1 Crop Production and Management

Exercise

A. Multiple Choice Questions (MCQs) :
Choose the correct option :

Ans. 1. c. 2. b. 3. a. 4. c. 5. b. 6. c. 7. d. 8. c.

B. Fill in the blanks :

1. plough 2. summer 3. winter 4. chemical 5. Dairy

C. State True or False:

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

D. Very Short Answer Type Question :

1. Before sowing the seeds it is important to prepare the soil. To do so ploughing of soil is done. The loosening and turning of a few inches of the top soil is known as ploughing.
2. Weeds are those unwanted and uncultivated plants that grow along with the crop plants.
3. Water is a key input for crop production. Supplying of water to the crop plants from the wells, canals or water reservoirs is known as irrigation.
4. The organisms that damage or destroy the crops are known as pests.
5. The branch of agriculture that deals with the rearing of animals (livestock) is known as animal husbandry.
6. This is done either by hand or by using animals such as bullocks or camels. The harvested crop is spread on the ground and the bullocks or camels are made to walk over them again and again till the grains come out of the chaff. Tractors are used for doing this job in modern times. The leaves and the stems of the crops get crushed into smaller pieces. Although, the grains come out of the chaff, they still remain mixed with the chaff and crushed leaves as well as the stems of the plants. The grains are then separated from the chaff, dried leaves and stems of the crops.
7. Threshing is the process by which the grains are released from the chaff.
8. Soil, temperature irrigation etc.

E. Short Answer Type Questions :

1. The various agricultural tasks are as follows :
   - Soil preparation
   - Sowing of seeds
   - Irrigation
   - Crop protection
   - Threshing
   - Selection of seeds
   - Adding manure or fertiliser
   - Weeding
   - Harvesting
   - Storage of grains
2. This system involves providing water drop by drop at the roots of the plants. Thus water is not wasted. This system is practiced in regions where water availability is poor.
3. This method is used where the soil cannot retain water for long or where sufficient water is not available. Rotating nozzles are attached to perpendicular pipes at regular intervals. Water is sprinkled on crop as if it is raining.

4. Wastage of seeds
5. No
6. So that it can hold more water and air.
7. So that they may get enough nutrients from soil.
8. Grainaries and soils
9. Excess water supply is called water logging.
10. Manual removal and removal with chemical. Removal with chemical is best.
11. This is done either by hand or by using animals such as bullocks or camels. The harvested crop is spread on the ground and the bullocks or camels are made to walk over them again and again till the grains come out of the chaff. Tractors are used for doing this job in modern times. The leaves and the stems of the crops get crushed into smaller pieces. Although, the grains come out of the chaff, they still remain mixed with the chaff and crushed leaves as well as the stems of the plants. The grains are then separated from the chaff, dried leaves and stems of the crops.
12. When the quality of grains is good,
    1. Crop with more grains 2. Crops with better quality of grains,
    3. Crop which are disease resistant
13. The various traditional methods of drawing water out from wells, lakes and canals were moat (pulley system) chain pump, dhekli and rahat (lever system). Cattle or human labour is used in these methods. These methods are cheaper but less efficient.

F. Long Answer Type Questions :

Ans. 1. **Field Fallow**

One method of allowing land to naturally regain the nutrients is to leave it free or fallow for one or more season. The dead plants, animals and other organic matter that get collected on the field are decomposed by microorganisms. Therefore, the nutrients are returned to the soil.

Mixed Cropping

The practice of growing two or more crops simultaneously on the same piece of field is known as mixed cropping. It is an age-old practice in our country. Farmers mix the seeds of two crops and sow them in the field. The crops are chosen in such a way that the products and waste materials from one crop help in the growth of the other crop. For example, if a cereal crop such as wheat is grown along with a leguminous crop such as pulse (e.g., gram), then the uptake of nitrogen from the soil by cereal is compensated by the addition of nitrogen in the soil by the nitrogen-fixing bacteria like Rhizobium in the legume. This has two advantages :

1. The fertility of the soil is increased.
2. Ultimately, yield of the crop is improved.

Crop Rotation

Wheat crop is planted during the month of November and harvested in March and April. Rice crop is planted in June-July and harvested in October and November. Now in between these two seasons, the land lies empty. Instead of leaving it as it is, the farmers plant a pulse crop in this time. A pulse crop does not take as long as wheat or rice to grow. So, by the time the farmer has to plant the cereal crops, the pulse is ready to be

harvested. The process of growing a crop in between two similar crops is called crop rotation.

Uses of crop rotation

- It maintains the fertility of the soil.
- Gives better yield.
- Prevents crop diseases and pests.

2. **Soil Preparation**

Before sowing the seeds. It is important to prepare the soil. To do so ploughing of soil is done. The loosening and turning of a few inches of the top soil is known as **ploughing**. It is also called **tilling**.

It helps in loosening the soil so that it can hold more water and air. The loose soil also helps in the growth of earthworms and microbes which make the soil rich in nutrients. It is also easy to mix the fertilisers and manures in the loose soil. It helps in removing the weeds by uprooting them.

These are wild, unwanted plants which grow along with the crops and the useful plants. Because of the presence of them, the crops and other useful plants do not get air, water and nutrition from the soil. They compete with the crops and finish their share of water and nutrition. Therefore, it is important to remove such plants from the soil before sowing the seeds.

3. Do Yourself

4. Do Yourself

G. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself.

2 The Microbial World

Exercise

A. Multiple Choice Questions (MCQs) :

Choose the correct option :

1. C. **2.** b. **3.** d. **4.** a. **5.** c. **6.** a. **7.** b. **8.** a.

B. Fill in the blanks :

1. Microscope **2.** Comme **3.** Virus **4.** Dysentery
5. Antibiotics **6.** Xanthomonas

C. State True or Flase :

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

D. Who am I?

1. Microbe **2.** Yeast **3.** Penicillin **4.** Mosquito
5. Edward Jenner **6.** Yeast **7.** Bacterium **8.** Fungus/Bacterium

E. Do Yourself

F. Very Short Answer Type questions :

Ans. 1. Microorganisms can be observed with **microscopes** of different magnification.

2. The bacteria which do not require oxygen are called anaerobic bacteria.

3. Algae are found fresh water ponds, lakes, reservoirs, damp places like barks of trees, on the rocks at river banks.

4. Viruses living in bacteria are called bacteriophages.
5. Saprophyte and parasitic :

G. Short Answer Type questions :

Ans. 1. Food should always be kept covered to prevent food poisoning. Certain microorganisms (bacteria and fungi) grow on cooked food kept for long or stored. They produce toxic substance and make the food poisonous. Consumption of spoiled food causes vomiting, diarrhea and headache.

2. No, microorganisms cannot be seen with the naked eye. They can be observed with microscopes of different magnification.

3. Milk gets curdled when curd is added to it because bacteria increases by reproduction rapidly and convert the milk into curd.

