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Class 8

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Chapter 1 : Food

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Recap Questions :

A.1 The need of improved methods of crop production in India arised due to keep pace with growing requirement of crop due to rapidly increasing population.

A.2 Some of the crop, their sources and examples are :

S. No.	Name of Crop	Source	Examples
1.	Cereals	Carbohydrates	Rice, Maize, Wheat, barley etc.
2.	Pulses	Proteins	gram, peas, beans
3.	Oil Seed	oils/fats	Mustard, Sunflower, Ground-nut
4.	Root Crops	Carbohydrates/ Minerals	Sweet Potato, Carrot
5.	Tuber Crops	Carbohydrates	Potato, Ginger

A.3 ***Rabi Crops :*** These are the winter crops which are sown in the beginning of winter and harvested at the beginning of summers.

Example : Wheat, barley, gram etc.

Kharif Crops : These are summer crops which are sown in beginning of monsoon season and harvested at the end of monsoon.

Example : Rice, Maize, Coconut etc.

A.4 Sowing of seeds in our country is done by following methods :

i. By hand

ii. By seed drill

iii. By transplantation

A.5 ***Weeding :*** The unwanted plants which compete with the crop plants for nutrients, sunlight and water; growing along with them are called weeds. The process by which they are removed is called weeding.

Some common weeds are wild grasses, Amaranthus, Chenopodium etc.

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Recap Questions

A.1 The process of supplying water to crop plants for their production is called irrigation.

A.2 The water requirement for growing rice, wheat and plants grown in sandy and clayey soil is as follows :

i. Growing Rice needs continuous irrigation.

ii. Wheat do not require much of water.

iii. Plants growing in sandy soil need frequent irrigation but plants growing in clayey soil need less irrigation.

A.3 Few disease causing organisms in plants are virus, bacteria, fungi etc.

A.4 Following are the precautions that should be taken. While spraying pesticides in the fields are :

i. Hands, nose and mouth should be covered while spraying them in the fields.

ii. Blowing of spray should be away from the face of the sprayer.

iii. Wash the exposed body parts after spraying.

A.5 ***Harvesting :*** The process of cutting and gathering of matured crops is called as Harvesting.

Produce : The harvested crop is called as the produce.

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Formative Assessment

D. Match the following

1.	Rabi Crop	Wheat
2.	Kharif	Rice
3.	Ammonia	Haber's process
4.	Insecticide	BHC
5.	Oil seed	Mustard

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E. Answer in one word :

1. Weeding
2. Seed drill
3. Ploughing
4. Mixed cropping
5. Nitrogen fixation
6. Pisciculture
7. Fowl Cholera
8. 21 days

Summative Assessment

A. Give reasons for the following :

1. It is so because levelling prevents soil erosion and water logging and thus helps in uniform irrigation.

2. So that they remain protected from microbial infection causing damage to grains.

3. It is so because fish is rich in proteins and other nutrients which are helpful in proper growth of body.

4. Weeds must be removed from the fields to get better and large amount of yield of crops.

5. It is so because fertilizers provide specific nutrients needed by plants.

B. Long Answer Type Questions

1. ***Rabi Crops :*** These are the winter crops which are sown in the beginning of winter and harvested at the beginning of summer.

Example : Wheat, gram, barley etc.

Kharif Crops : These are the summer crops which are sown in beginning of monsoon season and harvested at the end of monsoon.

Example Rice, Maize, Coconut etc.

2. The agricultural practices employed in our country are :

i. Selection of soil	ii. Preparation of soil
iii. Levelling	iv. Manuring
v. Sowing of seeds	vi. Weeding
vii. Irrigation	viii. Crop Protection
ix. Harvesting	x. Winnowing

Winnowing : It is the process of separation of chaff and hay from the grain. In this method, mixture of grains, chaff and hay is allowed to drop on the ground from a height. The heavier seeds fall vertically down and lighter chaff and hay get blown away by the wind.

3. ***Transplantation :*** It is the method in which seedlings from the nursery beds are selected and planted in the main field at proper intervals. It is done in crops like rice, onions, tomato, brinjal etc.

Its benefits are :

i. Seedlings get proper space to grow into better crops.

ii. Healthy selected seeds are cultivated.

iii. Roots penetrate better.

4. Animals like cattle, buffaloes, sheep, goat, pig, horses and camels are referred as live stock which are kept for our use or profit.

They are useful to us as they give us many useful products.

5. The food grains to be used throughout the year, should be stored in the following ways :

i. The grains must be first dried in the sun before storing.

ii. They should be store in suitable air tight containers.

iii. Wheat, gram, rice etc. should be stored in gunny bags on grain silos.

6. ***Hybridization :*** The technique of using plant breeding methods to produce better varieties of seeds and crop is known as Hybridization. The varieties produced are called as high yielding varieties or hybrid varieties.

It involves the following steps :

i. Two existing varieties having one of the desired characters like one being high yeilding and the other disease resistant is selected.

ii. The two varieties are crossed and the seeds produced grow into a new mixed variety having both the desired character of the parent plants. Repeated cross breeding gives rise to stock.

Some high yielding varieties produced as a result of hybridization are :

i. Wheat : Sonara, Hira-Moti, Sarbati, Sonalika etc.

ii. Rice : Padma, Jaya, Pusa-205.

Chapter 2 : Micro Organisms

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Recap Questions

A.1 Micro Organisms are different from other organisms in the following ways :

i. Micro Organisms can not be seen by naked eyes but the other organisms can be seen by naked eyes.

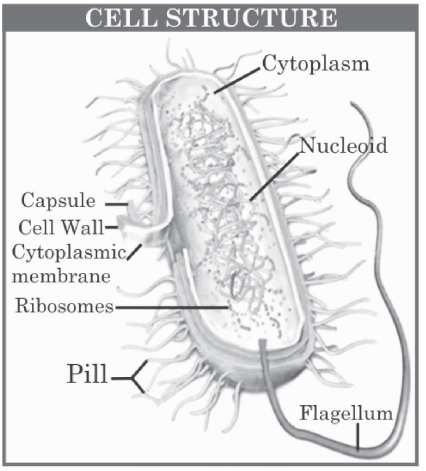
ii. They have very high power of adaptability, whereas other organisms do not.

A.2 Louis Pasteur introduced the Method of "Pasteurization" to kill the micro-organisms by heating.

A.3 The classification of bacteria on the basis of their shapes is as folloows :

S. No.	Shape	Called as (Plural)	(Singular)
1.	Spherical	Cocci	Coccus
2.	Rod shaped	Bacilli	Bacillus
3.	Spiral shaped	Spirilla	Spirillum
4.	Comma Shaped	Vibrio	Vibrio

A.4 ***Sturcture of Bacterial Cell :*** Bacteria is a unicellular organisms, found in groups of two or more or in chains. Each cell is covered by a cell wall made up of peptidoglycan well organised Nucleus is absent, it is found as DNA molecule called as Nucleoid. Cytoplasm is viscous, colloidal and granular in nature. Cells organelles are absent. Flagella may be present or absent.



Bacterial cell

A.5 The bacteria which can take stain are called as gram positive bacteria whereas the bacteria which do not take stain are called as gram negative bacteria.

Example of gram positive bacteria are Bacillus, Clostridium etc.

Example of gram negative bacteria are Vibrio, Salmonella etc.

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Recap Questions

A.1 Algae are basically different from fungi as algae have pigment to prepare food by their own out fungi are non-green plant like organisms which are not able to prepare their food by their own.

A.2 Different examples of algae on the basis of colour are :

i. Blue green algae-Nostoc, Anabaena
ii. Green algae-Spirogyra, Volvox Chlamydomonas
iii. Brown algae-Fucus
iv. Red algae-Polysiphonia

A.3 ***Yeast Cell Structure :*** The size of yeast varies from 5 to 10 microns.

It is unicellular organism and form colonies It is spherical or elliptical in shape having a cell wall, cell membrane nucleus, a large vocuale, fat globules and granules.

A.4 Fungus gets its nutrition by heterotropic mode of nutrition as they are not able to prepare food by their own. They lack Chlorophyll, so they depend on others for their nutrition. They get their nutrition from decaying organic matter.

A.5 Fungi is also useful to us in many ways. These are :

i. It helps in bakery industry in the production of bread, cakes etc.
ii. It also helps in the production of alcohol and beer etc.
iii. Fungi Penicillum notatum also provides antibiotic penicillin.
iv. Mushrooms are eaten as food.

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Formative Assessment

D. Match the following

i.	Sodium benzoate	Chemical preservative
ii.	Sewage treatment	bacillus
iii.	Foot and mouth disease in animals	FMDV
iv.	Gram Negative bacteria	Vibrio
v.	Malaria	Parasitic bacteria

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E. Answer in one word :

1. Salt
2. Virus
3. Rust
4. Bacteria
5. Pasteurization
6. Paramecium
7. Fuglena

Summative Assessment

Distinguish between these :

1. Algae and Fungi.

Algae :

i. Most of the algae are coloured plant like organism.
ii. They are mostly autrotrophs. Example : Nostoc.

Fungi :

i. They are non-green plants like organism.
ii. They are hetrotrophs. Example : Yeast.

2. Virus And Bacteria

Virus :

i. They may be unicellular or multicellular.
ii. They are non-green heterotrophic plant like organisms.

Bacteria :

i. They are unicellular.
ii. They may be autotrophic or heterotrophic in nature.

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B. Answer in 3 or 4 sentences :

1. Two methods of food preservation are :

i. Cooling : Keeping the cooked food, milk and milk products at low temperature in refrigerators or deep freezers prevent their spoilage.

ii. By heating and canning in vacuum : Heating food to high temperature to about 110°C for half hour and canned under vacuum.

2. Virus reproduces as soon as it enters into a living cell. It multiplies very rapidly to give numerous virus particles.

3. Mode of nutrition in fungi is heterotrophic. As fungi are non-green plants so they depend on others for their nutrition.

4. Bacteria are useful to us in many ways, three of them are following :

i. Bacteria are used to make antibiotics.

ii. They help in leather industry.

iii. Bacteria help in decomposition of dead and decaying organic matter, acting as nature's scavengers.

5. Virus are found every where in water, air, soil etc.

6. Different methods by which fungi can reproduce are -

Budding (yeast) binary fission, regeneration and spore formation.

C. Answer in detail :

1. ***Nutrition in Bacteria :*** Nutrition in bacteria can be autotrophic or heterotrophic. Autotrophic bacteria can able to make food by their own.

They are of two types :

i. Photo autotrophs : These type of bacteria prepare their own food by the help of energy of sun.

ii. Chemoautrotrohic : These bacteria prepare food by the help of energy of chemical substances.

Heterotrophic bacteria are not able to make food by their own. They are of four types :

i. Saprophytes : These bacteria depend on dead or decaying organic matter for their food.

ii. Parasites : Depend on other living organism for their food.

iii. Aerobic Bacteria : Depend on oxygen to get energy by breaking down food.

iv. Anaerobic Bacteria : Do not depend on oxygen to get energy.

2. Some algae are useful in many ways. These are :

i. They produce food and oxygen by photosynthesis.

ii. They provide food directly to sea animals like fish, snails etc.

iii. Blue green algae can fix atmospheric nitrogen.

iv. Used as food for human beings.

v. Agar-Agar obtained from brown algae is used in the manufacture of cosmetics, jellies, medicines, food etc.

vi. Brown algae provides iodine and calcium also.

Harmful algae

i. They causes fouling of the beaches.

ii. Some algae like oscillatory made water unfit for drinking by producing toxins.

iii. Algae growth blocks passage in water channels.

3. Fungi harm the living and dead organisms both as in living organisms., they causes many diseases like athletes foot, ringworms, eczema etc. in human beings and some diseases in plants also like rusts and smuts.

Fungi also harm the dead organisms as they grow on them and decay them, to get their nutrition.

4. The different kinds of viruses and the diseases caused by them are :

i. FMDV — Foot and mouth disease virus in animals.

ii. TMVT — Tobacco Mosaic Virus in the cells of tobacco plant.

iii. Measles Virus — Causes measles in humans.

iv. Polio Virus — Causes Polio in children.

v. Bacteriophage Infect bacteria.

They are found every where in water, air, soil but they have life only when they enter a living host.

5. Food can be preserved to prevent the growth of micro-organisms in the following ways :

i. ***Cooling :*** By keeping the cooked food, milk and its products at low temperature in refrigerators prevent their spoilage.

ii. ***Dehydration :*** Vegetables like cauliflower, spinach, ginger, methi can be preserved by sun drying. Meat and fish can be dehydrated by smoking.

iii. ***By pasteurization :*** In this method, milk is heated to 60-65°C to kill the bacteria present in it. Then it is suddenly cooled to kill any remaining bacteria present in it.

iv. ***By heating and canning in Vacuum :*** Heating food to high temperature to about 110°C for half and hour and canned under vacuum.

v. ***By treatment of food with salt or Sugar :*** High concentration of sugar or salt removes water from the food materials helps to preserve food.

vi. Use of Chemical preservatives like sodium benzoate preserves fruit juices and squashes.

