

HOTS

Because they give us lot of energy to work and play.

Let's Enjoy

A Do it yourself.

B Do it yourself.

C 1. Rickets

2. Scurvy

3. Goiter

4. Night Blindness

CHAPTER 3

Safety and First-Aid

A 1. (b) sling

2. (c) Nose bleeding

3. (c) By sand or mud

4. (c) Water

5. (a) Due to our carelessness

B 1. injured

2. bone

3. Synthetic

4. Viruses

5. anti-rabies

- C** 1. True 2. True 3. True 4. False
 5. True 6. True
- D** 1. Whenever an accident happens, the injured must be given immediate medical aid before he is shifted to the hospital for accurate diagnosis and treatment. This is known as first aid.
 In case of minor burns, the affected skin develops a reddish colour. Wash the affected area under cold running water. After that, apply burnol and place clean cloth on it to prevent any infection.
2. In case of deep cut, the wound should be cleaned first with cotton dipped in an antiseptic solution. Bleeding must be stopped by tying a bandage tightly above the wound i.e., a tourniquet can be used to stop bleeding. The victim must then be taken to the doctor immediately for taking anti tetanus injection to prevent spreading of infection in the body.
3. F We should make nose bleeding patient sit up with head tilted upward and ask him to keep his arms folded above his head.
 F Prepare an ice pack and use it to reduce the bleeding.
 F Ask patient to breathe through his mouth.
 F Do not allow him to blow his nose.
 F If there is heavy bleeding take victim to the hospital.
4. A break or crack in a bone is called fracture. Following are first aid steps in case of fracture:
 F Do not allow person to move.
 F Make the patient calm and comfortable.
 F Tie a splint to give support to broken bone.
 F The fractured arm can be supported by a sling.
 F The person must be rushed to the hospital immediately.
5. Fire can be put out in following ways:
 F In case of major fire, the nearest fire station should be informed. Fire extinguishers are devices to put out fire.
 F Fire which are caused by petrol and electricity can be extinguished by throwing sand or mud over it.
 F In case of big fire, call fire brigade by dialing number 101.

HOTS

- A** Since Komal is naughty, she can burn herself while coming in contact with hot objects like pan, stove etc.
 She can also get minor cuts while cutting vegetables and fruits.
- B** Because teasing animals make animals angry. They can bite you in return which will spread viruses of very dangerous disease called rabies.

Let's Enjoy

- A Do it yourself.
- B Do it yourself.
- C Do it yourself.

CHAPTER 4
Solids, Liquids and Gases

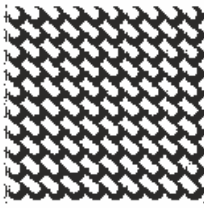
- A** 1. (a) solids 2. (c) Heating
3. (a) Physical 4. (b) permanent
5. (b) molecules
- B** 1. True 2. True 3. True 4. False
5. True
- C** 1. solids 2. matter 3. molecules
4. soluble 5. heat 6. physical
- D** 1. **Matter** – Anything that has mass and occupies space is called matter.
2. **Molecules** – The smallest unit of a substance that has all the properties of the substance is called molecule
3. **Physical Change** – The temporary change in the state of matter is called physical change.
4. **Chemical Change** - The permanent change in state of a matter is called chemical change.
5. **Condensation** – When the freely flowing particles of water vapour touch a cold surface, they cool down. Changing of gas into liquid is called condensation.
- E** 1. In solids, molecules are very tightly packed. They attract each other with great force. They cannot move away from each other. So, a solid is hard and has definite shape and volume. It cannot flow.
In liquids, the molecules are not very closely packed. They can move freely due to weak attraction among molecules. They can flow. A liquid has definite volume, but no definite shape.
In gases, the molecules are separated by empty spaces. They move about freely that is why a gas has no definite shape as volume.
2. A molecule can be further broken down into still smaller particles called atoms. Atoms are smallest particles of matter that can take part in chemical change.
3. When ice is heated, it gradually melts. Changing of a solid into a liquid is called melting.

4. There are two types of changes that takes place in matter.

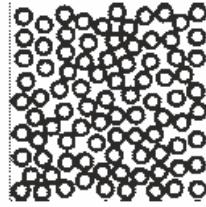
Physical Change: The temporary changes in the state of a matter is called physical change.