4. The food can be preserved by the following methods :
i. To reduce food wastage by avoiding spoilage.
ii. Increases the storage period of foodstuff.
iii. Retains nutritive value for a longer period.
iv. Ensures food availability during off season.

5. The commercial was of micro organisms are : making curd, making cheese, production of alcohol, wine, vineger, making pickles, improving flavour of butter, making beverages, tenderisation of meat, Preparing dough for bread, idlis, dose and bhaturas,

H. Long Answer Type questions :

Ans. 1. Viruses are the most primitive microorganisms which are ultramicroscopic. It is a controversial organism as it shows both living and non-living features. Many, a diseases in animals and plants are caused by viruses which literally means poison.

2. The three benefits of fungi are :
1. The fungus Aspergillus is used for producing large quantities of citric acid which is used in soft drink industry.
2. Preparing dough for bread, idlis, dose and beaters.
3. Fungi like mushrooms are edible which are source of protein.

3. The different types of bacteria are :
(i) Coccus or round shaped : The bacteria which have a spherical shape are called coccus forms (Singular coccus, plural cocci).
Example : Streptococcus which causes pneumonia.
(ii) Bacillus or rod shaped : The bacteria which are rod shaped are known as bacillus. These are with or without flagella. They cause certain dangerous diseases in man like tuberculosis, diphtheria, tetanus, leprosy, etc.
Examples : Bacillus typhosus which causes typhoid.
(iii) Spirullum or vibrio shaped : These bacteria are cork-screw shaped or comma shaped. These may have one or more cilia or flagella on their body surface.
Example : Vibrio cholerae which causes cholera.

4. Certain bacteria and fungi are used in the production of medicines called antibiotics that destroy certain disease-causing microbes. Penicillin (obtained from the fungus Penicillium), streptomycin, and tetracycline (both obtained from Streptomyces bacteria) are examples of antibiotics.

5. Fungi lack chlorophyll. Their cell walls are made up of a material different from plant cell walls. They get their food from other living things like animals; but fungi are not animals. Animals digest their food inside their body; fungi digest it outside their body by releasing enzymes on the food. Once the food is digested, it is absorbed by the fungus. All saprophytic fungi obtain their food like this. When they live as parasites, fungi absorb ready-made food from their host. Fungi grow best when there is warmth and enough moisture.

6. i. To reduce food wastage by avoiding spoilage.
ii. increase the storage period of foodstuff.
iii. To retain nutritive value for a longer period.
iv. To Ensure food availability during off season.

7. (a) To, Yeast, a micro organism is used on large scale for the production of alcohol, wine and beer. For this purpose, yeast is grown on natural sugars present in fruit juices and grains like barley, wheat and rice. Yeast brings about conversion of sugars into alcohol and carbon dioxide.
(b) Nitrogen fixing soil bacteria and blue-green algae are able to fix nitrogen compounds. This process of nitrogen fixation enriches the soil with nitrates which are used by plants cells in the synthesis of proteins.

I. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself

Project/Activity

Ans. Do yourself

3 Synthetic Fibres and Plastics

Exercise

A. Multiple Choice Questions (MCQs) :
Choose the correct option :

Ans. **1.** c. **2.** a. **3.** c.

B. Fill in the blanks :

Ans. **1.** A **synthetic fibre** can be used to make different kinds of things.
2. **Nylon** is the first fully synthetic fibre.
3. The fabrics made from petroleum last longer.
4. Polythene is prepared by the polymerisation of **ethene** gas.

C. Match the following :

	Column A		**Column B**
Ans. 1.	Biodegradable	a.	Synthetic fibres
2.	Quick drying	b.	Natural fibre
3.	Acrylic fibre	c.	Synthetic wool
4.	Cellulose	d.	Cotton

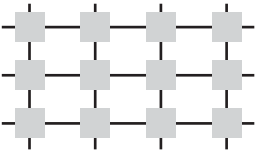
D. Very Short Answer Type questions :

Ans. **1.** The fibre obtained from nature is called natural fibre, cotton wool, silkare the examples of natural fibre.
2. Man-made fibres made from synthetic polymers are called synthetic fibre.

3. nylon was the first synthetic fibre.
4. Plastics is a polymer which can be easily moulded into any shape on heating.
5. Fibre consist of short chain of one unit are monomer.

E. Short answer Type questions :

Ans. 1. Polymers are the fibres consisting of long chains of smaller molecules. Many man-made materials are polymers. The simplest definition of a polymer is something made up of many units. The word 'polymer' comes from two Greek words; poly meaning many and mer meaning part or unit. So, we can say that a polymer is a large molecule (macromolecule) composed of repeating structural units typically linked to each other.

2. a. b. 

3. A **thermoplastic** is a plastic that melts when exposed to heat and can be bent and remoulded easily. Polyethylene and polypropylene are thermoplastics.
Heavy cross linking after shaping the plastic forms a class of plastics called thermosetting plastics. Unlike thermoplastic, thermosetting plastics cannot be remoulded after reheating. Examples of thermosetting plastics are melamine and bakelite.

F. Long Answer Type questions :

Ans. 1. Rayon, is called artificial silk. It is shiny and lustrous and can absorb moisture too. Because of the property of absorbing moisture, clothes made of rayon can absorb sweat and are therefore preferred over clothes made of other synthetic fabrics.

2. The advantages of using clothes made from synthetic fibres :
Clothes made of synthetic fibres have become very popular because of the following reasons:
(i) They do not shrink.
(ii) They are quick drying and need very little or no ironing. That is why, they are called wash-and-wear fabrics.
(iii) **Disadvantages** of using clothes made from synthetic **fibres :**
(i) Synthetic fibres do not absorb water or sweat in hot and humid weather, therefore the clothes made of synthetic fibre stick to the body and make the wearer uncomfortable.
(ii) Synthetic fibres are non-biodegradable.

3. Most of the plastics waste (after being picked up by rag-pickers) ends up floating in the nearby water body and becomes a home for many disease-causing germs.
If plastics waste is buried in the soil, it remains there for a long time and does not allow rainwater to seep through the ground. Plants growing in that area do not get sufficient supply of water and their growth is affected.
Burning plastic wastes is not a very good option as it does not get

completely burnt. Moreover, during burning, it releases many toxic gases and pollutes the environment and causes health hazard.

G. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself

Project/Activity

Ans. Do yourself

4 Metals and Non-metals

Exercise

A. Multiple Choice Questions (MCQs) :
Choose the correct option :

Ans. 1. b. **2.** d. **3.** c. **4.** a **5.** c

B. Fill in the blanks :

Ans. 1. Almost all metals are **solid** at room temperature.
2. Graphite is a non-metal yet it is a good conductor.
3. Non-metallic oxides are also called **acidic** oxides.
4. Non-metals do not react with **water**.
5. Gold and **silver** are used for making jewellery.

