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Infinity Science

Teacher's Manual

CLASS 6

Ottimo Publications

Infinity Science
Class – 6

Chapter – 1 The Wonderful World of Science

Exercises

1. Science is the study of the world around us. It helps us learn about nature, the universe, living things, and how everything works. Scientists use experiments and observations to find answers to questions.
2. Science helps us understand the world by giving us ways to ask questions and find answers. For example, science helps us understand how plants grow, how animals live, and how the weather works. By studying nature, we learn more about how everything is connected.
3. Through science, we can learn many things about Earth, like:
    - The land: How mountains and valleys form.
    - The weather: How clouds, rain, and storms happen.
    - Living things: How animals and plants survive and grow.
    - The environment: How we can protect Earth from pollution and other harm.
4. The scientific method is a way scientists find answers to questions.
5. Science is like a big puzzle because scientists are always discovering new things.
6. Science is everywhere in our daily lives! For example:
    - Technology: Phones, computers, and cars all work because of science.
    - Medicine: Doctors use science to help people stay healthy.
    - Food: Science helps us grow food and learn about nutrition.
    - Energy: Science helps us find ways to use energy, like electricity or solar power.
    - Weather: Science helps us know when it will rain or when it will be sunny.
7. Science helps us explore and understand how everything around us works, from the tiniest bugs to the biggest stars in the sky.

Chapter – 2 Diversity in the Living World

Knowledge Check (Page 16)

1. Creeping 2. mango tree 3. Herbs 4. One

Knowledge Check (Page 17)

1. Hen, frog
2. Monkey, Squirrel, Koala, Chameleon, Bird

Competency-Based Exercise (As Per NEP Guidelines)

A. 1. (a) Elephant 2. (b) Mint 3. (d) Creeper 4. (a) Rose
5. (c) Mustard 6. (b) Two 7. (a) One 8. (b) Hyacinth
9. (d) Bird 10. (c) Cheetah

B. 1. True 2. True 3. False 4. True
5. False 6. False 7. True 8. True
9. False 10. True

C. 1. arboreal 2. smaller 3. greater 4. weak
5. veins 6. tap 7. similar 8. two
9. Leaves 10. gills

D. 1. Stem 2. Date palm 3. Herbs 4. Shrubs
5. Trees 6. Reticulate 7. Parallel 8. Tap root
9. Streamlined 10. Fat

E. 1. Herbs are small in size and they have soft and green stem. Shrubs are taller than herbs and they have brown but weak stem.
2. Shrubs are taller than herbs and they have brown but weak stem. Trees are very tall and they have thick and brown stem.
3. When veins and their branches make a network, such an arrangement of veins is called reticulate venation. When veins run parallel to each other, such an arrangement of veins is called parallel venation.
4. On the basis of eating habits, animals can be divided into three categories: herbivore, carnivore and omnivore.
5. Hollow and long stem allows the lotus plant to remain above water. Leaf surface is covered with a layer of wax which prevents damage from water.
6. The body of a fish is streamlined. A shape that is wide in the middle and tapering at both ends is called streamlined. A streamlined body helps the fish move in water with least effort.
7. The system of interdependency between plants, animals and non-living things is called ecosystem.
8. Features in a living being which make it fit for survival in its habitat is called adaptation. Human beings are able to survive on land because they have adaptations to suit the conditions on land. Fish are able to survive in water because they have adaptations to suit the conditions in water.
9. We can understand the adaptations that allow them to survive in different environmental conditions. Each type of plant habitat comes with its own set of challenges, and plants evolve specific traits to thrive in these conditions.
10. Animals and plants are fit to survive both on land as well as in water. Such living beings are called amphibians. Frogs are probably the best examples of amphibians. A frog can survive in water as well as on land. A frog breathes through its skin when it is under water. But it breathes through lungs when it is on land.

F. 1. Here are the key ways in which camels survive:
- Long legs of camels keep their body away from the hot sand and thus keep the body cool.
- Padded feet of camel prevent its legs from sinking in the sand.
- Leathery tongue helps camel eat plants with thorns, and such plants are abundant in desert.
- Long eyelashes of camel help in keeping sand out of their eyes.
- There is a hump on a camel's back. Fat is stored inside the hump. This fat is utilized as source of energy when a camel does not get food for many days.
- A camel can drink about 100 litre water in one go, and it can then live without water for many days.

2. • The body of a fish is streamlined. A shape that is wide in the middle and tapering at both ends is called streamlined. A streamlined body helps the fish move in water with least effort.

- Whole body of a fish is covered with scales. These scales prevent the loss of moisture from the body. These scales also prevent injury from external factors.
- A fish has gills on both sides of its head. These are respiratory organs of a fish, the way lungs are respiratory organs in our body. Gills enable a fish to take up oxygen which is present in dissolved form in water.
- There are fins and a tail on the body of fish. Fins are meant for swimming and tails help in changing directions.

3.
- Roots of cactus go very deep inside the soil in order to access water from deeper layers. It helps because there is little availability of water in desert.
- Leaves of cactus plant are modified into spines and this modification is to serve a particular purpose. Such leaves prevent loss of water through transpiration and thus help in conserving water. You may recall that loss of water vapour through leaves and other parts of plants is called transpiration.
- Stem of cactus is modified into spongy leaf-like structures. The spongy stem stores water and thus helps a cactus plant to survive in hot desert.

4.
- Hollow and long stem allows the plant to remain above water. The stem is very long and attached to the bottom through roots.
- Leaves are large and disc-shaped, and there are air spaces inside leaves. Due to this, these leaves can easily float above water. Leaf surface is covered with a layer of wax which prevents damage from water.
- Seeds are lightweight and hence can float on water. This ensures dispersal of seeds which helps in spreading the lineage of lotus.

G.

	Type of root	**Type of venation**
Wheat	Fibrous Root	Parallel Venation
Chana (Chickpea)	Taproot (Main root with lateral roots)	Reticulate (Netted) Venation
Almond	Taproot	Reticulate (Netted) Venation
Green Pea	Taproot	Reticulate (Netted) Venation
Corn	Fibrous Root	Parallel Venation
Groundnut (Peanut)	Taproot	Reticulate (Netted) Venation

H. 1. (a) Both A and R are true and R is correct explanation of A.
2. (d) A is wrong but R is correct.

I. 1. They thrived in diverse ecosystems, including grasslands, savannas, and semi-arid regions, displaying their adaptability to various environments.
2. The main threats to cheetahs include conflict with humans and livestock, loss of prey, habitat change, and illegal trade.
3. To improve the conservation of cheetahs, two key measures could include: i. To improve the conservation of cheetahs and ii. illegal trade.

J. Across
2. DICOT
3. LUNGS
6. CAMEL
7. TREE

Down
1. MONOCOT
2. GILLS
4. GRAPEVINE
5. HERB

Think & Answer (HOTS)

1. A dolphin, despite living in water, can breathe through lungs because it is a mammal. Unlike fish, which have gills to extract oxygen from water, dolphins must come to the surface to breathe air. Dolphins have specialized adaptations for this, such as:
    - Blowhole: Dolphins have a blowhole located on the top of their heads, which they use to breathe. They surface, open the blowhole, and expel air, often forcefully, to clear the lungs of carbon dioxide, then inhale fresh air.
    - Breath Control: Dolphins can hold their breath for several minutes and dive deep underwater without needing to breathe.
    - Efficient Oxygen Use: Dolphins have highly efficient respiratory systems that allow them to extract more oxygen from each breath.
2. Polar bears are well adapted to survive in their cold Arctic environment. Here are five key adaptations:
    - Thick Fur Coat: Their dense fur keeps them warm by trapping air close to their bodies, providing insulation against freezing temperatures.
    - Black Skin: Beneath their fur, polar bears have black skin, which helps absorb and retain heat from the sun, further warming their bodies in the cold climate.
    - Fat Layer: Polar bears have a thick layer of fat (blubber) beneath their skin. This layer insulates them from the cold and provides energy during long periods when food is scarce.
    - Large Paws: Their large paws act like snowshoes, distributing their weight and preventing them from sinking into the snow. The paws are also covered with thick fur for additional insulation.
    - Sharp Claws: Their sharp claws help them catch and hold onto slippery prey, such as seals, and provide traction when moving on ice and snow.