Chapter 3 : Materials in Daily Life

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Recap Questions

A.1 Two kinds of materials are commonly used by us in our daily life. These are Natural materials, example – wood, soil, metal etc. and Artificial materials, example – Plastic, paint, fibres etc.

A.2 Yes, one kind of material be used for making more, than one kind of things. For example – glass can be used for making mirror, furniture, cups etc. No, different materials cannot make one kind of article.

A.3 The composition of a polymer is as follows :

Some materials are made up of long chain molecules having simple molecules. Such giant molecules are called polymers and the process of formation of polymers is called polymerization.

For Example : Polymer of ethene

$$CH_2 = CH_2$$

A.4 **T**erracotta is one of the man made material which is prepared by heating clay. It is used to make utensils, decorative articles etc.

A5. Two differences between Natural and Synthetic fibres are :

Natural Fibre

i. These fibres are not made by man.

ii. Their components are biodegradable. Example Cotton, Jute etc.

Synthetic Fibre

i. These fibres are made by man.

ii. Their components are non-biodegradable. Example Nylon, Rayon etc.

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Recap Questions

A.1 Different kinds of plastics are :

i. Thermoplastics

ii. Thermosetting plastics.

A.2 PVC is a kind of thermoplastic known as poly-vinyl-Chloride. Its properties and uses are :

i. It can be heated to be moulded into different shapes and hardone by cooling.

ii. It is a long chain polymer with no cross linkages.

iii. It can be processed repeatedly.

iv. It is used for making pipes.

A.3 Differences between thermoplastic and thermosetting plastic are :

Thermoplastic

i. They are long Chain polymers with no cross linkages.

ii. They can be processed repeatedly. Example : PVC

Thermosetting Plastic

i. They are chain of polymers with cross linkages.

ii. They can be processed only once. Example Bakelite.

A.4 Some conservation efforts to reduce plastic pollution are :

i. Efforts should be taken at individual and mass level to reduce plastic pollution.

ii. The use of plastic should be minimized.

iii. Use of polythene bags should be completely banned.

iv. Recycling and reuse of plastic should be practiced.

v. Use of paper bags should be encouraged.

vi. Awareness and efforts by general public should be generated for proper disposal of non-biodegradable materials.

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Formative Assessment

E. Answer in one word :

1. Cotton

2. Rayon

3. Nylon

4. Terrycot

5. Jute

6. Cotton

7. Rayon

8. Wool

Summative Assessment

A. Give reasons :

1. It if so because bakelite is bad conductor of heat so it prevents the heating effect at handle of utensils while cooking food.

2. They catches fire easily and burn rapidly by sticking to the skin causing severe burns.

3. Plastics are non-biodegradable in nature and causes pollution and many other hazards also.

5. It is so because synthetic fibres do not absorb sweat.

6. Bakelite is poor conductor of heat and electricity so electrical fittings are made of it.

B. Answer in detail :

1. Differences between cotton and polyester are :

Cotton

i. It is a natural fibre.

ii. It is obtained naturally from cotton plant.

iii. It absorbs much water.

iv. It is not crease resistant.

Polyester

i. It is a synthetic fibre.

ii. It is obtained artificially from petroleum.

iii. It absorbs very little water.

iv. It is crease resistant.

Uses of Cotton are :

i. It is used to make cloth.

ii. It is mixed with synthetic fibre to make terycot.

iii. It is used as absorbent cotton in medical work.

iv. It is also used in upholstery.

v. It is used for cleaning purposes as in, mops, dusters etc.

vi. It is also used in making bags, sheets, decorative wall hangings etc.

Uses of Polyester are :

i. It is used as dress materials.

ii. It is used in making bed spreads, curtains either as polyester or mixed with cotton.

iii. It is also used for making sails of boat.

iv. It is used for the manufacture of water hoses for fire fighting.

v. It is also used for making conveyer belts etc.

2. There are many disadvantages of using Synthetic fibres, as they are made up of nonbiodegradable components which causes soil pollution :

Some of the disadvantages are :

i. These fibres catch fire easily and adhere to the skin. This causes burns on the skin.

ii. They cannot absorb water and sweat. So, they are uncomfortable to wear during humid and hot weather.

iii. They can be harmful to wear as sometimes they attain static electricity causing sparks during dry conditions.

3. The observations, when different kinds of fibres are burnt are as follows :

S. No.	***Cloth Material***	***Observations***
1.	Cotton	burns immediately leaving very little ash.
2.	Wool, silk	burns with smell of burning hair.
3.	Rayon	burns immediately with the smell of burning paper.
4.	Nylon	burns, shrinks forming beads, with the smell of burning hair.
5.	Polyester	burns and shrinks producing black smoke.

4. General properties of plastic are :

i. It is a material which can be moulded into any shape on heating.

ii. It is a man made material made from many monomers.

iii. Its materials are widely used by people all over the world due to their properties.

iv. It is a synthetic material made of non-biodegradable components. Its remains in soil causes pollution and other serious hazards.

5. *Perspex*

Properties :

i. It is thermoplastic.

ii. It is transparent like glass but strong in nature.

Uses :

i. Used as substitute for glass.

ii. Used for making artificial domes, sky lights, windows in air crafts, wind screens of cars etc.

Teflon

Properties :

i. It is also thermoplastic.

ii. It is heat resistant, not affected by chemicals.

iii. It has low friction, slippery.

Uses :

i. It is used for making non-stick coating on utensils

ii. It is also used as non-corrosive coating in industries.

Bakelite

Properties :

i. It is thermosetting plastic.

ii. It is harder than other plastics.

iii. It acts as insulator also.

Uses :

i. It is used for making electric switches, plugs lamination for table tops.

ii. It is also used for making fountain pen bodies, comb etc.

Melamine

Properties

i. It is made of thermosetting plastic.

ii. It is highly polished and hard in nature.

Uses :

i. It is used in making umbreakable crockery, decorative items etc.

Chapter 4 : Metals and Non-Metals

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Recap Questions :

A.1 There are 92 kinds of elements exist in nature out of which 70 are metals and 22 are none-metals.

Example : Gold, silver, oxygen, nitrogen etc.

A.2 Ores : A mineral from which profitable amount of metal can be extracted is called an ore.

Gangue : In ores, useful metallic mineral is mixed with other minerals of not much use are called as gangue. They are present in ores as impurities.

A.3 Two important physical properties of metals are :

i. All metals can be hammered to sheets : malleability or drawn into thin wires – ductility.

ii. All metals are good conductors of heat and electricity.

A.4 ***Conductors :*** The materials that allow electricity to pass through them are called conductors.

Example : Copper, iron etc.

Insulators : The materials do not allow electricity to pass through them are called as Insulators.

For example : wood, paper etc.

A.5 An experiment to show that oxide of magnesium is basic in nature is as follows :

Take a piece of magnesium ribbon and hold it over a flame with the help of a pair of tongs. It starts burning with dazzling white colour light, getting converted into white ash of magnesium oxide. Collect this ash in a china dish. Add water to it. Test the solution with red litmus paper. It turns to blue showing that solution is basic in nature.

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Recap Questions

A.1 Colour of some non metals are :

	Non Metals	Colour
i.	Sulphur	Yellow
ii.	Phosphorus	red or white
iii.	Chlorine	greenish yellow

iv.	Bromine	Red
v.	Hydrogen, oxygen, nitrogen etc.	Colourless

A.2 The electro negative character of Chlorine means, it accepts electrons by removing electrons from electro-positive elements and acts as a nion or oxidising agent.

Chlorine + e^- ⟶ Chloride ion (a nion)

A.3 ***Reactivity series of metal is as follows :***

K > Na > Ba > Ca > Mg > Al > Zn > Fe > Ni > Sn > Pb > H > Cu > Hg > Ag > Au > Pt.

So, potassium is the most reactive metal and platinum is the least reactive metal.

A.4 ***Uses of iron, copper & aluminum are :***

Iron :

i. It is used for making pipes, storage tanks, railings, bridge, engine parts, sheets, bars, nails.

ii. It is also used in construction work.

iii. Stainless steel is used to make utensils, finer parts of machines etc.

Copper :

It is used for making electrical wires, cables, utensils, radiators calorimeters, alloys.

Aluminium :

i. It is used for making electrical wires, cables, cooking utensils, metallic points, aluminum foil for packing food.

ii. Also used for making bodies of air-carft and cars as alloys.

A.5 Food items having acids should not be packed in metallic containers because acids present in food items may reacts with metals causing poisoning of food.

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Formative Assessment

D. Match the following :

	A	**B**
i.	Copper	Cu
ii.	Iron	Fe

	A	B
iii.	Gold	Au
iv.	Sodium	Na
v.	Aluminium	Al

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E. Answer in one word :

1. Mercury
2. Graphite
3. Platinum
4. Potassium
5. Aluminium
6. Sodium
7. Copper
8. Sodium

Summative Assessment

A. Give reasons :

1. Because they are good conductor of heat and electricity.

2. Because sodium is very much reactive so it reacts rapidly when it comes in contact of air.

3. It is so because the acids present in food may react with metallic container and cause toxication of food.

4. Non-metals break easily because they are soft not hard in nature.

5. The corrosion of metal should be prevented for the safety and longer use of metal.

B. Answer in detail :

1. i. *Name of the non-metal* : Hydrogen
In free form : Most abundant element in universe present in stars.
In combined form : In water, petroleum clay and all living being.
How they are obtained : from water by electrolysis.

ii. *Name of the non-metal* : Oxygen

In free form : Most abundant element on earth in atmosphere.

In combined form : In water, oxides, carbonates, silicates in earth's crust

How they are obtained. : from air by fractional distillation.

iii. *Name of the non-metal* : Carbon

In free form : As graphite, coal and diamond.

In combined form : As CO_2 in air as carbonates in earth's crust, carbon in living beings.

How they are obtained. : Mined from earth.

2. The physical properties of non-metal are :

i. They may occur in solid, liquid or gaseous states at normal room temperature

ii. Some non-metals like graphite and iodine have metallic lustre.

iii. All the non-metals except graphite, do not conduct heat or electricity. They act as insulators.

iv. They are not malleable, non ductile.

v. They have low specific gravity.

vi. Non-metals have less tensile strength.

vii. They do not produce sound.

viii. They have low melting and boiling point except graphite.

3. Reaction of Nitrogen with oxygen :

Nitrogen + Oxygen ———> Nitrousoxide (Neutral)

Reaction of Sulphur with halogens.

Sulphure + Chlorine $\xrightarrow{\text{heat}}$ Sulphurous tri-chloride

Reaction of Carbon with acids

Carbon + Nitric acid ——> Carbonic acid + Nitrogendioxide

(core) + Water

4. ***Displacement reaction of metals :*** Some more reactive metal can displace less reactive metals from its salt solution.

For Example : As zinc is more reactive metal, so it displace copper from the solution of copper sulphate.

Zinc + Copper Sulphate ——> Zinc Sulphate + Copper

A5. ***Corrosion of Metals :*** Some metals in the presence of moisture and air, get spoilt. It is the slow destruction of metals layer by air which causes a great loss to metals.

For example : Iron nails, grills, screen etc. may get corroded by reddish powder in moist conditions. It can be prevented in the following ways :

i. By applying paint or greese.

ii. By galvanization.

iii. By electroplating.

iv. By alloying.

Thus, using the above methods, corrosion can be avoided.

Chapter 5 : Combustion and Flame

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Recap Questions

A.1 There are four kinds of combustions. These are :

i. Rapid Combustion

ii. Slow Combustion

iii. Incomplete Combustion.

iv. Complete Combustion.

A.2 Combustible substances are those substances which burn readily in air. For example : coal, wood, paper, petrol etc.

Non-Combustible substances are those substances which do not burn.

For example : Water, sand, glass etc.

A.3 Burning of yellow phosphorous at room temperature is a slow combustion because :

i. No light is produced during its burning.

ii. The temperature also remains constant or changes to negligible degree.

A.4 Incomplete combustion adds pollution to the air. Carbon–monoxide is a pollutant, in such type of combustion.

A.5 The minimum temperature required to initiale burning of a substance is called as its Ignition temperature.

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Recap Questions

A.1 Some examples of solid fuels are fire wood, agricultural wastes, animal dung cakes, coal etc.

