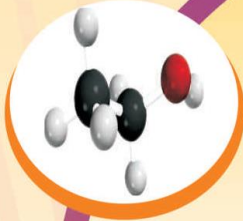


STUDENT SUPPORT MATERIAL

CLASS X

Subject : Science



तत् त्वं पृषन् अपावृणु
केन्द्रीय विद्यालय संगठन

Session 2017-18



केन्द्रीय विद्यालय संगठन, नई दिल्ली

KENDRIYA VIDYALAYA SANGATHAN, NEW DELHI

संतोष कुमार मल्ल, भा.प्र.से.
आयुक्त
Santosh Kumar Mall, I.A.S.
Commissioner



केन्द्रीय विद्यालय संगठन
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A WORD TO MY DEAR STUDENTS

It gives me great pleasure in presenting the Students' Support Material to all KV students of class X.

The material has been prepared keeping in mind your needs when you are preparing for final exams and wish to revise and practice questions or when you want to test your ability to complete the question paper in the time allotted or when you come across a question while studying that needs an immediate answer but going through the text book will take time or when you want to revise the complete concept or idea in just a minute or try your hand at a question from a previous CBSE Board exam paper or the Competitive exam to check your understanding of the chapter or unit you have just finished. This material will support you in any way you want to use it.

A team of dedicated and experienced teachers with expertise in their subjects has prepared this material after a lot of exercise. Care has been taken to include only those items that are relevant and are in addition to or in support of the text book. This material should not be taken as a substitute to the NCERT text book but it is designed to supplement it.

The Students' Support Material has. all the important aspects required by you; a design of the question paper, syllabus, all the units/chapters or concepts in points, mind maps and information in tables for easy reference, sample test items from every chapter and question papers for practice along with previous years Board exam question papers.

I am sure that the Support Material will be used by both students and teachers and I am confident that the material will help you perform well in your exams.

Happy learning!

Santosh Kumar Mall
Commissioner, KVS



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FOREWORD

The Students' Support Material is a product of an in-house academic exercise undertaken by our subject teachers under the supervision of subject expert at different levels to provide the students a comprehensive, yet concise, learning support tool for consolidation of your studies. It consists of lessons in capsule form, mind maps, concepts with flow charts, pictorial representation of chapters wherever possible, crossword puzzles, question bank of short and long answer type questions with previous years' CBSE question papers.

The material has been developed keeping in mind latest CBSE curriculum and question paper design. This material provides the students a valuable window on precise information and it covers all essential components that are required for effective revision of the subject.

In order to ensure uniformity in terms of content, design, standard and presentation of the material, it has been fine tuned at KVS HQRS level.

I hope this material will prove to be a good tool for quick revision and will serve the purpose of enhancing students' confidence level to help them perform better. Planned study blended with hard work, good time management and sincerity will help the students reach the pinnacle of success.

Best of Luck.

U.N. Khaware
Additional Commissioner (Acad.)

STUDENT SUPPORT MATERIAL

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Course Structure Class - X (Annual Examination)

Marks : 80

Unit No.	Unit	Marks
I	Chemical Substances - Nature and Behaviour	25
II	World of Living	23
III	Natural Phenomena	12
IV	Effects of Current	13
V	Natural Resources	07
	Total	80
	Internal assessment	20
	Grand Total	100

Note : Above weightage includes the weightage of questions based on practical skills.

Theme: Materials

Unit I : Chemical Substances - Nature and Behaviour

Chemical reactions: Chemical equation, balanced chemical equation, implication of a balanced chemical equation, types of chemical reactions: Combination, decomposition, displacement, double displacement, precipitation, neutralization, oxidation and reduction.

Acids, bases and salts : Their definitions in terms of furnishing of H⁺ and OH⁻ ions, General properties, examples and uses, concept of pH scale (Definition relating to logarithm not required), importance of pH in everyday life; preparation and uses of Sodium Hydroxide, Bleaching powder, Baking soda, Washing soda and Plaster of Paris.

Metals and nonmetals: Properties of metals and non-metals; Reactivity series; Formation and properties of ionic compounds; Basic metallurgical processes; Corrosion and its prevention.

Carbon compounds: Covalent bonding in carbon compounds. Versatile nature of carbon. Homologous series. Nomenclature of carbon compounds containing functional groups (halogens, alcohol, ketones, aldehydes, alkanes and alkynes), difference between saturated hydrocarbons and unsaturated hydrocarbons. Chemical properties of carbon compounds (combustion, oxidation, addition and substitution reaction). Ethanol and Ethanoic acid (only properties and uses), soaps and detergents.

Periodic classification of elements: Need for classification, Early attempts at classification of elements (Dobereiner's Triads, Newland's Law of Octaves, Mendeleev's Periodic Table), Modern periodic table, gradation in properties, valence, atomic number, metallic and non-metallic properties.

Theme: The World of the Living

Unit II : World of Living

Life processes: 'Living Being'. Basic concept of nutrition, respiration, transport and excretion in plants and animals.

Control and co-ordination in animals and plants: Topic movements in plants; Introduction of plant hormones; Control and co-ordination in animals; Nervous system; Voluntary, involuntary and reflex action; Chemical co-ordination: animal hormones.

Reproduction: Reproduction in animals and plants (asexual and sexual) reproductive health-need and methods of family planning. Safe sex vs HIV / AIDS. Child bearing and women's health.

Heredity and Evolution: Heredity; Mendel's contribution - Laws for inheritance of traits: Sex determination: brief introduction; Basic concepts of evolution.

Theme: Natural Phenomena

Unit III: Natural Phenomena

Reflection of light by curved surfaces; Images formed by spherical mirrors, centre of curvature, principal axis, principal focus, focal length, mirror formula (Derivation not required), magnification. Refraction; Laws of refraction, refractive index. Refraction of light by spherical lens; Image formed by spherical lenses; Lens formula (Derivation not required); Magnification. Power of a lens. Functioning of a lens in human eye, defects of vision and their corrections, applications of spherical mirrors and lenses. Refraction of light through a prism, dispersion of light, scattering of light, applications in daily life.

Theme: How Things Work

Unit IV : Effects of Current

Electric current, potential difference and electric current. Ohm's law; Resistance, resistivity, Factors on which the resistance of a conductor depends. Series combination of resistors, parallel combination of resistors and its applications in daily life. Heating effect of electric current and its applications in daily life. Electric power, Interrelation between P, V, I and R.

Magnetic effects of current : Magnetic field, field lines, field due to a current carrying conductor, field due to current carrying coil or solenoid; Force on current carrying conductor, Fleming's Left Hand Rule, Electric Motor, Electromagnetic induction. Induced potential difference, Induced current. Fleming's Right Hand Rule, Electric Generator, Direct Current. Alternating current: frequency of AC. Advantage of AC over DC. Domestic electric circuits.

Theme: Natural Resources

Unit V : Natural Resources

Sources of energy: Different forms of energy, conventional and non-conventional sources of energy: Fossil fuels, solar energy; biogas; wind, water and tidal energy; Nuclear energy. Renewable versus non-renewable sources of Energy.

Out environment: Eco-system, Environmental problems, Ozone depletion, waste production and their solutions. Biodegradable and non-biodegradable substances.

Management of natural resources: Conservation and judicious use of natural resources. Forest and wild life; Coal and Petroleum conservation. Examples of people's participation for conservation of natural resources. Big dams: advantages and limitations; alternatives, if any. Water harvesting. Sustainability of natural resources.

PRACTICALS

Practicals should be conducted alongside the concepts taught in theory classes.

LIST OF EXPERIMENTS

1. Finding the pH of the following samples by using pH paper / universal indicator:

- a) Dilute Hydrochloric Acid
- b) Dilute NaOH solution
- c) Dilute Ethanoic Acid Solution
- d) Lemon juice
- e) Water
- f) Dilute Hydrogen Carbonate solution

Studying the properties of acids and bases (HCl & NaOH) by their reaction with:

- a) Litmus solution (Blue/Red)
 - b) Zinc metal
 - c) Solid sodium carbonate

2. Performing and observing the following reactions and classifying them into :

- a) Combination reaction
- b) Decomposition reaction
- c) Displacement reaction
- d) Double displacement reaction
 - (i) Action of water on quick lime
 - (ii) Action of heat on ferrous sulphate crystals
 - (iii) Iron nails kept in copper sulphate solution
 - (iv) Reaction between sodium sulphate and barium chloride solutions

OR

3. Observing the action of Zn, Fe, Cu and Al metals on the following salt solutions :

- a) ZnSO_4 (aq)

- b) FeSO_4 (aq)
- c) CuSO_4 (aq)
- d) $\text{Al}_2(\text{SO}_4)_3$ (aq)

Arranging Zn, Fe, Cu and Al (metals) in the decreasing order of reactivity based on the above result.

4. Studying the dependence of potential difference (V) across a resistor on the current (I) passing through it and determine its resistance. Also plotting a graph between V and I.
5. Determination of the equivalent resistance of two resistors when connected in series and parallel.
6. Preparing a temporary mount of a leaf peel to show stomata.
7. Experimentally show that carbon dioxide is given out during respiration.
8. Study of the following properties of acetic acid (ethanoic acid) :
 - i) odour
 - ii) solubility in water
 - iii) effect on litmus
 - iv) reaction with sodium Hydrogen Carbonate
9. Study of the comparative cleaning capacity of a sample of soap in soft and hard water.
10. Determination of the focal length of : i) Concave mirror ii) convex lens
by obtaining the image of a distant object.
11. Tracing the path of a ray of light passing through a rectangular glass slab for different angles of incidence. Measure the angle of incidence, angle of refraction, angle of emergence and interpret the result.
12. Studying (a) binary fission in Amoeba, and (b) budding in yeast with the help of prepared slides.
13. Tracing the path of the rays of light through a glass prism.
14. Finding the image distance for varying object distances in case of a convex lens and drawing corresponding ray diagrams to show the nature of image formed.
15. Identification of the different parts of an embryo of a dicot seed (Pea, gram or red kidney bean).

QUESTION PAER DESIGN FOR SCIENCE (CODE NO. 086/090) Class - X (2017-18)

Time : 3 Hours

Max. Marks : 80

S. No.	Typology of Questions	Very Short Answer (VSA) 1 Mark	Short Answer - I (SAI) 2 Marks	Short Answer - II (SAII) 3 Marks	Long Answer (LA) 5 Marks	Total Marks	% Weight age
1	Remembering (Knowledge based simple recall questions, to know specific facts, terms, concepts, principles, or theories, Identify, define or recite, information)	2	-	1	1	10	15%
2	Understanding (Comprehension - to be familiar with meaning and to understand conceptually, interpret, compare, contrast, explain, paraphrase, or interpret information)	-	1	4	2	24	35%
3	Application (Use abstract information in concrete situation, to apply knowledge to new situations, use given content to interpret a situation, provide an example or solve a problem)	-	1	2	2	18	26%
4	High Order Thinking Skills (Analysis & Synthesis - Classify, compare, contrast or differentiate between different pieces of information, organize and / or integrate unique pieces of information from a variety of sources)	-	-	1	1	8	12%
5	Inferential and Evaluative (Appraise, judge and / or justify the value or worth of a decision or outcome, or to predict outcomes based on values)	-	1	1+1*	-	8	12%
	Total (Theory Based Questions)	2x1=2	3x2=6	10x3=30	6x5=30	68(21)	100%
	Practical Based Questions (PBQs)		6x2=12	-	-	12(6)	
	Total	2x1=2	9x2=18	10x3=30	6x5=30	80(27)	

1. Question paper will consist of 27 questions.
2. All questions would be compulsory. However, an internal choice will be provided in two questions of 3 marks each and one question of five marks.