Chemical Change: The permanent change in the state of matter is called chemical change.

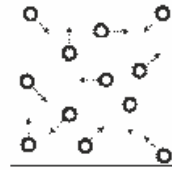
- 5.



Molecules of Solid



Molecules of Liquid



Molecules of Gas

HOTS

The liquid coconut oil freezes and become solid during winter due to solidification.

Let's Enjoy

1. Do it yourself.
2. Do it yourself.
3. Do it yourself.
4. Do it yourself.
5. Do it yourself.

CHAPTER 5 Rocks, Minerals and Soil

- A** 1. (b) marble 2. (c) marble
3. (a) humus 4. (a) topsoil
5. (b) igneous
- B** 1. marble 2. minerals
3. Pumice 4. metamorphic rock
5. metallic 6. bedrock
- C** 1. True 2. True 3. False 4. False
- D** 1. Metamorphic rocks are formed due to physical and chemical changes in igneous and sedimentary rocks.

When these rocks are subjected to high heat or pressure inside the earth, the mineral content of these rocks are transferred. These changed rocks are called metamorphic rocks.

2. Types of sedimentary rocks are-

Sandstone- It is widely used in making buildings. Many of old buildings in Delhi, Agra and Rajasthan are made of sandstone.

Conglomerate- It is solid mass of pebbles cemented together with minerals. It is mostly orange and grey in colour.

Shale- It is a smooth sedimentary rock. It is formed when the layers of clay harden. It is used for making tiles and bricks.

Limestone- Chalk is an example of limestone rock. Cement and lime are also made using limestone.

3. Igneous rocks come from melted rock, or magma, that lies beneath Earth's surface. Igneous rock form when magma from inside the Earth moves towards the surface, or is forced above the Earth's surface as lava and ash by a volcano. Three types of igneous rocks are-Basalt, Granite and Pumice.
4. Gemstones are found in form of crystal. They are very hard. They are cut and polished by experts. They are colourful because they have impurities.
5. Different uses of minerals are-
- F Metals are extracted from minerals; which are further used to make utensils, wires, coaches of train and airplanes.
 - F Coal is extracted from the ground by coal mining. It is used for cooking, producing electricity and preparing cement.
 - F Petrol is used in industry, household and office. We obtain various kinds of gases such as LPG, CNG etc. from petrol deposits.
 - F Gemstones like diamond, ruby, emerald etc. are used to make jewellery.

HOTS

He will choose diamond for the ring.

Let's Enjoy

Do it yourself.

CHAPTER 6

Animal Life

Just Do More (Pg 53)

1. An area where a particular animal naturally lives called its habitat.
2. Animals that live in water are called aquatic animals.

EXERCISE

- A** 1. (c) habitat 2. (a) Snake
3. (c) feathers 4. (b) shell
5. (b) lungs 6. (a) Fish
- B** 1. (e) 2. (d) 3. (a) 4. (b)
5. (c)
- C** 1. hollow 2. frog 3. Scales 4. insects
5. scales
- D** 1. False 2. False 3. True 4. True
5. True
- E** 1. Animals can be found in forests, rivers, ponds, deserts and even in the cold snow clad mountain. This is because different animals need different conditions to live and have chosen different areas or location to live in. It may be its food habit or physical features that make it suitable to its habitat.
2. Camel is called the ship of desert. It can walk or run on sand with ease as it has padded feet that do not sink in sand.
3. Fur or Hair- The bodies of animals like sheep, polar bear, human beings are covered with fur or hair. These covering protect them from rain and cold.
- Feathers-** Bodies of birds are covered with feathers which help them to fly and protect them from rain and cold.
- Scales** – Fish, snakes, crocodiles, lizard etc. have scales on outer covering of their body. These do not allow water to enter their body. Horny scales prevent water loss from their body.
- Shell** – Snail, tortoise and turtle are protected by shell. A shell works as shield and protect them.
4. To catch its prey cheetah has special features that make him run at a great speed.
These are-
- F The backbone of cheetah is very flexible.
 - F It has long legs that help him in having long strides.
 - F The claws on cheetah’s feet grip the ground like spikes in shoes of athletes.
5. Eel lives in lakes, ponds and rivers. After living there for about 7 to 12 years, it migrates to sea to lay its eggs. The babies take birth in seas but move to rivers and ponds to spend their life.
6. Animals that eat plants or plants products are called herbivorous animals. They have thick pad called dental pads in upper jaws and sharp incisors in lower jaw. Cow, goat and elephant are the herbivorous animals.