A.2 The properties of a good fuel are :

i. A good fuel should produce sufficient amount of heat per unit mass.

ii. It should burn with moderate speed.

iii. It should be cheap and economical, transportable and easily available.

iv. It should not burn with evolution of poisonous or irritating fumes or odours.

v. Its ignition temperature should not be too low.

vi. It should be safe and be stored conveniently.

A.3 The amount of heat produced when one gram of a fuel completely burns in air is known as its calorific value. It is expressed in kilo Joule/gram (KJ/g)

A.4 The factors responsible for burning are :

i. Presence of a combustible substance like paper, petrol etc.

ii. Supporter of combustion like oxygen must present for burning.

iii. The temperature of the combustible substance to be raised till it reaches its ignition temperature when it catches fire.

A.5 Luminous substance are those substance which have their own light. Example : burning candle, torch etc.

Non-luminous substance : The substances which do not have their own light but shine due to the light of some other source are called Non-luminous substance. For example : Moon.

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Formative Assessment

D. Match the following :

	A	B
i.	LPG	fuel for home.
ii.	Unnat Chulhas	Smokeless Chulhas
iii.	Liquid fuel	petrol
iv.	Solid fuel	Coal
v.	Fuel	Combustible substance

E. One Word Answer :

1. Ignition temperature

2. Carbon monoxide.

3. Carbon dioxide.

4. LPG

5. Paraffin Wax.

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Summative Assessment

A. Give reasons :

1. It is so because LPG does not produce smoke on burning and also do not leave any ash after burning.

2. Because outermost zone of the flame has highest temperature.

3. It is so because moisture in wood raises the ignition temperature of wood and it takes time to burn.

4. It is so because water is good conductor of electricity so we may get an electric shock by using water to extinguish fire caused by electric short circuit.

B. Answer in detail :

1. Oxygen, Present in air is a supporter of combustion.

An activity to show the substances burn only in the presence of a supporter of combustion is as follows :

Take two lighted candles and fix them separately on a table. Cover one of them with a bell jar. We will see that the

candle covered with bell Jar burns for sometimes but the one which is not covered keeps on burning.

This is because till the air within the bell jar is there the candle keep burning but it blows out as soon as air is used up.

2. ***Structure of a Flame :*** A luminous flame has four zones :

i. Outermost Non-luminous blue zone : It is the outermost zone of complete combustion.

ii. Second yellow (middle) zone : This zone is below the outer zone of incomplete cumbustion. This area of flame has moderate temperature. The wax vapours get burnt here in insufficient amount of air which produce carbon particles.

iii. Inner dark Zone of no combustion : This zone is black or dark area where no burning takes place as there is no air present. The temperature is minimum in this zone.

iv. The innermost blue zone : This is the lowest zone, located at the base of the flame. The carbon monoxide, produced in this zone, gives it blue colour.

3. A fuel is a combustible substance which on burning gives large amount of heat and light.

There are three kinds of fuels :

i. Solid Fuel

ii. Liquid Fuel

iii. Gaseous Fuel

Solid Fuels : The substances which are solid at room temperature and burn to give energy are called solid fuels. Example : Fire wood, Coal, Animal dung cakes etc.

Liquid Fuels : The liquid substances which on burning produce combustible vapours are called liquid fuels.

Example : Kerosone, Petrol, Diesel etc.

Gaseous Fuels : Gases or the mixture of gases that burn to give heat energy are called gaseous fuels.

Example : LPG, Natural gas, bio gas etc.

4. Green House Effect : The increase in the temperature of earth due to increase in concentration of carbon dioxide in the atmosphere, Carbon dioxide trap, the infra red radiations, result in the heating of atmosphere. This is

called Green house effect.

Its affects on environment are :

i. It causes melting of polar ice that result in rise in the level of water bodies like oceans and seas. Flooding of rivers also takes place in some areas.

ii. It also results in change in cropping pattern.

iii. It also adversely affect the monsoon rains.

5. ***Acid Rain :*** The rain water when mixes with oxides of nitrogen and sulphur results in the formation of acid rain.

It affects both living and non-living things in the following ways :

i. If destroys aquatic life like fish, plants etc.

ii. It causes loss of soil fertility.

iii. It also corrodes the building made with metals, marbles etc.

Chapter 6 : Biodiversity

Page : 80

Recap Questions

A.1 Biodiversity is defined as the variations in genes, species and ecosystem in totality.

A.2 Man, himself is responsible for the loss of biodiversity due to following reasons :

i. Habitat destruction.

ii. Deforestation and overgrazing.

iii. Over population.

iv. Pollution.

A.3 Endangered species are the threatened species which are vulnerable and rare species.

A.4 The ways to preserve the biodiversity are :

i. By preserving biodiversity as germ-plasm.

ii. Deforestation should be avoided.

iii. Aforestation should be encouraged.

iv. By creating more protected areas as national park etc.

v. By enforcing as sanctuaries, laws on hunting of animals and cutting of trees.

vi. Illegal trade of animal skin and elephant tusks to be penallised.

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Formative Assessment

A. Distinction between :

1. ***Deforestation and Reforestation***

Deforestation :

i. It is the cutting down of trees on a large scale.

ii. It damages the biodiversity of areas.

Reforestation :

i. It is the replanting of trees.

ii. It helps in maintaining the bio-diversity of areas.

2. ***Endangered Species and Extinct Species***

Endangered Species :

The species which are in danger of becoming disappear from earth.

Example : Asian Lion.

Extinct Species :

i. The species which are totally disappeared from earth are called extinct species.

Example : Dinasaurs

3. ***Sanctuary and Zoo***

Sanctuary

i. Animals are free to move.

ii. Food is not provided to animals.

Zoo

i. Animals are kept in cages.

ii. Food is provided to animals.

B. Answer in 3 or 4 sentences :

1. Red data book is a book that gives information on the threatened species of plants and animals.

2. Migration is defined as the movement of animals from one habitat to another to overcome the extreme condition of survival.

3. Some causes of extinction of wild life are :

i. Habitat destruction.

ii. Deforestation.

iii. Pollution.

4. Birds migrate from one habitat to another to get the favourable condition for their survival, breeding etc.

5. Some popular parks and sanctuaries are :

i. The Jim Corbett National Park.

ii. Kanha National Park, M.P.

iii. Bharatpur Bird Sanctuary.

iv. Kaziranga Sanctuary.

C. Answer in detail :

1. Biodiversity is threatened due to deforestation, overgrazing, human over population, pollution etc. causes degradation of biologically rich, rare and unique habitats and the pollution created by human activities lead to acts as poison for flora and fauna.

All these reasons threatened the biodiversity.

2. IUCN red list categories are extinct, critically endangered vulnerable, lower risk data deficient and not evaluated species.

3. Conservation of biodiversity means to prevent further destruction or degradation of habitat by us by adopting biodiversity strategies.

Some of them are :

i. By preserving biodiversity as germ-plasm.

ii. Deforestation should be avoided.

iii. Afforestation should be encouraged.

iv. By creating more protected areas as national park.

v. By enforcing as sanctuaries laws on hunting of animals

and cutting of trees.

vi. Illegal trade of animal skin and elephant tusk to be penallised.

4. ***Gene Banks :*** These are one of the strategies of conserving the species for future use. These include botanical gardens, zoos, pollen, seeds, seedlings, gene banks and tissue culture.

   Preservation of genetic resources is carried out in field gene banks under normal growing conditions.

   Protected Areas : The areas of land and water especially designed and dedicated to the protection and maintenance of biological diversity, natural and associated cultural resources.

   Example of protected areas are national parks, wild life sanctuaries, biosphere reserves etc.

5. ***Sacred Forests :*** These are islands of pristine forests which are not disturbed by human activities and impact.

   Sacred Lakes : These give protection to flora and fauna.

   These are the water bodies declared as sacred by the local people which gives protection to aquatic flora and fauna. Example : Khecheopalri lake in Sikkim.

   Endemic Species : These are the species which are unique to that place, region or area which are not found anywhere else in nature. These are native to a particular place. These species are especially found in isolated patches of land like Hawaii and Galapagos islands.

   Migration : Seasonal movement of some animals from one habitat to another is called Migration. For example, Arctictern travels from North Pole to South Pole and back each year.

Chapter 7 : Cell Structure and Functions

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Recap Questions

A.1 Most of the cells cannot be seen without the use of microscope because they are extremely small.

A.2 ***Contribution of Robert Hooke :*** Robert Hooke's contribution was great as he was the first person who saw small spaces in the cork tissue which appeared like honey comb and called them as cells.

A.3 Difference in the onion and human cheek cell is as follows :

Onion Cell :

i. Cell wall is present that separate the cells.

ii. Vacuole is present.

iii. Cells are rectangular in shape.

Human Cheek Cell :

i. Cell wall is absent.

ii. Vacuole is absent.

iii. Cells are irregular.

A.4 Magnifying lens is the simplest microscope used.

A.5 The smallest known cell is of Microplasma and largest known cell is of Ostrich.

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Recap Questions :

A.1 The difference between unicellular and multi-cullular organisms is as follows :

Unicellular Organism : The organisms which passess only one cell and perform all their functions through that cell only are the unicellular organisms.

Multicellular Organism : Multicellular organism have unnumerable cells. Different cells perform functions to bring about more efficiency in the organisms. The cells are vary in size and functions.

A.2 The parts of a typical cell are :

i. A plasma membrane or cell-membrane

ii. Cytoplasm

iii. Nucleus

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Formative Assessment

D. Match the following :

	A	**B**
i.	Mitochondria	Power house of the cell.

	A	B
ii.	Chloroplast	preparation of food.
iii.	Chromosome	Inheritance of Characters
iv.	Nucleus	Controls all the activities of the cell.
v.	Cytoplasm	Where most of the activities of the cell takes place

E. Answer in one word only :

1. Microscope
2. Chloroplast
3. Vacuoles
4. Multicellular
5. Cell

Summative Assessment

A. Differentiate between these :

1. ***Plant Cell and Animal Cell***

Plant Cell :

i. Plant cell has a rigid cellulose cell wall surrounding the plasma membrane.
ii. Plastids are present in plant cell.
iii. A large vacuole is present in the centre of the cell. The cytoplasm is peripheral.
iv. Organelle called centrosome is absent in a plant cell.
v. Lysosomes are rarely found or are absent.

Animal Cell :

i. Animal cell lacks the cell wall.
ii. Plastids are absent in an animal cell.
iii. Vacuoles are very small if present, normally central large vacuole is absent in an animal cell.
iv. Centrosome present.
v. Lysosomes present.

2. ***Nucleus and Nucleolus***

Nucleus :

i. It is a dense oval body.
ii. It is well defined bounded by nuclear membrane.

Nucleolus :

i. It is rounded structure present inside the nucleus.

ii. It is not bounded by nuclear membrane.

Cell Wall and Cell Membrane

Cell Wall :

i. It is the outermost covering of cell and give protection to the cell.

ii. It is made up of cellulose.

Cell Membrane :

i. It is next to cell wall that gives shape and size to the cell.

ii. It is made up of proteins and fats.

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B. Answer in 3 or 4 sentences :

1. It is so because it helps to break food to release energy.

2. A cell is the structures and functional unit of all living beings.

3. The chloroplast helps to trap sun rays for the process of photosynthesis.

4. Ribosomes are the cell organelles present in cytoplasm that helps in protein synthesis.

5. Plastids are the largest cell organelles found in the cytoplasm of the plant cells only.

Their three kinds are :

i. Chloroplasts

ii. Leucoplasts

iii. Chromoplasts.

C. Answer in detail :

1. Discovery of Microscope helped in scientific studies to great extent. With the help of microscope, it becomes possible to see cells, micro organisms, by magnifying them. etc. under it. It helps to study about them i.e. their structure, functions etc.

2. An activity to see the characteristics features of animal cell is follows :

Gently scrap the inner side of mouth with the help of

scalpel. Stain it with methylene blue by keeping the portion of scrapping on a slide. Wash it with water and mount in a drop of water or glycerine on a slide. Cover it with a cover slip and observe it under the microscope.

It shows the following features :

i. The cells are irregular and arranged leaving no inter-cellular spaces.

ii. Darkly stained rounded nucleus is seen in the centre of each cell.

iii. No cell wall or central vacuole is seen.

3. Cell is the structural and functional unit of organisms because cell is the basic unit of all the living organisms. All living organisms are made up of cells. Cells together form the tissues which combine to form organs. Organs form the organ system. So cells are common to all organisms.

4. ***Mitochondria :*** These are the cell organelles present in the cytoplasm. These are oval or rod like bodies found in the cytoplasm of both plant and animal cells. They are bounded by their membrane. It causes the breakdown of food to release energy so they are also called as the power house of the cells.

