

Tanquiri.AI

Environmental Science

5

Teacher's Manual

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MASTERMIND

Chapter 1 : Water– The Essence of Life

1. a. (ii) b. (iii) c. (iii) d. (ii) e. (ii) f. (ii) g. (iii)
2. (a) heated (b) gills (c) solid (d) Transpiration (e) freshwater
3. (a) ✗ (b) ✓ (c) ✓ (d) ✓ (e) ✓
4. (a) Water exists in three forms—liquid, solid, and gas. Liquid water is found in rivers, lakes, and oceans and is used daily. Solid water is ice, seen in glaciers and snow-covered areas. Gaseous water is water vapour, which mixes with air and is invisible. These forms keep changing with temperature. All three forms are essential for the water cycle.

(b) The water cycle is the continuous movement of water in nature. Heat from the Sun causes evaporation of water into vapour. The vapour cools and forms clouds by condensation. When clouds become heavy, precipitation occurs as rain or snow. Water then collects in rivers and lakes. This cycle supports life and controls weather.

(c) Groundwater is water stored beneath the Earth's surface. Rainwater seeps through soil and fills underground spaces. It is an important source of freshwater where rivers are not enough. People get groundwater through wells and hand pumps. It is used for drinking and farming. We must save groundwater to avoid shortages.

(d) Rivers help in the development of life and economy in India. They provide water for drinking and irrigation. Farmers depend on rivers to grow crops. Rivers are used for transport and generating electricity. Many plants and animals live in rivers. Rivers are also considered sacred.

(e) Aquatic plants and animals are adapted to live in water. Fish have gills to breathe underwater and streamlined bodies to swim. Floating plants stay on the surface due to light bodies. Fixed plants are rooted in soil under water. Submerged plants grow fully underwater. These adaptations help them survive.

5. a. (ii) b. (v) c. (iv) d. (i) e. (iii)

Activity – Do it yourself.

Chapter 2 : Journey of a River

1. a. (iii) b. (ii) c. (ii) d. (ii) e. (ii)

2. (a) source (b) seasonal (c) dam (d) hydroelectric (e) pollution

3. (a) ✗ (b) ✗ (c) ✓ (d) ✓ (e) ✓

4. (a) A river is a natural flowing water body that usually begins in mountains or highlands. It starts due to melting snow, glaciers, or heavy rainfall. Small streams called tributaries join together to form a river. The river flows through valleys, plains, villages, and cities. Its speed depends on the slope of the land. Finally, the river meets a sea or ocean.

(b) Rivers are very useful to us in many ways. They provide water for drinking, cooking, and cleaning. Farmers use river water to irrigate their fields and grow crops. Rivers are used for transport and trade in many places. Dams on rivers help in producing hydroelectric power. Rivers also support plants, animals, and human life.

(c) Perennial rivers flow throughout the year because they get water from melting snow and rain. Examples of perennial rivers are the Ganga and the Brahmaputra. Seasonal rivers flow only during the rainy season. They depend mainly on rainfall for water. In summer, seasonal rivers may dry up.

Thus, perennial and seasonal rivers differ in water availability.

- (d) River pollution means making river water dirty and unsafe for use. Waste from homes, factories, and farms pollutes rivers. Plastic, chemicals, sewage, and garbage harm river water. Polluted rivers affect fish, animals, and plants living in water. People using polluted water may fall sick. Pollution disturbs the balance of the river ecosystem.
- (e) It is important to save water because fresh water is limited. Overuse and pollution can dry up rivers. Water is needed for drinking, farming, and daily activities. Saving water helps protect rivers and aquatic life. It ensures water availability for future generations. Using water wisely helps protect nature and life.

5. a. (iii) b. (v) c. (ii) d. (i) e. (iv)

Activity – Do it yourself.

Chapter 3 : The Mystery of Food

- 1. a. (ii) b. (ii) c. (iii) d. (iii) e. (iii)
- 2. (a) Drying (b) Microbes (c) warm (d) Sugar (e) teeth
- 3. (a) ✗ (b) ✓ (c) ✓ (d) ✓ (e) ✓
- 4. (a) Food gets spoiled mainly due to the growth of tiny living organisms called microbes. These microbes include bacteria and fungi. They grow fast in warm, moist, and uncovered food. Spoiled food may smell bad or change colour. Sometimes it becomes sticky or develops mould. Such food is unsafe to eat and can cause illness.
- (b) Food preservation means keeping food fresh and safe for a longer time. Drying removes moisture and slows the growth of microbes. Pickling uses salt, oil, or vinegar to stop

microbes from growing. Refrigeration slows down microbial activity. Salting and sugaring remove water from food. These methods help prevent food spoilage.