Animals that eat flesh of other animals are called carnivorous animals. They have sharp canines to tear the flesh. Tiger, lion, cat etc. are carnivores.

Animals that eat both plants and animals are called omnivorous animals. They have well developed canines for tearing flesh, crow, man, bear etc. are omnivores.

HOTS

- A** Animals migrate from one place to another in search of food, shelter and water to escape harsh weather or to breed.
- B** Yes, it is useful because snakes shed their skins for growing and removing parasites on their body that may have attached to old skin.

Let's Enjoy

Do it yourself.

Do it yourself.

CHAPTER 7

Skeletal and Nervous System

- A** 1. (a) skeletal 2. (a) marrow
3. (a) Elbow 4. (a) Nerves 5. (a) 33
- B** 1. skeletal 2. skull 3. framework
4. involuntary 5. healthy 6. Cerebrum
- C** 1. False 2. False 3. False 4. False
5. False 6. False
- D** 1. (d) 2. (a) 3. (c) 4. (b)
- E** 1. The skeletal system gives shape, support and strength to our body. Skeletal system protects our internal organs. It gives shape to our body. It allows us to move. The skeletal system comprises of skull backbone, rib cage and limbs.
2. The different kinds of joint in the body are pivot joint, gliding joint, hinge joints and ball and socket joints.
3. The muscles that are under our control are called voluntary muscles. Muscles in our arms and legs are example of voluntary muscles.
- Whereas some muscles work by themselves. They are not in our control. They are called involuntary muscles. They work automatically. These muscles help your lungs expand and contract and your food is digested.
4. It is an important involuntary muscle. Muscle of the heart is called cardiac muscle. They make our heart to beat.
5. Muscles are attached to the bones with help of special tissues

called tendons. Muscles work in pairs. They can do contraction and relaxation. When you flex a muscle, it contracts or gets shorter. It goes back to its original shape or relaxing.

6. There are three main parts of the brain- cerebrum, cerebellum and the medulla.

Cerebrum- It is the main part of brain. It takes message from the sense organs and tells us what to do. It is responsible for learning, memory, intelligence and logic.

Cerebellum- Our body actions such as walking, running, cycling etc. are controlled by cerebellum. It is situated below the cerebrum and is responsible for muscle coordination and maintaining the balance of our body.

Medulla – Below the cerebellum lies medulla. It is the brain stem that joins the brain and the spinal cord. It controls the activities of internal organs. It also controls the rate of breathing and heartbeat.

HOTS

There will be no flexibility and we will not be able to bend.

Let's Enjoy

- | | | | |
|----------|------------------|----------|-------------------|
| A | Do it yourself. | B | Do it yourself. |
| C | 1. Pivot joints | | 2. Gliding Joints |
| | 3. Socket Joints | | 4. Hinge joints |

CHAPTER 8 Measurement

Just Do More (Pg 66)

- | | | |
|----------|-------------------|--------|
| 1. Ruler | 2. Measuring Tape | 3. 100 |
| 4. litre | 5. milligram | |

Just Do More (Pg 67)

Do it yourself.

EXERCISE

- | | | | |
|----------|---|-------------------|--------------------|
| A | 1. (a) Body parts | 2. (a) centimetre | |
| | 3. (b) 1000 | 4. (a) litre | |
| | 5. (c) Kilogram | 6. (c) seconds | |
| B | 1. (d) | 2. (g) | 3. (b) 4. (h) |
| | 5. (a) | 6. (c) | 7. (e) 8. (f) |
| C | 1. 7.5 cm | 2. 7.5 cm | 3. 4.8 cm 4. 10 cm |
| D | 1. Length is the size or measurement of an object from its one end to another. The standard unit used to measure length is meter (m). We use a ruler to measure length of different lines/things length is also measured using a measuring tape or a meter rod. | | |