Plastids : These are the largest cell organelles found in the cytoplasm of the plant cells. They may be of following types:

i. Chloroplasts : These organelles have green pigment chlorophyll that help in the preparation of food.

ii. Leucoplasts : These are colourless plastids which store food in plant tissues.

iii. Chromoplasts : They have different pigments in the cells of fruits and flowers of plants.

5. ***Differences between the plant and animal cells are :***

Plant Cell :

i. It has a rigid cell wall surrounding the plasma membrane.

ii. Plastids are present.

iii. A large vacuole is present in the centre of the cell.

iv. Centrosomes are absent.

v. Lysosomes are rarely present or are absent.

Animal Cell :

i. It lacks the cell wall.

ii. Plastids are absent.
iii. Vacuoles are small if present.
iv. Centrosomes are present.
v. Lysosomes are present.

Chapter 8 : Sexual Reproduction and Endocrine System

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Recap Questions

A.1 Organisms prefer to have sexual reproduction because it is an advanced method of reproduction especially in higher organisms.

A.2 There are two types of reproduction. These are :

i. Asexual reproduction.
ii. Sexual reproduction.

A.3 Some animals which lay eggs are : fish, frog, birds, reptiles etc.

Some animals which give birth to their young ones are : dog, cat, cattle, elephant etc.

A4. Difference between external and internal fertilization in animals is as follows :

External Fertilization : It is a type of fertilization, in which fusion of male and female gametes occur outside the body of organisms. For example, fish, frog etc.

Internal Fertilization : It is a type of fertilization in which fusion of male and female gametes take place inside the body of the female partner. For example, dog, cat, cattle etc.

A.5 'XX' and 'XY' cell types determine the sex of unborn baby. If the cell has 'XX' type of chromosome then the child will be female and if the cell has 'XY' type of chromosome, then the child will be male.

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Formative Assessment :

D. Match the following :

	A	B
i.	Fish	External fertilization
ii.	Hydra	Binary fusion
iii.	Estrogen	Female hormone
iv.	Frog	Tadpole
v.	Testosterone	Male hormones

E. Answer in one word only :

1. Hydra
2. Frog
3. Fish
4. Cat
5. Thyroxine

Summative Assessment

Differentiate between them :

1. ***Internal Fertilization and External Fertilization***

Internal Fertilization :

i. The fusion of gametes takes place inside the body of the female partner.

ii. Dogs, cats, cattle, birds etc. adopt mode of internal fertilization.

External Fertilization :

i. This is fertilization in which the fusion of male and female gametes outside the body of the organisms.

ii. Frogs and fish adopt mode of external fertilization.

2. ***Asexual and Sexual reproduction :***

Asexual reproduction :

It involves only one parent.

Example : Budding in Hydra.

Sexual reproduction :

It involves both parents.

Example : Frog, fish.

3. ***Oviparous and Viviparous***

Oviparous

The animals which lays eggs are called oviparous animals.

Example : Frog, fish etc.

Viviparous

The animals which give birth to their young ones are called viviparous animals.

Example : Cat, dog, human etc.

B. Answer in 3 or 4 sentences :

1. Budding : It is a method of asexual reproduction in which an outgrowth called bud appears which later on separated from parent's body, and develop into an individual plant.

2. i. Hormones are substances acting as chemical regulators in the body.

ii. They are needed in small amount.

3. Two ill effects of over population are :

i. Malnutrition.

ii. Financial problems of proper education, medication etc. arise.

C. Answer in detail :

1. Sexual reproduction is necessary because it plays an important role in the continuity of species and evolution of living beings by small variations occuring in every generation Male reproductive system of man is as follows :

It consists of following organs :

i. ***Testis :*** A pair of testis is present outside the abdomen in bag like structures called the scrotal sacs. Each testis is oval in shape in which the male gametes sperms and hormone testosterone are produced.

ii. ***Vas Deferens :*** It is duct through which the sperms produced in the testis travels upwards into the abdominal cavity.

iii. ***Urethra :*** Vas deferens passes the fluid containing sperm into urethra before receiving secretions from accessory glands called the seminal Vesicles, prostrate glands and cowper's gland.

iv. ***Penis :*** It is a muscular organ which becomes stiff due to erectile tissues and blood spaces inside it.

It helps to pass out urine and male gametes.

2. ***Fertilization :*** The process of fusion of male gamete and female gamete is known as fertilization.

It is of two types :

i. External fertilization.

ii. Internal fertilization.

External Fertilization : The type of fertilization in which fusion of male and female gamete takes place outside the body of organism. For example, fish, frog etc.

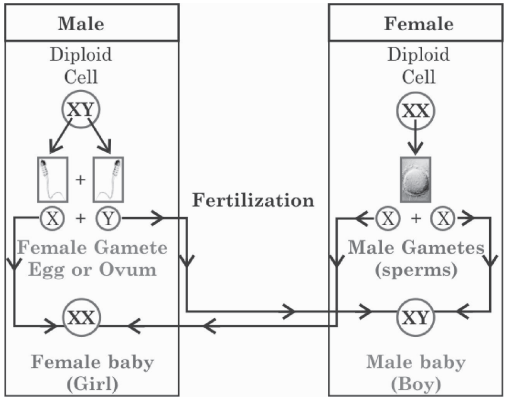
Internal Fertilization : The type of fertilization, in which fusion of male and female gamete takes place inside the body of female partner. For example, dog, cat, cattle etc.

3. ***Secondary sexual characters :*** The changes, which develop when the child attains sexual maturity. As the child reaches puberty at the age of 14-15 years in males and 11-12 years in females, some changes in the body structure and internal sexual development takes place. These are called Secondary Sexual Characters.

4. ***Sex Determination :*** Sex determination in a unborn child depends upon the type of chromosomes present in the diploid cell :

i. If the sex chromosome pair has one X chromosome and one Y chromosome forming XY type pair, then the baby will be male.

ii. If the sex chromosome pair has both X chromosome forming XX type pair, the baby will be female.



Sex Determination

A5. Endocrine system consists of certain endocrine glands which produce secretions called the hormones which regulate the growth and development of the body.

The functions of four major hormones produced in different undocrine glands are :

i. ***Adrenalin :*** It is called as emergency hormone, produced from endocrine gland. It works under the situations of stress, angry or excitement.

ii. ***Insulin :*** This hormone is secreted by pancreas which regulates Sugar level in the body.

iii. ***Estrogen :*** It is female sex hormone produced by ovaries in females which help to control secondary female sexual characters.

iv. ***Testosterone :*** It is a male sex hormone produced by testis in males which help to control the secondary male sexual characters.

Chapter 9 : Force, Friction and Pressure

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Recap Questions

A.1 Force can be defined as a pull or push applied on a body to change its position from rest to motion. It is denoted by letter 'F'.

A.2 Contact force is the force which can be applied only on touching the object.

The force seen in magnets, by which magnets attract or repel the other magnet without coming in contact is called non–contact force.

A.3 An example of force where shape changes is as follows :

Sitting on a cushion, changes its shape.

A.4 ***Resultant Force :*** Sometimes, more than single force acts on a body which together produces same effect as that done by one is called as resultant force.

A.5 ***Weight :*** The force by which any object is attracted towards the earth is called the weight of that object.

SI unit of weight is Newton.

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Recap Questions

A.1 The force acting along the two surfaces in contact which opposes the motion of one body over the other is called as force of friction.

A.2 Friction is necessary for moving objects because it is due to friction which keep a body in motion less than the force required to start the motion between the two surfaces.

A.3 No, area does not affects the force of friction.

A.4 ***Rolling Friction :*** When a ball rolls on a surface, it faces a kind of friction called as Rolling friction.

A.5 One way of reducing friction is by lubricating the surfaces in contact.

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Formative Assessment

D. Match the following :

	A	B
1.	Force applied per unit area	Pressure
2.	Frictional force	opposes motion
3.	A force between two charged body	electrostatic force
4.	Force exerted by muscles	Muscular force
5.	To measure atmospheric pressure	Barometer

E. Answer in one word :

1. Pan balance

2. Rolling friction

3. Static friction

4. Gravitational force

5. N/m^2

6. Pressure

7. Muscular force

8. Frictional Force.

Summative Assessment

A. Answer in detail :

1. There are six different types of forces. These are :

i. Mechanical force
ii. Frictional force
iii. Electrostatic force
iv. Muscular force
v. Magnetic force
vi. Gravitational force.

i. Mechanical force : All machine work due to applying force to produce energy.

For example – The wind mills, sailboats change their direction or speed due to mechanical force of wind.

ii. Frictional force : This force acts between two surfaces in contact with each other.

For example – A ball moving in a high speed on a grassland slows down and stops due to friction with the grass.

iii. Electrostatic force : When an object is rubbed over another surface, it attains an electrostatic change due to which it can attract small bits of paper towards it. This is due to friction between the two surfaces.

iv. Muscular force : The force exerted by the muscles of limbs is called Muscular force.

For example – lifting objects, walking etc. are all due to muscular force.

v. Magnetic force : The force of attraction between the magnet and magnetic materials is called Magnetic force.

For example – Magnets are used to separate scraps from the garbage.

vi. Gravitational force : This force exist everywhere in the universe. It is the force of attraction by which every object is attracted towards earth.

All things fall on the earth due to this force.

2. The different units of force are :

Its S.I. unit is Newton denoted by 'N'.

Its non S.I. units are Kilogram force and gram force denoted by Kgf and gf and gram force. Their mutual relationship is as follows :

1 Kgf = 1000 gf

1 Kilogram force = 9.8 Newton

or 1 Kgf = 9.8 N

3. ***Construction of spring balance :*** It is a kind of simple machine for weighing objects manually. It is made up of a high tension steel spring enclosed in a metal case. The upper end of a spring is welded to the top of the metal case and the lower end is attached to a strip of steel. A hook is fixed at the lower end of the strip. A small pointer is attached at the function of steel strip and the spring. A scale is calibrated in gram force (gf) or kilogram force (Kgf). On the metal case on front. The spring is free to move along the scale.

Working : The object to be weighed is suspended on the hook of the balance. The spring get stretched due to the downward pull due to its weight of the object. The pointer moves down along the scale and the reading is recorded.

4. ***Force of friction :*** The force acting along the two surfaces in contact which opposes the motion of one body over the other is called as the force of friction.

For example : A rolling ball after sometime is seen to slow down in its speed and finally stop. This happens due to the force of friction between the ball and the surface on which it is rolling.

5. Different kinds of friction are :

i. Static friction and limiting friction.

ii. Sliding friction or kinetic friction.

iii. Rolling friction

i. Static friction : When the force on any body gradually increases, the force of friction also increases at the same rate result in body remaining stationary. This is called as static friction (fs).

Limiting Friction :If the force applied increases further so that the body just starts to move then at this stage, force of static friction is maximum. This force is called as limiting friction.

ii. Sliding or Kinetic friction

It is the force of friction which is required to keep a body in motion less than the force required to start the motion between the two surfaces.

iii. Rolling friction : When a ball roles on a surface, it faces a kind of friction called as Rolling friction.

6. ***Two activities to show liquids and gases exert pressure are as follows :***

An activity to prove that liquid exerts pressure

Take a can and make holes in all the sides at the same level. Fill the can with water. We see that water starts gushing out reaches the same distance away from the car with the same pressure.

Gases exerts pressure : Take an empty tin can. Fill it half with water and heat to boil. Close the mouth of the can with the cap. Cool it under tap. The can gets deformed. The water on boiling inside the can pushes out the air and the can gets filled with steam. On cooling the steam condenses, thus lowering the pressure. Greater outside pressure presses the can and deforms it.

7. A barometer is a device to measure atmospheric pressure.

Construction : Take a metre length thin glass tube and fill it with mercury. Remove air bubble if any by tapping it. Close the open end of the tube by thumb and invert it in a through containing mercury. The mercury falls to certain level and then stays at a point. There is a vacuum above the mercury level.

Chapter 10 : Sound

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Recap Questions

A.1 Sound is a form of energy which creates a sensation of hearing in our ears.

A.2 No, it is not possible for sound to be propagated in vacuum.

A.3 A tuning fork is a 'U' shaped single metal prong with a handle.

A.4 Sonic sound is a sound which is with in the audible range i.e. from 25 Hz to 20,000 Hz.

A.5 Relationship between frequency and time period of sound waves :

$$\text{Frequency (n)} = \frac{1}{T}$$

T = Time Period

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Recap Questions

A.1 An activity to show that sound needs medium to propagate is as follows :

Take an electric bell, and suspend it inside a bell jar which is made air tight. Bell Jar is connected to vacuum pump. On pressing the switch of the bell, we can hear the bell. Now, take out the air from the bell for slowly. The sound of the bell goes on becoming fainter and fainter. There will be no sound heard when there is no air inside the bell jar.