Life Skills

Do it Yourself

Project

Do it Yourself

Chapter – 3 Mindful Eating: A Path to a Healthy Body

Knowledge Check (Page 30)

1. Punjab 2. Bengal

Knowledge Check (Page 35)

(a) Nutrients (b) Body-building (c) Vitamins, minerals (d) Iron (e) Starch

Knowledge Check (Page 37)

a. Lack of one or more nutrients in the diet may result in deficiency diseases.

b. i. Marasmus ii. Rickets iii. Anaemia
iv. Night blindness v. Scurvy

Competency-Based Exercise (As Per NEP Guidelines)

A. 1. (c) Iron 2. (d) Water 3. (b) Carbohydrates
4. (b) Goitre 5. (b) Lemon

B. 1. True 2. False 3. True
4. False 5. True 6. True

C. 1. Fats 2. cells 3. Vitamins
4. skin 5. Balanced

D. 1. Vitamin k 2. Calcium 3. Iodine
4. Iodine 5. Proteins

E. 1. Nutrients are needed by our body to provide energy, promote growth, repair tissues, and maintain overall health.

2. The most important components of food without which our diet is incomplete are carbohydrates, proteins, fats, vitamins, minerals, and water.

3. A diet that contains all the nutrients in appropriate amounts.

4. (a) Carbohydrates: Rice, wheat, potatoes, bread, corn.
   (b) Vitamins: Fruits (e.g., oranges, bananas), vegetables (e.g., carrots, spinach), dairy products.
   (c) Minerals: Salt, leafy greens, dairy products, meat, and nuts.
   (d) Proteins: Eggs, milk, meat, fish, beans, lentils, soybeans.
   (e) Fats: Butter, ghee, oils (e.g., olive oil, coconut oil), nuts, cheese.

5. Proteins help in repairing and replacing the worn-out tissues in our body. They are called body-building foods.

F. 1. Water and roughage help in removing undigested waste from our body.
   - Water acts as a solvent and helps in the absorption of nutrients during digestion.
   - It helps in removing waste from the body.
   - It transports nutrients in the body.
   - It helps in regulation of body temperature.

   Roughage or dietary fibre adds bulk to the food and helps in removal of undigested waste from the body.
   - It helps in bowel movement and contraction of muscles, thus supporting removal of waste from the body.
   - It prevents constipation.
   - It absorbs and retains water in the body.

2. A diet that contains all the nutrients, water and roughage in adequate amounts is called a balanced diet.

3. Vitamins and minerals are called protective foods because they play a crucial role in protecting the body against diseases, ensuring proper functioning of various systems, and supporting overall health. They help in maintaining the immune system, promoting healing, and preventing deficiencies that can lead to health problems.

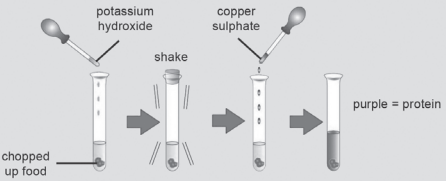
   Important Vitamins and their Functions:
   - Vitamin A (retinol): Normal growth of body, healthy skin and eyes
   - Vitamin C (ascorbic acid): Healthy teeth and gums, strong blood vessels, fighting diseases
   - Vitamin D (calciferol): Helps absorb calcium and maintain strong bones and teeth.

   Important Minerals and their Functions:
   - Calcium: Healthy bones and teeth
   - Iron: Formation of haemoglobin in the blood
   - Iodine: Helps in secretion of thyroid hormone for normal functioning of body.

4. **Aim:** **Test the presence of proteins in food.**

Materials Required: Milk, test tube, copper sulphate solution, caustic soda or sodium hydroxide solution.

Procedure: Take nearly 2–3 mL of milk in the test tube. Add 2–3 drops of copper sulphate solution to the sample and shake well. Now add about 10 drops caustic soda to the sample. Observe the change in colour.



Observation: The colour of the milk changes to dark blue or purple.

Conclusion: Copper sulphate and caustic soda change the colour of proteins to dark blue or purple. Therefore, change in the colour of the sample here shows that milk contains proteins.

G.

Nutrients	Deficiency diseases	Symptoms
Proteins		Mostly seen in children – the child becomes very thin with folds of skin on the body
Vitamin C		Swollen and bleeding gums, increased susceptibility to infection, pain in limbs, wounds and injuries take longer to heal
Calcium		Weak and fragile bones
Iron		Pale face, fatigue
Iodine		Swelling of thyroid gland in the neck area

H. 1. Both A and B are true and R is correct explanation of A.
2. Both A and B are true and R is correct explanation of A.

I. i. To remain healthy and fit we require all the nutrients in the food.
ii. Milk
iii. Calcium keeps our bones healthy and strong.
iv. Minerals

J. Across
5. GOITRE
6. IRON
7. CALCIUM

Down
1. WATER
2. PROTEINS
3. VITAMIN I
4. DIET

Think & Answer (HOTS)

By increasing his intake of water and roughage, Gaurav will help soften his stool, improve the movement of the digestive system, and reduce the symptoms of constipation. This combination helps ensure regular bowel movements and overall digestive health.

Life Skills

By including milk or milk-based products in her diet, Nisha will get the essential nutrients her body needs for growth and development.

Project

Do it Yourself

Chapter – 4 Exploring Magnets

Knowledge Check (Page 50)

3. c. Attraction
4. d. Repulsion

Knowledge Check (Page 53)

(a) magnetic compass
(b) demagnetisation
(c) opposite, opposite
(d) Magnetic Resonance Imaging
(e) magnetised

Competency-Based Exercise (As Per NEP Guidelines)

A. 1. (b) north pole is much more than the south pole
2. (c) iron
3. (b) rectangular
4. (b) steel
5. (d) ends

B. 1. ironsmith
2. silver
3. Eraser

C. 1. The process of destroying the magnetic property of a magnet.
2. A substance that attracts metals like steel, iron, nickel and cobalt.
3. Substances that are attracted to magnets are called magnetic substances.
4. The two ends of a magnet where the magnetic field is the strongest.
5. Magnetic compass is a navigational device used by travellers and sailors to navigate directions.

D. 1. Magnet is an object that attracts metallic substances like iron and nickel. In nature, some rocks have this property of attracting iron pieces. These rocks are called natural magnets. With the drastic increase in the use of magnets, they are now prepared in laboratories or factories and are called artificial magnets.
2. Substances that are attracted to magnets are called magnetic substances. Substances made from iron, steel, cobalt and nickel are magnetic substances. Machines, tools, pins, certain coins are some examples of magnetic substances.
3. Transforming a magnetic material into a magnet.
The process of destroying the magnetic property of a magnet.

E. 1. When two similar poles (either north-north or south-south) are brought together, they repel each other.
2. The two ends of a magnet are called the north pole and the south pole.
3. Lodestone is a naturally occurring magnetic mineral, a form of magnetite, that has magnetic properties.