- Capacity of a container is the amount of liquid it can hold. A measuring cylinder is an instrument used to measure capacity. The standard unit for measuring capacity is litre (l). Smaller capacities are measured in millilitres (ml).
- Mass tells us how heavy or light an object is. Mass is defined as amount of material an object contains. The word 'weight' is generally used for mass the standard unit for measuring weight is kilogram (kg). Smaller weight are measured in grams (g). A beam balance, weighing balance, weighing machine and pain balance are some instruments used to measure weight.
- The period between two events is called time. Time is measured in seconds, minutes and hours. We have different clocks and watches to measure time.
- Temperature is the measure of how hot or cold an object is.
- The temperature of healthy person is 98.6°F which is equivalent to 37°C .
- The most commonly used unit of temperature is degree celsius ($^{\circ}\text{C}$). The other unit to measure temperature is kelvin. Mostly scientific thermometers have reading in $^{\circ}\text{F}$ and chemical thermometers have $^{\circ}\text{C}$ readings on them.

HOTS

No, she should not use footsteps to measure distance. Rather she should measure it in kms.

Let's Enjoy

- A** Do it yourself.
B Do it yourself.

CHAPTER 9

Force, Work and Energy

- A** 1. (b) Friction 2. (a) sun 3. (c) buoyant
 4. (c) heat 5. (a) load 6. (a) wedge
- B** 1. True 2. False 3. True 4. False
- C** 1. force 2. slows 3. muscular
 4. Gravitational 5. solar
 6. Axe
- D** 1. Solar cooker, Solar watches
 2. Burning of coal, Burning of kerosene
 3. Ceiling fan, Moving car
 4. Falling of ball, Falling of fruits from the tree
 5. Stopping of vehicle, Stopping of rolling ball

- E**
1. A push or pull on an object is called force. A force does the following work:
 - F It stops a moving object.
 - F It moves a stationary object.
 - F It changes the shape and size of an object.
 - F It makes a moving object move faster.
 2. **Muscular Force**- It is the force applied by our muscles. When we push, pull or lift anything, we apply muscular force.
Magnetic Force- When we bring a magnet near an iron object, say iron nail, it attracts the iron nail towards itself. So, the force applied by a magnet on an object is called magnetic force.
Buoyant Force- If we push down a mug floating on water, we feel an upward thrust. This upward force or push is called buoyant force.
Elastic Force- When we stretch a spring, it increases its length. But when we release it, it regains its original position. It is due to elastic force.
 3. Energy is the ability to do work. To perform any activity like playing, reading, running we need energy.
The different types of energy are-
 - F **Heat Energy**- Energy that we get from the sun.
 - F **Light Energy**- Energy that we get from light.
 - F **Wind Energy**- Wind has the power to move things. This power is called wind energy.
 - F **Potential Energy** – It is energy that is stored in a body due to its position.
 - F **Solar Energy** – The energy that we get from sun is called solar energy.
 - F **Electrical Energy**- Energy that is obtained from electric current is called electrical energy.
 - F **Mechanical Energy**- It shows the combination of both kinetic and potential energy.
 - F **Kinetic Energy** – The energy of an object due to its movement.
 4. Energy that we get from the sun is the main source of heat. This energy is also produced by burning fuels like coal, LPG and kerosene.
Whereas energy that we get from light is called light energy. It helps us to see things around us. Bulb, candle, tube etc. are sources of light energy.

5. A simple machine that turns around a fixed point is called lever. It is basically a long rod that is used by an operator to do useful work. There are three types of lever:

First Class Lever- In this, the fulcrum (F) is in between the load (L) and the effort (E). For eg. see-saw, scissors, hammer etc.

Second Class Lever – In this, the load (L) is in between the fulcrum (F) and the effort (E). For eg. wheel barrow, bottle opener etc.

Third Class Lever – It is the effort (E) in between the fulcrum (F) and load (L). For eg. knife, forceps etc.

6. A wheel is a simple machine connected to a rod. This rod is known as axle. A wheel and a circle rotate together. They are used to lift heavy loads by applying a small effort. For eg. steering wheel of a car, screw driver etc.

HOTS

Water makes the floor smooth and slippery. Due to less friction it becomes difficult to walk on wet floor.

Let's Enjoy

- A Do it yourself.
B Do it yourself.
C Do it yourself.