This shows that sound needs medium to propagate.

A.2 ***Difference between vibration and Oscillation is :***

Vibration is rapid to and fro movements of a body about mean position.

But slower vibrations are called oscillations, in which movement of a body from one position to another and back passing through its mean position.

A.3 Maximum displacement of a body from its mean position is called the amplitude of oscillations.

A.4 The speed of gases is 1284 m/sec. The speed of air is 346 m/sec.

A.5 The applications of Echo-sounding are :

i. It is used by ships to detect submarines.

ii. It is used for determining the depth of sea.

iii. It is also used to locate any obstacle by bats and dolphins.

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Formative Assessment

D. Match the following :

1.	Frequency	Hertz
2.	Undesirable sound	Noise
3.	Time Period	Seconds
4.	Membrane	Tabla
5.	Slower Vibrations	Oscillations

Summative Assessment

A. Distinguish :

1. Ultrasonic and Infrasonic

Ultrasonic :

The sounds whose frequency is higher than 20,000 Hz is called as ultrasonic sound.

Infrasonic :

The sound of frequency lower than 20 Hz is called infrasonic sound.

2. Loudness and Pitch

Loudness :

i. It is determined by the amplitude of vibration of the sound.

ii. It has units.

Pitch :

i. The shrillness of sound is called pitch.

ii. If has no units.

3. Noise and Music

Noise :

The unpleasant sound is called noise.

Music :

The pleasant sound is called music.

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B. Give reasons :

1. Children and women have shriller voices than man because they have higher frequency and the pitch of sound compared with that of man.

2. Because sound needs medium like the air to travel to ears to be heard.

3. It is so because speed of sound is much, less than the speed of light.

4. It is so because sound travels in air but there is no air on moon.

C. Answer in detail :

1. An activity to show how sound is produced is as follows :

Take a rubber band and hold it to a hook on some fixed object. Stretch the other end of the rubber band with fingers. We will observes that there is a kind of mild sound produced when rubber band moves up and down. The sound is not produced when the rubber band is at rest.

This shows that sound is produced due to vibrations, which may do seen or may not be seen but felt only.

2. ***Applications of ultrasonic sound are :***

i. Materials like emulsions, catalysts, alloy are being prepared now a days by using ultrasonic waves.

ii. In dish washers.

iii. In homogenization of milk in which bigger fat particles are broken into smaller ones.

iv. In detecting deformity in unborn baby.

v. To detect depth of sea.

vi. To detect flows in tyres, metal castings etc.

vii. The technique SONAR – Navigation and ranging use ultrasonic waves to detect submarines, ice bergs, sunken ships in seas.

3. ***Vibration :*** The rapid to and fro movements of a body about mean position are called vibration.

Oscillations : Slower vibrations are called oscillations.

Amplitude of Oscillation : Maximum displacement of a body from its mean position is called the Amplitude of Oscillation.

Frequency of Oscillation : The no. of oscillations made by an oscillating body in one second is called frequency of oscillations.

$$\text{Frequency(n)} = \frac{1}{T}$$

4. An activity to demonstrate the phenomenon of reflection of sound is as follows :

Take two identical cardboard tubes. Place them on a table touching the wall. Keep a clock near the open end of one of the tubes and try to hear the sound of the clock by keeping ear near the open end of the other tube. Arrange the tube until we hear the best sound mark the positions of the tubes measures the angle of incidence and angle of reflection

which are found to be equal.

Thus, it shows the sound like the light, follow the laws of reflection.

5. The characteristics of sound are :

i. Loudness

ii. Pitch

iii. Quality or tone

Loudness : It is directly proportional to the amplitude of vibration, producing the sound. Greater the amplitude of vibration, louder will be the sound produced by it.

Pitch : The shrillness of sound is called as pitch. Higher the frequency of sound, higher will be its pitch.

Quality : Quality of sound is called as the tone. Different kinds of sounds produced by different sources can be recognized by their tones.

Chapter 11 : Electricity : Its Chemical Effects

Page : 143

Recap Questions :

A.1 Transformation of energy means conversion of one form of energy into another form of energy.

A.2 Electricity is regarded as form of energy because it makes things work. No work can be done without the use of one or more kinds of energies.

A.3 Electrolytes : Copper wire, acidulated water.

Non electrolytes : Graphite, wood paper, distilled water.

A.4 The process of decomposition of a Chemical compound in the fused state or aqueous state by the passage of a direct electric current resulting in discharge ions as neutral atoms at the respective electrodes is called electrolysis.

A.5 Voltmeter is an instrument used to measure voltage across the two electrodes.

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Summative Assessment

Differentiate between :

1. Anode and Cathode

Anode :

i. It is the positively charged electrode.

ii. Electricity enters the solution through this electrode.

Cathode :

i. It is negatively charged electrode.

ii. Electricity leaves the solution through this electrode.

2. Electrolyte and Non-electrolytes

Electrolyte :

i. They conduct electricity.

ii. They undergo chemical decomposition when current passes through them. Eg.– Sodium hydroxide.

Non-electrolytes :

i. They do not conduct electricity.

ii. They do not undergo chemical decomposition when current passe through them. Eg.– Distilled Water.

B. Give reasons for the following :

1. Zinc is plated on iron to prevent the corrosion of iron.

2. Tap water is conductor of electricity but distilled water does not because tap water has few salts dissolved in it which makes it conductor but distilled water is free of salts.

3. It is so because water being good conductor of electricity may transfer an electric shock.

4. Direct Current (DC) should be used for good electroplating because DC keeps the polarity changing very fast.

5. Some metals are electroplated because they are protected from corrosion and they also look more attractive.

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C. Answer in detail :

1. ***Electrolytes :*** These are the chemical compounds which conduct electricity in fused or aqueous solution when

electricity is passed through them and undergo chemical decomposition. Eg. – solution of copper sulphate.

Non-electrolytes : These are the chemical compounds which do not conduct electricity on passage electric current Eg. – distilled water.

2. ***Difference between cations and anions :***

Anions :

i. These are negatively charged ions.

ii. They migrate to anode during electrolysis. Example – all non- metallic ions.

Cations :

i. These are positively charged ions.

ii. They migrate to cathode during electrolysis. Example, all metallic ions and hydrogen ions.

3. ***A typical electrolytic cell :*** A glass or plastic container having two electrodes and the solution is called as electrolyte cell.

4. Purification of metals is done with the help of electricity is as follows :

Purification of metals is done with the help of electricity by the process called Electro Refining by which metals containing impurities are purified, electrolytically. Method of reduction does not remove all the impurities of metals. So metals like copper, zinc, silver, nickel, gold etc. are refined by this method.

5. ***Copper Electroplating :*** Steps for copper electroplating are as follows :

i. Take an acidified solution of copper sulphate ($CuSO_4$) as a electrolyte in the beaker.

ii. Now make, iron spoon as the cathode (–).

iii. Thin copper strip is made as the anode (+).

iv. When we pass the electricity through the solution, the copper ions (Cu^{++}) move towards the cathode to get reduced to copper metal (Cu) which get electroplated on the spoon (cathode).

v. Copper sulphate breaks up chemically. Instead of sulphate ions $(SO_4)^{-2}$, copper metal (Cu) of the anode get converted to copper ions (Cu^{++}) which go into solution. So, the Cu^{++} concentration remains unchanged.

Reaction at Cathode $\longrightarrow$ Cu^{2+} (from solution) + $2e^{-}$ (from cathode) $\longrightarrow$ Cu (S)

Reaction at anode :

Cu(S) $\longrightarrow$ $Cu2^{+}$ + $2e^{-}$

impure copper — enters solution — migrate to cathode

Chapter 12 : Rain, Thunder and Lightning

Page : 154

Formative Assessment

D. Answer in one word only :

1. Repulsion

2. Thunderstorm

3. Static electricity

4. Earthing

5. Lightning

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Summative Assessment

A. Answer in three or four sentence :

1. When lightning strikes a lightning conductor, it induces opposite charge on the spikes. This quickly flows down into the earth thereby building is protected from damage due to electric discharge.

2. Ozone formation is beneficial for all living organisms as it absorbs all the ultraviolet rays of sun and protects us from the harmful effects of UV rays.

3. Ebonite rod is a rod made of material called ebonite. It gets negative charge when rubbed with fur cloth.

4. When a charged body is brought near an uncharged body, the uncharged body get attracted towards the charged body due to transfer of charge from charged to uncharged body.

B. Answer in detail :

1. Static electricity means the electricity that does not flow continuously.

2. An activity to show that like poles repel each other and unlike poles attract each other is as follows :

Take a piece of silk cloth and rub a glass rod on it and suspend it. Rub another glass rod in silk cloth and bring it near one end of the suspended glass rod. It is observed that the suspended glass rod moves away from the other glass rod.

Now, rub an ebonite rod on a piece of fur and suspend it Rub another ebonite rod on fur cloth and bring it near the suspended ebonite rod. It moves away.

Now, do the same activity by bringing a rubbed glass rod. They get attracted to each other.

This shows that two similarly charged rods (two glass or two ebonite rods) repel each other but two opposite charged rods (one glass and one ebonite rods) attract each other.

3. It is true that repulsion is a sure test of charge on a body, as repulsion is seen only when both the bodies have similar charges.

For example – two similarly charged rods either of glass or of ebonite repel each other.

4. Benjamin Franklin was the first person to propose that the clouds are electrically charged during rainy season. He used a silk cloth kite and tied a metallic key to the silk thread. He received an electric shock whenever there was a flash of lighting in the clouds. The key also got warmed up. He demonstrated that if the kite reached the charged cloud, the charge passed down to the key, tied to silk cloth kite on touching the metallic key, he also received the charge passing it to the earth.

So, in this way he explained how lightning and thunder are caused during rainy season.

5. Due to lightning during reaing season a large amount of heat is produced which suddenly heats up the air. It causes expansion of air which creates disturbances resulting in loud sound in air called the "Thunder."

Chapter 13 : Light

Page : 166

Recap Questions

A.1 The sending back of light rays after falling on an object to our eyes is called as Reflection of light.

A.2 Smooth surfaces give clearer images than those of rough surfaces because the beam of light when falls on smooth surface, is totally reflected back in one direction only whereas when beam of light falls on rough surface, they get reflected in different direction giving a hazy kind of image.

A.3 According to First law of reflection. The angle of incidence $\angle i$ is equal to the angle of reflection $\angle r$

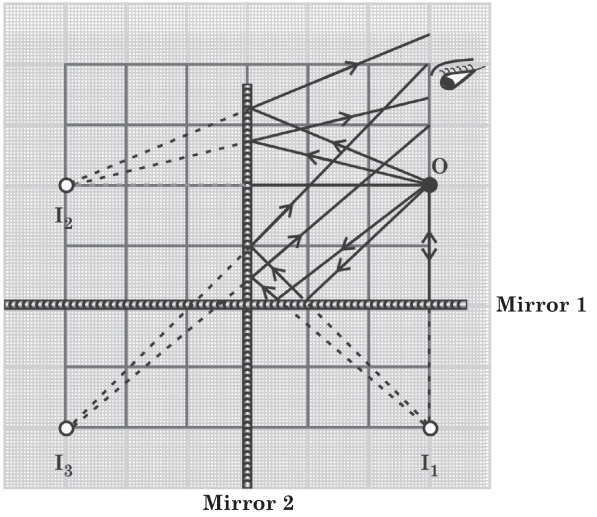
$$\angle i = \angle r$$

A.4 Multiple images of an object one formed when object is placed between two mirrors inclined to each other. Three images are formed which are as follows :

i. Mirror 1 makes the image I_1, of the object 0.

ii. Mirror 2 makes the Image I_2 of the object 0.

iii. The third image I_3 is regarded as the image of I_1, in the image of the mirror 2 or in other words image of I_2 is the image of mirror I.



A.5 Infinite number of images are formed when object is placed between two plane mirrors parallel to each other.

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Recap Questions

A.1 It is kind of toy, through which children peep through and enjoy different coloured patterns of glass or plastic pieces. It is based on the principle of multiple reflection using a set of three mirrors.

A.2 Periscope is used to see objects which are not in line with sight. Mariners use periscope to see ships on the sea from a submarine.

A.3 Refraction of light is bending of light as it passes from one medium to another.

A.4 The fate of a ray of light when it travels from a rarer medium to denser medium, it bends towards the normal.

A.5 Rainbow is a spectacular natural phenomenon viewed due to refraction of light after rains.