4. Magnetism can be lost by heating the magnet or striking it with a hammer.
5. Magnets should be stored in pairs with opposite poles facing each other, and they should be kept in a soft iron keeper or in a cool, dry place to maintain their magnetic properties.
6. No, the poles of a magnet cannot be separated.
7. More iron pieces stick to the ends of the magnet because the magnetic field is strongest at the poles (the ends) of the magnet. As a result, these areas attract more iron filings.
8. A magnetic compass is a device used to determine direction. The compass needle rotates freely, indicating the directions—north, south, east, and west.

F. 1.
- A freely suspended magnet always rests itself in the north– south direction.
- Magnetic strength of a magnet is maximum at its poles.
- A magnet attracts all magnetic materials.
- Like poles always repel each other and unlike poles of two magnets attract each other.

2.
- Compass Navigation: Magnets are used in magnetic compasses to find directions. The needle of the compass aligns with Earth's magnetic field, pointing towards the magnetic north.
- Electromagnets: Magnets are used in electromagnets for various applications like cranes to lift heavy metallic objects, in electric motors, and in MRI machines.
- Magnetic Storage: Magnets are used in devices like hard drives, credit cards, and cassette tapes to store data.
- Speakers and Microphones: Magnets are essential components in speakers and microphones, converting electrical signals into sound.

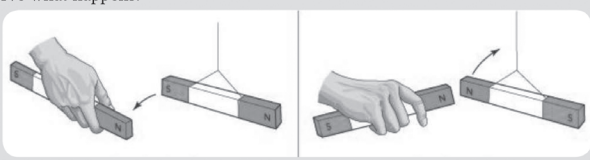
3. An iron slab can be magnetized in the following ways:
   1. Rubbing with a Magnet: Rubbing a bar magnet along the length of the iron slab in one direction can induce magnetism. The iron particles in the slab align with the magnetic field of the bar magnet, causing the slab to become magnetized.
   2. Placing in a Magnetic Field: The iron slab can be placed in a strong external magnetic field, such as inside the poles of a large magnet. The field will cause the atoms in the iron to align, magnetizing the slab.
   3. Electric Current (Electromagnetism): Passing an electric current through a coil wrapped around the iron slab (creating an electromagnet) can magnetize the slab. The magnetic field generated by the current will align the iron's atomic structure, magnetizing it.

4.

Aim: **To observe the attraction and repulsion in magnets.**

Materials required: Two magnets with clearly marked poles.

- Suspend a clearly marked magnet using a string.
- Bring another handheld magnet close to the suspended magnet.
- Repeat the same with changing the position of the bar magnet.
- Observe what happens.



unlike poles attract | like poles repel

Observation: Opposite poles of magnet attract each other whereas similar poles repel each other.

5. When a magnet is broken into two or more pieces, each piece becomes a magnet with its own north and south poles.

G. Earth has a weak magnetic field. It acts like a giant bar magnet with magnetic north and south poles. The location of the magnetic north and south poles is not aligned with our geographic North and South Poles. The earth's magnet is aligned a tilt within the earth.

This is why, if we suspend a bar magnet freely using a thread or string, the magnet aligns itself along the north–south direction. The north pole of the bar magnet aligns to the geographical North Pole and the south pole of the magnet aligns to the geographical South Pole.

H. 1. Both A and R are true and R is the correct explanation of A.

I. 1. A magnet is an object that attracts metallic substances.
2. Magnets can be of two types-natural and artificial.
3. bar magnet
4. Artificial magnets that show magnetic properties for a long period of time are known as permanent magnets such as steel, cobalt and nickel.

Think & Answer(HOTS)

1. If you are facing the north direction (where the north pole of the bar magnet is pointing), east will be to your right.
2. The doctor can use a magnet to remove the small iron splinters from the patient's eye.

Life Skills

I would advise Deepika to gently place the magnets on the ground or use a soft surface, and to avoid any rough handling to ensure the magnets remain in good condition and last longer for her game.

Project

Do it Yourself

Chapter – 5 Measurement of Length and Motion

Knowledge Check (Page 61)

1. a. True b. True c. False d. True e. False
2. a. 100 b. 2500 c. 5

Knowledge Check (Page 65)

a. circular

b. The common factor between the two is that both involve the movement of an object in space and both are types of mechanical motion.

c. The Earth exhibits rotational motion because it spins around its axis. The Earth also shows periodic motion because it revolves around the Sun in an elliptical orbit.

d. When the to and fro movement is very fast, it is called vibration or vibratory motion.

Competency-Based Exercise (As Per NEP Guidelines)

A. 1. (c) Cubit
2. (a) Gram
3. (a) March-past of soldiers
4. (b) Vibratory motion
5. (a) Curvilinear motion

B. 1. True 2. True 3. False 4. False
5. True

C. 1. Meter 2. time 3. free fall 4. axis
5. Oscillatory 6. fast

D. 1. Mass 2. Span 3. Handspan 4. Measuring tape
5. Aeroplane

E. 1. The fixed quantity to which an unknown quantity is compared.

2. Standard units of measurement are units used to measure physical quantities. Meter (m) for length, kilogram (kg) for mass, and second (s) for time, which are part of the International System of Units (SI).

3. Handspan, cubit, foot span and fathom are some non-standard units of measurement which were used earlier.

4. When an object changes its position with time relative to its surroundings that are at rest, it is called motion. The main types of motion are: Translational motion, Rotational motion, Oscillatory motion, Vibratory motion 5. 1000 m

F. 1 Translational motion is the kind of motion in which all the parts of the object move in the same direction. translational motion can be of two types — rectilinear motion and circular or curvilinear motion. Rectilinear motion is the motion in which an object moves in a straight path. Circular or curvilinear motion is the type of translational motion where an object moves along a curved or circular path.

2. When an object repeats its motion at regular intervals, it is called periodic motion. Movement of the needles of a clock, movement of pendulum, rotation of the earth, revolution of the earth around the sun.

Such motion in which an object moves in an irregular manner or the motion does not repeat itself at regular intervals is called non-periodic motion. Birds flying, children playing in the park, movement of vehicles on the road are some examples of non-periodic motion.

3. Precautions to take while measuring length using a ruler:
- Ensure the ruler is placed correctly and aligned with the line segment.
- Place the ruler flat on the surface to avoid any tilting.
- Start measuring from the zero mark of the ruler for accuracy.
- Keep the ruler steady and avoid parallax error (ensure you view the scale at eye level).
- Use a clear and well-marked ruler to avoid reading errors.

4. Ways to measure the length of a curved line:
- Using a string: Place a flexible string along the curve and then measure the length of the string using a ruler.
- Using a measuring tape: A measuring tape can be used to follow the curve and measure its length.
- Graphical method: For curves plotted on a graph, the curve's length can be approximated by dividing it into small straight segments and summing their lengths.
- Tracing and measuring: Trace the curved line on a paper, then measure the total length of the trace with a ruler or measuring tape.

5. a. When an object moves about a fixed axis, it is called rotational motion. A top spinning around a fixed rod, movement of the earth around its axis, movement of a car's wheel or a giant wheel.

b. A unit that has a fixed value and does not vary from person to person or place to place.

G. Rotational motion, Oscillatory motion, Periodic motion, Circular on curvilinear motion

H. 4. A is wrong but R is correct.

I. 1. The length 2. Meter 3. Time 4. M

J.

Across	Down
1. NON-PERIODIC	2. OSCILLATORY
5. RECTILINEAR	3. METER
6. ROTATIO	4. PERIODIC

Think & Answer(HOTS)

No, they are not correct. We can measure length of desks using meter not pencils.