C. Write one word for the following :

Ans. 1. Iodine **2. Diamond**
3. Sodium **4. Graphite**

D. Very Short Answer Type questions :

Ans. 1. On the basis of chemical reaction, metals are the elements which form positive ions by losing electrons.
2. Iron nails + Copper sulphate → Iron sulphate + Copper
3. Sodium. **4.** Graphite
5. Allotropes of an element are the substances with same chimical properties but different physical properties. Graphite and diamond are the allotropes of carbon.

E. Short answer Type questions :

Ans. 1. We can prevent rusting by the following two ways :
(i) By painting (ii) By oiling and greasing.
2. Metals are used for making electrical cables because metals are good conductor of electricity.
3. A more reactive metal can displace a less reactive metal from its compound in solution or molten state.
Example :
Copper sulphate + Zinc ⟶ Zinc sulphate + Copper
4. Copper so copper vessels turn green with the passage of time.
5. Malleability : The property by virtue of which metals can be beaten into thin sheets.
Example : Aluminiun foil, silver varak on burfi.
Ductility : Metals can be drawn into wires, and this tendency of metals is called ductility.

For example, copper and silver

F. Long Answer Type questions :

Ans. 1. Uses of Metals :

(i) Iron is used for making automobiles, machinery, pipes, containers, nails, etc.

(ii) Gold and silver are used for making jewellery.

Uses of Non-metals :

(i) Hydrogen is used for the synthesis of ammonia and methyl alcohol, in welding torches, etc. (ii) Sulphur is used in the manufacture of compounds like sulphuric acid and sulphates and in the production of matches, dyes and gunpowder.

2. (a) $Zn + H_2SO_4 \longrightarrow ZnSO_4 + H_2$
Zinc, Sulphuric acid, Zinc sulphate, Hydrogen gas

(b) $Mg + H_2SO_4 \longrightarrow MgSO4 + H_2$
Magnesium, Sulphuric acid, Magnesium sulphate, Hydrogen gas

(c) $2Al + 6HCl \longrightarrow 2AlCl_3 + 3H_2$
Aluminium, Hydrochloric acid, Aluminium chloride, Hydrogen gas

3. A reaction in which more reactive metal displaces the less reactive metal, is called displacement reaction.

Iron is a metal with more reactivity than copper. Et can displace copper from its alt solution.

We can understand the displacement of copper from its salt solution by iron with the help of this activity.

Activity :

Testing reactivity of metals :

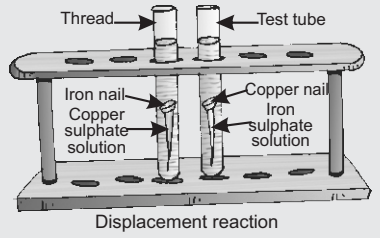
Set up the two test tubes as shown in the figure below.

Take a clean copper nail and an iron nail.

Place the copper wire in a solution of iron sulphate and the iron nail in a solution of copper sulphate.

Write your observations after sometime.

In which test tube do you find that a reaction has occurred?



Displacement reaction

You will observe that the reaction has occurred in the test tube containing iron nail and copper sulphate solution. Iron takes the sulphate away from copper. You see that a reaction takes place and copper is left by itself. Now, we can say that iron has displaced copper from copper sulphate.

Copper sulphate + Iron $\longrightarrow$ Iron sulphate + Copper

4. Both air and water are needed together to rust the iron. The only way to prevent iron from rusting is to keep air and water away from it. It can be done as follows :

1. By painting. 2. By greasing and oiling.
3. By using cilica oiling. 4. By electroplating.

5. **By galvanisation :** The process of coating a thin layer of zinc on the surface of iron objects is called galvanisation.

G. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself

Project/Activity

Ans. Do yourself

5 How Things React

Exercise

A. Multiple Choice Questions (MCQs) :
Choose the correct option :

Ans. 1. d. **2.** a. **3.** b.

B. Fill in the blanks :

Ans. 1. All fuels release **carheat** on burning and differ in efficiency.
2. The lowest temperature at which a substance catches fire is called its **ignition temperature**.
3. Burning is also known as **combustion**.
4. The **C** zone of the candle flame is called the non-luminous zone.
5. Large amounts of **carbon mono-oxide** can cause death.

C. State True or False :

Ans. 1. True **2.** False **3.** True **4.** True

D. Very Short Answer Type questions :

Ans. 1. Zone A
2. A flame is a zone of combustion of gaseous substances.
3. The process of burning of a fuel is called combustion.
4. Petrol, kerosene, alcohol, liquefied petroleum gas [LPG] etc.

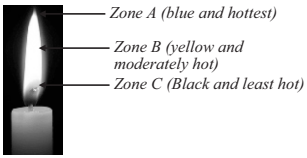
E. Short Answer Type questions :

Ans. 1. The minimum temperature at which a substance catches fire and starts burning is known as its ignition temperature.
2. Calorific value is the amount of heat produced during combustion. An ideal fuel produces large amount of heat.
3. (i) Coal dust (ii) Forest fire
4. Being heavier than air, carbon dioxide settles down and cuts of the supply of oxygen, which extinguishes the fire. That is why carbon-dioxide is used as fire extinguisher gas.

F. Long Answer Type questions :

Ans. 1. The substance used for producing heat energy is called fuel.
The four characteristics of fuel :
1. It should be cheap and easily available. 2. It is easy to store, transport and handle.
3. It causes minmum pollution.
4. It should have a high calorific value, i.e., it produces large amount of heat per unit consumption.

2.



Three distinct zones of a candle flame.

3. (i) Carbon dioxide : The fuel, on combustion produces many harmful gases such as carbon, dioxide, carbon monoxide nitrogen dioxide sulphur dioxide. These gases cause many diseases and are disastrous. The excess of carbon dioxide in air traps heat energy with the result, the temperature of the Earth is gradually rising.

(ii) Carbon monoxide : It is a highly poisonous gas. Very small amounts of it in the air cause breathing problems. Large amounts of it can cause death.

(iii) Nitrogen dioxide : This gas is soluble in water. It dissolves in water vapour present in air and then by the action of sunlight changes to nitric acid. When it rains, the nitric acid is washed down to Earth where it weakens the buildings and damages the plants and trees thereby causing deforestation. Such a rain is called acid rain.

(iv) Sulphur dioxide : This gas causes lung problems. It also dissolves in water vapour to produce sulphuric acid. When it rains, the acid in it damages buildings, plants and trees.

(v) Carbon particles and ash : Carbon particles of smoke or the ash get suspended in the air. Excessive amount of them in the air causes breathing problems.

G. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself

Project/Activity

Ans. Do yourself

6 Conservation of Biodiversity

Exercise

A. Multiple Choice Questions (MCQs) :

Choose the correct option :

Ans. 1. d. **2.** c. **3.** c. **4.** c.

B. Fill in the blanks :

Ans. 1. Dinosaurs and **Dodo** are examples of extinct species.

2. India contributes over **World** to the global diversity.

3. The plants found typically in particular area from the **flora** of that area.

4. Deforestation is clearing of forests for using the land for other purposes.

5. Replanting trees in forests is called **Afforestation**.

6. The seasonal movement of animals in group from one habitat to another is called **Migration**.

C. State True or False :

Ans. 1 False **2.** True **3.** True

4. False **5.** True

D. Match the columns :

Ans.