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Formative Assessment

D. Match the followings :

	A	B
1.	Cornea	transparent front part of the eye
2.	Real image	the reflected rays from the mirror meets at a point.
3.	Virtual image	the reflected rays appear to meet at a point.
4.	Angle of incidence	the angle between the normal and the incident ray.
5.	Angle of reflection	the angle between the normal and the reflected ray

E. Answer in one word :

1. Ciliary muscles

2. Braille

3. Reflection

4. Transparent

5. Incident ray.

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Summative Assessment

A. Difference between :

1. Myopia and Hypermetropia

Myopia :

i. In this defect of eye, a person can see nearby objects clearly.

ii. It can be corrected by using concave lens of suitable focal length.

Hypermetropia :

i. In this defect of eye, a person can see far off objects clearly.

ii. It can be corrected by using convex lens of suitable focal length.

2. Real Image and Virtual Image

Real Image :

i. The image that can be obtained on screen is called Real Image.

ii. This type of image is seen on screen.

Virtual Image :

i. The image that cannot be obtained on the screen is called virtual image.

ii. This type of screen is seen in a mirror.

3. Reflection of Light and Refraction of Light

Reflection of Light :

Light rays are bounces back after striking from the objects.

Refraction of Light

Light rays are bend when passes from one medium to another medium.

B. Give reasons :

1. Objects can not be seen in total darkness because light makes the things visible to us due to reflection of light.

2. Rainbow is formed just after rain due to the refraction of sun rays through the rain drops suspended in the air after the rain.

3. Infinite images are formed when two mirror are placed parallel to each other due to multiple reflection of light rays from the mirror.
4. The pupil dilates in dim light so that maximum light rays can enter the eye to see in dim light.

C. Answer in three or four sentences :

1. Eyes can be protected in following ways :
   i. Eyes should be washed by splashing clean cold water and not rubbed by hands.
   ii. Eyes should be protected against too strong or dim lights especially while reading, driving etc.
   iii. Proper distance should be maintained while watching T.V. or working on computers and while reading.
   iv. Diet rich in vitamin– A should be taken as it is good for eyesight.
   v. Protect eyes from damage while playing.
2. Kaleidoscope is based on the principle of multiple reflect. When three mirrors are placed inclined at 60° to each other.
3. Myopia and Hypermetropia.
4. Dispersion of light is the splitting of white light into its constituent seven colours.
5. Rainbow is formed just after the rain due to reflection of sun light rays from the suspended water drops in the air.

D. Answer in detail :

1. ***Regular reflection :*** The type of reflection in which the beam of light when falls on smooth surface it is totally reflected back in one direction only, is called regular reflection.

   Irregular Reflection : The type of reflection in which the beam of light when falls on rough or uneven surface, they get reflected in different directions giving a hazy kind of vision, is called as irregular reflection.
2. An activity to prove laws of reflection is as follows :

   Take a cardboard sheet. Make a slit of about 1 mm within it. Make the cardboard stand vertically on a piece of white sheet spread on a table. Place a plane mirror in front of the

hole at a distance on the white sheet vertically. Darken the room and throw torch light into the hole. We will see a ray of light coming from the hole, striking the surface of the mirror. Mark the path of this ray with points on the white sheet. We will see another ray emerging from the point of incidence on the mirror. Mark the path of this ray with points on the white sheet. Mark the position of the mirror also. Now remove all the things from the white sheet and join all the points. Draw a perpendicular at the point O, the point of incidence of incident ray. This is called the Normal. We will find the angle of incidence and angle of reflection will be equal.

We will also see that the incident ray, the normal and the reflected ray, all lie at the same plane.

Thus laws of reflection are proved.

3. Multiple images are formed when, two mirrors are placed inclined to each other. The angle at which the two mirrors are placed, decides how many images can be produced. For example :

i. When two plane mirrors are placed at right angles to each other, three images are formed.

ii. When two mirrors are placed parallel to each other, infinite images are formed.

4. When a beam or ray of light passes through a glass prism, it breaks up into seven colours called the 'Spectrum.' This phenomenon of splitting of white light into its various constituents colours is called dispersion of light.

5. Structure of human eye :

An human eye is kind of optical instrument used for seeing.

Its main parts are :

i. ***Eye ball :*** It is spherical consist of "Cornea", a transparent membrane in front of the eyeball. Light enters through it, which protects the eye and controls focusing the light rays.

ii. ***Iris and Pupil :*** Pupil is present just behind the cornea in the form of black or dark coloured diaphragm having a small hole in the centre, called Iris. Iris regulates the amount of light entering through the pupil by making it wide or narrow.

iii. ***Aqueous Humour :*** It is a watery third, filled in the

region between cornea and the lens.

iv. ***Lens :*** It is a convex lens filled with jelly like substance. It focuses the images on retina.

v. ***Ciliary Muscles :*** The lens is held in the position by ciliary muscles. They regulate the focal length of the lens.

vi. ***Vitreous Humour :*** The region between lens and retina is filled with jelly like material called the vitreous humour.

Retina : It is inner most of eye, where image is formed.

Images in human eyes are formed as follows :

The retina consists of light sensitive cells–rods and cones which receive the light stimulus and send it to brain via optic nerve. The image formed on retina is small, inverted which is interpreted by brain as erect and of the right size.

6. ***Braille System :*** It is a special writing system for visually challenged people. It was invented by Louis Braille of France in 1800 in which special symbols are used to represent the alphabets and their combination.

Chapter 14 : The Universe

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Recap Questions

A.1 Galaxies are either spiral or elliptical cluster of stars. For example– Akash Ganga.

A.2 There is no air on moon and thus there is no atmosphere on the moon.

A.3 Difference between terrestrial and Jovian planets is :

Terrestrial planets have well defined surface having soil and rock. Example– Mercury, Venus, Earth, Mars.

But Jovian planets are mostly gaseous. Example– Jupiter, Saturn, Uranus and Neptune.

A.4 Two differences between Mercury and Venus are :

Mercury :

i. It is closest to the Sun.

ii. It completes its revolution around the sun in 88 days.

Venus :

i. It is next in position after Mercury.

ii. It completes its revolution around the sun in 225 days.

A.5 An earth is a special and different planet of the solar system as it is the only planet on which the life exist due to the presence of air and water on it.

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Recap Questions

A.1 Stars and other celestial bodies present in the sky, during the day time, though they are not seen because the glare of the sun during day, masks the light coming from the stars and hence they become invisible to us.

A.2 A light year is the distance travelled by light in one year at the speed of light, which is about 3,00,000 km/sec.

A.3 All heavenly bodies that are seen in the night sky are moon, star, shooting star, some planets etc.

A.4 Stars are celestial bodies which have very high temperature and they continuously emit light.

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Formative Assessment

D. Match the following :

	A	**B**
i.	Earth	Prithvi
ii.	Venus	Shukra
iii.	Jupiter	Brihaspati
iv.	Mercury	Budh
v.	Uranus	Indra
vi.	Saturn	Shani
vii.	Mars	Mangal

E. Answer in one words :

1. Saturn

2. Constellation

3. Moon

4. Mars

5. Earth

6. Stars

Summative Assessment

A. Difference Between

1. Meteors & Meteorites

Meteors :

These are very small heavenly bodies which burn when enters the earth atmosphere.

Meteorites :

These are small heavenly bodies which do not burn completely when enters the earth atmosphere.

2. Asteroids and Comets

Asteroids :

i. They revolve round the sun between the orbits of Mars and Jupiter.

ii. They do not have tail.

Comets :

i. They revolve around the sun in very large orbits.

ii. They have tail.

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B. Answer in 3 or 4 sentences :

A1. Two applications of artificial satellite are :

i. Satellite communication by which services like long distant telephones, cellular phones, fax etc. are provided.

ii. Weather forecasting.

A2. Three important features of the moon are :

i. It is earth's natural satellite.

ii. There is no air on moon.

iii. It complete one revolution around the earth in 27.3 days.

3. Change of season occurs on the earth due to the tilting of its axis of rotation and the change in its position with respect to the sun.

4. Two characteristics features of constellation are :

i. They are stars which appear in group.

ii. They form particular shapes and patterns. Eg.– Ursa Major, Ursa Minor etc.

5. The sun and all the celestial bodies revolving around it forms the solar system. Its constituents are sun, nine planets, asteroids, comets, meteor and meteorites.

C. Answer in detail :

1. ***Ursa Major :***

i. It consists of seven bright and easily visible stars.

ii. It is also known as 'Big Dipper' and Great bear.

iii. Seven stars of the constellation are arranged like dipper-three stars in the handle and four in its bowl.

iv. Pole star lies on the northern end.

Ursa Minor :

i. It is also known as "Laghu Saptarishi."

ii. It can be clearly seen during spring in the months of June-July.

iii. Pole star is at the end of the tail of the constellation.

Galaxies :

i. Galaxies are either spiral or elliptical clusters of stars.

ii. There are about 100 billion galaxies in the universe.

iii. They are moving away from each other.

Example : Akash Ganga.

2. The different phases of moon are : No Moon, Crescent Moon, Full Moon.

No Moon : During this phase of moon, it is not visible from the earth as it comes between earth and the Sun. So, only one side of the moon is lighted by the sun. This phase is also called "Amavasya."

Crescent Moon : In this phase only a part of moon, get lighted by the sun giving it a crescent shape.

Full Moon : During this phase moon is seen as a full disc of light when rays fall from the Sun on it directly. This phase is also called "Purnima".

3. Seasons change on the earth due to the tilting of its axis of rotation and the change in its position with respect to the Sun. It is because of the tilt that the position of the Northern and Southern hemispheres of the earth keeps changing round the year.

4. ***Asteroids***

i. These are believed to be pieces of matter which could not assembled in the form of planet.

ii. These rock pieces revolve around the sun between the orbits of Mars and Jupiter.

iii. Their size varies from barely a kilometre to few handed kilometres. Example, Ceres.

Comets :

i. These are very small sized celestial bodies which revolve around the sun in very large orbits comet.

ii. Each comet has bright glowing head followed by a long tail. The head is towards the Sun and tail always points away from the Sun.

Example : Halley's Comet.

5. ***Artificial Satellites :*** These are the man-made objects revolving around the earth. The first Artificial Satellite was launched by USSR on October 4, 1957 which was named Sputnik-I. Many countries have launched a number of satellites into the space. India launched Aryabhatta on 19th April, 1975 its first artificial satellite. Artificial Satellites are of two types :

i. Geostationary Satellites.

ii. Sun-Synchronous Satellites.

Artificial Satellites are used for communication, weather forecasting, television and radio transmission etc.

Chapter 15 : Earthquakes

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Formative Assessment

D. Answer in one word :

1. Earthquake

2. Crust

3. Richter scale

4. Man made explosions

5. Faults.

Summative Assessment

A. Answer in three or four sentences :

1. **Volcanic Eruptions :** A volcano is forceful gushing out of hot molten rocks and hot gases under great pressure through an opening in the earth's crust. The energy causes vibrations in the earth's crust at the time or before the earthquakes. The intensity of such earthquakes is felt in nearby areas of the epicentre is shallow but may be very strong near the volcanoes. Alaska and Kilauea, Mauna Loa, Hawaii Mount St. Helens Washington are some of the places where such volcanic eruptions have been reported.

2. Three examples of man made explosions are :

i. Mining

ii. Blasting of rocks by dynamite.

iii. Nuclear explosions.

3. 'Tsunamis' is a Japanese word which means 'harbour wave'. Tsunami is a huge seismic waves which are generated due to the deformities in the sea floor.

B. Answer in detail :

1. Earthquakes are vibrations or tremors in earth's crust due to sudden disturbances below it.

2. Extraordinary amount of energy released due to an earthquake, travels through the earth's crust in the form of waves. Such waves are called Seismic Waves.

Seismologist : The science which deals with the seismic waves is called seismology and scientists are called as Seismologist.

Seismic Focus : The point from where shock–waves originates in the earth due to sudden movement or slipping of rocks is called as Seismic focus.

Epicentre : It is the point on the surface of earth vertically above hypocentre.

Seismograph : It is an instrument used to record seismic waves.

3. Location of an earthquake is usually described by the geographic position of the epicentre and hypocentre. Earth crust is in the form of flat irregular plates, which can slide over each other. The boundaries of such plates are the locations of earthquake.

4. ***Various causes of earthquake are :***

i ***Volcanic Eruptions :*** Due to the volcanic eruptions through an opening in the earth crust, the energy causes vibrations in the earth's crust at the time or before the earthquakes.

ii. ***Dislocation of the earth's crust :*** It results in earthquakes of great destruction. During the process, vibrations are produced which travel outwards through the earth at different speeds. Tremors on the earth are felt due to these vibrations.

iii. ***Man made explosion :*** Practices like mining, blasting of rocks with the help of dynamite, various kinds of nuclear explosions also causes the vibration in the earth crust which is of high magnitude. Areas around the sites of such activities are prone to earthquakes.