*One question of 3 marks will be included to assess the values inherent in the texts.

CHAPTER 1- CHEMICAL REACTIONS AND EQUATIONS

1. During chemical reactions, chemical composition of substances changes or new substances are formed.

2. Chemical reactions can be written in chemical equation form which should be always balanced.

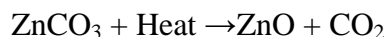
3. Types of Chemical Reactions

S NO	Types of reactions	Examples
1	Combination reaction A single product is formed from two or more reactants.	$2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$
2	Decomposition reaction A single reactant breaks down to yield two or more products. i) Thermal decomposition	$2\text{Pb}(\text{NO}_3)_2 \rightarrow 2\text{PbO} + 4\text{NO}_2 + \text{O}_2$
	ii) Electrolysis	$2\text{H}_2\text{O} \rightarrow 2\text{H}_2 + \text{O}_2$
	iii) Photo chemical reaction	$2\text{AgBr} \rightarrow 2\text{Ag} + \text{Br}_2$
3	Displacement reaction One element is displaced by another element.	$\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$
4	Double displacement reaction Exchange of ions between reactants.	$\text{AgNO}_3 + \text{NaCl} \rightarrow \text{AgCl} + \text{NaNO}_3$
5	Redox reaction Both oxidation and reduction take place simultaneously	$\text{CuO} + \text{H}_2 \rightarrow \text{Cu} + \text{H}_2\text{O}$

4. i) **Exothermic reaction:** A chemical reaction in which heat energy is evolved.



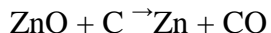
ii) **Endothermic reaction:** A chemical reaction in which heat energy is absorbed.



5. **Redox reaction:** Chemical reaction in which both oxidation and reduction take place simultaneously.

Oxidation: Reaction that involves the gain of oxygen or loss of hydrogen.

Reduction: Reaction that shows the loss of oxygen or gain of hydrogen



ZnO is reduced to Zn -reduction

C is oxidized to CO -----oxidation

6. Effects of oxidation reactions in our daily life:

a) **Corrosion:** It is an undesirable change that occurs in metals, when they are attacked by moisture, air, acids and bases.

Corrosion (rusting) of iron: $\text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$ (Hydrated iron oxide)

Corrosion of copper: $\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$ (Basic copper carbonate)

Corrosion of silver: Ag_2S (Silver sulphide)

Corrosion of Aluminum: Al_2O_3 (Aluminum oxide)

b) **Rancidity:** Undesirable change that takes place in oil containing food items due to the oxidation of fatty acids.

Preventive methods

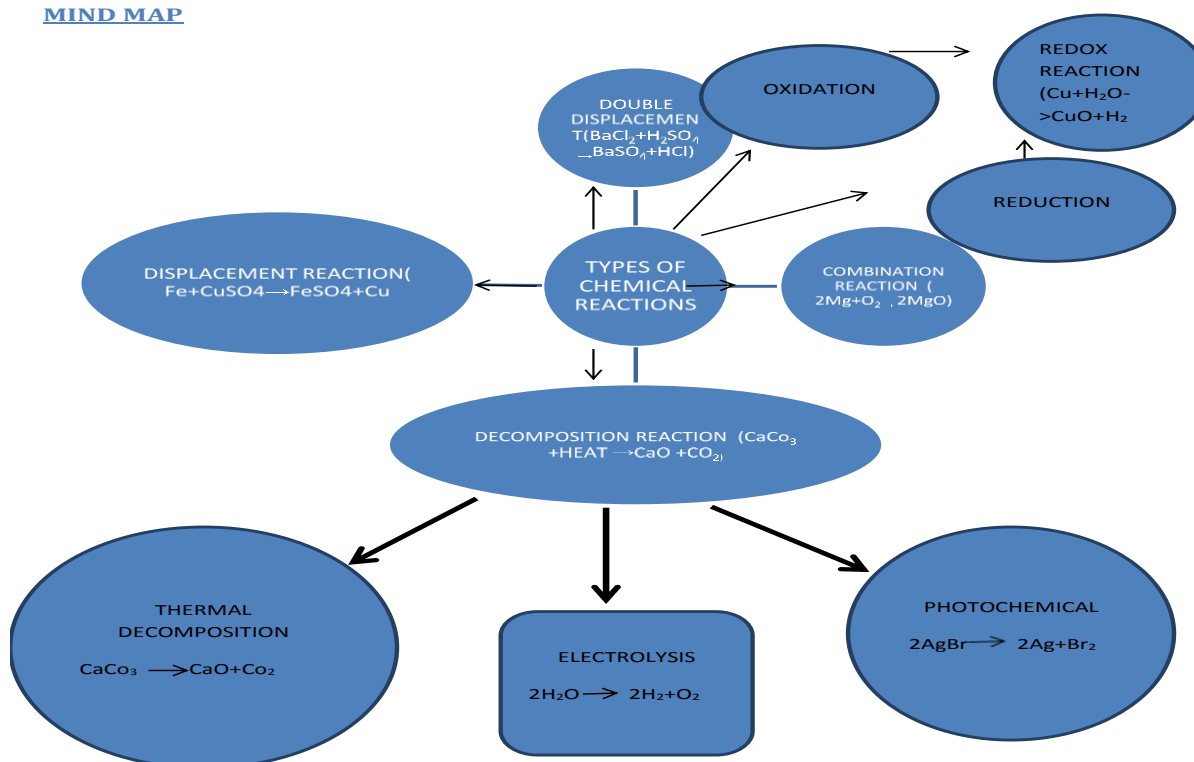
(1) Adding antioxidants to the food materials.

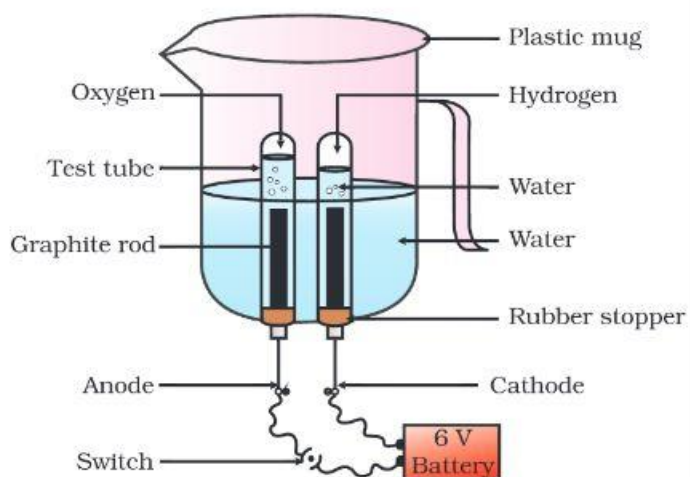
(2) Storing food in air tight container

(3) Flushing out air with nitrogen gas.

(4) Refrigeration

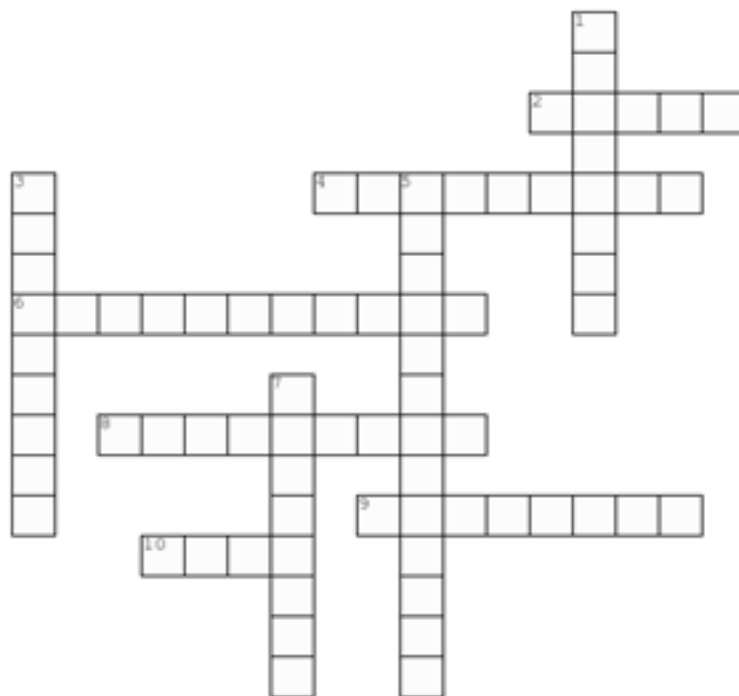
MIND MAP





CROSSWORD

Complete the crossword belowput the correct word



Created with TheTeachersCorner.net [Crossword Puzzle Generator](http://www.theteacherscorner.net/CrosswordPuzzleGenerator)

Across

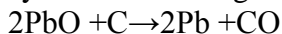
2. Both oxidation and reduction take place
4. Process of loss of oxygen
6. Reaction of two elements combined together to get a single product
8. Process of gain of oxygen
9. What does iron do when placed in copper sulphate solution
10. Metal extensively used in industries and infrastructure

Down

1. Change where new substances produced
3. when oil foods are kept for long time
5. Single compound broken down into two or more products
7. All chemical reactions should be ----

Very short answer questions. (1 mark)

1. Identify in the following reaction:



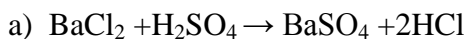
- the substance oxidised and
- the substance reduced.

2. A shiny brown coloured element “x” on heating in air becomes black in colour . Name the element “x” and the black coloured compound formed.

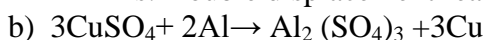
Ans: Element ‘x ’is Copper and the black coloured compound is cupric oxide Cu_2O

Short answer type questions (2 mark)

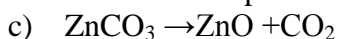
1. Classify the following reaction as combination, decomposition, displacement and double displacement reaction:-



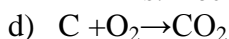
Ans: Double displacement reaction.



Ans: Displacement reaction.



Ans: Decomposition reaction



Ans: Combination reaction

2) What is a precipitation reaction? Give an example.

Ans. Reaction in which an insoluble substance or precipitate is formed

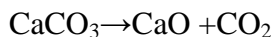


Short answer type questions (3 mark)

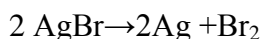
1. Give an example, each for thermal decomposition and photochemical decomposition reactions.

Write balanced equation for the same.

Ans. Thermal decomposition - Heating of lime stone.



Photochemical decomposition - Action of light on silver bromide.



VALUE BASED QUESTION

Asmita visited her grandmother during summer holidays. Her grandmother prepared chips for her and stored it in airtight containers.

- What value is shown by her grandmother?
- Why did Asmita’s grandmother store the snack in airtight container?

Ans: a) Scientific temperament / concern for health
b) To prevent the food items from rancidity.

Very long answer type questions (5 mark)

1. (i) Write chemical equations for the following and balance them.

a) Zinc carbonate(s) \rightarrow Zinc oxide + Carbon dioxide

Ans) $\text{ZnCO}_3 \rightarrow \text{ZnO} + \text{CO}_2$

b) Potassium bromide (aq) + Barium iodide (aq) \rightarrow Potassium iodide + Barium bromide.

Ans) $2\text{KBr} + \text{BaI}_2 \rightarrow 2\text{KI} + \text{BaBr}_2$

a) Nitrogen + Hydrogen \rightarrow Ammonia

Ans) $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$

ii) What happens when electricity is passed through acidified water?

Decomposition of water takes place resulting in the formation of hydrogen and oxygen.