CHAPTER 10

Air and Water

- A** 1. (b) atmosphere 2. (b) many gases
3. (b) filtration 4. (c) Both (a) and (b)
5. (c) filtration
- B** 1. gases 2. balance 3. oxygen 4. Water
5. atmospheric 6. chlorine
- C** 1. True 2. False 3. True 4. False
5. True 6. False
- D** 1. **Decantation** – In this method, a mixture of water and insoluble impurities is allowed to stand undisturbed in a container for some time. The impurities settle down and clean water comes up. This can be separated slowly by pouring out the clean water into another vessel. The impurities are left behind.
(**Diagram** – Do it yourself.)
2. **Filtration** – In this method, insoluble impurities are removed by passing the impure water through a filter paper for filtration, filter paper should be arranged in a cone shape. To make the filter

paper stay in glass fund, sprinkle some water over it. Now, pour the mixture into the funnel. The sand does not pass through filter paper and remain behind. This is called residence.

3. **Distillation-** In distillation, we get impurities as well as pure water. In this process, contaminated water is heated in the flash. After sometime, water changes into steam and impurities are left behind in the flask. This steam passes through a condenser. Here, it cools down and converts into water. This water is pure which is collected in separate flask.
- E**
1. Anything that has weight exerts pressure. Air also has weight and exerts pressure. The pressure exerted by air upon the earth is known as atmospheric pressure. This pressure is important for many activities like taking liquid through straw, filling ink in a fountain pen, filling medicine in a syringe etc.
 2. Water purification is very important as the impure water is harmful for all polluted water may contain many impurities like lead, mercury, sand germs, bacteria, harmful gases etc. All harmful impurities and germs should be removed from water before drinking it.
 3. In distillation, we can get impurities as well as pure water. In this process contaminated water is heated in the flask. After some time, water changes into steam and impurities are left behind in the flask. This steam passes through a condenser. Here, it cools down and converts into water. This water is pure which is collected in a separate flask.
 4. The main pollutants are unburnt carbon particles from fuels, carbon monoxide, sulphur dioxide, nitrogen dioxide and lead. Out of these, sulphur dioxide and nitrogen dioxide gases are very harmful. They cause acid rain on combining with rainwater or water vapour. This rain is harmful for plants and animals.
 5. As the air passes through the electrical purifiers, the filters present in the purifiers traps the dust and other harmful germs in a prefilter. Therefore, they help in trapping harmful particles from the air around us and make it clean and fresh.

HOTS

1. Because crushed bottles will not be reused by people.

Let's Enjoy

- A** Do it yourself.
- B** Do it yourself.

CHAPTER 11

Our Universe

- A** 1. (b) solar system 2. (b) Mars
3. (b) 63 4. (a) waxing
5. (a) total solar eclipse
- B** 1. (d) 2. (e) 3. (a) 4. (b)
5. (c)
- C** 1. True 2. False 3. False 4. False
5. True
- D** 1. sun 2. thirteen 3. neptune 4. new moon
5. Solar eclipse 6. gibbous
- E** 1. **New Moon** – We cannot see the moon at all when moon is between the earth and sun. It is dark on new moon light.
2. **Crescent Moon**- When we see a small sunlit portion of the moon's surface, it is crescent moon.
3. **Half Moon**- When we see half of moon, it is called half moon.
4. **Gibbous Moon** – When we see more than half of the moon, it is called gibbous moon.
5. **Full Moon** – When we see complete moon, it is full moon.
- F.** Do yourself.
- G** 1. Earth is different from all other planets in the solar system. It is the third planet of solar system and our home planet. It is only planet where life exist. It is also known as blue planet. It has many climatic zones. It also spins around its axis due to which day and night occur on the earth.
2. The earth has an egg like structure. At its centre is a yolk of metal. It is called core. The core is surrounded by soft rocks called mantle. The outer shell is of hard rock called crust.
Core – It is innermost layer of earth. It is divided into two parts. They are outer core and inner care.
Mantle – It is the middle layer. It is between the crust and the core of the earth. Its upper part is made up of solid rocks, whereas the lower part consist of molten rock.
Crust – The crust is relatively thin outermost layer of rocks that float above the mantle.
3. The surface of the moon is dry and dusty and is covered with mountains and craters. Craters are saucer shaped holes that have been made when lumps of rocks and iron, called meteroits hit the moon's surface. There are flat plains and high mountains on the moon. The moon has gravity with which it pulls all objects towards its centre. That is because there is no atmosphere at all on the moon.