5. The disastrous effects of earthquake are :

i. It causes landslide which may block rivers. This also results in floods.

ii. It also changes course of rivers causing floods.

iii. It may damage buildings, bridges, railway track etc. People may also get trapped under the rubble of damaged buildings, and even die.

iv. It may also lead to break out due to damage caused to underground water and gas pipelines.

Chapter 16 : Pollution of Air and Water

Page : 199

Recap Questions :

1. The basic amenties for the survival of all living beings, provided by nature are called Natural resources. Example : air, water etc.

2. Pollution is addition of harmful substances into the environment due to natural phenomenon and human activities.

3. Some gaseous pollutants causing air pollution are carbon monoxide, oxides of sulphur and nitrogen etc.

4. Non-biodegradable pollutants are the substances which are added into the environment and do not chemically breakdown by the action of microbes, air, enzymes are called non-biodegradaed pollutants. For example, DDT, CFC, Insecticides, pesticides etc.

5. The harmful effects of oxides of lead and mercury when mixed with air are :

i. Oxides of lead when mixed with air may cause brain damage in children.

ii. Particles of mercury, may cause diseases like Mini-mata brain damage, mental retardation, paralysis.

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Formative Assessment :

D. Answer in one word only :

1. Carbon monoxide

2. Eutrophication

3. Boiling

4. Typhoid

5. Lead

Summative Assessment

A. Answer in three or four sentences :

1. Sources of water pollution are :

i. Addition of untreated sewage into the river.

ii. Discharge of industrial toxic waste in the rivers (*e.g.*

addition of lead, arsenic, mercury etc.)

iii. Injudiciously using fertilizers and pesticides.

iv. Presence of acids, alkalies etc. can be very harmful, also give bad taste to water.

2. Pollution is addition of harmful substances into the environment due to natural phenomena and human activities.

Different kind of pollution are :

i. Water pollution

ii. Air pollution

iii. Sound pollution

iv. Soil pollution

3. Two harmful effects of water pollution are :

i. Many diseases like cholera, dysentery, gastroenteritis, hepatitis, typhoid, skin diseases etc. many human diseases caused due to intake of polluted water.

ii. Aquatic life is disturbed due to the addition of toxic non-biodegradable metals like lead, mercury, arsenic, copper, nickel etc.

4. i. Avoid wastage of water at all levels.

ii. Recycling of water in industries.

iii. Industrial affluents should be treated before they are thrown into the river.

5. Different types of pollutants are :

i. Gaseous pollutant

ii. Solid pollutants

iii. Non-biodegradable pollutants.

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B. Answer in detail :

1. There are mainly three kinds of pollutants. These are :

i. Gaseous Pollutants : It includes gases like carbon monoxide, oxides of sulphur and nitrogen etc.

ii. Solid or particulate pollutants : It includes smoke, mist, fumes, cement, dust, pesticides, insecticides, pollen grains, fungi etc. Their size varies from 0.1 micrometre to 10 micrometre causing a lot of air pollution.

iii. Non-biodegradable pollutants : These are the pollutants, which are added into the environment, that do not chemically breakdown by the action of microbes, air, enzymes etc. They can very harmful as they are toxic and remain unchanged for a long time. Example : DDT, CFC, insecticides, pesticides etc.

2. Damaging effects of presence of oxides of sulphur, nitrogen and carbon in air are :

i. Oxides of sulphur and nitrogen in air, causes respiratory problems, causes acid rain also.

ii. Oxides of carbon in air, when inhaled causes nausea, headache which may lead to death as it mixes with heamoglobin of blood.

3. ***Acid rain :*** The rain water containing dissolved oxides of mainly sulphur and nitrogen is called as Acid rain. Oxides of nitrogen and sulphur produce nitric acid and sulphuric acid when dissolved in rain water.

It is very harmful and causes :

i. Loss of fertility of soil.

ii. It promotes corrosion of metallic structures.

iii. It causes damage to buildings made up of marble, cement etc.

iv. It also harm the aquatic and plant life.

4. ***Green House effect :*** Burning of fossil fuels n the air produces excess of carbon dioxide in air. This increases the temperature of the earth's atmosphere known as Green house effect causing global warming

It has following adverse effects :

i. Changes in Monsoon pattern.

ii. It also affects the crop cultivation cycle.

iii. It also causes the melting of polar caps resulting in floods, raising the water level in seas and oceans submerging the low lying areas.

For lowering the global warming, we should grow more and more trees.

5. The various steps in the purification of water for city supply are :

i. Removal of suspended impurities : The river water is collected in large tanks. The suspended impurities

settle down and the upper clean layers of water are taken for filtration. This is called as Sedimentation.

ii. ***Filtration :*** Fine suspended impurities get removed by the process of filtration by passing water through thick layers of Sand and Gravel.

iii. ***Aeration :*** It is done to kill harmful micro-organisms by pumping air into the filtered water.

iv. ***Chlorination :*** At last, the aerated water is treated with very small amount of Chlorine to kill remaining germs and bacteria. This water is supplied through pipelines to the consumers of city.

Model Test Paper I

Formative Assessment

A. Multiple Choice Questions :

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

B. True or false :

1. T
2. F
3. F
4. F
5. T

C. Answer in one word :

1. Cold storages
2. Paramecium
3. Polyesters
4. Oxygen
5. Leeuenhock.
6. LPG
7. Silver
8. Hydrogen
9. Unnat Chuhlas
10.

Summative Assessment

A. Very Short Answer :

1. Agriculture.

2. Large quantities of plants grown are called crop plants.

3. Antonie Van Leeuwenhock.

4. Bacteria, Algae, Fungi, Protozoa and viruses.

5. Synthetic fibres are the fibres that are made by man

artificially. Example – Rayon, Nylon etc.

6. Rayon does not melt or stick even at higher temperatures.

7. Two physical properties of metal are :

i. All metals are solid at normal temperature and pressure except Mercury and Gallium.

ii. All metals are malleable and ductile.

8. Copper + Water ——> Copper hydroxide

9. Highest reactive metal : Potassium

Lowest reactive metal : Platinum.

10. The minimum temperature required to initiate burning of a substance is called as its ignition temperature.

B. Short Answer type questions :

11. Kharif Crops are the summer crops which are sown in the beginning of monsoon season (June-July) and harvested at the end of monsoon. Example : Rice, maize, coconut etc.

12. ***Levelling :*** After ploughing, the soil is leveled with the help of a wooden plant or iron leveller. It helps to smoothen the soil by crushing bigger soil pieces into smaller ones. It prevents erosion and water logging which helps in uniform irrigation.

Manuring : The soil is finally mixed with manures. Combination of manures and fertilizers are used by farmers.

13. The different type of crops are :

i. Vegetables : Tomato, potato, onion etc.

ii. Flowers : Rose, Marigold, Jasmine.

iii. Fruits : Banana, Grapes, Oranges.

iv. Decorative Plants : Rose, Gladioli etc.

14. The habitat of micro-organisms means the surroundings places or regions, where the micro-organisms live. They may live almost everywhere, in water, in the soil, in marshy lands, poles in deserts, inside the body of living organisms etc.

15. Various shapes of algae are spherical, rod shaped or spiral shaped.

Size of different algae varies from 1 μ (micron to severl metres of sea Hypene weeds.

Different Cloured algae are : Blue green algae, green algae, brown algae, red algae.

16. Metals are found in both free and combined form in nature. The metals which are very less reactive like silver, gold, platinum are found in free state in nature. Most metals occur in combined state as they are very reactive. For example : Sodium, Potassium, Calciuum etc.

C. Long answer type question :

17. (a) Magnesium + Water ⟶ Magnesium oxide + Hydrogen

(b) Copper + dil. Hydrochloric acid ⟶ No Reaction

(c) Zinc + Oxygen ⟶ Zinc oxide

18. Reactivity series of metal means that metals show serial order of reactivity with various substances.

The arrangement of metals in decreasing order of reactivity is called us the reactivity series of metal.

19. Rapid Combustion : When certain substances combine chemically with oxygen at a raised temperature with the evolution of heat and light. It is called Rapid Combustion.

For ex. – combustion of carbon.

Carbon + Oxygen ——> Carbon dioxide + Heat + light

Slow Combustion : When certain substances burn at room temperature only and no light is produced. It is called slow combustion.

Example : Combustion of yellow phosphorous at room temperature.

In Complete Combustion : In this type of combustion incomplete burning takes place in limited supply of air.

For example : Carbon + Oxygen **** Carbon Monoxide

20. Uses of Carbon are :

i. Allotrop of Carbon : Diamond is used in high value jewellary, cutting and grinding.

ii. Graphite is used in lead pencils.

iii. Coal is used as fuel.

iv. It is also used at important reducing agent in chemical reactions.

Uses of Sulphur are :

i. It is used for the manufacture of gun powder sulphuric

acid.

ii. It is also used in vulcanization of rubber.

iii. It is used to make skin ointments.

iv. It is also used to make fungicides and insecticides.

21. The factors affecting burning are :

i. The presence of combustible substance.

ii. Presence of supporter of combustion.

iii. Ignition temperature.

22. ***Combustible substances :*** These are those substances, which burn readily in air. For example : Coal, wood, paper, petrol, diesel, wax etc.

Non-combustible substances : These are those substances which do not burn. For example : Water, sand, glass etc.

Supporter of Combustion : The substances, which are needed to bring about combustion or burning are called supporter of combustion. For example : air or oxygen, which is required to burn substance like carbon, is supporter of combustion.

D. Very long answer type questions :

23. Process of Irrigation : It is the process of supplying water to crop plants for their production. This is done with the help of rivers, canals, tubewell deep wells etc. In our country, most of the land depends upon rains during monsoon. Only very small percentage of land is fully irrigated. A major amount of rain water runs off which can be stored in reservoirs, tanks etc. for the irrigation of fields. Some irrigation methods are sprinkler method, swinging basket method, lift irrigation method etc.

24. The various zones of luminous flame are :

1. Outer Most Non-luminous blue zone : This zone is feebly visible, that surrounds the visible inner yellow zone of the candle flame. It is the zone of complete combustion.

2. Second (middle) yellow zone : It is the zone of incomplete combustion, below the outer non-luminous zone. The vapours of wax, burnt here in insufficient amount of air to produce carbon particles. These carbon particles glow on heating and produce bright yellow luminous flame. This

zone has moderate temperature.

3. Inner dark zone of no combustion : This zone is black or dark area, where no burning takes place as no air is present here. The temperature is minimum in this zone.
4. The innermost blue zone : It is the lowest zone located at the base of the flame. The carbon monoxide produced in the dark zone gives it a blue colour.

Model Test Paper II

Formative Assessment

A. Multiple Choice Questions :

1. (c)
2. (d)
3. (a)
4. (a)
5. (d)

B. True or False :

1. T
2. F
3. T
4. F
5. T

C. Answer in one word :

1. Rare species
2. Microscope
3. Egg
4. Atmospheric pressure
5. Time period.
6. Echo
7. Pascal

8. Mitochondria
9. Chloroplast
10. Estrogen

Summative Assessment

A. Very Short Answer :

1. Extinct species are those in which last individual has died, no living organism exists. Example : Dianosaurs.

2. (1) Jim Corbett National Park, Uttrakhand.

(2) Kanha National Park, M.P.

3. Magnifying lens.

4. In paramecium, "Cilia" and in Amoeba, "pseudopodia". help them to move.

5. The benefit of sexual reproduction.

6. Adrenal gland secretes a hormone adrenalin, which works when one is stressed, angry or excited.

7. A pull or push applied on a body to change its position from rest to motion is called as force.

8. Electrostatic friction is the type of friction which occurs when the surfaces in contact with each other meet at certain points due to electrostatic attractions or charge. This is due to friction between the two surface.

9. Pressure (P) = $\frac{\text{Force (F)}}{\text{Area (A)}}$

10. Maximum displacement of a body from its mean position is called the Amplitude of oscillation.

B. Short Answer :

11. Protected areas are areas of land and water especially designed to protect bio-diversity.

12. The structures present in the cytoplasm of cell are known as cell organelles.

The two cell organelles are :

(1) Mitochondria : These are oval or rod shaped bodies found in the cytoplasm of both plant and animal cells. They are known as power house of cell as they causes the break down of food to realease energy.

(2) Endoplasmic Raticulum : It is a double membraned of channels, vesicles and tubule system lying in the cytoplasm. They make transportr connections between the nucleus and plasma membrane.