CHAPTER 2--ACIDS, BASES AND SALTS

Acids: Substances which turn blue litmus solution red are called acids. Acids are sour in taste

Bases: Substances which change red litmus solution blue are called bases. They are bitter in taste.

Mineral Acids: Acids which are obtained from minerals like sulphates, nitrates, chlorides etc. are called mineral acids, e.g., H_2SO_4 (Sulphuric acid), HNO_3 (Nitric acid) and HCl (Hydrochloric acid).

Organic Acids: Acids which are obtained from plants and animals are called organic acids. e.g. citric acid, ascorbic acid, tartaric acid, lactic acid, acetic acid.

Hydronium Ions: They are formed by reaction of H^+ (from acid) and H_2O . It is because H^+ is unstable.

Universal Indicator: A universal indicator is a mixture of indicators which shows a gradual but well-marked series of colour changes over a very wide range of change in concentration of H^+ ion.

Strong Acids: Acids which dissociate into ions completely are called strong acids. Eg. H_2SO_4 , HCl

Weak Acids: Acids which do not dissociate into ions completely are called weak acids Eg. Citric acid, acetic acid.

Chemical properties of acids

(i) Acids react with active metals to give salt and hydrogen gas.

(ii) Acids react with metal carbonate and metals hydrogen carbonate to give salt, water and carbon dioxide.

(iii) Acids react with bases to give salt and water. This reaction is called neutralization reaction.

iv) Acids react with metals oxides to give salt and water.

Chemical properties of Bases

(i) Reaction with Metals – Certain metals such as Zinc, Aluminium and Tin react with alkali solutions on heating and hydrogen gas is evolved

(ii) Reaction with acids – Bases react with acids to form salt and water

Indicators - Indicators are substances which indicate the acidic or basic nature of the solution by their colour change.

pH scale : A scale for measuring hydrogen ion concentration in a solution.

The pH of a solution is defined as the negative logarithm of hydrogen ion concentration in moles per litre.

$$\text{pH} = -\log [\text{H}^+]$$

$$\text{pH} = -\log [\text{H}_3\text{O}^+]$$

where $[\text{H}^+]$ or $[\text{H}_3\text{O}^+]$ represents concentrations of hydrogen ions in solution.

The pH of a neutral solution is 7

The pH of an acidic solution is < 7

The pH of a basic solution is > 7

Some Important Compounds and their uses

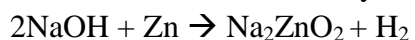
Common Name	Chemical name	Chemical formula	Uses
Washing soda	Sodium carbonate decahydrate	$\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$	Manufacture of borax, caustic soda, softening of hard water
Baking soda	Sodium hydrogen carbonate	NaHCO_3	Used as antacid, ingredient of baking powder
Bleaching powder	Calcium oxychloride	CaOCl_2	Bleaching clothes, used as oxidizing agent, disinfecting water, manufacture of chloroform
Plaster of Paris	Calcium sulphate hemihydrate	$\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$	Plastering fractured bones, making toys, decorative materials, statues

EQUATIONS OF ACIDS, BASES AND SALTS

Acid + Metal \rightarrow Salt + Hydrogen gas

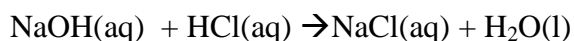


Base + Metal \rightarrow Salt + Hydrogen gas



(Sodium zincate)

Base + Acid \rightarrow Salt + Water



Acids give hydronium ions in water



Bases generate OH^- ions in water



Reactions of Important Chemical Compounds

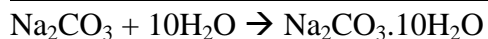
Preparation of Bleaching powder

By the action of chlorine on dry slaked lime



On heating, baking soda liberates CO_2
 $2\text{NaHCO}_3 \xrightarrow{\text{Heat}} \text{Na}_2\text{CO}_3 + \text{H}_2\text{O} + \text{CO}_2$

Washing soda (Sodium carbonate decahydrate)

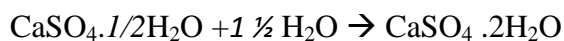


Plaster of Paris

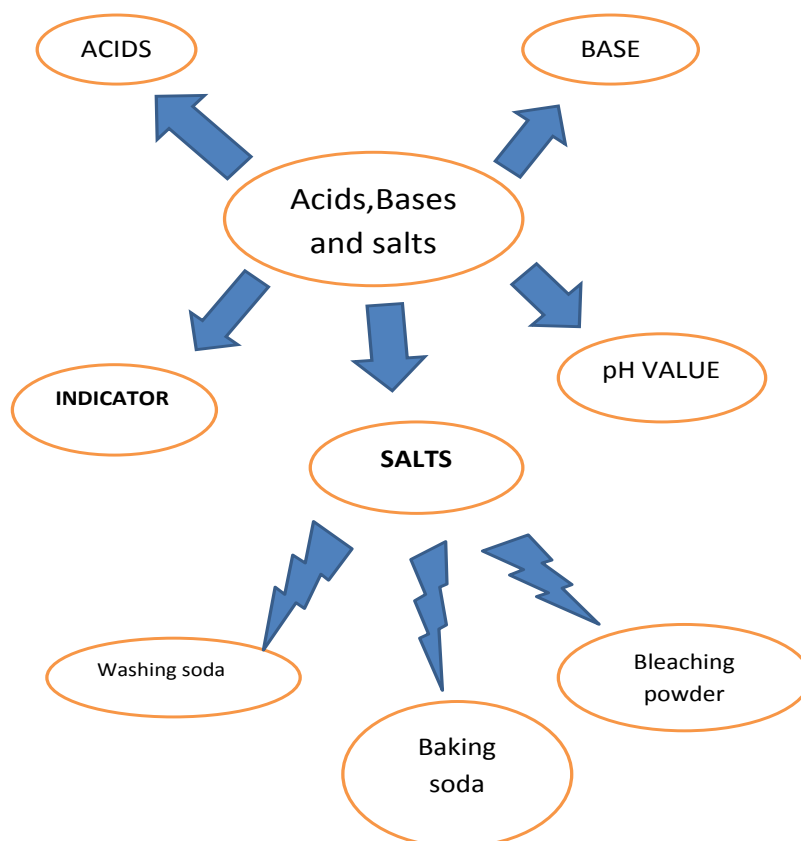
Preparation of plaster of Paris



On mixing plaster of Paris with water, gypsum is obtained



MIND MAP



QUESTION BANK

Very Short Answer Type Questions (1mark)

1. Write the name of the products formed by heating gypsum at 373K. Write one use of it.
Plaster of Paris and water. It is used for plastering fractured bone.
2. Write the chemical name and formula of the compound which is used as an antacid.
Sodium bicarbonate, NaHCO_3

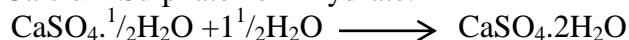
Short Answer Type Questions (2mark)

1. Given below are the pH values of different liquids. 7.0, 14.0, 4.0, and 2.0. Which of these could be that of a) lemon juice b) distilled water c) sodium hydroxide solution d) tomato juice.
2. What is baking powder? How does it make the cake soft and spongy?
Baking powder is a mixture of sodium hydrogen carbonate and tartaric acid. On heating it liberates CO_2 which makes the cake soft and spongy

Short Answer Type Questions(3mark)

1. Write the chemical name of Plaster of Paris. Write a chemical equation to show the reaction between Plaster of Paris and water. Name the compound produced in this reaction.

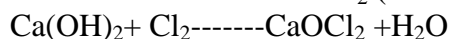
Calcium Sulphate hemi hydrate.



The compound produced is Gypsum.

2. A gas X reacts with lime water and forms a compound Y which is used as bleaching agent in the chemical industry. Identify X and Y. Give the chemical equation of the reaction involved.

X is chlorine Y is CaOCl_2 (calcium oxy chloride) used as bleaching agent.



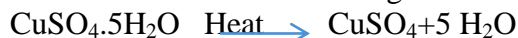
Long answer type questions (5 mark)

1. a) A milk man adds a very small amount of baking soda to fresh milk. Why does he shift the pH of the fresh milk from 6 to slightly alkaline?
b) Mention pH range within which our body works?
c) Explain how antacids give relief from acidity.
d) Mention the nature of tooth pastes. How do they prevent tooth decay?
a) It is done to prevent the formation of lactic acid which spoils the milk
b) pH range 7.0- 7.8
2. a) Antacids neutralizes excess of acid in our body and gives relief.
d) Basic. Neutralize the acid formed in the mouth
2. a) Crystals of a substance changed their color on heating in a closed test tube but regained it after some time when they were allowed to cool down. Name the substance and write its formula. Explain the phenomenon.

- b) How is sodium carbonate prepared? Give two uses of the compound

a) Copper sulphate, $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$.

It is blue. It becomes white on heating due to loss of water molecule.



It regains its colour by absorbing water from atmosphere



- b) Prepared by passing CO_2 through ammoniacal brine
Used for production of washing powder & manufacture of glass