Column A	Column B
1. Endangered species	a. Biosphere reserve
2. National parks/ wildlife sanctuaries	b. Paper
3. Urbanisation	c. Floods and soil erosion
4. Recycling	d. Asiatic lion
5. Deforestation	e. Loss of biodiversity

E. Very Short Answer Type questions :

Ans. 1. (i) Giant Panda (ii) Asiatic lion (male)
b. Gir National park (Gujarat)
c. Replanting trees in forests in called afforestation.
d. Plant and animal species confined to a specific geographical area are called endemic species.

F. Short Answer Type questions :

Ans. 1. The plants found typically in particular area form the flora of that area. The term **fauna** represents the wild animals found in a particular place or particular geographical region

2. **Deforestation has following serious effects on environment :**
(i) It disturbs the natural living places of many plants and animals.
(ii) Pollution level increases. Level of carbon dioxide in the atmosphere would go up as fewer trees would mean that less CO_2 would be used up in photosynthesis. This would lead to global warming.
(iii) Increased temperature on Earth would disturb the water cycle and may reduce rainfall. Droughts may occur.
(iv) It would lead to soil erosion and floods.
c. The variety and variability among living organism on the Earth is known as biodiversity.
d. Wise use of natural resources with an aim to preserve and protect them is called conservation.

G. Differentiate between the following :

Ans. 1. Endangered species : Species that are at a high risk of getting extinct in their habitat are called endangered species.
Extinct Species : Species that no longer exist anywhere on the Earth are called extinct species. Dinosaurs and dodo bird are examples of extinct species.

2. The plants found typically in particular area form **the flora** of that area. The term **fauna** represents the wild animals found in a particular place or particular geographical region.

3. Deforestation is clearing of forests for using the land for other purpose.
Afforestation is replanting trees in forests.

4. A National Park is an area which is strictly reserved for the protection of wildlife. National parks preserve flora, fauna, landscape and historic objects of an area. Activities like grazing and cultivation are not allowed in a national park.
In a sanctuary, protection is given only to the animals (fauna). Activities such as harvesting of timber and collection of minor forest products are

allowed so long as these activities do not interfere with the well-being of animals. Killing (poaching) or capturing of animals is strictly prohibited.
Biosphere reserves are large protected areas wherein people are an important component of the system. These are multipurpose protected areas being developed to.

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H. Give reasons for the following :

Ans. 1. India is called a mega biodiversity centre. It contributes 8% the global diversity.

2. Biodiversity needs to be conserved because It benefits the economy, society and environment. It provides our economy and society with medicine, food clothing and shelter.

3. Birds migrate to escape the inhospitable winter conditions, to find plenty of food and lay eggs at a warm place where they can incubate early.

4. Some areas of the earth are called mega biodiversity centre because these places have a range of animals, and plants. These places are rich in biodiversity.

5. Deforestation leads to depletion of wildlife because animals live and depend in forest. They take their food and shelter.

I. Long Answers Type Questions :

Ans. a. The three effects of deforestation on wild life are :
(i) Herbivores do not get food in the absence of trees and plants. So the food chajn is disturbed.
(ii) Some animals live on trees. They become homeless.
(iii) Wildlife cannot survive without trees. They need oxygen fro respiration.

b. Causes of Wildlife Depletion : Wildlife is a valuable biological resources. The various factors responsible for wildlife destruction and depletion are:
Habitat loss : The destruction of natural habitats of animals by deforestation disturbs the life, growth and reproducing timing of wild animals.
Indiscriminate hunting : Indiscriminate killing and poaching of wild animals for food, skin, fur, horn, tusk, etc.
Pollution : Air, water and soil pollution is also responsible for death and elimination of sensitive wild species.

c. Project Tiger was launched by the Indian government in 1973 to protect the tigers in the country. The tiger population in India has been decreasing sharply over the years. In 1948, population of tigers was about 20,000. In 1989 it was about 4,000 and it went about 1,233 in 2000.

Realizing this decline, the Project Tiger was initiated by the Government of India. At present, there are 27 Tiger Reserves in 17 Indian States.

d. A National Park is an area which is strictly reserved for the protection of wildlife. National parks preserve flora, fauna, landscape and historic objects of an area. Activities like grazing and cultivation are not allowed in a national park.

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J. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself

Project/Activity

Ans. Do yourself

7 The Cell

Exercise

A. Multiple Choice Questions (MCQs) :
Choose the correct option :

Ans. 1. c. **2.** c. **3.** d. **4.** c. **5. d.**

B. Fill in the blanks :

Ans. 1. Cells are the 'building block of life'.
2. A **tissue** is a group of cells of the same size, shape and function.
3. In **multicellular** organisms, the structure of the body is organised and complex.
4. Cell membrance is also known as the **Plasma membrane**.

C. State True or False :

Ans. 1. True **2.** False **3.** True **4.** False

D. Very Short Answer Type Questions :

Ans. 1. Cells are the 'building blocks of life'.
2. Robert Hooke in 1665
3. Chromosomes are present the nucleus of a cell.

E. Short Answer Type questions :

Ans. 1. In plant cells, there is an additional covering over the living plasma membrane called cell wall. This is because plants are immobile and need extra protection from the variations in temperature, pressure, wind and other environmental stress.
2. Nucleus (plural nuclei) is a spherical structure present in the centre of the cell and is surrounded by the cytoplasm. It is the **control centre** of the cell.

3. Cytoplasm is composed of many living and non-living parts called cell organelles which are concerned with cell function.

F. Long Answer Type questions :

Ans. 1. a. The cytoplasm (kytos = hollow; plasma = liquid) : It is a jelly-like fluid which occupies the space between the cell membrane and the nucleus.

Protoplasm (proto = first; plasma = liquid) : The living substance of the cell is called the protoplasm. It includes the cytoplasm and the nucleus.

b. Plant Cell :

1. A rigid cell wall is present.
2. Chloroplasts are present.
3. Large vacuoles are present and occupy a large portion of the cell.
4. Centrosomes are absent.
5. Lysosomes are absent.

Animal Cell :

1. Cell wall is absent.
2. Chloroplasts are absent.
3. Vacuoles are either absent or very small and few in number.
4. Centrosomes are present.
5. Lysosomes are present.

c. A tissue is a **group** of cells of the same size, shape and function.
Examples of some tissues are muscle tissues and nerve tissues.
An organ is a structure that contains more than one type of tissues. It is normally big enough to be seen with the naked eye. Examples of some organs are heart and brain in animals, and leaves, roots and stems in plants.

d. Cell membrane : The outermost layer, that encloses the cytoplasm and the nucleus within, is called the This is present in all living organisms. It is also known as the plasma membrane.
Nuclear membrane It is a thin porous membrane that separates the nucleus from the cytoplasm. It is, thus, the outermost covering layer of the nucleus. Being porous, it allows the movement of material between the cytoplasm and the nucleus.

e. Which lack a nuclear membrane, are called prokaryotic cells (pro = before; karyon = nucleus). The organisms with prokaryotic cells are called **prokaryotes**.
Bacteria and blue-green algae have a well organised nucleus with a **nuclear membrane:** These organisms are called **eukaryotes** (eu = true; karyo = nucleus) and the cells as eukaryotic.