4. The increasing size of the lighted part of the moon is called waxing. Whereas, the decreasing size of the lighted part of moon is called waning.
5. When the earth comes between the sun and the moon in a straight line, it blocks a lot of the sunlight from reaching moon creates a shadow. This is called an eclipse to the moon or lunar eclipse. Whereas, when the moon comes between the sun and the earth, it blocks some parts of the sun and creates a shadow. This is known as solar eclipse.

HOTS

- A** Because there is no gravity in the space.
- B** We will not be able to get heat and light energy. All plants will die because photosynthesis won't take place. All animals that rely on plants for food will eventually die. Including human beings.

Let's Enjoy

- A** Do it yourself.
- B** Do it yourself.
- C** Do it yourself.

CHAPTER 12

Light and Shadow

- A** 1. (a) clear glass 2. (b) opaque things
3. (a) transparent 4. (c) straight line
- B** 1. light 2. sun 3. Opaque
4. translucent 5. Shadows
- C** 1. False 2. True 3. False 4. False
- D** 1. When the straight rays of sun, bulb, torch, candle etc. falls on an object, it bounces back from the source of the object and spreads in all directions. Where the reflected light from the object reaches our eyes, it allows us to see the object.
2. Materials that allow all the light to pass through them are called transparent materials. Eg. clean glass, clean water etc.
Whereas materials that allow some amount of light to pass through them are called translucent materials. Eg. smoked glass, mist, clouds etc.
3. A shadow is formed when the light is blocked due to any opaque object. A shadow is always formed on the opposite side of source of light. Shadows are always black in colour.
4. Translucent and opaque materials form shadow because they do not allow or partially allow light to pass through them. Due to which dark patch is formed near the object, known as shadow.

HOTS

Because the lights pass through the objects completely and no blocking of path of light takes place.

Let's Enjoy

- A Plants use light, water and carbon dioxide for process of photosynthesis without sufficient light photosynthesis will not take place, gradually plants will die without light.
- B 1. Goat 2. Butterfly 3. Wolf
4. Dog 5. Rabbit 6. Hound

CHAPTER 13 Natural Calamities

Just Do More (Pg 109)

Maharashtra, Karnataka, Andrapradesh, Orissa, Gujarat, Rajasthan, Bihar, Haryana, Jharkhand, Punjab.

EXERCISE

- A 1. (c) lava 2. (c) Both (a) and (b)
3. (a) strong waves 4. (b) lava
5. (b) Italy
- B 1. (e) 2. (a) 3. (b) 4. (d)
5. (c)
- C 1. lava 2. rain 3. starvation 4. tsunami
- D 1. 1. **Active Volcanoes**- They are those that may erupt at any time or have erupted in the recent past years. Mount Vesuvius and Mount Fuji are two famous active volcanoes.
2. **Dormant Volcanoes**- They are ones that are currently not erupting but they may erupt in future. They are not active now. Nardodam and Mount Kilimanjaro are examples of dormant volcanoes.
3. **Extinct Volcanoes**- They are ones that have stopped erupting because they no longer have a lava supply. Many extinct volcanoes are found in Hawain Island.
2. An earthquake is a sudden movement of a part of the earth's surface. It is caused by shock waves travel through solid rocks from under the ground to surface inside the earth where an earthquake starts is called the focus. The area on the earth surface just above the focus is called the epicenter. Maximum danger is caused in this area.
3. **Focus**- The surface inside the earth where earthquake starts is called focus.

Epicenter- The area on the earth's surface just above the focus is called the epicenter.

Aftershocks- After the first big shakings, smaller shakings or tremors occur. These are called aftershocks.

4. A tidal wave is the periodic rise and fall of sea level. It is caused by the gravitational force acting between the sun, moon and earth. Tsunami is also known as tidal waves.
5. The dry conditions which occur in an area due to the shortage of water are called as droughts. It is caused due to very less rainfall. The rivers, lakes, underground water etc. get dried and cracks start appearing on the earth's surface. As there is no water, no crop will grow. This leads to starvation and many people die of it.

HOTS

Earthquake can cause fires by damaging electrical power or gas lines. It also becomes difficult to control fire during an earthquake.

Let's Enjoy

- A Do it yourself.
- B Do it yourself.
- C Do it yourself.