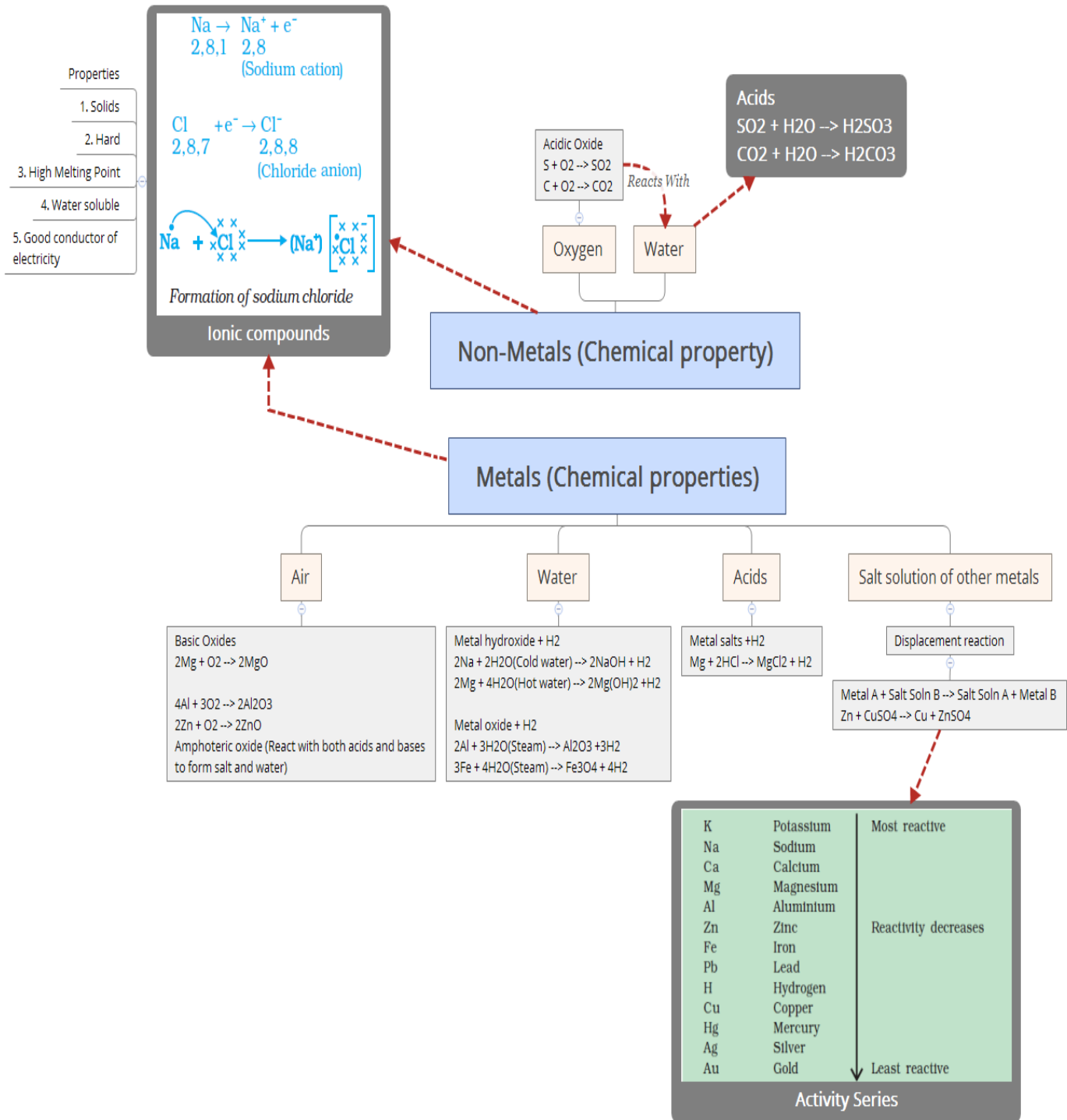
CHAPTER 3 : METALS AND NON-METALS

MIND MAP

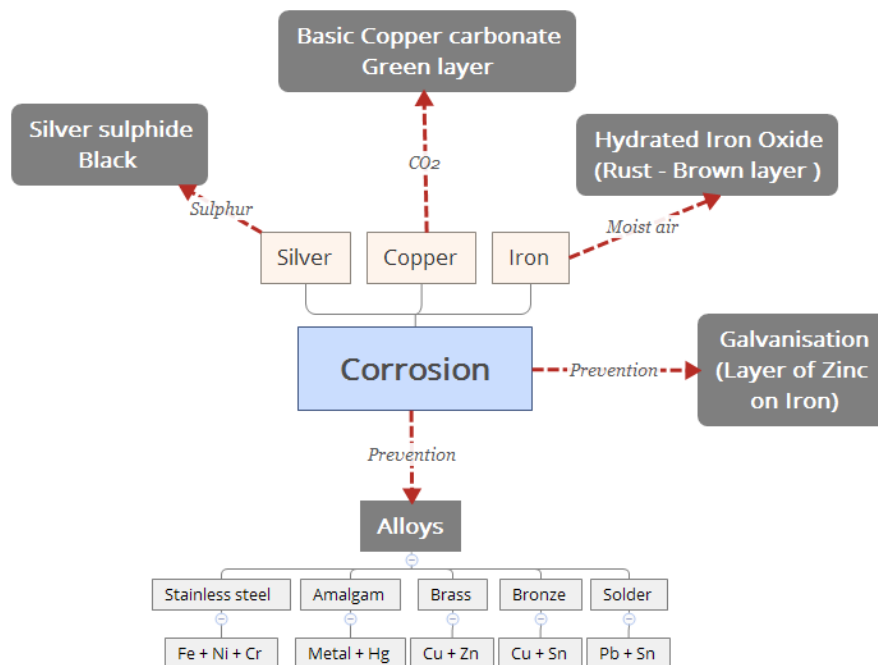
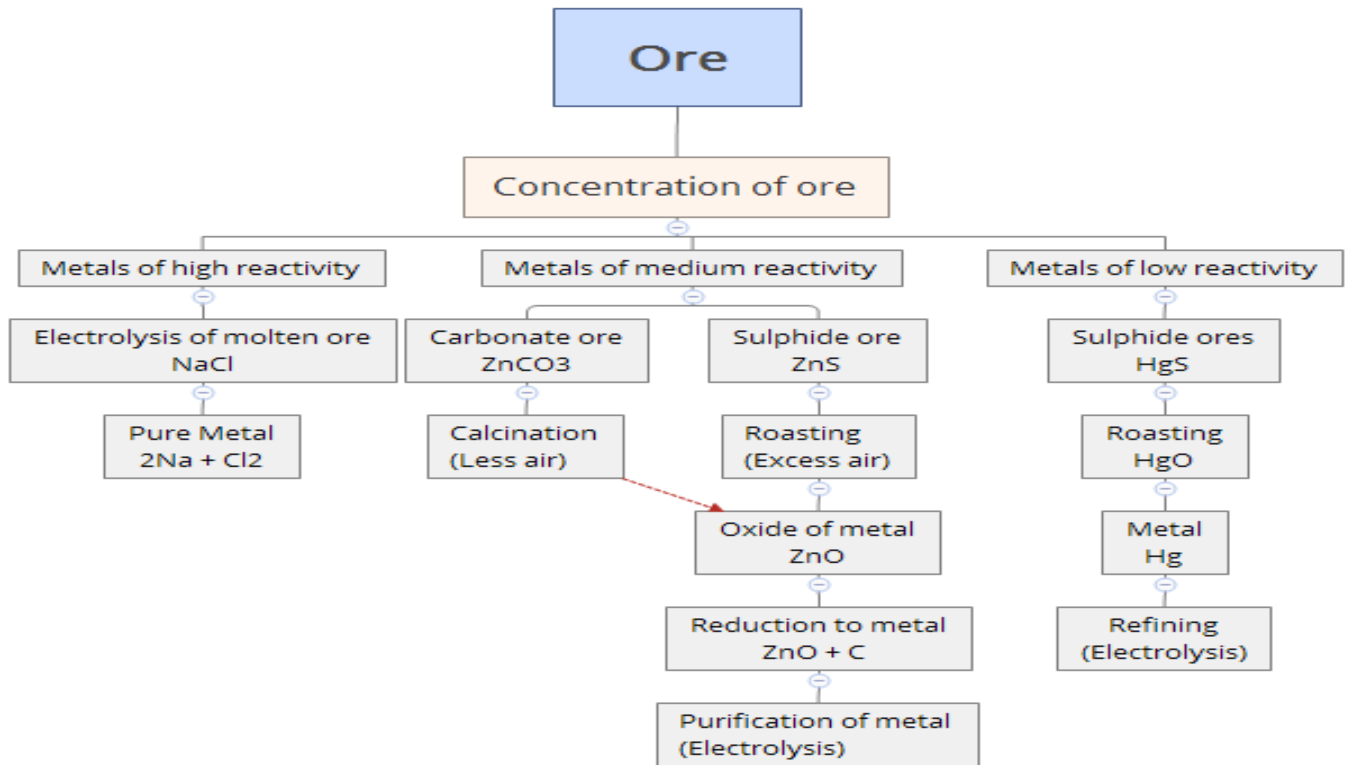
PHYSICAL PROPERTIES 📌		
	METAL	NON-METALS
LUSTRE	LUSTROUS	NON-LUSTROUS
HARDNESS	HARD	BRITTLE
MALLEABILITY	MALLEABLE	NON-MALLEABLE
DUCTILITY	DUCTILE	NON-DUCTILE
CONDUCTIVITY	GOOD CONDUCTOR OF HEAT AND ELECTRICITY	BAD CONDUCTOR OF HEAT AND ELECTRICITY
PHYSICAL STATE	GENERALLY SOLID	SOLID, LIQUID OR GAS
SONOROUS	MAKES SOUND WHEN STRUCK	DOES NOT MAKES SOUND WHEN STRUCK
MELTING AND BOILING POINT	HIGH MELTING POINT AND BOILING POINT	LOW MELTING POINT AND BOILING POINT

Exceptional properties of metals and non-metals

1. Mercury (Metal) is liquid at room temperature
2. Iodine (Non-metal) is lustrous
3. Diamond (Carbon, non-metal) is the hardest substance
4. Graphite (Carbon, Non-metal) is a good conductor of electricity
5. Sodium and potassium (Metals) can be cut with a knife
6. Gallium and caesium (Metals) melt when kept on palm (Low M.P)



EXTRACTION OF METALS



DIAGRAM

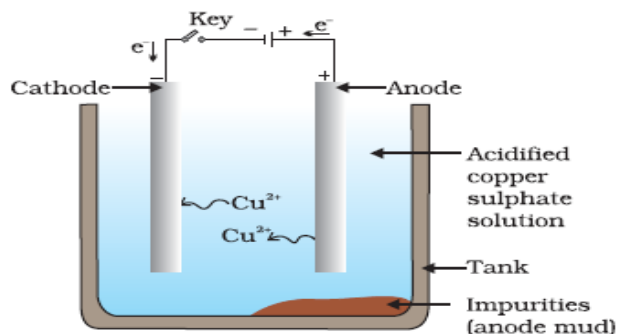
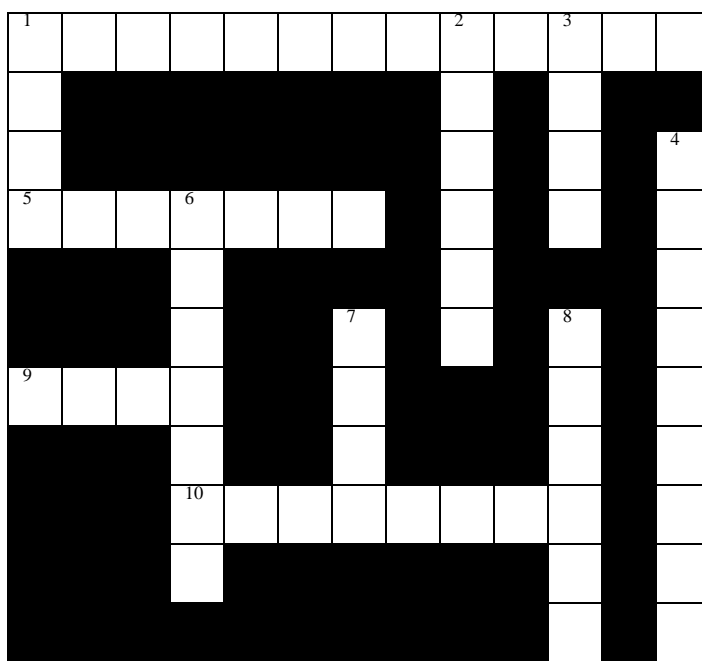


Figure 3.1
Electrolytic refining of copper. The electrolyte is a solution of acidified copper sulphate. The anode is impure copper, whereas, the cathode is a strip of pure copper. On passing electric current, pure copper is deposited on the cathode.

CROSSWORD



Across

- 1 Protecting Iron
- 5 Hardest Substance
- 9 Forms amphoteric oxide
- 10 Sulphide Ores

Down

- 1 Most ductile metal
- 2 Homogenous mixture of metals
- 3 A Metal which gets rusted
- 4 Burns with dazzling white flame
- 6 Liquid at room temperature
- 7 Minerals from which metal is extracted
- 8 Impurity in ore

QUESTION BANK

VERY SHORT ANSWER TYPE (1 MARK)

1. Differentiate between the oxides of magnesium and sulphur.
2. Name one metal which is a poor conductor of heat

SHORT ANSWER TYPE (2 MARK)

1. Give Reasons
 - a. Sodium and potassium are stored in kerosene
 - b. Ionic compounds have higher melting point
2. Differentiate between metals and non-metals based on
 - a. Malleability
 - b. Electrical conductivity

SHORT ANSWER TYPE (3 MARK)

1. Show the formation of magnesium chloride with the help of electron dot structure
2. What happens when
 - a. Zinc reacts with copper sulphate solution
 - b. Aluminium reacts with steam
 - c. Sodium reacts with waterGive balanced equations for each.

VALUE BASED QUESTION

Anita bought silver jewellery along with her friend Rita. Anita advised Rita to make sure that the jewellery was kept in a sealed box and not exposed to air; but Rita forgot and left it open. After some months when Rita decided to wear it, she found the jewellery all black. Rita was very upset.