2. a. Protoplasm (proto = first; plasma = liquid): The living substance of the cell is called the protoplasm. It includes the cytoplasm and the nucleus.
b. The cytoplasm (kytos = hollow; plasma = liquid) is a jelly-like fluid which occupies the space between the cell membrane and the nucleus.
c. Nucleus (plural nuclei) is a spherical structure present in the centre of

the cell and is surrounded by the cytoplasm. It is also known as the control centre of the cell.

d. Cytoplasm is composed of many living and non-living parts called cell organelles which are concerned with cell function.

G. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself

Project/Activity

Ans. Do yourself

8 Reaching the Age of Adolescence

Formative Assessment (CCE Pattern)

A. Multiple Choice Questions (MCQs) :

Choose the correct option :

Ans. 1. a. **2.** b. **3.** a. **4.** b.

B. Fill in the blanks :

Ans. 1. Harmones are the chemical substances released by glands.

2. Endocrine glands release hormones directly into the **blood stream**.

3. XX and **XY** are called sex hormones.

4. Stoppage of menstruation is termed as **menopause**.

5. Ductless glands make up the endocrine system.

C. Match the columns :

Ans.

Column A	Column B
1. Thyroid	a. Stress hormone
2. Pituitary gland	b. Larynx
3. Pancreas	c. Master gland
4. Voice box	d. Stimulates respiration and growth rate
5. Adrenal glands	e. Deficiency causes diabetes.

D. Encircle the odd one. give reason for your choice :

Ans. 1. Estrogen, Progesterone, Testosterone, (Insulin.)

2. Mental growth, Emotional growth, Social growth, (Economic growth.)

3. Voice box, Larynx, Adam's apple, (Goitre)

4. Menopause, Menarche, (Ovulation,) Menstruation.

Summative Assessment (CCE Pattern)

A. Very short answer Type questions :

Ans. 1. Thyroxin

2. Adrenalin

3. We have 23 pairs of chromosomes.

4. Testosterone

5. Protruding part of the throat.

B. Short Answer Type Questions :

Ans. 1. Testosterone and Estrogen are sex hormones.

2. The age at which reproductive organs become functionally active is

called puberty. Adolescence is the period of life when the body undergoes changes, leading to reproductive maturity.

3. In females the ova begins to mature with the onset of puberty. One ovum matures and is released by the ovaries once in about 28 to 30 days. The ovum is then released from the respective ovary by the process called ovulation. During this period, the wall of the uterus becomes thick. This is a natural preparation to receive the egg in case it is fertilized and pregnancy occurs. If fertilization does not occur, the released egg, and the thickened lining of the uterus along with its blood vassels are shed off. This causes bleeding in women which is called menstruation.

4. In males :

Development of facial hair in the form of moustache and beard.
Development of hair under the armpits, on the chest and in the pubic region.
Voice becomes deeper as the voice box enlarges.
Body becomes muscular.

In females :

Development of breasts.
Development of hair under the armpits and in the pubic region.
Beginning of the menstrual cycle (discussed later in this chapter).

5. The characters which develop during puberty and help to distinguish a male from a female are called secondary sexual characters.

C. Long answer Type questions :

Ans. 1.

Gland	Hormone secreted	Function(s)
1. Pituitary (master gland)	Several hormones including Growth Hormone (GH)	i. Stimulates thyroid for thyroxine production. ii. Controls the activity of other endocrine iii. Controls the activity of other endocrine glands (so called master gland.)
2. Thyroid	Thyroxine	i. Stimulates respiration and growth rate. ii. Lack of thyroxine causes goitre.
3. Adrenal	Adrenalin	Maintain correct salt balance in the blood, controls blood pressure and helps the body to fight stress (alarm reaction).
4. Pancreas	Insulin	Sugar metabolism. Lack of insulin causes diabetes.

2. **The precaution should be taken by girls and boy during the age of adolescence are :**

i. Nutritional needs of the adolescents : Adolescence is a stage of rapid growth and development, hence the diet for an adolescent has to be carefully planned.

ii. Personal hygiene : Personal hygiene plays a very important part in keeping us fit and healthy. We should maintain extreme caution in keeping our body clean. Undergarments should be changed everyday after taking a proper bath. Every part of the body is important for us, so we must take care of them properly.

iii. Physical exercise : All young boys and girls should perform some physical activity or the other. Playing, jogging, cycling, swimming and brisk walks are good for health. Always remain active and play some outdoor games and do some exercises regularly. It enhances growth, increases blood circulation, keeps skin glowing, and keeps tensions away.

3. **Exocrine glands :** Which have ducts that carry their secretions to specific places in the body.

Target site : Endocrine glands releases hormone into the bloodstream to reach a particular body part called target site.

Menarche : Menstruation occurs once in about 28 to 30 days. The first menstrual flow begins at puberty and is termed menarche.

Menopause : At 45 to 50 years of age, the menstrual cycle stops. Stoppage of menstruation is termed menopause.

4. The body cells of every human individual, whether male or female, possess 23 pair of chromosomes. Of these 23 pairs, 22 pairs of chromosomes are similar in all respects. However 23rd pair is different. The chromosomes of 23rd pair are called sex chromosomes. In females these chromosomes are 22 + XX pairs of chromosomes and in males they are 22 + XY pairs of chromosomes. When female gametes (eggs) are produced, each egg contains 22 + X and 22 + X chromosomes. The males on the other hand produce male gametes (sperms) having 22 + X and other having 22 + Y chromosomes.

Thus the sex of the children will be determined by what they inherit from their father.

I. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself

Project/Activity

Ans. Do yourself

9 Reproduction in Animals

Exercise

A. Multiple Choice Questions (MCQs) :

Choose the correct option :

Ans. 1. a. **2.** c. **3.** a.

B. Fill in the blanks :

Ans. 1. The production of new individuals from parents is known as **reproduction**.

2. The product of fertilization is known as **zygote**.

3. Animals that lay eggs are called **oviparous** animals.

4. Hydra reproduces by **budding**.

5. Tadpole get transformed into frogs.

C. State True or False :

Ans. 1. True **2.** True **3.** False **4.** False **5.** True

D. Match the columns :

Ans.

Column A	Column B
1. Male gamete	a. Hen
2. Internal fertilization	b. Ovum
3. Budding	c. Frog
4. External fertization	d. Sperm
5. Female gamete	e. Hydra

E. Very Short Answer Type questions :

Ans. 1. 1. Asexual reproduction 2. Sexual reproduction

2. Reproduction in which only a single parent is involved is called asexual reproduction.
Reproduction in which fusion of male and female gametes takes place is called **sexual reproduction**.