Life Skills

1 & 2. Do it Yourself

Project

1 & 2. Do it Yourself

Chapter – 6 Materials Around Us

Knowledge Check (Page 73)

1. a. Metals, wood, steel
   b. Sponge, wool, foam
   c. Glass, water, plastic
   d. Jute, concrete, rock
   e. Silk, glass, polished materials

Knowledge Check (Page 75)

1. a. These materials can be sorted based on their conductivity.
   b. These can be sorted based on their state of matter or form.
2. Rubber is used as a covering on electrical wires because it is a good insulator.

Competency-Based Exercise (As Per NEP Guidelines)

A. 1. (c) Oil 2. (a) Husk 3. (c) Butter paper
   4. (b) Smoke 5. (c) Copper

B. 1. False 2. True 3. True
   4. False 5. True

C. 1. (d) Soluble 2. (e) Magnetic 3. (a) Insulator
   4. (b) Insoluble 5. (c) Float

D. 1. Matter 2. Opaque 3. Miscible
   4. Liquids 5. Solids

E. 1. Based on physical properties, chemical properties, state of matter, and conductivity.
   2. Materials are made of atoms and molecules.
   3. Element: Made of one type of atom.
      Compound: Made of two or more different atoms bonded together.

4. The ability of a material to conduct heat or electricity.
5. Thermal conductors: Conduct heat (e.g., metals).
   Electrical conductors: Conduct electricity (e.g., copper).
6. Matter is anything that has mass and occupies space. Examples: Solid (wood), Liquid (water), Gas (air).

F. 1. Classification of materials involves grouping materials based on their properties (e.g., physical, chemical, or mechanical). It is useful for understanding their behavior and choosing appropriate materials for specific applications.
2. • Solids have fixed shape and volume.
   • Liquids have fixed volume but take the shape of their container.
   • Gases have neither fixed shape nor volume and expand to fill their container
3. Materials can be classified as transparent (e.g., glass), translucent (e.g., butter paper), and opaque (e.g., wood) based on how much light they allow to pass through.
4. Hard materials resist deformation (e.g., iron), while soft materials can be easily deformed (e.g., cotton).
   Rough materials have uneven surfaces (e.g., sandpaper), while smooth materials have even, polished surfaces (e.g., glass).

G.

Solid	Gas
Has a fixed shape and fixed volume.	Has no fixed shape or volume, it expands to fill the container.
Particles are closely packed in a fixed arrangement.	Particles are far apart and move freely.
Particles vibrate in place but do not move freely.	Particles move rapidly in all directions.

H. 2. Both A and R are true but R is not a correct explanation of A.

I. i. Table ii. Sponge iii. Gold iv. Cotton bolls

J.

Across	Down
1. MISCIBLE	2. CONDUCTORS
4. IMMISCIBLE	3. ATOMS
6. COMPOUNDS	4. MATTER

Think & Answer(HOTS)

1. Electricians wear rubber gloves and rubber slippers because rubber is an insulator, which prevents electric current from passing through their bodies, protecting them from electric shocks.
2. Gold and silver are used in jewellery because they are malleable, ductile, and have a lustrous.

Life Skills

Do it Yourself

Project

Do it Yourself

Chapter – 7 Materials Around Us

Warm Up (Page 82)

1. summer 2. winter 3. thermometer

Knowledge Check (Page 85)

1. body 2. touch

Knowledge Check (Page 87)

1. Freezing 2. Boiling 3. clinical

Competency-Based Exercise (As Per NEP Guidelines)

A. 1. (c) Temperature
2. (a) Room thermometer
3. (d) 37° C
4. (b) 98.6° F
5. (c) 0° C
6. (a) –273° C
7. (b) Mercury
8. (d) 100° C

B. 1. False 2. True 3. False 4. False
5. True 6. True 7. False 8. False

C. 1. Digital 2. Mercury 3. temperature 4. Fahrenheit
5. kelvin 6. absolute 7. 35 6. 100

D. 1. Temperature
2. Clinical thermometer
3. Laboratory thermometer
4. 94°F
5. 42°C
6. 100°C
7. 0°C
8. Yes
9. No
10. Meteorologists

E. 1. The device for measuring temperature is called thermometer. There are two types of thermometer: clinical thermometer and laboratory thermometer.
2. A clinical thermometer is used for measuring body temperature. The range of a clinical thermometer is between 35°C and 42°C.
3. A laboratory thermometer is used in laboratory, factory and at many other places. The range of laboratory thermometer is from –10°C to 110°C.
4. Traditional thermometers use liquid expansion, while digital thermometers use electronic sensors to measure temperature. Digital thermometers provide faster and more accurate readings compared to traditional thermometers.
5. Clinical thermometers measure between 35°C to 42°C, while laboratory thermometers have a wider range. Clinical thermometers are for body temperature, while laboratory thermometers are used for experiments and scientific purposes.

F. To take temperature, turn it on, place the probe in the mouth, under the arm, or rectally, wait for the beep, and read the temperature displayed.

A digital clinical thermometer

2. Ensure that the tip of thermometer does not touch the side or bottom of the container when thermometer is immersed in the liquid in container.

- Keep the thermometer vertically straight. It should not tilt but should be at right angle to the horizontal plane.
- Reading must be taken while the thermometer is still immersed in the liquid.
- Your eye should be directly in line with the level of mercury in thermometer.

G.

Object					
Hot or Cold	Hot	Cold	Hot	Cold	Hot

H. 1. (a) Both A and R are true and R is correct explanation of A.
2. (b) Both A and R are true but R is not a correct explanation of A.

I. 1. Celsius scale
2. It was called a centigrade scale because of the 100-degree interval.
3. So that a temperature increment of one degree Celsius is the same as an increment of one kelvin, though numerically the scales differ by an exact offset of 273.15.

J. Across
3. TEMPERATURE
4. KELVIN
6. THERMOMETER
7. METEOROLOGY

Down
1. FAHRENHEIT
2. CELSIUS
5. MERCURY

Think & Answer (HOTS)

1. Cleaning the tip prevents the spread of germs and ensures the thermometer gives an accurate reading by removing any dirt or residue.
2. The sense of touch is not accurate because it is subjective and can be influenced by the skin's sensitivity, making it unreliable for precise temperature measurement.

Life Skills

To help a patient with a high fever, monitor their temperature, keep them hydrated, use a cool compress on their forehead, and ensure they rest. If necessary, administer fever-reducing medication and seek medical attention if symptoms worsen.

Project

Honey:
Boiling point: 160°C – 190°C
Freezing point: –10°C to –15°C

Kerosene:
Boiling point: 150°C –300°C
Freezing point: –47°C

Mustard Oil:
Boiling point: 250°C
Freezing point: –10°C

Paraffin Wax:
Boiling point: 370°C
Freezing point: 46°C – 60°C

Spirit:
Boiling point: 78.37°C
Freezing point: –114°C

Chapter – 8 A Journey Through States of Water

Knowledge Check (Page 96)

(c) Both a and b

Knowledge Check (Page 98)

1. vapour 2. gaseous

Knowledge Check (Page 102)

1. freezes 2. melts

Competency-Based Exercise (As Per NEP Guidelines)

A. 1. (a) Brick 2. (b) Water 3. (c) Air 4. (d) Rainy
5. (b) Evaporation 6. (c) Three

B. 1. False 2. True 3. False 4. True
5. False 6. False 7. False 8. True

C. 1. same 2. fixed 3. positive 4. negative
5. Evaporation 6. faster 7. less 8. plants

D. 1. Ice 2. Water, steam 3. Water 4. Steam
5. Evaporation 6. Melting

E. 1. The process of a liquid turning into gas is called evaporation. The main cause of evaporation is the heat energy.
2. The process of a gas turning into liquid is called condensation. The main cause of condensation is the cooling of water vapour.
3. The process of a solid turning into liquid is called melting. The main cause of melting is the addition of heat.
4. The process of a liquid turning into solid is called freezing. The main cause of freezing is the removal of heat.
5. As temperature increases, the rate of evaporation increases. Water evaporates faster on a hot day than on a cold day.
6. The larger the surface area, the faster the rate of evaporation. You will notice that water in the plate completely turns into vapour but it does not happen with the water in bottle cap. It happens because water in the plate is spread over a larger surface area.
7. Percentage of moisture in air is called humidity. Humidity slows down the rate of evaporation.
8. Higher wind speed increases the rate of evaporation. You may have observed that clothes dry faster on a windy day.