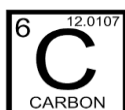
- a. Why did the jewellery become black when exposed to air?
- b. What is this process called?
- c. What were the values shown by Anita?

LONG ANSWER TYPE (5 MARK)

1. With the help of labelled diagram explain how copper metal is purified after extraction
2. Explain
 - a. How is zinc obtained from sulphide and carbonate ores? Differentiate between the two giving chemical reactions
 - b. What are the advantages of alloys? Name the constituents of bronze.

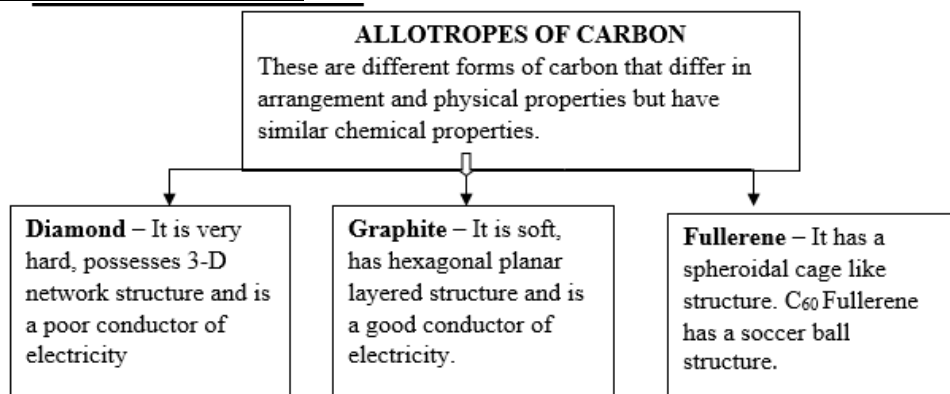
CHAPTER-4 CARBON AND ITS COMPOUNDS

IMPORTANT POINTS

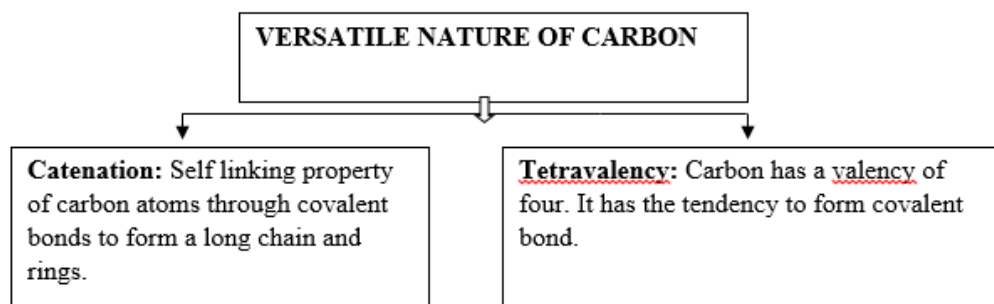


The chemical symbol of Carbon is C. Its atomic number is 6 and mass number is 12. It is a non-metallic element.

ALLOTROPES OF CARBON



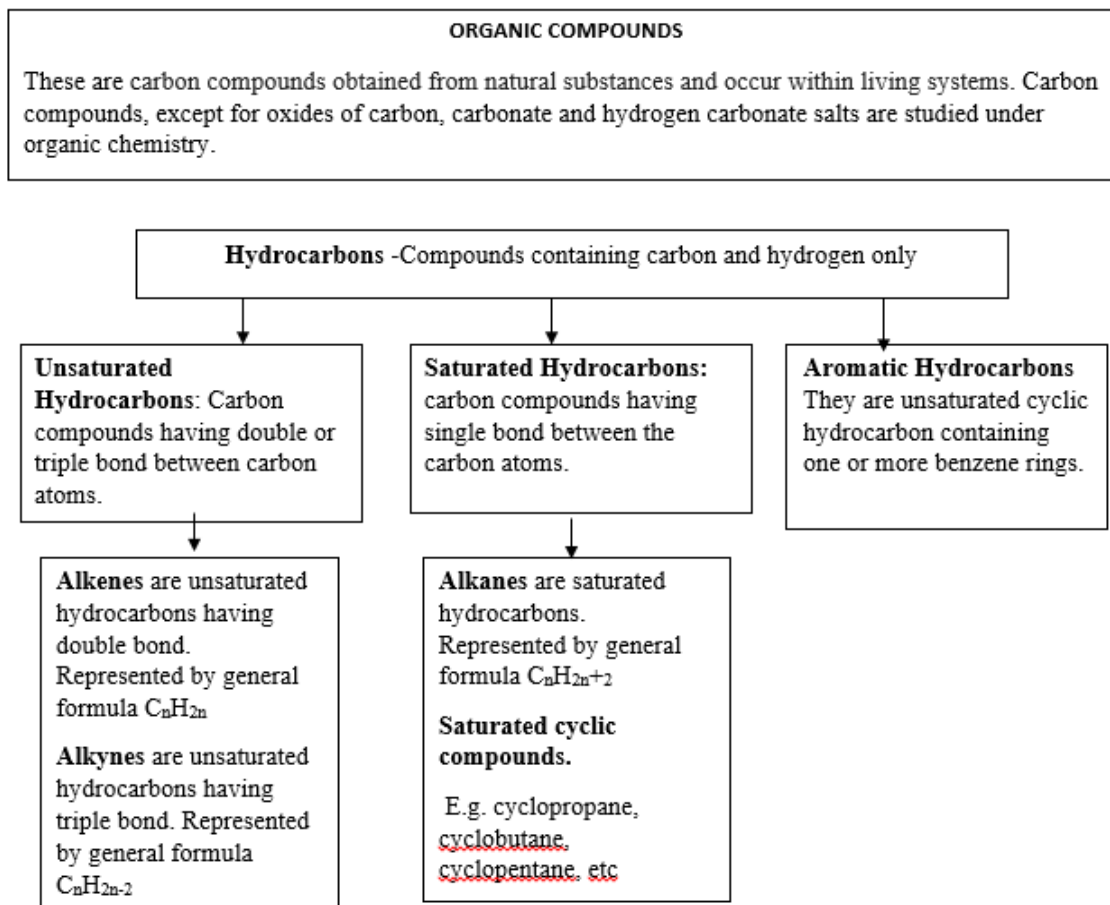
VERSATILE NATURE OF CARBON



ISOMERISM - The phenomenon in which a compound has the same molecular formula but different structures is called isomerism.

ISOMERS -The compounds which have the same molecular formula but different structures and different properties are called isomers.

FUNCTIONAL GROUPS: Atoms or group of atoms responsible for the chemical properties of an organic compound.

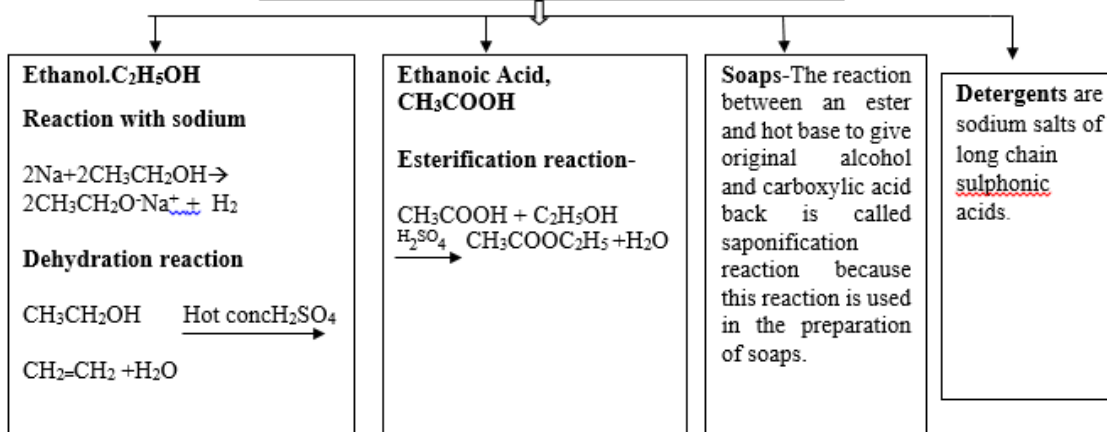


In a hydrocarbon chain, one or more hydrogens can be replaced by some other element .In such compounds, the element replacing hydrogen is referred to as a **heteroatom**

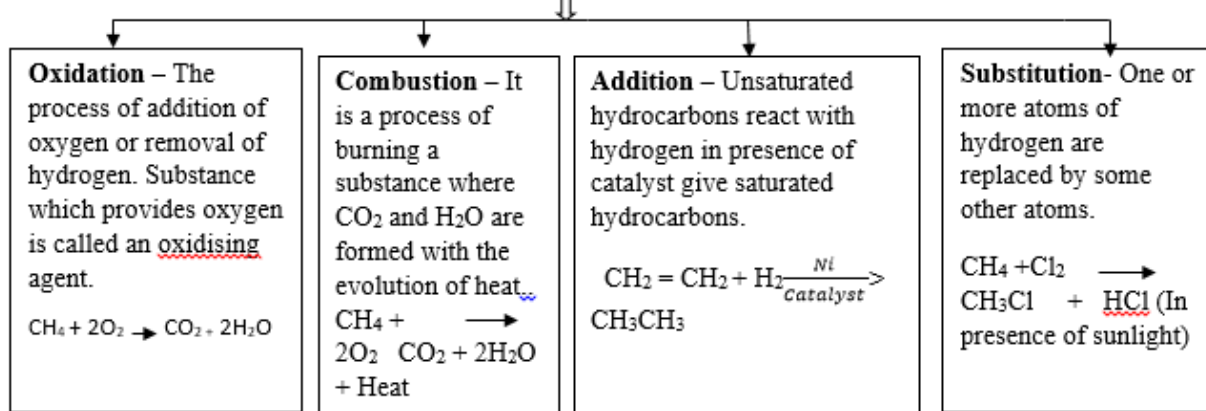
Functional group	Symbol/formula	Prefix/suffix	Compound name
Halo	-Cl, -Br, -I	Halo (prefix)	Haloalkane
Alcohol	-OH	-ol	Alkanol
Aldehyde	-CHO	-al	Alkanal
Ketone	-CO-	-one	Alkanone
Carboxylic acid	-COOH	-oic acid	Alkanoic acid

HOMOLOGOUS SERIES –A series of compounds having same functional group and similar chemical properties but differ by-- CH_2 unit between two successive members.