3. Male gametes — Sperm
Female gametes — Egg (Ovum)

F. Short Answer Type Questions :

Ans. 1. Reproduction in which fusion of male and female gametes takes place is called sexual reproduction.

2. The process of drastic changes by which a tadpole (or caterpillar) changes into an adult is called metamorphosis 1. Example - silkworm and frog.

3. The fertilisation that occurs outside the body of an animal is referred to as **external fertilisation**.
fertilisation takes place inside the body. This is termed as internal fertilisation.

4. Fertilization occurs in human females in fallopian tubes.

G. Long Answer Type Questions :

Ans. 1. The sperms (or male gametes) in the testes of a man are introduced into the vagina of the woman through penis during copulation (or mating). In this way, millions of sperms are released into the vagina at one time. The sperms are motile, so these come up through cervix into the uterus and then pass into the oviducts. The oviduct contains an ovum or egg cell released by the ovary during ovulation. Only one sperm fuses with the ovum (or egg) in the oviduct. The sperm nucleus and the egg nucleus fuse together. This fusion of a male gamete and a female gamete is called fertilisation.

2. Reproduction in which only a single parent is involved is called asexual reproduction. There are several methods of asexual reproduction in

animals, like binary fission, budding, fragmentation, and regeneration.

Budding in Hydra

Budding amongst animals is commonly seen in Hydra.

In this animal, one or more small bulb-like outgrowths or bulges are formed on the body.

These are called buds and are responsible for giving rise to new individuals.

The nucleus of the parent hydra divides into two.

Then, one of the two nuclei passes into the bud.

The bud detaches itself from the parent body. It grows to full size and becomes a new individual.

Binary Fission in Amoeba

Another method of asexual reproduction is observed in amoeba. It begins the process of reproduction by the division of its nucleus into two nuclei. This is followed by division of its body into two parts with each part receiving a nucleus. Finally, two amoebae (plural of amoeba) are produced from one amoeba. This type of asexual reproduction in which an animal reproduces by dividing into two individuals is called binary fission (bi = two; fission = division).

3. a. Ovaries : Ovary starts producing ovum when the female reaches the age of 12-14.

b. Sperm : Sperm fertilizes with egg then become a zygote.

c. Urethra : Urethra at different time, carries urine and sperm.

d. Uterus : Uterus communicates eggs.

e. Oviducts : Eggs are received by the Oviducts.

4. Cloning is a method that involves production of an exact copy of a cell, any living part or a complete organism. Example Cloning was successfully done for the first time at the Roslin Institute in Edinburgh, Scotland, on 5th July 1996, by Ian Wilmut and his colleagues. They successfully cloned a sheep and named it Dolly.

H. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself

Project/Activity

Ans. Do yourself

10 Force and Pressure

Exercise

A. Multiple Choice Questions (MCQs) :
Choose the correct option :

Ans. 1. d. **2.** b. **3.** d. **4.** a.

B. Fill in the blanks :

Ans. 1. **Force** causes some kind of motion.

2. A **magnet** can pull iron alpins from a distance.

3. The force exerted by an electrified body is called **electrostatic** force.

4. Force can bring change in the **direction** of moving objects.
5. Pressure at a point in a liquid depends on its **depth**.

C. State True or False :

Ans. 1. True **2.** True **3.** False **4.** True **5.** False

D. Encircle the odd-one Give reasons or your choice :

Ans. 1. Pulling a cart, Kicking a football, (Picking alpins with a magnet,) Lifting a suitcase.

2. Electrostatic force, Gravitational force, Muscular force,(Magnetic force)

3. Camel, (Drawing pin,) Elephant, Tractor.

E. Very Short Answer Type Questions :

Ans. 1. Force is defined as push or pull.

2. a. Force can make an object move from its position of rest.
b. Force can stop or slow down the moving objects.

3. Newton

4. Rub a plastic pen or comb into the dry hair and then hold it near some tiny pieces of paper. What happens? The tiny pieces of paper get attracted towards the plastic pen or comb.
The tiny pieces of paper get attracted due to the force exerted by the electrostatic charges on the pen or comb.

F. Short Answer Type Questions :

Ans. 1. No, force can act without an interaction between two objects. **Example :** magnetic force.

2. a. Contact Force :
For an object to be pulled or pushed, there should be a contact between the two objects.
For example,
When a coiled spring is stretched (pulled), the two ends of the spring must be in actual contact with the hands of the person.
b. Non-contact Force (or Action-at-a-distance Force) :
There are some kind of forces which can be exerted from a distance without touching the object.
For example, a magnet can exert a pull (attraction) or a push (repulsion) on another magnet even when the two magnets are at a distance from each other.

3. Larger is the area of contact, lesser is the pressure exerted by.

G. Long Answer Type Questions :

Ans. 1. Force is defined as push or pull.
Effects of Force :
A force cannot be seen. It can be judged only by the effects which it can produce in various bodies (or objects) around us. A force can produce the following effects.

1. **Force can make an object move from its position of rest :** We can make an object move by applying force on it.
When you push your friend, he or she tends to fall down. To pluck an apple from the tree, you pull the apple towards yourself.
2. **Force can stop or slow down the moving objects :** A ball is stopped by a

player by applying force in the direction opposite to that of the ball.
When you apply force on the brakes of a moving car its speed slows down or the car is stopped. So, a force can stop a moving body or can reduce the speed of the moving body.

3. **Force can make a moving object move faster :** When we push the child swinging on a swing with a force it swings faster.
4. **Force can bring change in the direction of moving objects :** Force always has some direction. A force can change the direction of the moving car.
5. **Force can change the shape and size of objects :** The force applied by the lady in kitchen changes the shape of the dough (kneaded flour) into round chapatties.

2. The different types of forces are :

a. Contact Force :

For an object to be pulled or pushed, there should be a contact between the two objects.

For example,

When a coiled spring is stretched (pulled), the two ends of the spring must be in actual contact with the hands of the person.

b. Non-contact Force (or Action-at-a-distance Force).

There are some kind of forces which can be exerted from a distance without touching the object.

For example, a magnet can exert a pull (attraction) or a push (repulsion) on another magnet even when the two magnets are at a distance from each other.

H. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself

Project/Activity

Ans. Do yourself

11 Sound

Exercise

A. Multiple Choice Questions (MCQs) :

Choose the correct option :

Ans. 1. d. **2.** c. **3.** a.

B. Fill in the blanks :

Ans. 1. A **vibration** is a rapid back and forth movement of a body about a central position.

2. Frequency is the number of vibrations made by a vibrating body in one second.

3. Sound waves require a **medium** to travel through.

4. The sound waves travel fastest in **solids** and slowest in **gases**.

5. Loud and harsh sound is called **noise**.

C. State True or False :

Ans. 1. True **2.** True **3.** False **4.** True

D. Do Yourself

E. Very Short Answer Type Questions :

Ans. 1. A vibration is a rapid back and forth movement of a body about a central position.