CHAPTER 14 Our Environment

- A 1. (c) Both (a) and (b) 2. (c) environment
3. (b) Factories 4. (a) Water
- B 1. True 2. False 3. False 4. True
5. True
- C 1. Plastics 2. Asthma, Lung Cancer
3. Water, Plant 4. Paper
- D 1. The introduction of harmful substances into the environment due to human activities is called pollution. We can control pollution by adopting the following measures:
 - F Use of plastic bags be replaced by paper or cloth bags.
 - F Water should be used wisely.
 - F More trees should be planted to increase the content of oxygen in the atmosphere.
 - F Vehicles should use CNG to reduce pollution.
 - F Factories should be shifted away from residential area.
 - F Factories should have tall chimneys.
 - F Garbage should be thrown at proper dumping places.
- 2. Green house is term given to a glass house constructed to keep delicate and rare plants that require warmth and protection from

weather. The house is constructed by panels of glass. The heat that enters the house cannot escape because the glass panel sends back the heat to the inside of the glass house. This makes glass house warmer than outside environment. This process is called greenhouse effect.

3. The green house gases trap the heat of the sun, due to which there is increase in temperature on the earth. This cause global warming.
4. We should reduce the use of fuel and grow more trees to reduce global warming.

HOTS

Deforestation leads to imbalance of oxygen in the environment. The level of carbon dioxide increases which gets mixed with other green house gases forming harmful pollutants, leading to global warming.

Let's Enjoy

- A** F Burning of fuel
F Air conditioner
F Cutting down of trees
F Volcano
- B** Do it yourself.
- C** Do it yourself.

Model Test Paper 1

- A** 1. (c) Cotton 2.
3. (b) molecules 4. (c) marble
5. (c) habitat 6. (a) nerves
- B** 1. dispersal 2. Minerals 3. viruses 4. solids
5. metallic 6. involuntary
- C** 1. (d) 2. (f) 3. (e) 4. (a)
5. (b) 6. (c)
- D** 1. Greeny vegetables, Dalia
2. Cereals, Fish
3. Potato, Sugar
4. Egg, Meat
5. Fruits, Whole grains
- E** 1. **Condensation**- When the freely flowing particles of water vapour, touch a cold surface, it cools down. Changing of gas into liquid is called condensation.
2. **Chemical Change**- The permanent change in the state of a matter is called chemical change.

3. **Molecules** - The smallest unit of a substance that has all the properties of the substance.

F Herbivorous Animals: Animals that eat plants or plant product are called herbivorous animals. They have thick pad called dental pad in upper jaw and sharp incisors in lower jaw. They have broad molars to grind and chew their food. For eg. cow, goat etc.

Carnivorous Animals: Animals that eat flesh of other animals are called carnivorous animals. They have sharp canines to tear the flesh. They need to attack the prey and tear flesh. For eg. lion, cat etc.

Omnivorous Animals: Animals that eat both plants and animals are called omnivorous animals. They have well developed canines for tearing flesh, as well as broad and flat molars for crushing vegetables matter. Eg. bear, squirrel etc.

G 1. Fracture

- F Do not allow person to move.
- F Make the patient calm and comfortable.
- F Tie a splint and give support to broken bone.
- F The fractured arm can be supported by a sling.
- F The person must be rushed to the hospital immediately.

2. Nose bleeding

- F Make the patient sit up with head tilted upwards and ask him to keep his arms folded above his head.
- F Prepare an ice pack and keep on patients nose.
- F Ask patient to breathe through his mouth. Do not allow him to blow his nose.
- F If there is heavy bleeding, immediately take the victim to the hospital.

H 1. Seeds need sufficient amount of sunlight, air and water to grow into new plants. That is why nature helps in scattering the seeds and ensures that they do not grow too close to each other. Dispersal of seeds reduces the competition of nutrients for growth of seeds.

Seeds can be dispersed by wind, water birds and animals. All these are known as dispersal agents.

2. Following are the different components of the food-

F **Carbohydrates:** They give us lot of energy to work and play. They are rich in sugar and starch. Sugar, potatoes, cereals like rice, wheat etc. are rich sources of carbohydrates.

F **Vitamins:** They keep us fit and healthy. They improve our ability to fight against diseases. They are also called

protective food. Green leaf vegetable and fresh fruits are rich sources of vitamins.