F. 1. Water vapour is the gaseous form of water, it is formed when liquid water evaporates due to heat. Differences between evaporation and vapourisation are following:
   - Evaporation takes place at all temperatures but vapourisation only takes place beyond certain temperature.
   - Evaporation is a surface phenomenon but vapourisation is a bulk phenomenon.

2. Effect of Heat on Evaporation
   - Take two bowls of equal size and fill equal amount of water in both of them.
   - Keep one bowl in sunshine and another bowl in shade.
   - Mark the levels of water in both the bowls with a permanent marker.
   - Wait for an hour and check water levels in both bowls.

You will notice that level of water in one bowl is different from that in another bowl. The level of water in the bowl in sunshine has reduced more than the level of water in the bowl in shade. This activity shows that water evaporated faster in sunshine than in shade. It proves that heat hastens the rate of evaporation.

3. Effect of wind speed on evaporation

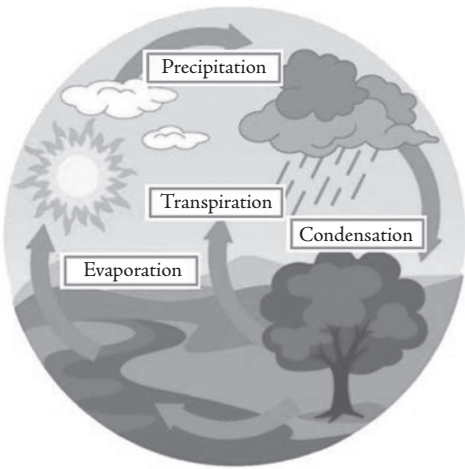
   Wind speed is another factor which affects the rate of evaporation. You may have observed that clothes dry faster on a windy day.

   - Take two handkerchiefs of same size.
   - Rinse them with water and squeeze whatever water you can from them.
   - Spread one of the handkerchiefs on a flat surface.
   - Spread another handkerchief too on a flat surface but keep it under a ceiling fan that is on.
   - Wait for about an hour.

   You will notice that the handkerchief under the ceiling fan dried faster than the handkerchief which was not put under the fan. It happened because of wind from the ceiling fan hastened the rate of evaporation.

4. Cool a glass bottle with ice cubes. Water droplets will form on the outer surface of the bottle. This show that moisture is present in air.
5. The cyclical process through which water changes in three states of matter in nature is called water cycle. Water cycle involves all the steps of change of matter from one state to another. In other words, water cycle involves freezing, melting, evaporation and condensation.

G.



H. 1. (a) Both A and R are true and R is correct explanation of A.
   2. (a) Both A and R are true and R is correct explanation of A.

I. 1. Surface layer
   2. Increase in temperature increases the kinetic energy of particles.
   3. Evaporating cooling

J. Across
3. LIQUID
5. EVAPORATION
2. MELTING
7. FREEZING

Down
1. CONDENSATION
6. PRECIPITATION
4. SOLID

Think & Answer (HOTS)

1. The alcohol in the sanitizer evaporates quickly, absorbing heat from our skin and making our hand feel cold.
2. Air coolers use evaporation to absorb heat from the air, cooling it before blowing it into the room.
3. Earthen pitchers cool the water through evaporation, making it more refreshing.

Life Skills

In this condition, I would use a hairdryer or fan to quickly dry the clothes.

Reason: These methods increase air circulation and heat, which speeds up the evaporation of water from the clothes, helping them dry faster even in the rainy, humid conditions.

Project

Do it Yourself

Chapter – 9 Methods of Separation in Everyday Life

Warm Up (Page 108)

1. using a strainer
2. by manually sorting or sieving.

Knowledge Check (Page 109)

Homogeneous
1. Air
2. Sugar in water

Heterogeneous
1. Oil in water
2. Cornflakes in milk
3. Sand in water

Knowledge Check (Page 111)

(a) Sand from water — Filtration
(b) Husk from water — Decantation
(c) Salt from water — Evaporation
(d) Tea leaves from tea — Straining
(e) Husk from wheat grains — Winnowing

Knowledge Check (Page 114)

(a) distillation
(b) sediment
(c) residue
(d) winnowing
(e) centrifugation

Competency-Based Exercise (As Per NEP Guidelines)

A. 1. (c) Residue 2. (d) Threshing 3. (a) Distillation
4. (c) Evaporation 5. (c) Sugar in water

B. 1. False 2. True 3. False
4. True 5. False

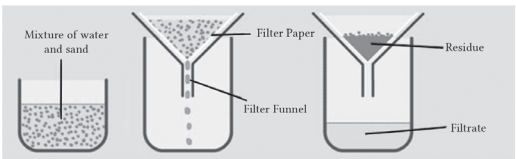
C. 1. (c) Handpicking 2. (e) Evaporation 3. (d) Universal solvent
4. (a) Immiscible 5. (b) Sedimentation

D. 1. Evaporation is the process by which soluble impurities are separated from a solution.
2. Distillation is a method used to obtain pure liquid from a solution.
3. The process of transferring the supernatant without disturbing the sediments is called decantation.
4. Grains from the stalks of crops such as wheat are removed by the process of threshing.
5. The process in which a mixture of grains and husk is dropped from a height against the blowing air is called winnowing.
6. Sedimentation is the process by which the heavy insoluble particles mixed in the solution settle down.

E. 1. Matter around us can be broadly classified into pure substances and mixtures.
2. Substances that are made of two or more than two types of substances. It can be homogeneous or heterogeneous.
3. The ability of a solute to dissolve in a solvent.
4. Sediment is the solid particles that settle at the bottom, while supernatant is the liquid layer above the sediment.

F. 1. To separate a mixture of sand and salt in water, the following methods are used:
Filtration: First, filter the mixture through filter paper. The sand, being insoluble, will remain as residue on the filter paper, while the salt solution (filtrate) passes through.
Evaporation: Once the salt solution is obtained, heat the filtrate to evaporate the water, leaving behind the salt as solid crystals.

2. The decanted liquid that we acquired in the previous activity may still contain some sand particles. This solution can now be passed through a filter paper where the suspended sand particles will stay on the filter paper while the clearer water passes through it. The process of separating insoluble or suspended solutes (solids) from a liquid through a filter is called filtration.
The insoluble particles that are left behind on the filter paper are called residue while the liquid that passes through the filter paper is called the filtrate.



Filtration

3. We know that a solution is formed when a solute is dissolved in a solvent. For example, we get sugar solution when sugar (solute) is dissolved in water (solvent).
What do you think will happen if we keep adding a solute to the solvent? After some time, sugar stops dissolving in the water and gets accumulated in the container.
Such solution in which no more solute can be dissolved is called saturated solution.

4. We can increase the solubility of a solute by different methods such as:
   - stirring
   - powdered form of solute
   - heating the solution
5. a. In Homogeneous mixtures the constituent particles are evenly distributed throughout. In Heterogeneous mixtures the constituent particles are unevenly distributed throughout.
   b. Sieving separates solids of different sizes using a sieve. Filtration separates solids from liquids or gases using a filter.