SOME IMPORTANT ORGANIC COMPOUNDS

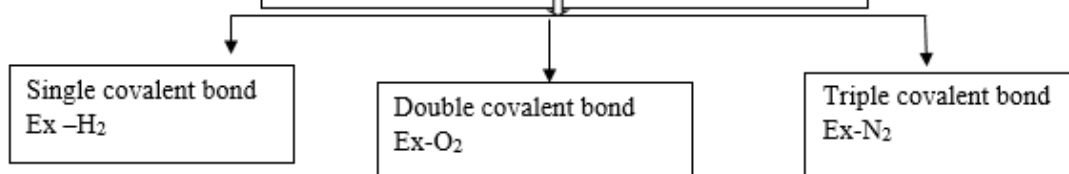


CHEMICAL PROPERTIES

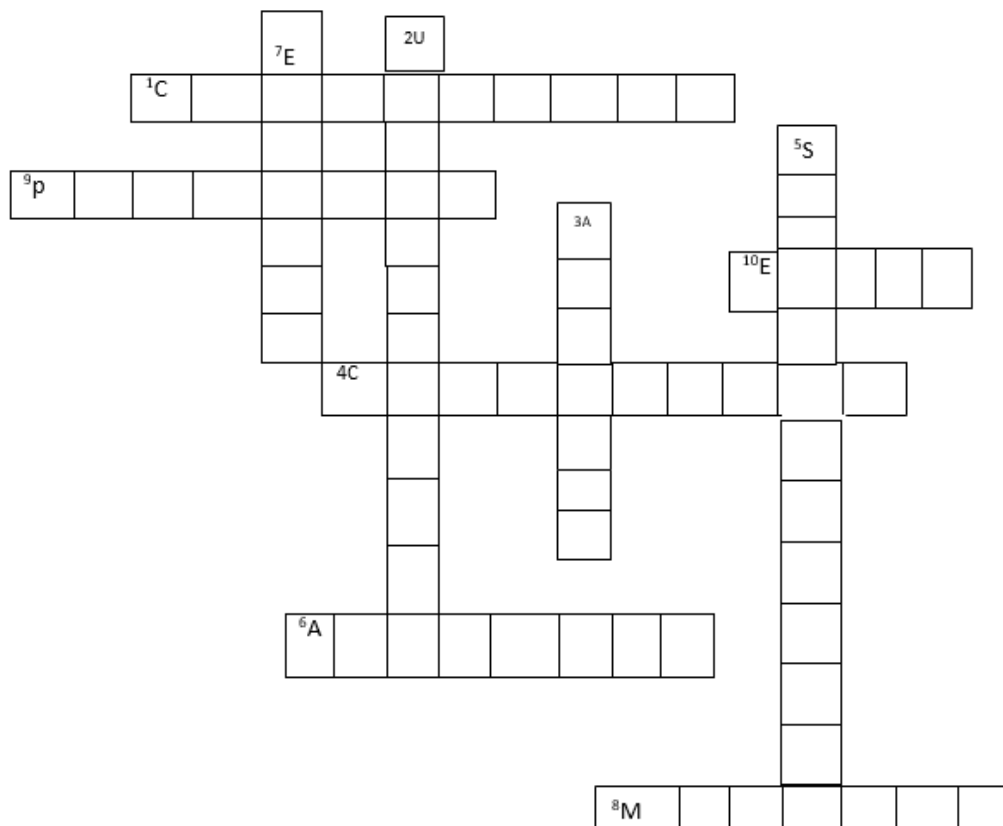


COVALENT BONDING

A bond formed by mutual sharing of electrons



CROSSWORD



1. Self-linking property of carbon
4. Acid having functional group -COOH
- 6 .Hydrogenation of vegetable oil is ---- reaction
8. Simplest hydrocarbon
- 9 IUPAC name of next higher homologous of ethanol
10. The substance used in making perfumes and flavoring agents

DOWN

2. Hydrocarbon burns in air with sooty flame.
3. The functional group present in methanol.
5. Chlorination of alkanes is ----- reaction
7. The active ingredient of all alcoholic drinks.

Question Bank

Answer the following questions.

Very short answer questions (1 mark)

1. Which of the following formulae represents a saturated hydrocarbon?
 C_nH_{2n} , $\text{C}_n\text{H}_{2n-2}$, $\text{C}_n\text{H}_{2n+2}$, $\text{C}_n\text{H}_{2n+1}$
2. Draw the electron dot structure of Ethene .

Short answer question (2mark)

1. Why is the conversion of ethanol to ethanoic acid an oxidation reaction?
2. What is meant by denatured alcohol? What is the need to denature alcohol?

Short answer question (3 mark)

1. An organic compound A of molecular formula C_2H_6O on heating with excess of conc. H_2SO_4 gives compound B of molecular formula C_2H_4 . Compound B on addition reaction gives compound C of molecular formula C_2H_6 .

- a) Name A, B and C.
- b) Write the chemical equation for the conversion of A to B
- c) What is the role of conc. H_2SO_4 in above equation? (HOTS)

VALUE BASED QUESTION

Meera and her mother were travelling in a CNG auto. The auto driver took the auto to the CNG filling station for filling the empty cylinder. Meera asked her mother about the gas used to fill the cylinder. Her mother replied that the gas used was CNG. CNG is used in place of petrol or diesel because it is cheaper, pollution free and eco-friendly.

Answer the following questions

- a) What is the long form of CNG?
- b) Name the main constituent of CNG.
- c) What value have you learnt after reading the text?

Long answer question (5 mark)

1. An organic compound with molecular formula $C_2H_4O_2$ produces brisk effervescence on addition of sodium carbonate /bicarbonate.

- a. Identify the organic compound.
 - b. Name the gas evolved.
 - c. How will you test the gas evolved?
 - d. Write the chemical equation for the above reaction.
 - e. List two important uses of the above compound (HOTS)
- 2 .a. List two reasons for carbon forming a large number of compounds.

b. Name the type of bonding found in most of the carbon compounds. Why does carbon form compounds mainly by this kind of bonding?

c. Give reason.

- (i) Carbon compounds generally have low melting and boiling points.
- (ii) Carbon compounds generally do not conduct electricity.

Multiple choice questions

1. Vinegar is a solution of
(a) 50% – 60% acetic acid in alcohol

- (b) 5% – 8% acetic acid in alcohol
 (c) 5% – 8% acetic acid in water
 (d) 50% – 60% acetic acid in water
2. On adding NaHCO_3 to acetic acid, a gas is evolved which turns lime water milky due to formation of
- (a) Calcium bicarbonate
 (b) Calcium hydroxide
 (c) Calcium carbonate
 (d) Calcium acetate
3. Dilute acetic acid was added to the four test tubes containing the following chemical.
 i. KOH ii. NaHCO_3 iii. K_2CO_3 iv. NaCl
 Brisk effervescence was observed in test tubes
 a) i & ii b) ii & iii c) I & iv d) ii & iii
4. Few drops of ethanoic acid was added to solid sodium carbonate .The observation made was that
- a. A pungent smelling gas evolved b. Brown fumes evolved. c. Brisk effervescence occurred.
5. 2 ml pf acetic acid was added in drops to 5ml of water it was noticed that:
- a. A pink and clear solution was formed.
 b. Water formed a separate layer on the top of the acid.
 c. A clear and homogenous solution was formed.
 d. The acid formed a separate layer on the top of water

Practical based question (2 marks)

1. 1ml glacial acetic acid and 1ml of ethanol are mixed together in a test tube. Few drops of concentrated sulphuric acid is added in the mixture are warmed in a water bath for 5 min.
- a. Name the resultant compound formed.
 b. Represent the above change by a chemical equation
 c. What term is given to such a reaction
 d. What are the special characteristics of the compound formed.
2. An organic compound with molecular formula $\text{C}_2\text{H}_4\text{O}_2$ produces brisk effervescence on addition of sodium carbonate /bicarbonate.
- a. Identify the organic compound.
 b. Name the gas evolved.

CHAPTER 5

PERIODIC CLASSIFICATION OF ELEMENTS

Dobereiner's Triads

Dobereiner observed that when elements were arranged into groups of three in the order of their increasing atomic masses, the atomic mass of the middle element was the arithmetic mean of rest of the two.

Limitation

Could be applied only to limited number of elements.

Newlands' Law of Octaves

Newlands found that every eighth element has chemical properties when they are arranged in increasing order of their atomic masses.

Limitations

- Could be valid up to calcium only
- Newlands assumed that only 56 elements existed in nature and no more elements would be discovered.

Mendeleev's Periodic Classification

Mendeleev's Periodic Law states that the properties of elements are the periodic function of their atomic masses.

Merits of Mendeleev's Periodic Table

- Mendeleev left some blank spaces for undiscovered elements.
- Mendeleev predicted the discovery of some elements and named them as eka-boron, eka-aluminium and eka-silicon.
- Noble gases discovered later could be placed without disturbing the existing order.

Limitations of Mendeleev's Periodic Table

- **Position of Hydrogen-** Could not assign a correct position to hydrogen as hydrogen resembles alkali metals as well as halogens
- **Position of Isotopes-** Isotopes are placed in same position though they have different atomic masses
- **Separation of chemically similar elements while dissimilar elements are placed in the same group.**

Modern Periodic Classification

Modern Periodic Law states that properties of elements are the periodic function of their atomic numbers.

Groups in Modern Periodic Table:

Group 1	Alkali metals
Group 2	Alkaline earth metals
Groups 3 to 12	Transition elements
Group 13	Boron family
Group 14	Carbon family
Group 15	Nitrogen family
Group 16	Oxygen family
Group 17	Halogens
Group 18	Noble gases

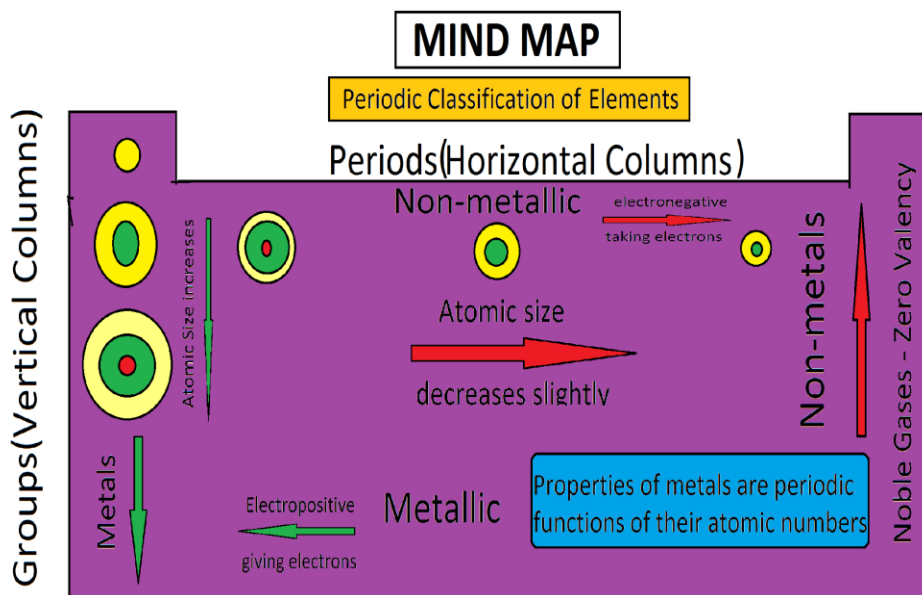
Periods in Modern Periodic Table

Period	No of elements
1 st period	2 (H, He)
2 nd and 3 rd period	8 (Li, Be, B, C, N, O, F, Ne)
4 th and 5 th period	18
6 th period	32
7 th period	Incomplete period

Trends in Modern Periodic Table:

Property	Variation along the group	Variation along the period
Valency	Remains the same	Increases up to group 14 then decreases
Atomic radii	Increases	Decreases
Metallic character	Increases	Decreases
Electropositive character	Increases	Decreases
Electronegativity	Decreases	Increases

MIND MAP



DIAGRAMS

Döbereiner's triads

Li	Ca	Cl
Na	Sr	Br
K	Ba	I

Notes of music:

sa (do)	re (re)	ga (mi)	ma (fa)	pa (so)	da (la)	ni (ti)
H	Li	Be	B	C	N	O
F	Na	Mg	Al	Si	P	S
Cl	K	Ca	Cr	Ti	Mn	Fe
Co and Ni	Cu	Zn	Y	In	As	Se
Br	Rb	Sr	Ce and La	Zr	—	—