2. Oscillation is the movement of bob from its mean position and to come back.

3. Frequency is the number of vibrations made by a vibration body in one second. It is denoted by letter 'f'.

4. 20 Hz to 20 KHz

F. Short Answer Type Questions :

Ans. 1. Sound is produced by a vibrating body

2. Amplitude and Speed

3. The time taken by the vibrating body to complete one oscillation is called time period.

4. 1. Tabla 2. Guitar 3. Flute

G. Long answer Type questions :

Ans. 1. The organ in human beings, that is involved in the production of sound, is the larynx (commonly called the voice box). The voice box is situated in the neck at the upper end of the wind pipe. The sound produced is controlled by vocal cords, which are thin membranes stretched across the voice box. There are muscles attached to the vocal cords. These muscles can vary the tension in the vocal cords (i.e., make them tight or loose). With the help of these muscles, we can make different sounds.

2. We can under stand the travelling of sound in air with the help of this examples. When a loudspeaker is switched on, a membrane in the loudspeaker moves backward and forwards, i.e., it vibrates. This causes the air molecules surrounding the loudspeaker to vibrate. If we imagine the air molecules to be like small balls, a sound wave travelling through air alternatively pushes these balls close together and then pulls them away from each other. The areas where they lie together are called compressions, and the areas which they lie away from one another are called rarefactions. A diagrammatic representation of the propagation of sound waves produced when a drummer beats the drum

3. The working of ear : The pinna collects the sound waves and then directs them through ear canal. The sound waves on striking the ear drum, make it vibrate exactly the same way as the given sound emitting object is vibrating.

A tube connects the middle ear to the throat and is commonly called air canal or eustachian tube. The air canal helps in regulating the pressure of air on both sides of ear drum and protects it from sudden changes in the atmospheric pressure.

Cochlea is a spiral tube lined with sensory receptors, which are connected to the sensory nerve. The sensory nerve is connected to the brain. When the vibrations amplified by the middle ear enter the cochlea, the fluid in it starts vibrating. These vibrations are picked by the sensory receptors and then converted into electrical signals. The electrical signals then travel through the sensory nerve to the brain. It is ultimately the brain which on receiving electrical signals interprets the sound.

4. In stringed instruments like violin, guitar, and sitar, sound is produced by a vibrating string. The shrillness or pitch of the sound is altered by

changing the length of the vibrating portion of the string.

In percussion instruments like tabla, drums, and dholak sound is produced by a vibrating skin or membrane. The pitch of the sound is altered (to a certain extent) by increasing or decreasing the tension in the membrane.

In wind instruments like trumpet, flute, and harmonica, sound is produced by the vibrating air column inside the instrument. The pitch of the sound is altered by changing the length of the vibrating air column.

H. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself

Project/Activity

Ans. Do yourself

12 Chemical Effect of Current

Exercise

A. Multiple Choice Questions (MCQs) :
Choose the correct option :

Ans. **1.** b. **2.** a. **3.** b. **4.** d. **5.** d.

B. Fill in the blanks :

Ans. **1.** All metals are good **conductor** of electricity.
2. Distilled water does not conduct **electricity**.
3. We should never touch an electric switch with **wet** hand.
4. **Cutlery** and **jewellery** and items are often silver plated.

C. State True or False :

Ans. **1.** False **2.** True **3.** True **4.** True

D. Match the columns :

Ans.

1.	Pure water	a.	Positive terminal of the battery
2.	Anode	b.	A group of atoms having charge on the
3.	Cathode	c.	Bad conductor of electricity
4.	Radicals	d.	Electroplated nickel silver
5.	EPNS	e.	Negative electrode

E. Very Short Answer Type Questions :

Ans. **1.** Light Emitting Diode
2. No, pure water is not a conductor of electricity
3. We are instructed to never touch an electric switch with wet hand because we can get an electric shock.
4. The container carrying the electrodes along with the electrodes is known as voltameter.
5. Electroplating is done to improve the appearance of metals and for protection against corrosion.

F. Short Answer Type Questions :

Ans. **1.** Materials which allow electricity to pass through them are called conductors.
2. Pollution makes impossible to find a 100% pure sample of water.
3. 1. Purification of metals 2. Extraction of metals
4. 1. Acid 2. Tap water 3. Lemon juice

G. Define these terms :

Ans. 1. Electrolysis is causing chemical change in a liquid by passing an electric current through it is called electrolyte.

2. Depositing a thin layer of a metal on another metallic object with the help of an electric current is called electroplating.

3. A solution or paste used in electrolysis which allows electric current to flow through it is called electrolyte.

4. Cathode is negatively charged electrode in a voltameter.

5. Anode is **p**ositively charged electrode in a voltameter.

H. Long Answer Type Questions :

Ans. 1. Applications of Electrolysis :

Electrolysis is used extensively for commercial purposes. Some of them are :

1. Purification of metals 2. Extraction of metals 3. Electroplating

Purification of Metals

For this purpose, the impure metal is made the anode and a pure metallic strip is used as the cathode. A soluble salt of pure metal is taken as the electrolyte. On passing current, the anode dissolves but only the pure metal deposits on the cathode. For example, copper, silver, gold, zinc, etc. are refined by this process.

Extraction of Metals from Ores

Certain metals are extracted from their ores using electrolysis. For example, aluminium is obtained by passing an electric current through fused bauxite (Al_2O_2) and cryolite (Na_2AlF_2). Active metals like sodium, calcium and magnesium are also extracted from their ores using electrolysis.

2. Electroplating is done to improve the appearance of metals and for protection against corrosion.

Reasons of Electroplating

1. Objects like bangles, chains, etc. are gold plated by jewellers. On an ordinary metal a very thin covering of gold is provided to give them appearance of gold and are much less expensive.

2. Metals that rust are often coated with other metals to prevent rusting.

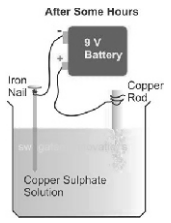
3. Some applications of electro plating :

1. Objects like bangles, chains, etc. are gold plated by jewellers. On an ordinary metal a very thin covering of gold is provided to give them appearance of gold and are much less expensive.

2. Metals that rust are often coated with other metals to prevent rusting.

Silver plating is also common for the same reasons. Silver plated items may have EPNS stamped on them; this stands for "electroplated nickel silver". Cutlery and jewellery items are often silver plated–they have the appearance of silver but are much less expensive.

4.



I. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself

Project/Activity

Ans. Do yourself

13 Some Natural Phenomena

Formative Assessment (CCE Pattern)

A. Multiple Choice Questions (MCQs) :

Choose the correct option :

Ans. **1.** b. **2.** c. **3.** a. **4.** a. **5.** b

B. Fill in the blanks :

Ans. **1.** An object or body having electric charge on it is called a **chargred body**.