G. Distillation is a method used to obtain pure liquid from a solution. It can be used to separate impurities from tap water to obtain pure water called distilled water. The process is based on the fact that different liquids have different boiling points. In this process, a solution is heated over a burner. The liquid starts to boil as it reaches its boiling point and the impurities are left behind. The evaporated liquid is then allowed to pass through a condenser called the Liebig's condenser. The liquid cools down or condenses and is collected in a container. This pure liquid is called the distillate.

H. 4. A is wrong but R is correct.
   2. (a) Both A and R are true and R is correct explanation of A.

I. (i) (a) dissolved salts
   (ii) (d) Evaporation
   (iii) (b) a liquid changes into vapour
   (iv) (c) salt

J.

Across	Down
3. WINNOWING	1. DISTILLATION
4. HETEROGENEOUS	2. EVAPORATION
5. SIEVING	3. HOMOGENEOUS

Think & Answer (HOTS)

1. The method used to obtain dye from a solution of ink and water is evaporation. By heating the solution, the water will evaporate, leaving the dissolved dye behind as a solid.
2. Tap water is called a mixture because it contains various dissolved substances, such as salts, minerals, and gases, which are not chemically bonded and can be separated by physical methods.

Life Skills

Do it Yourself

Project

Do it Yourself

Chapter – 10 Living Creatures: Exploring their Characteristics

Knowledge Check (Page 124)

1. fuel 2. the lungs 3. fold 4. a calf

Knowledge Check (Page 127)

1. processes 2. food 3. The soil

Knowledge Check (Page 129)

1. tiny plant 2. fruit

Competency-Based Exercise (As Per NEP Guidelines)

A. 1. (d) Plant 2. (a) Oxygen 3. (c) Gum 4. (c) Lion
5. (a) Sunlight 6. (b) Seedling 7. (c) Fruit 8. (c) Pupa
9. (a) Eggs 10. (d) Cholera

B. 1. True 2. True 3. False 4. True
5. False 6. True 7. False 8. True
9. False 10. True

C. 1. Water 2. before 3. after 4. light
5. positive 6. waste 7. Carbon dioxide 8. energy
9. Plants 10. the soil

D. 1. Movement 2. Excretion 3. Respiration 4. Reproduction
5. Growth 6. Oxygen 7. Mosquito 8. Water
9. Water 10. Tadpole

E. 1. Drosera plants have hair like structures on their leaves.
2. Growth in living beings happens from inside.
3. Nutrition gives energy to the body for carrying out routine tasks.
4. After we breathe in air, oxygen is absorbed and carbon dioxide is removed from the body.
5. Removal of waste materials from the body is called excretion. It is necessary to remove the waste materials from the body.
6. Plants remove waste materials in the form of gum and resin.
7. The essential conditions for germination are water, oxygen, and proper temperature; without any of these, seeds may not sprout.
8. Water is necessary for germination to activate enzymes that help the seed absorb nutrients and begin growth.
9. Positive phototropic movement is the growth of a plant towards light.
10. Negative phototropic movement is the growth of a plant away from light.

F. 1. Water: It activates enzymes that help in breaking down stored food in the seed, which is necessary for growth.

Temperature: Adequate warmth is required for enzymes to function properly and for the seed to begin growing.

2. Mosquitoes are considered as pests because they are harmful for us. We can prevent malaria and dengue by preventing the breeding of mosquitoes.
3. The life cycle of a frog has following stages: eggs, tadpole, froglet and adult.

Eggs

A frog lays eggs in stagnant water. A frog lays thousands of eggs at one go and all its eggs are bound together by a jelly-like substance. Such a cluster of frog's eggs is called spawn. If you will get a chance to visit a pond or a ditch during rainy season you may get to see spawns of frogs.

Such a spawn looks like a jelly with numerous tiny black dots in it. There is a reason for a frog laying thousands of eggs. Most of the eggs get destroyed by flow of water or are eaten by predators. Only a few of the eggs survive to grow further. A large number of eggs ensures survival of at least a few of them.

Tadpole

After a few days, the eggs change into tadpoles. A tadpole looks like a small fish and does not resemble a frog. The tadpole can swim in water.

Froglet

The tadoples develop four legs and begin to appear like a frog. But the tail is still intact. This stage is called froglet.

Frog

The tail of froglet falls off and the transformation from tadpole to frog is complete. Such a transformation from young one to adult (in case of indirect development) is called metamorphosis. Many other animals also show metamorphosis such as butterflies and silk moth. It is important to keep in mind that if an animal shows indirect development it also shows metamorphosis.

G.

Column A	Column B
	Germination of seed
	Appearance of leaves
	Appearance of flowers
	Appearance of fruits

H. 1. 2. Both A and R are true but R is not the correct explanation of A.
2. 4. A is wrong but R is correct.

I. 1. The feeding habit of a pitcher plant is carnivorous.
2. Modified leaves
3. Digestive liquid

J. Across
5. TADPOLE
6. REPRODUCTION

Down
1. EXCRETION
2. RESPIRATION
3. PITCHER
4. MOSQUITO

Think & Answer (HOTS)

1. A train is not a living being because it doesn't grow, reproduce, or carry out life processes.
2. A croton plant is a living being because it can grow, reproduce, and undergo processes like photosynthesis.

Life Skills

Do it Yourself

Project

Do it Yourself

Chapter – 11 Nature's Treasures

Warm Up (Page 137)

1. water 2. fuel 3. Air

Knowledge Check (Page 142)

1. proteins 2. respiration 3. waste 4. sunlight

Knowledge Check (Page 145)

1. soil 2. minerals 3. crude oil

Competency-Based Exercise (As Per NEP Guidelines)

A. 1. (a) Oxygen 2. (d) Carbon dioxide 3. (c) Water
4. (b) Slate 5. (a) Sun 6. (b) Water
7. (c) Copper 8. (b) Dark 9. (c) Paper
10. (d) Millions

B. 1. False 2. True 3. False
4. True 5. True 6. False
7. True 8. True 9. False
10. True

C. 1. gases 2. salt 3. water
4. soil 5. red sandstone 6. white marble
7. ore 8. the sun 9. fossil
10. fuel

D. 1. Nitrogen 2. Carbon dioxide 3. Bawdi
4. Vav 5. Sun 6. July
7. Chamoli 8. Granite, Marble, Slate 9. Crude oil
10. Reduce, Reuse, Recycle

E. 1. Air is a mixture of gases, primarily nitrogen (78%), oxygen (21%), and small amounts of carbon dioxide, argon, and other gases.
2. Drinking, cooking, washing clothes, bathing, and irrigation.
3. In India, structures like Bawdi in Rajasthan, Vav in Gujarat and Baoli in Delhi are used for collecting and storing rainwater.
4. The sun is a huge reservoir of energy and all of us get energy from the sun. So, it is called ultimate source of energy.

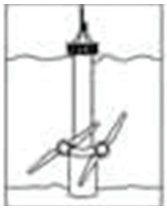
5. Solar energy is also utilised to cook food in solar cooker. Many people install solar water heaters on rooftops to get hot water. Solar energy can be converted into electricity by using solar panels.
6. Forests are important resources in many senses. They provide habitat to wildlife and natural vegetation. They help in preventing soil erosion and reducing air pollution. Forests also help in bringing rains.
7. Van Mahotsav is organised every year in the month of July. This event lasts for a week in which new trees are planted all over the country.
8. Some soil is good for making pottery and bricks. Fertile soil generally contains a dark material called humus. Humus is made after decomposition of dead remains of plants and animals.
9. Rocks provide materials like minerals, metals, and stones, which are essential for construction, manufacturing, and other industries.
10. Coal is used for energy production and in industries like steel manufacturing, while petroleum is used for fuel, transportation, and making products like plastics.