NEWLAND'S OCTAVES

Table 5. 6 Modern Periodic Table

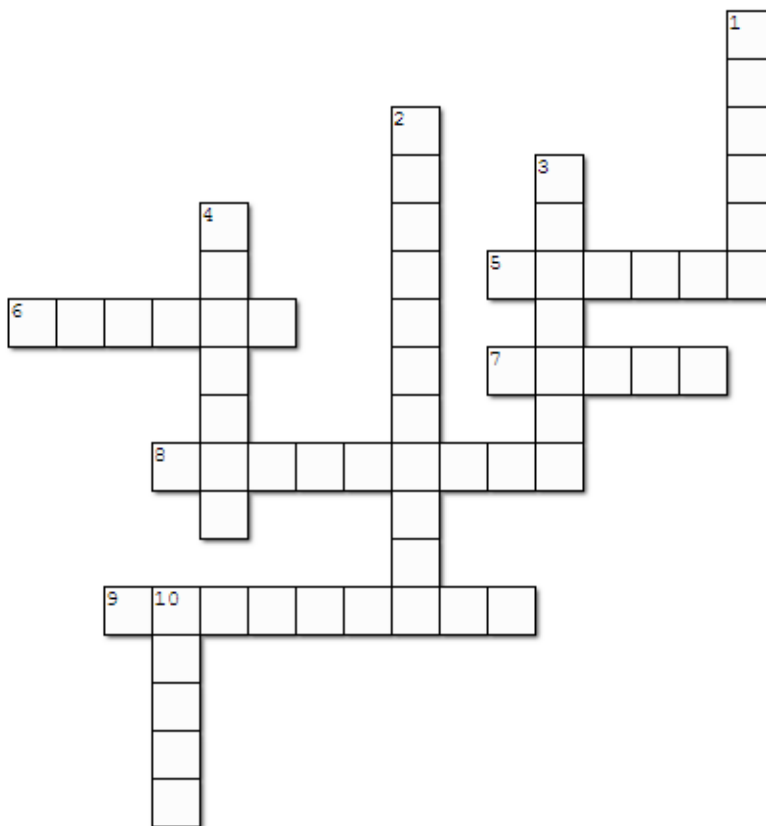
The zigzag line separates the metals from the non-metals.



GROUP NUMBER	1	2	GROUP NUMBER										13	14	15	16	17	18			
P	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18			
E	H Hydrogen 1.0		Li Lithium 6.9	Be Beryllium 9.0	B Boron 10.8	C Carbon 12.0	N Nitrogen 14.0	O Oxygen 16.0	F Fluorine 19.0	Ne Neon 20.2											
R			Na Sodium 23.0	Mg Magnesium 24.3	Al Aluminium 27.0	Si Silicon 28.1	P Phosphorus 31.0	S Sulphur 32.1	Cl Chlorine 35.5	Ar Argon 39.9											
I			K Potassium 39.1	Ca Calcium 40.1	Sc Scandium 44.9	Ti Titanium 47.9	V Vanadium 50.9	Cr Chromium 52.0	Mn Manganese 54.9	Fe Iron 55.8	Cobalt 58.9	Ni Nickel 58.7	Cu Copper 63.5	Zn Zinc 65.4	Ga Gallium 69.7	Ge Germanium 72.6	As Arsenic 74.9	Se Selenium 79.0	Br Bromine 79.9	Kr Krypton 83.8	
O			Rb Rubidium 85.5	Sr Strontium 87.6	Y Yttrium 88.9	Zr Zirconium 91.2	Nb Niobium 92.9	Mo Molybdenum 95.9	Tc Technetium 98.9	Ru Ruthenium 101.1	Rh Rhodium 102.9	Pd Palladium 106.4	Ag Silver 107.9	Cd Cadmium 112.4	In Indium 114.8	Sn Tin 118.7	Sb Antimony 121.8	Te Tellurium 127.6	I Iodine 126.9	Xe Xenon 131.3	
D			Cs Caesium 132.9	Ba Barium 137.3	La* Lanthanum 138.9	Hf Hafnium 178.5	Ta Tantalum 180.9	W Tungsten 183.8	Re Rhenium 186.2	Os Osmium 190.2	Ir Iridium 192.2	Pt Platinum 195.1	Au Gold 197.0	Hg Mercury 200.6	Tl Thallium 204.4	Pb Lead 207.2	Bi Bismuth 208.9	Po Polonium 209	At Astatine 210	Rn Radon 222	
S			Fr Francium 223	Ra Radium 226	Ac** Actinium 227	Rf Rutherfordium 261	Db Dubnium 262	Sg Seaborgium 266	Bh Bohrium 264	Hs Hassium 277	Mt Meitnerium 268	Ds Darmstadtium 271	Rg Roentgenium 272	Uub Ununbium 285	Uuh Ununhexium 289	Uuq Ununquadium 288					

* Lanthanoides	58	59	60	61	62	63	64	65	66	67	68	69	70	71
	Ce Cerium 140.1	Pr Praseodymium 140.9	Nd Neodymium 144.2	Pm Promethium 145	Sm Samarium 150.4	Eu Europium 151.9	Gd Gadolinium 157.3	Tb Terbium 158.9	Dy Dysprosium 162.5	Ho Holmium 164.9	Er Erbium 167.3	Tm Thulium 168.9	Yb Ytterbium 173.0	Lu Lutetium 174.9
** Actinoides	90	91	92	93	94	95	96	97	98	99	100	101	102	103
	Th Thorium 232	Pa Protactinium 231	U Uranium 238	Np Neptunium 237	Pu Plutonium 244	Am Americium 243	Cm Curium 247	Bk Berkelium 247	Cf Californium 251	Es Einsteinium 252	Fm Fermium 257	Md Mendelevium 258	No Nobelium 259	Lr Lawrencium 260

CROSSWORD



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Across

5. Vertical columns in the periodic table
6. Element with atomic number 6
7. Metalloid in Group 13
8. Variation of atomic size along the group
9. Variation of electronegativity along the group

Down

1. Elements that are electropositive in nature
2. Other name for inert gases
3. Horizontal rows in the periodic table
4. Non-metal that exists in liquid state at room temperature
10. Number of electrons in L shell

Question Bank: - Periodic Classification of Elements

Very Short Answer Type Questions (1 mark)

- Q1. Give an example of Dobereiner's triad.
Q2. What is the basis of Mendeleev's periodic table?

Short Answer Type Questions (2 marks)

- Q1. State the modern periodic law for classification of elements. How many groups and periods are there in the modern periodic table?
Q2. An element 'M' has atomic number 11.
(i) Write its electronic configuration.
(ii) State the group to which 'M' belongs.
(iii) Is 'M' a metal or a non-metal?
(iv) Write the formula of its chloride.
Q3. Name two elements that show chemical properties similar to bromine. Give reason.
Q4. An atom has electronic configuration 2, 8, 2.
(i) What is the atomic no. of this element?
(ii) Is it a metal or non-metal?

Short Answer Type Questions (3 marks)

Q1. The elements Li ($Z = 3$), Na ($Z = 11$) and K ($Z = 19$) belong to group 1

- (i) Predict the periods they belong.
- (ii) Which one of them is least reactive?
- (iii) Which one of them has the largest atomic radius? Give reason to justify.

Q2. F, Cl and Br are the elements each having seven valence electrons.

Pick the element (i) with the largest atomic radius (ii) which is most reactive. Justify your answer.

Q3. Nitrogen ($Z = 7$) and Phosphorus ($Z = 15$) belong to same group-15 of the periodic table.

Write the electronic configuration of these two elements. Which of these two is more electronegative? Why?

Long Answer Type Questions (5marks)

Q1.(i) How does atomic size vary along the group? Give reason.

(ii) Why are metals electropositive in nature?

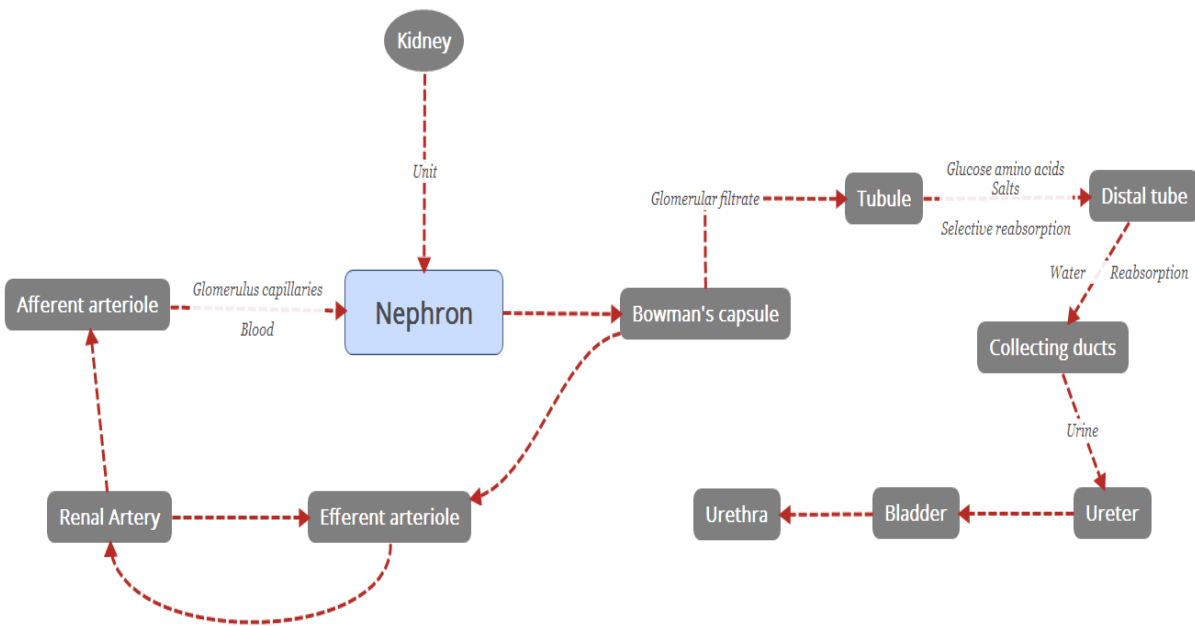
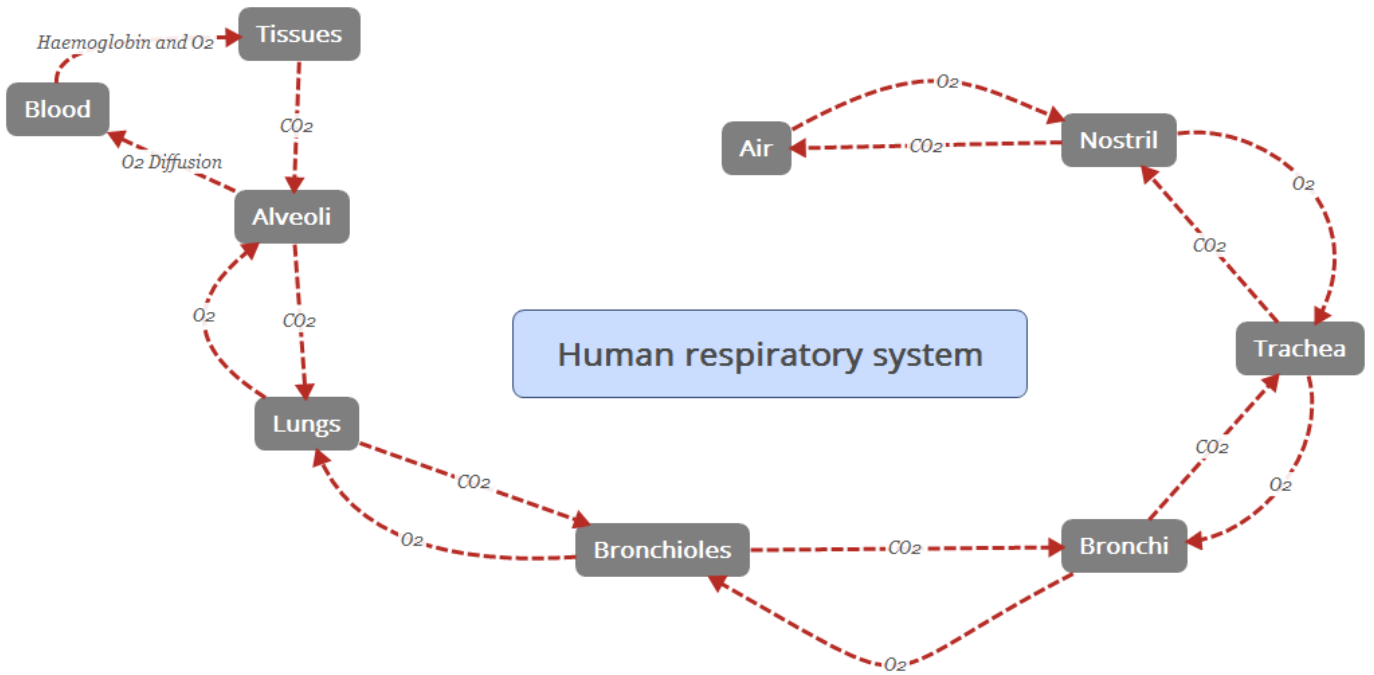
(iii) What are metalloids? Give an example.