- F **Minerals:** They strengthen the bones and maintain a normal heart beat. They are needed by our body for proper growth. Fruits, whole grains, green vegetables etc. are rich in minerals.
 - F **Proteins:** They help the body to grow. They are also called body building food. They make and repair cells in our body. Fish, chicken, meat, milk, pulses etc. has highest protein content.
 - F **Fats:** They also provide energy to our body. They give structure to cells in our body. Cooking oil, butter, ghee, nuts, eggs etc. are main sources of fats.
 - F **Water:** It act as a medium for transportation of nutrients inside our body.
 - F **Roughage:** They are fibrous food. It helps to get rid of undigested food. For eg. salad and dalia.
3. When ice is heated, it gradually melts. Changing of a solid into a liquid is called melting.
 4. Metamorphic rocks are formed due to physical and chemical changes in igneous and sedimentary rocks. When the rocks are subjected to high heat or pressure inside the earth, the mineral content of these rocks are transferred. These changed rocks are called metamorphic rocks.
 5. There are three main parts of the brains-
 - F **Cerebrum:** It is the main part of brain. It takes messages from the sense organs and tells us what to do. It is responsible for learning, memory, intelligence and logic.
 - F **Cerebellum:** Our body actions such as walking, running etc. are controlled by cerebellum. It is situated below cerebrum and responsible for muscle coordination and maintaining the balance of our body.
 - F **Medulla:** Below the cerebellum lies medulla. It is the brain stem that joins the brain and the spinal cord. It controls the activities of the internal organs. It also controls the rate of breathing and heartbeat.

Model Test Paper 2

- A
- | | |
|-------------------|-------------------------|
| 1. (c) Kilogram | 2. (a) wedge |
| 3. (b) atmosphere | 4. (b) opaque |
| 5. (b) lava | 6. (c) both (a) and (b) |

- B** 1. False 2. False 3. False
4. False 5. True 6. True
- C** 1. Gravitational 2. chlorine
3. new moon 4. light
5. lava 6. starvation

- D** 1. 1 day = 24 hours
2. 1 litre = 1000 millilitres
3. 1 metre = 100 centimetres
4. 1 kilogram = 1000 grams
5. 1 minute = 60 seconds
6. 1 centimetre = 10 decimetres

E Do it yourself.

- F** 1. Energy that we get from light is called light energy. It help us to see things around us. Bulb, candle, tube etc. are sources of light energy.

Whereas energy that we get from sun is called heat energy. This energy is also produced by burning of fuels like coal, LPG and kerosene. When we cook food, we use heat energy.

2. The increasing size of the lighted part of moon is called waxing moon.

Whereas the decreasing size of the lighted part of moon is called waning moon.

- G** 1. **New Moon**

We cannot see the moon at all when the moon is between the earth and sun. This is called new moon. It is dark on new moon night.

2. **Crescent Moon**

When we see a small sun-lit portion of the moon's surface it is called crescent moon.

3. **Half Moon**

When we see half of the moon it is called half moon.

4. **Gibbous Moon**

When we see more than half of the moon, it is called gibbous moon.

5. **Full Moon**

When we see complete moon, it is called full moon.

- H** 1. Plastic 2. Asthma, Lung cancer
3. Water, Plants 4. Paper
5. Translucent Material

- I** 1. Mass tells us how heavy or light an object is. Mass is defined as amount of material an object contains. The word weight is used for mass.

Some instruments used for measuring weight are:

- F Weighing Balance
 - F Weighing Machine
 - F Pan Balance
 - F Spring Balance
 - F Beam Balance
2. A wheel is a simple machine connected to a rod. This rod is known as axle. A wheel and an axle rotates together. They are used to lift heavy loads by applying small effort. For eg. steering wheel of car, screw driver etc.
3. Anything that has weight exerts pressure. Air also has weight and exerts pressure. The pressure exerted by air upon the earth is called atmospheric pressure.
- This pressure is important for many activities like taking liquid through straw, filling ink in a fountain pen, filling medicine in a syringe etc.
4. Earthquake is caused by shock waves that travel through solid rocks from under the ground to the surface inside the earth where an earthquake starts is called the focus.
5. Green house is a term given to a glass house constructed to keep delicate and rare plants that require warmth and protection from weather. The house is constructed by panels of glass. Glass panels allow sun rays and heat to pass through the glass house. The heat that enters the glass house cannot escape because the glass pencil sends back the heat to the inside of glass house. This make the glass house warmer than the outside environment. This process is called green house effect.

DISCOVERY SCIENCE

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