13. The process of fusion of male and female gamete is known as fertilization.

The difference between external and internal fertilization is : In external fertilization, fusion of male and female gametes takes place outside the body of organisms.

But in internal fertilization fusion of male and female gametes takes place inside the body of female partner.

14. Spring balance is a kind of simple machine to weigh the objects manually. It has a high tension steel spring enclosed in a metal case having a split throughout its length. The upper end of the spring is welded to the top of the metal case whereas the lower end is attached to a strip of steel. A hook is fixed at the lower end of the strip. A small pointer is attached at the function of steel strip and the spring. A scale is calibrated in gm force (gf) or kilogram force (kgf) on the metal case on from the spring is free to move along the scale.

15. An activity to show that liquid exerts pressure is as follows :

Take a can and make holes in all the sides at the same level. Fill the can with water. It is observed that water starts gushing out reaches the same distance away from the can with the same pressure.

16. The sound that is received from tall and far off surfaces is called as Echo.

Application of Echo-system are :

The method of sound navigation and ranging called Sonar is used :

i. By ships to detect submarines.

ii. For determining the depth of sea.

iii. To locate any obstacle by bals and dolphins.

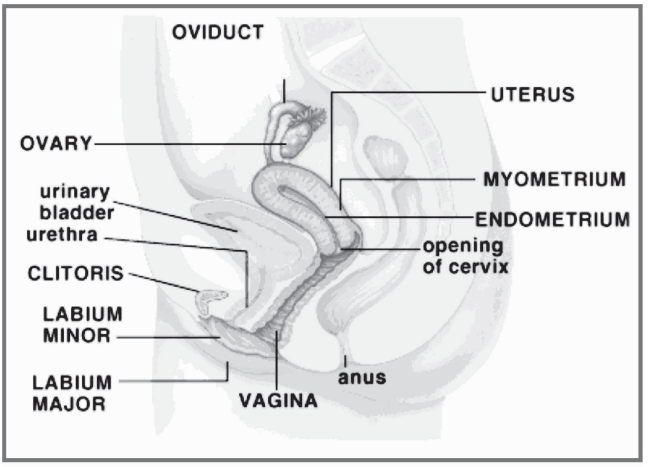
C. Long answer type questions :

17. Conservation of Biodiversity : It means the conservation of gene pool, species and biotic communities over exploitation

of ecosystem by humans, pollution and invasive species should not be allowed to destroy the present diversity of nature. Some steps should be taken to avoid further destruction of habitat. This is known as conservation of biodiversity.

18. Cell membrane is a living membrane that surrounds every cell. It provides shape and size to the cell. It is made up of proteins and fats. It allows only certain materials to pass through it, in and out. It separates the inner contents of the cells from the outside surroundings.

19. Well labelled diagram of female reproductive system



Female Reproduction System

20. ***Pascal's Law :*** According to this law, "The pressure applied to the liquid is same in all the directions."

Actvity to prove this law is as follows :

Take a can and make holes in all the sides at the same level. Fill the can with water. It is observed that water starts gushing out reaches the same distance away from the can with the same pressure.

21. ***Propagation of Sound :*** Sound needs a medium to propagate from the point of generation to the listner. Sound is produced due to vibrations in any object. If a body starts vibrating, it makes the particles around it to vibrate. These particles vibrate the adjacent particles. These particles further exert force on their adjacent particles and come back to their original position. The

process continues till the vibrations reach the listner's ears. The particles inside the ear finally vibrate the membrane in the ear which transform into sound.

22. ***The human ear consists of three parts :*** Outer ear, middle ear and inner ear. The vibrating waves from outside reach the external ear of human beings to cause hearing by passing through the middle ear to internal ear.

The sound waves strikes the ear drum which starts vibrating. These vibrations are passed on to the three small bones, hammer, anvil and stirrup acting as leavers. They amplify the sound several times. The vibrates are transmitted to the parts of internal ear, semi circular canal and cochlea. The fluid filled in cochlea vibrates are affects the auditory nerve which reaches the brain to bring about hearing.

D. Very long answer type questions :

23. Over population poses a contant challenge to the growth of nation.

Over population is one of the major cause of loss of biodiversity. To meet the needs of increasing population, there is huge loss in habitat profile due to human activities, industrialization, urbanization, building of dams, mines etc. Large areas of forests and green lands are cleared to put up industries, for construction and agricultural work. Thus, damaging the biodiversity of an area, and thus hamming the natural wealth of country or nation.

24. Wind ordered musical Instruments

In this type of musical instruments, sound is produced due to vibrations in the air column inside them. Lower frequencies are produced by longer air column in shehnai and flute. The length of the air column can be changed by opening and closing of holes in it.

Few examples are : Flute, trumpet, mouth organ, shehnai etc.

Membrane musical instrument : These type of instruments have membranes in them. When the membrane is stretched, it vibrates to produce sound. For example– Tabla, Mridangam etc.

Model Test Paper III

A. Multiple Choice Questions :

1. (b)
2. (a)
3. (c)
4. (b)
5. (a)

B. True or false :

1. F
2. T
3. T
4. F
5. T

C. Answer in one words :

1. Sodium Chloride
2. Repulsion
3. Concave lens
4. Astigmatism
5. Akash Ganga
6. Volcanic Eruptions
7. Crust
8. Copper
9. Cathode
10. Rough Surface.

A. Very Short Type Answer :

1. Electrolytes are chemical compounds which conduct electricity in fused or aqueous solution when electricity is passed through them and undergo chemical decomposition.

2. Anions are negatively charged ions which migrate to anode during electrolysis, eg.– all non-metallic ion.

Cations are positively charged ions which migrate to cathode during electrolysis, eg.– all metallic ions and hydrogen ions.

3. Sodium (Na), Calcium (Ca).

4. Charged body means body which possess electric charge.

5. Benjamin Franklin.

6. The loud sound caused due to disturbance caused by expansion of air is called as thunder.

7. The sending back of light rays, when they fall on the object to our eyes is called reflection of light.

8. According to first law of reflection the angle of incidence $\angle i$ is equal to the angle of reflection $\angle r$.

9. Stars, moon, sun, planets, comets, meteors and meteorites

10. Faults are fractures in earth's crust due to plate tectonic forces.

B. Short Answer :

11. Battery, key, electrolytic cell, electrolyte, voltmeter.

12. An activity to show that there are different charges in glass rod and ebonite rod is as follows :

Take a glass rod and rub it on a piece of silk cloth and suspend it. Now, rub another glass rod on silk cloth and bring it near one end of the suspended glass rod. It is observed that the suspended glass rod moves away from the other glass rod.

Now, rub an ebonite rod on a piece of fur and suspend it. Rub another ebonite rod on fur cloth and bring it near the suspended ebonite rod near a robbed ebonite rod. It moves away. Now do the same activity by bringing a rubbed glass rod. They get attracted to each other.

This shows that glass rod and ebonite rod have different charges.

13. During lightning, nitrogen of the atmosphere reacts with the oxygen to form nitric oxide which combines with more of oxygen to form acidic oxide nitrogen dioxide. This nitrogen dioxide reacts with rain water and falls on the soil in the form of Nitric acid, Carbonates of soil react with nitric acid to form soluble salts of nitrogen, nitrates and nitrites. Plant roots absorb these compounds and use them for their growth.

14. Two major defects of eye are : Myopia and Hypermetropia.

(1) Myopia : In this defect of eye, the person can see nearby objects clearly but find difficulty in seeing the far off objects.

This may be due to :

(i) elongation of the eye ball or

(ii) decrease in the focal length of the eye lens.

Correction : By using concave lens of suitable focal length.

(2) Hyper metropia : The person suffering from this defect can see far off objects clearly but find difficulty in seeing nearer objects.

It may be due to :

(i) Shortening of eye ball.

(ii) Increase in the focal length of the eyelens.

Correction : It may be corrected by using convex lens of suitable focal length.

15. Characteristic features of Uranus are :

(1) It was discovered by William Herschel in 1781 with the help of telescope.

(2) Its distance is almost two times that of Saturn.

(3) Its diameter is four times that of earth.

(4) It has rings also but less spectacular.

(5) The atmosphere around Uranus has hydrogen and methane gases.

(6) 21 moons have been discovered around Uranus so far.

16. Two major natural resources are Air and Water.

Their significance is that they are the basic needs of all living organisms. Air is needed for breathing by all living organisms. Other activities like burning of fuels, movement of sail boalts, wind mills etc. are dependent on air.

Water is used by plants for Photosynthesis, transport of nutrients, germination of seeds etc. Animals use water for drinking, bathing etc. Human being uses water for drinking, cooking, washing, watering plants etc. Thus, both of these natural resources have great significance as no life can exist without them.

C. Long answer type questions :

17. Electrolysis of acidulated water is as follows :

Take a beaker in which two inverted test tubes A and B are arranged. Take two copper wires, place them in each test tube A and B with their one end only. Now connect the other end of the wires to the two terminals of the battery with key and ammeter on the way. Fill the test tubes and the beaker with water. Add a few drops of dilute sulphuric acid in water to make it an electrolyte. Now, pass an electric current from the battery, bubbles of gases will be seen to evolve in water in both the test tubes.

After some time, we will see, that gas collected at from cathode is double in volume than the gas by anode i.e. in the ratio of 2 : 1. This shows that water chemically break by passage by electricity into hydrogen and oxygen in the ratio 2 : 1.

18. The conditions for the electroplating of metal are :

(1) An electrolyte must contain ions of the metal to be electroplated on the article.

(2) The article to be electroplated should be cleaned thoroughly.

(3) The article to be electroplated is to be made as the cathode.

(4) The metal to be plated on the article is to be made the anode.

(5) Anode to be connected to the positive (+) terminal of the battery and cathode to be connected to the (-ve) negative terminal of the battery.

(6) A low current and for a longer should be allowed to pass.

(7) Direct current and not A.C. current should be used.

19. Earthing is a preventive measure, which is done to allow high charge of lightning to flow down into the ground and thus save the buildings and lives. Lightning conductors are provided to high and multistoried buildings to prevent lightning discharge. Earthing in such buildings is done to protect them from damage due to electric dicharge.

20. One can take care of eyes in the following ways :

(1) Eyes should be washed by splashing clean cold water and not rubbed by hands.

(2) Eyes should be protected against two strong or dim lights.

(3) Proper distance should be maintained while watching T.V. or working on computers and while reading.

(4) Diet rich in Vitamin A should be taken as it is good for eye sight.

21. Magnitude of earthquake is measured by Richeter scale. It is an open ended logarithmic scale having no upper limits i.e. change in the value of the scale by one corresponds to 10 times change in the energy of the earthquake. Earthquake of 4.5 intensity is regarded as moderate and can cause mild disturbances in objects, but earthquakes of 6 intensity and above can cause damage to furniture, trees etc.

Intensity of an earthquake means how strong a tremor or a shock was felt at that particular spot. The value is given from I to XII on this I is the lowest value of earthquake which is not felt while value XII is total disaster.

22. Domestic purification of water can be done by using following methods :

(1) Filtration

(2) Boiling

(3) Treatment with chemicals.

(4) Exposure to ultra violet rays.

Filtration : A muslin cloth can be used as a filter, to remove the suspended impurities like clay, sand etc. from the water.

Boiling : By boiling the water for few minutes, germs present in water are killed.

Treatment with Chemicals :

Chemicals like potassium permanganate, chlorine tablets or bleaching powder are added to the water in right amount to kill the germs present in water.

Exposure to ultraviolet rays : Water can also be purified by exposing the filtered water th ultra violet rays.

D. Very long answer type questions :

23. ***Meteors :*** These are very small heavenly bodies like small pieces of stones and metallic rocks. When they enters the earth's atmosphere, it gets heated up due to the friction of air. Due to the heat produced, the meteor begins to glow and evaporates with in flash of time. They appear as bright streak of light flashing for a moment and burn out immediately before reaching the earth.

Meteorites can be small pebbles or big blocks weighing some tonnes.

24. Effect of electricity on solid material can be demonstrated by an activity, which is as follows :

Take some materials like rubber, copper plastic, cotton thread, pencil lead. Now set up the electric circuit using wire, bulb, cell. Leave a gap XY in the circuit. Now the bulb will not glow. Join this gap with copper wire. The bulb will glow. Now, repeat the same with other materials.

The following are the observations :

(1)	Copper	bulb glows	Conductor
(2)	Rubber	bulb will not glow	Insulator
(3)	Plastic	bulb will not glow	Insulator
(4)	Cotton thread	Not glow	Insulator
(5)	Pencil lead	glow	Conductor

It shows that effect of electricity is different or solid materials.