- (c) Groundwater is important for us because it provides water for daily use. Rainwater seeps into the soil and gets stored underground. People get groundwater through wells and hand pumps. It is used for drinking and cooking. Farmers use it for irrigation. Saving groundwater is very important.
- (d) Chewing food properly is important for good digestion. Digestion begins in the mouth when we chew food well. Teeth break food into smaller pieces. This makes it easy to digest in the stomach. Proper chewing also keeps teeth healthy. It helps the body absorb nutrients better.
- (e) We should avoid food wastage to save resources and food. Food takes time and effort to grow and prepare. Wasting food means wasting water and energy. We should take only as much food as we can eat. Leftover food should be stored properly. Avoiding wastage helps needy people.

5. a. (v) b. (iv) c. (iii) d. (ii) e. (i)

Activity – Do it yourself.

Chapter 4 : Our School: A Happy Place

- 1. a. (ii) b. (ii) c. (ii) d. (ii) e. (ii) f. (ii)
- 2. (a) green (b) electricity (c) trees (d) zebra (e) firecrackers
- 3. (a) ✓ (b) ✗ (c) ✗ (d) ✓ (e) ✓
- 4. (a) A green school is a school that cares for nature and the environment. It teaches students to save water and electricity. Green schools reduce waste by reusing and recycling materials. Trees and plants are grown to keep the

surroundings fresh. Students are encouraged to keep the campus clean. Such schools help protect the Earth.

- (b) We can save water in school and at home by closing taps properly. Leaking taps should be repaired quickly. We should use water only when needed. Rainwater can be collected and reused. We must not waste water while washing hands. Saving water helps protect future resources.
- (c) Students can act as School Explorers to improve their school. They observe classrooms, corridors, and playgrounds. They check if lights and fans are switched off when not needed. They see if waste is properly separated. They also take care of plants and trees. This helps keep the school clean and green.
- (d) We can keep classrooms cool in a natural way by using light colours on walls. Windows should be kept open for fresh air. Trees should be planted near classrooms. Curtains can be used to block strong sunlight. Fans should be used wisely. These steps keep classrooms comfortable.
- (e) Good behaviour means being kind, polite, and helpful to everyone. It makes the school peaceful and happy. Speaking politely shows respect. Helping others builds friendship. Following rules keeps discipline. Good behaviour helps everyone feel safe.

5. a. (ii) b. (v) c. (iv) d. (iii) e. (i)

Activity – Do it yourself.

Chapter 5 : Our Vibrant Country

1. a. (iii) b. (i) c. (ii) d. (ii) e. (ii)

2. (a) Tiranga (b) spectacles (c) 24 (d) Punjab (e) Ashoka

3. (a) ✓ (b) ✓ (c) ✓ (d) ✓ (e) ✗
4. (a) Republic Day is important for Indians because it marks the adoption of the Constitution. On this day, India became a republic in 1950. The Constitution gives us rules to run the country. It ensures equality, justice, and freedom for citizens. Republic Day reminds us of our rights and duties. It fills us with national pride.
- (b) The national flag of India has three colours and a symbol. Saffron stands for courage and sacrifice. White represents peace and truth. Green shows growth and prosperity. The Ashoka Chakra in the centre stands for progress and justice. Together, the flag represents unity and values of India.
- (c) Unity in Diversity means people with different cultures live together peacefully. Indians speak different languages and follow different traditions. They wear different clothes and celebrate many festivals. Still, they respect each other and live as one nation. This diversity makes India unique. Unity is the strength of our country.
- (d) Indian currency notes tell us about our country and culture. They show the picture of Mahatma Gandhi. National symbols like the Ashoka Chakra are printed on them. Notes have many languages written on them. This shows India's linguistic diversity. Currency notes teach us about unity and values.
- (e) We can be proud and responsible citizens by following rules and laws. We should respect the national flag and anthem. Keeping our surroundings clean is important. We must respect people of all cultures and religions. Helping others shows good citizenship. A responsible citizen works for the country's progress.

5. a. (v) b. (ii) c. (iv) d. (i) e. (iii)

Activity – Do it yourself.