2. There are two kinds of electrical charges, **positive** and **negative**.

3. The concept of **positive** was introduced by Benjamin Franklin.

4. The location below the Earth's surface where the Earthquake starts is called the **hypocenter**.

5. In earthquake prone areas **bricks** should not be used for construction of houses.

C. State True or False :

Ans. **1.** True **2.** True

3. True **4.** False

D. Match the columns :

Ans.

Column A		Column B
1. Tectonic plates	→	a. Earth's crust
2. Earthing	→	b. Richter scale
3. Faults	→	c. Lightning
4. Earthquake	→	d. Lithosphere

E. Encricle the odd one out. Give reason for your choice :

Ans. **1.** Glass rod, Cotton cloth, (Positive charges on glass rod,) Silk cloth

2. (Static electricity,) Metal, Insulator, Rubbing

3. Hypocentre, (Volcanic eruption,) Earthquake, Seismic waves

4. Earthquake, (Tsunami,) Richter scale, Epicente, Focal depth

F. Very Short Answer Type questions :

Ans. **1.** When a charged body is brought near an uncharged body then they are attracted to each other.

2. Tsunami is generation of powerful sea waves due to an Earthquake under the ocean floor.

3. Balloon, Refill, comb etc.

4. 1. Crust 2. Mantle 3. Core.

G. Short Answer Type Questions :

Ans. **1.** Do not use any electrical appliances inside your home during thunderstorm.

2. Rubbing a neutral body to charge it.

3. When a charged cloud passes over a tall building or a tree, it induces an opposite charge on them.
4. a. Richter scale b. Seismograph

H. Long Answer Type Questions :

Ans. 1. When lightning strikes, the lightning conductor provides a passage for the entire charge to pass to the Earth without damaging the building. The metal used for a good lightning conductor is usually copper. Proper care should be taken to ensure that the lower end is firmly in contact with the Earth else both the conductor and the building may suffer damage due to lightning.

2. a. Don't stand near high poles or trees.
b. Use mobile/cordless phones and avoid talking to your friend on wired phone.
c. Unplug electrical appliances like TV, AC, computer etc. in your house.

3. a. Cause damage to the buildings, railway tracks, bridges, roads etc. As a result, people may get trapped inside the collapsed structures and many may die.
b. Cause landslides. The rubble may block river and cause flooding.
c. Change the course of river and cause floods.
d. Damage underground water and gas pipelines. This may lead to fire breakout and large scale burning.
Movements of the Tectonic Plates : Lithosphere is believed to consist of about 12 plates which float over the molten magma in the mantle.
Most Earthquakes occur at the boundaries where the plates meet. These boundaries are the locations of considerable geological activities. For example :
The molten mass (magma) rises up at these points, pushing the two plates apart. This release of energy causes Earthquakes.
The two plates might slide past one another. This causes sudden changes in the lithosphere generating Earthquakes at shallow depths.

4. a. Try to get out of the high-rise building. If we can't get out safely, hide under a desk or a study table. Cover our face and head to protect them from falling objects.
b. If we are outside blindly, we may get killed by falling bricks and debris just outside the buildings. We should not use lifts during an Earthquake.
c. If we are in a moving vehicle, ask the driver to take the vehicle on a side of the road. Keep away from the bridges, trees, buildings and power lines. Stay inside the vehicle and wait for the shaking to stop.
d. Do not rush to the roof of the house. Never enter a cracked or partially damaged house. The slightest movement may lead to its collapse.

I. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself

Project/Activity

Ans. Do yourself

14 Light

Exercise

A. Multiple Choice Questions (MCQs) :
Choose the correct option :

Ans. 1. b. **2.** b. **3.** b. **4.** d.

B. Fill in the blanks :

Ans. 1. **Light** makes things visible.
2. **Angle of reflection** is the angle formed between the reflected ray and the normal.
3. We can white light into **seven** colours.
4. Iris has a tiny hole in the middle called the **pupil**.
5. The defect of long-sightedness is also called **hypermetropia**.

C. Match the columns :

Ans.

Column A		Column B
1. Optic nerve	d.	Tape recorders, compact discs (CDs)
2. VIBGYOR	a.	Carries visual messages to the brain
3. Cataract	b.	Produced when white light splits
4. Auditory aids	c.	Eye lens become cloudy or opaque

D. State True or False :

Ans. 1. True **2.** False **3.** True **4.** False **5.** True

E. Very Short Answer Type Questions :

Ans. 1. This phenomenon of splitting of white light into its component colours is called dispersion of light.
2. Reflection through a rough surface is called irregular reflection. In irregular reflection, the reflected rays are not parallal to incident rays.
3. A place mirror is a glass painted one side with silver colour the image formed by a plane mirror is laterally inverted.
4. Lateral inversion.

F. Short Answer Type Questions :

Ans. 1. 1. The incident ray, the reflected ray and the normal at the point of incidence lie in the same plane.
2. The angle of incidence is always equal to angle of reflection.
$\angle Li = \angle Lr$
2. 90°
3. The phenomenon in which we get multiple images of an object.
The number of images = 360°/Angle between the mirrors
4. Iris controls the amount of light entering the eye by contracting or dilating to change the size of pupil.

G. Long Answer Type Questions :

Ans. 1. 1. The image of a plane mirror cannot be observed on a screen, i.e. a plane mirror forms a virtual image of the object.
2. Image size is always the same as that of the object and does not depend upon the size of plane mirror.
3. Image is always upright like the object. An upright image is also called

an erect image.

4. Image is always as far inside the mirror as the object in front of it.

2. Diffused reflection :

a. Reflected rays move in various directions.

b. The image is diffused or irregular.

c. It can be seen in scratched mirrors, rippling water, etc.

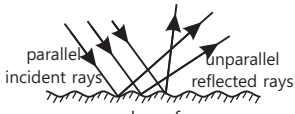
d. Regular reflection.

e. Reflected rays are parallel to each other.

f. The image is seen in the reflecting surface.

e. It can be seen in a plane mirror, unused stainless steel plate, water, etc.

a. Regular reflection



b. Diffused reflection

3. Structure of human eye :

1. Outer covering also called the sclerotic layer. The white outermost covering of the eye made of tough fibrous tissues protects the internal parts of the eye. The front of this layer has a bulging portion called the cornea which allows light to enter the eye.

2. The inner layer or choroid is black and contains iris which is a coloured diaphragm. Iris has a tiny hole in the middle called the pupil. Iris controls the amount of light entering the eye by contracting or dilating to change the size of pupil.

3. The eye lens is situated behind the iris. The curvature of this lens is controlled by the muscles of the eye or ciliary muscles. By changing the focal length of eye lens it is possible to get the images of objects at different distances on the retina. Retina after receiving the image converts it to optical signals and sends to the brain for identification.

4. There are 63 symbols or characters in Braille. Each symbol is represented by a cell which consists of two vertical rows of three dots each as shown in the given figure. One or more dots in a cell may be embossed (raised) to form the symbols.

H. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself

Project/Activity

Ans. Do yourself