F. 1. Air contains 78% nitrogen which means out of 100 parts of air, 78 parts are made up of nitrogen gas. Air contains 21% oxygen and remaining 1% of air contains carbon dioxide, argon, water vapour and other gases. Nitrogen is used by plants to make protein. Carbon dioxide is required by plants for making food.
2. About 71% of the earth's surface is covered with water but out of that about 97% water is present in oceans and seas. This means about 3% of water on the earth is in the form of freshwater but most of it is present as frozen ice in glaciers and icebergs. Less than 1% of total water on earth is present as freshwater in liquid form. Most of the freshwater in liquid form is present as groundwater and a minuscule portion is present in rivers and lakes. This data shows that drinking water is a scarce resource. While it is easy to take water from rivers and lakes, it is quite difficult to extract groundwater. We need to dig wells and install pumps to extract groundwater.
3. As water is a scarce resource we need to save water. There are many cities and villages where people suffer from the problem of scarcity of water. The situation worsens during summer season. We can use many methods to save water. Rainwater harvesting helps a lot in recharging underground aquifers. This can be done by simple method. For this, one just needs to channelize rainwater (which runs off from roof) to a storage tank. Bottom of the storage tank is laid with sand, pebbles and charcoal for filtering out impurities from rainwater. Water from this tank can be stored for later use. It can also be allowed to seep down the ground so that it ends up recharging the underground aquifer.
4. Some natural resources are renewed in foreseeable future and hence they are called renewable resources. For example; water is renewed in a short time span.

   A resource which cannot renew in foreseeable future is called non-renewable resource. You have read that it takes millions of years for formation of coal and petroleum. Rocks and minerals are also formed over the duration of millions of years. Soil takes hundreds of years to form. These are examples of non-renewable resources.
5. You have seen that some resources take millions of years to form. But we are using such resources at a high rate. There are so many vehicles and factories all over the world. They use millions of litres of petrol and diesel. Similarly, coal is used all over the world in huge quantity. A time will come when there will be no coal or petroleum on the earth. We are using huge quantities of minerals to make useful items for us. This means that

minerals will be exhausted in times to come. None of the non-renewable resources is going to last forever. We need to follow the rules of triple Rs which stand for reduce, reuse and recycle. We need to reduce the usage of resources. We need to reuse some of the resources wherever possible. We also need to recycle those resources which can be recycled.

G.



renewable

non-renewable

renewable

non-renewable

non-renewable

renewable

non-renewable

renewable

H. 1. 4. A is wrong but R is correct
2. 3. A is correct but R is wrong

I. 1. (b) Women and children
2. (c) Reduced attendance in school
3. (d) Women

J.

Across	Down
1. COPPER	2. RENEWABLE
3. SUN	4. MARBLE
5. BAWDI	
6. PETROLEUM	

Think & Answer (HOTS)

Yes, intensive farming puts a huge burden on underground aquifers because it requires large amounts of water for irrigation. Overuse of these aquifers can lead to their depletion and cause water shortages.

Life Skills

Do it Yourself

Project

Do it Yourself

Chapter – 12 Beyond the Earth

Warm Up (Page 152)

1. The Moon 2. The Sun

Knowledge Check (Page 155)

1. The Seven Sages 2. The North Star

Knowledge Check (Page 159)

1. Jupiter 2. Mars 3. Venus 4. Asteroids

Competency-Based Exercise (As Per NEP Guidelines)

A. 1. (d) Big Dipper 2. (b) Mercury 3. (d) Neptune
4. (a) One 5. (b) Moon 6. (b) Proxima Centauri
7. (c) Sun and Earth 8. (d) Mars and Jupiter 9. (c) 100 times
10. (d) Ten times

B. 1. False 2. True 3. True
4. True 5. True 6. False
7. False 8. True 9. False
10. False

C. 1. Northern 2. Orion 3. Sirius
4. navigation 5. 365 ¼ days 6. 27 days
7. 4 8. Nucleus 9. spherical
10. Moon

D. 1. Venus 2. International Astronomical Unit 3. Milky way
4. Taurus 5. 88 6. Venus
7. Neptune 8. Asteroid belt 9. Sun
10. Moon

E. 1. The region of sky where a particular group of stars appear is called constellation.
The term "constellation" commonly refers to a group of stars that appear to be close together in the sky, forming a particular shape or pattern, often used for navigation or cultural reference.
2. Constellation Orion is one of the constellations which can be easily recognised in the night sky.
3. Big Dipper is also known as Great Bear, and its Hindi name is Saptarishi.
4. The Sun, its planets, their satellites and many other celestial bodies form the Solar System.
5. Venus is called the Morning or Evening Star because it appears bright at dawn or dusk due to its proximity to Earth and the Sun.
6. Jupiter, Saturn, Neptune and Uranus are called gaseous giants.
7. The Moon is our nearest neighbour in this universe. The Moon takes 27 days to make a revolution around the Earth.
8 While the Sun and the planets are almost spherical in shape, there are many small objects in the Solar System which are irregular in shape. These are called asteroids.
9. A comet is a rocky material covered with frozen material and it moves on a highly elliptical path around the sun.

F. 1. Big Dipper is also known as Great Bear, and its Hindi name is Saptarishi. Seven stars of this constellation are clearly visible. They make a shape which appears like a rectangle with a tail. A cup-like container with a handle is called dipper. The Big Dipper looks similar.

The Little Dipper looks similar to the Big Dipper but appears somewhat smaller. The Pole Star or Polaris is a part of the Little Dipper, and is in a straight line from the rectangular part of the Big Dipper.

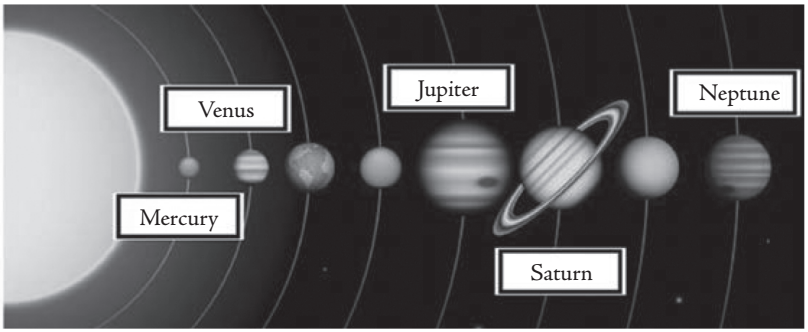
2. There are eight planets in the Solar System. They are grouped into two categories:

i. Terrestrial Planets: These are rocky planets, closer to the Sun, and include Mercury, Venus, Earth, and Mars.

ii. Gas Giants and Ice Giants:

- Gas Giants: Jupiter and Saturn, which are large, composed mostly of hydrogen and helium.
- Ice Giants: Uranus and Neptune, which contain more ice (water, ammonia, methane) in their composition than gas giants.

G.



H. 4. A is wrong but R is correct

I. 1. 1 meter wide 2. Outer space 3. Larger than a meter

J. Across

2. NEPTUNE
3. PLUTO
5. MERCURY
6. NEPTUNE

Down

1. VENUS
4. VENUS

Think & Answer (HOTS)

1. Neptune is not the coldest planet because it emits more internal heat than it receives from the Sun, unlike Uranus, which has lower internal heat.
2. Jupiter is the hottest planet because it generates more heat internally than it receives from the Sun, due to gravitational contraction and its large size.