Chapter 6 : Some Unique Places

1. a. (ii) b. (iii) c. (iii) d. (iii) e. (ii) f. (ii)
2. (a) breathe (b) Andaman (c) sunrise (d) Kerala (e) roots
3. (a) ✗ (b) ✓ (c) ✓ (d) ✗ (e) ✓ (f) ✓ (g) ✓
4. (a) The Andaman and Nicobar Islands are considered special because they have dense tropical rainforests and rich marine life. These islands are home to many rare plants and animals. Coral reefs around the islands provide shelter to sea creatures. Some birds like the Andaman hornbill are found only here. Indigenous communities live close to nature on these islands. They follow traditional ways to protect their environment.

(b) The Sundarbans is an important place because it is the world's largest mangrove forest. It is located where the Ganga meets the Bay of Bengal. Mangrove trees protect coastal areas from floods and storms. Their special roots help them survive in muddy and salty soil. Many animals, birds, and fish live here. People also depend on the forest for their livelihood.

(c) People in Northeast India help protect nature by living close to forests and rivers. They follow traditional ways that do not harm the environment. Communities protect rare birds like the Greater Adjutant Stork. They also take care of forests and wildlife together. Living root bridges are made without cutting trees. These actions help conserve nature for the future.

- (d) The Western Ghats are unique because they are rich in plants and animals. Many species found here are not seen anywhere else. Rivers like Godavari and Krishna start from these hills. The region has dense forests and medicinal plants. Animals like the lion-tailed macaque live here. The Western Ghats are a biodiversity hotspot.
- (e) Places like Kanyakumari teach us the importance of nature and culture. Kanyakumari is where three seas meet. It is famous for its sunrise and sunset views. The place has temples and memorials that show India's heritage. People learn to respect nature and traditions here. Such places connect us to our country's beauty.
- (f) The Western Ghats are considered a biodiversity hotspot because they have a great variety of life forms. Thousands of plant and animal species live here. Many of them are rare and endangered. Protected areas help conserve wildlife. Forests also provide clean air and water. Protecting this region helps maintain nature's balance.
- (g) Local communities help conserve the Sundarbans by planting mangrove saplings. Mangroves prevent soil erosion and floods. People use forest resources carefully. They do not harm animals or cut trees unnecessarily. Awareness programs teach conservation methods. Community efforts keep the Sundarbans safe.

5. a. (ii) b. (v) c. (iv) d. (i) e. (iii)

Activity – Do it yourself.

Chapter 7 : How Things Work

1. a. (iii) b. (ii) c. (ii) d. (ii) e. (i)

2. (a) Sun (b) save (c) Electricity (d) pollution (e) Wind

3. (a) ✓ (b) ✗ (c) ✓ (d) ✗ (e) ✓
4. (a) Energy is the power that helps us do work and perform activities. It helps us move, cook food, and run machines. Without energy, nothing can move or grow. We use energy at home, school, and outside. Our body also needs energy to work. Therefore, energy is very important in daily life.
- (b) Three main sources of energy used around us are food, fuel, and electricity. Food gives energy to humans and animals. Fuels like petrol and gas are used for cooking and transport. Electricity runs machines and appliances. These sources help us in daily activities. Energy sources make life comfortable.
- (c) Solar panels help us use solar energy by collecting sunlight. They convert sunlight into electricity. This electricity can be used in homes and schools. Solar energy does not cause pollution. It is available every day. Solar panels help save fuel and electricity.
- (d) We should use clean sources of energy instead of fuels like coal because fuels cause pollution. Burning coal releases smoke and harmful gases. This pollutes air and harms health. Clean energy like solar and wind is safe. It can be used again and again. Clean energy protects the environment.
- (e) We can save energy in daily life by switching off lights and fans when not in use. We should use energy-saving appliances. Walking or cycling short distances saves fuel. We must avoid wasting electricity. Using solar energy helps save energy. Saving energy protects nature.
5. a. (iii) b. (i) c. (ii) d. (v) e. (iv)

Activity – Do it yourself.

Chapter 8 : Clothes: How Things Are Made

1. a. (ii) b. (iii) c. (ii) d. (iii) e. (iii)
2. (a) tailorbird (b) weft (c) natural (d) Spinning (e) electricity
3. (a) ✗ (b) ✓ (c) ✗ (d) ✗ (e) ✓
4. (a) Weaving is the process of making fabric by crossing threads together. Two sets of threads are used in weaving. The vertical threads are called warp. The horizontal threads are called weft. These threads are interlaced over and under each other. This process makes strong fabric. Weaving is used to make clothes and other items.