Life Skills

Do it Yourself

Project

Do it Yourself

Assessment Paper – 1

A. 1. (b) Lemon 2. (a) One 3. (a) March-past of soldiers
4. (b) steel 5. (c) Ball and socket

B. 1. creeping 2. skin 3. free fall 4. tendons 5. rapid

C. 1. False 2. True 3. True 4. False 5. True

D. 1. Natural Magnet: Occurs naturally in nature, e.g., lodestone.
Artificial Magnet: Made by humans by magnetizing a material, e.g., bar magnet.
2. Herb: A small, non-woody plant with soft stems, e.g., mint, basil.
Shrub: A medium-sized, woody plant with multiple stems, e.g., rose, hibiscus.
3. Tendons: Connect muscles to bones.
Ligaments: Connect bones to other bones at joints.
4. Solid: Has definite shape and volume (e.g., ice).
Liquid: Has definite volume but no definite shape (e.g., water).
Gas: Has no definite shape or volume and expands to fill space (e.g., air).
5. Element: A pure substance made of only one type of atom (e.g., oxygen).
Compound: A substance made of two or more different types of atoms chemically combined (e.g., water).

E. 1 Proteins are called body-building foods because they help in the growth, repair, and maintenance of body tissues.
2. Adaptation is the process by which an organism adjusts to its environment to survive. The benefit is that it increases the organism's chances of survival and reproduction in specific conditions.
3. Lotus plants have broad, flat leaves that float on water, enabling them to absorb sunlight efficiently.
The leaves have a waxy coating that prevents water from staying on them, helping them remain dry.
4. Units are standard quantities used to measure physical quantities, such as meters for length or kilograms for mass.
5. Joints are the connections between two bones, allowing movement and providing support to the skeleton.

F. 1. cactus plants have several adaptations that help them survive in the desert despite the scarcity of water. Their thick, fleshy stems store water for long periods. They have a waxy coating on their leaves (which are reduced to spines) to reduce water loss through evaporation. Additionally, cactus plants have deep or widespread roots to absorb water from the soil quickly when it rains.
2. Water: Water is essential for digestion, nutrient absorption, temperature regulation, and removing waste from the body. It helps in maintaining bodily functions and hydration.
Roughage: Roughage, or dietary fiber, is important for proper digestion. It helps to regulate bowel movements, prevent constipation, and reduce the risk of digestive disorders.
3. The human skeleton consists of:
Skull: Protects the brain and sensory organs.
Spine (Vertebral Column): Protects the spinal cord and supports the body's structure.
Ribcage: Protects the heart and lungs.
Limbs and Joints: Allow movement and support body posture.

Pelvis: Supports the weight of the body and protects reproductive organs. The skeleton provides structure, supports movement, protects internal organs, and stores minerals.

4. Materials can be classified into three categories based on their ability to pass light:
   Transparent: Materials that allow light to pass through completely, e.g., glass, water.
   Translucent: Materials that allow some light to pass through, but not clearly, e.g., frosted glass, wax paper.
   Opaque: Materials that do not allow light to pass through, e.g., wood, metal.
5. Attraction: When opposite poles of magnets (North and South) are brought close, they attract each other.
   Repulsion: When like poles of magnets (North-North or South-South) are brought close, they repel each other.
   North (N) and South (S) poles attract: N ↔ S
   North (N) and North (N) poles repel: N ⊗ N

Assessment Paper – 2

A. 1. (d) 37° C 2. (b) Mercury 3. (b) Evaporation
   4. (a) Distillation 5. (c) Lion

B. 1. Fahrenheit 2. same 3. waste 4. water 5. Sirius

C. 1. True 2. True 3. False 4. True 5. False

D. 1. Traditional Thermometer: Uses mercury or alcohol to measure temperature, with a scale to read.
   Digital Thermometer: Uses electronic sensors to measure and display temperature digitally.
   2. Clinical Thermometer: Used to measure human body temperature (range: 35°C to 42°C).
   Laboratory Thermometer: Used to measure higher temperatures in labs (range: -10°C to 110°C or more).
   3. Evaporation: The process where a liquid changes into gas at the surface, occurring at any temperature.
   Vapourisation: The process of turning liquid into gas, including both evaporation and boiling.
   4. Homogeneous Mixture: A mixture that has a uniform composition throughout (e.g., salt water).
   Heterogeneous Mixture: A mixture with uneven distribution of components (e.g., salad, sand in water).
   5. Sieving: A process of separating particles of different sizes using a mesh or sieve (e.g., separating flour from bran).
   Filtration: A process of separating solids from liquids using a filter paper or membrane (e.g., water purification).

E. 1. Solubility is the ability of a substance to dissolve in a solvent, forming a homogeneous solution.
   2. Excretion is the process of removing waste products from the body. It is necessary to maintain the body's internal balance and prevent the buildup of harmful substances.
   3. Solar energy is harnessed through devices like solar panels, solar cookers, and solar water heaters to generate electricity, heat water, or cook food.
   4. Constellation Orion is one of the constellations which can be easily recognised in the night sky.

5. A laboratory thermometer is used to measure temperatures in experiments, with a range of -10°C to 110°C.

F. 1. A digital thermometer consists of a sensor (usually a thermistor) that detects temperature changes, an electronic circuit to convert the sensor's output into a digital signal, and a display screen (usually LCD) that shows the measured temperature. The thermometer is powered by a battery and has a probe or a metal tip for temperature measurement.

Steps to Take Temperature Using a Digital Thermometer:

i. Turn on the digital thermometer by pressing the power button.
ii. Place the thermometer in the appropriate position: under the tongue (oral), in the armpit (axillary), or rectally (for more accurate readings).
iii. Wait for the beep or signal indicating the measurement is complete (usually 10-20 seconds).
iv. Read the temperature displayed on the LCD screen.
v. Turn off the thermometer and clean the probe for reuse.

2. The water cycle (also called the hydrological cycle) describes how water moves through the Earth's atmosphere, surface, and underground systems in a continuous loop.

Steps of the Water Cycle:

i. Evaporation: Water from oceans, lakes, and rivers turns into vapor due to the heat of the Sun.
ii. Condensation: Water vapor cools and condenses to form clouds.
iii. Precipitation: When clouds become saturated, water falls back to Earth in the form of rain, snow, or hail.
iv. Infiltration/Runoff: Some water seeps into the ground (infiltration), while the rest runs off into rivers, lakes, and oceans.
v. Transpiration: Plants release water vapor into the air through small openings in their leaves.

3. Filtration is a process used to separate solid particles from a liquid or gas by using a filter medium that allows only the fluid to pass through.

Process of Filtration:

i. A mixture of solid and liquid is poured into a filter funnel containing a filter paper.
ii. The liquid passes through the filter paper, leaving the solid particles behind.
iii. The filtered liquid (filtrate) collects in a clean container, while the residue (solid particles) remains in the filter paper.

4. The necessary conditions for seed germination are:

i. Water: Seeds need water to soften their outer coat and activate enzymes that start the process of growth.
ii. Temperature: Seeds require an appropriate temperature, usually between 20°C to 30°C, to activate enzymes and facilitate growth.

5. Big Dipper is also known as Great Bear, and its Hindi name is Saptarishi. Seven stars of this constellation are clearly visible. They make a shape which appears like a rectangle with a tail. A cup-like container with a handle is called dipper. The Big Dipper looks similar.

The Little Dipper looks similar to the Big Dipper but appears somewhat smaller. The Pole Star or Polaris is a part of the Little Dipper, and is in a straight line from the rectangular part of the Big Dipper.