(b) Handloom weaving is done by hand using a loom. It does not use electricity or machines. This method is eco-friendly and uses natural fibres. It shows the culture and tradition of India. Many skilled weavers depend on it for livelihood. Handloom fabrics are strong and beautiful.

(c) Spinning is the process of making thread from fibres. Cotton fibres are twisted together during spinning. The tool used for spinning is called a charkha. Spinning makes long, strong threads. These threads are later used for weaving cloth. Spinning is an important step in making fabric.

(d) Natural fibres are obtained from plants and animals. Cotton, wool, silk, and jute are natural fibres. They are soft and biodegradable. Synthetic fibres are man-made fibres. Nylon and polyester are examples of synthetic fibres. Synthetic fibres are strong but not eco-friendly.

(e) People reuse and recycle old clothes in many ways. Old clothes are given to younger children or needy people. Some clothes are turned into bags or cleaning cloths. Reusing

clothes reduces waste. It saves water, fabric, and money.
Recycling clothes helps protect the environment.

5. a. (iii) b. (i) c. (ii) d. (v) e. (iv)

Activity – Do it yourself.

Chapter 9 : Rhythms of Nature

1. a. (iii) b. (ii) c. (i) d. (ii) e. (ii)
2. (a) axis (b) Spring (c) Rainy (d) cotton (e) east
3. (a) ✗ (b) ✓ (c) ✗ (d) ✓ (e) ✓
4. (a) Day and night change on Earth because of its rotation on its own axis. As the Earth rotates, one part faces the Sun and has day. The part that turns away from the Sun has night. The Earth takes about twenty-four hours to complete one rotation. This rotation happens continuously. Because of this, we experience regular day and night.
(b) Seasons affect the life of plants and animals in many ways. Plants grow, flower, or shed leaves depending on the season. Some animals migrate to warmer places during winter. Some animals go into deep sleep called hibernation. Birds build nests in certain seasons. Thus, seasons bring many changes in nature.
(c) People change their habits according to different seasons. In summer, people wear cotton clothes and drink more water. During the rainy season, people use umbrellas and raincoats. In winter, woollen clothes are worn to keep warm. Food habits also change with seasons. Festivals and daily routines depend on seasonal changes.
(d) India has six main seasons with special features. Spring is pleasant and flowers bloom. Summer is the hottest season of

the year. Rainy season brings heavy rainfall and fills rivers. Autumn is the harvest season with clear skies. Pre-winter and winter are cold seasons with shorter days.

- (e) A seasonal chart helps us learn about changes in nature throughout the year. It shows how plants, animals, and weather change in each season. Students can record observations regularly. It helps us understand patterns of nature. Seasonal charts improve observation skills. They help us live in harmony with nature.

5. a. (iii) b. (i) c. (iv) d. (v) e. (ii)

Activity – Do it yourself.

Chapter 10 : Earth: Our Shared Home

1. a. (iii) b. (i) c. (ii) d. (ii) e. (ii)
2. (a) India (b) South America (c) winter (d) marigold
3. (a) ✗ (b) ✓ (c) ✓ (d) ✗
4. (a) When we look at the Earth from space, it appears as a beautiful blue planet. It looks round and shining with white clouds around it. Large oceans, green lands, and swirling clouds can be seen clearly. There are no visible borders between countries. This view shows that Earth is one shared home. It reminds us that all people live together on one planet.

(b) People in different countries are connected through trade, travel, and ideas. Food, clothes, and goods move from one country to another. Music, stories, and inventions are shared worldwide. Technology helps people communicate easily. Cultures influence each other through exchange. This connection makes the world like one big family.

- (c) Chillies became part of Indian food after being brought from South America. Portuguese travellers introduced chillies to India about 400–500 years ago. The chilli plant adapted well to India's climate and soil. People liked its strong and spicy taste. Slowly, chillies replaced black pepper in many dishes. Today, chillies are an essential part of Indian cooking.
- (d) Bird migration is the movement of birds from one place to another during seasons. Birds migrate in search of food and better weather. Many birds come to India during winter from colder regions. Migratory birds help farmers by eating harmful insects. This protects crops naturally. Migration helps maintain balance in nature.

5. a. (iv) b. (i) c. (iii) d. (ii)