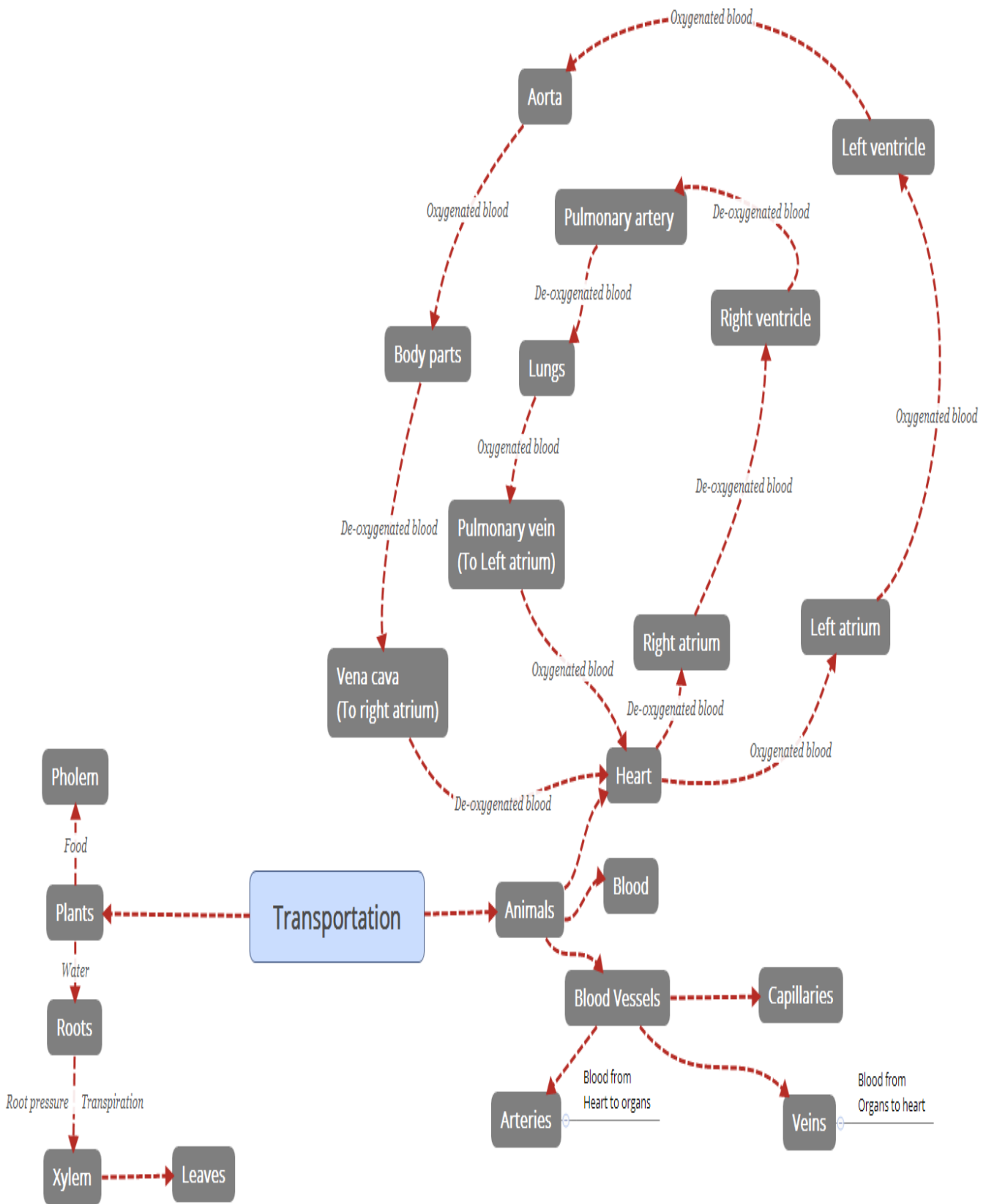
Q2. Name-

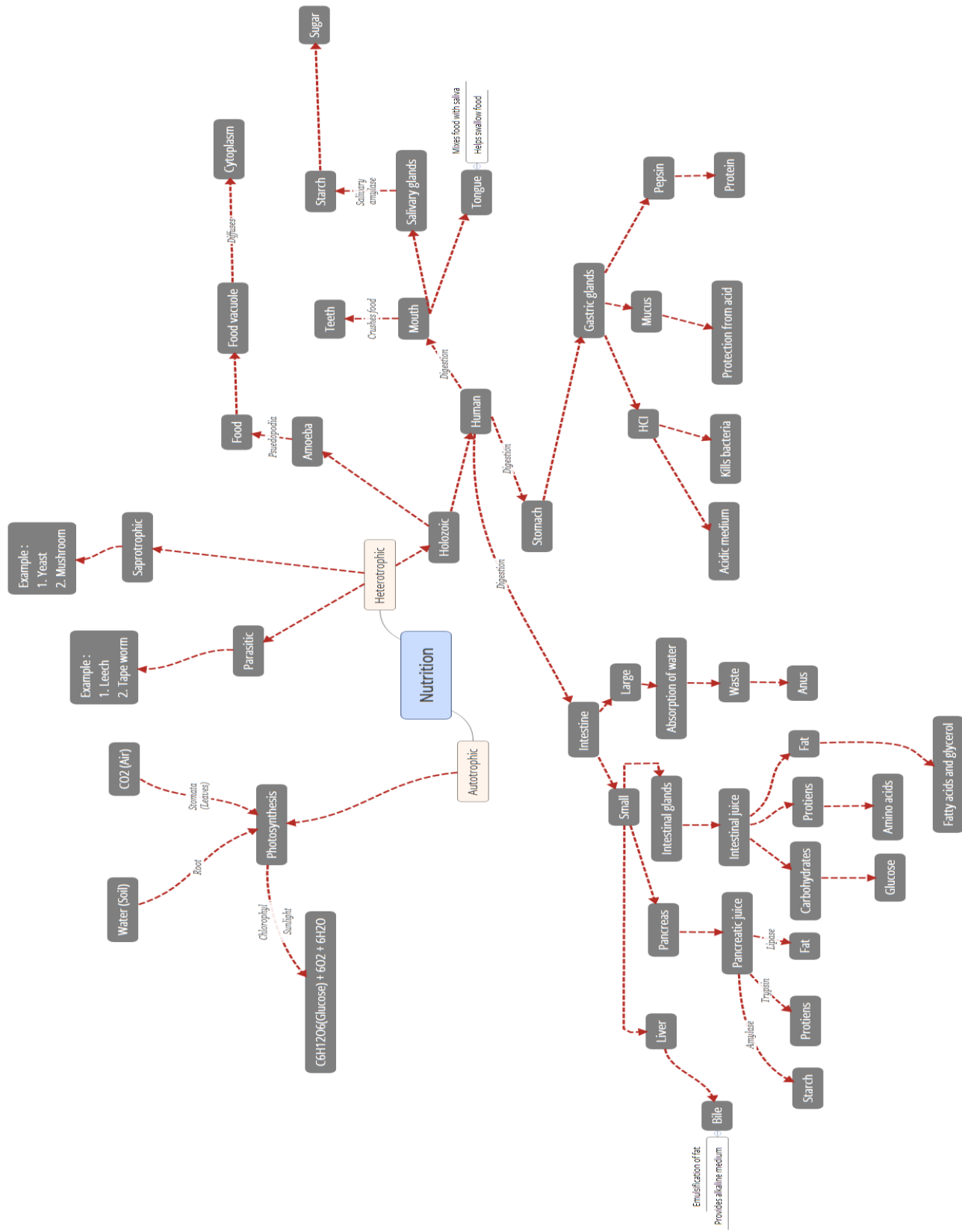
- (i) Two elements that have a single electron in their outermost shells.
- (ii) Two elements that have two electrons in their outermost shells.
- (iii) Two elements with filled outermost shell.
- (iv) Two elements that belong to halogen family.
- (v) An element which is tetravalent and forms the basis of organic chemistry.

CHAPTER 6 : LIFE PROCESSES

MIND MAP







DIAGRAMS

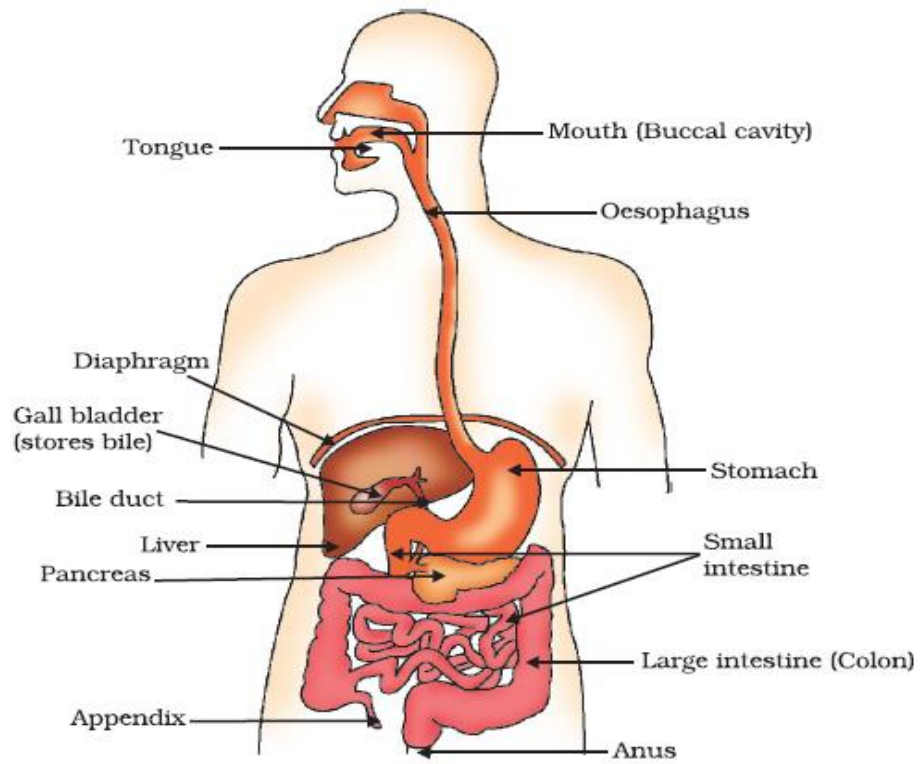


Figure 6.1 Human alimentary canal

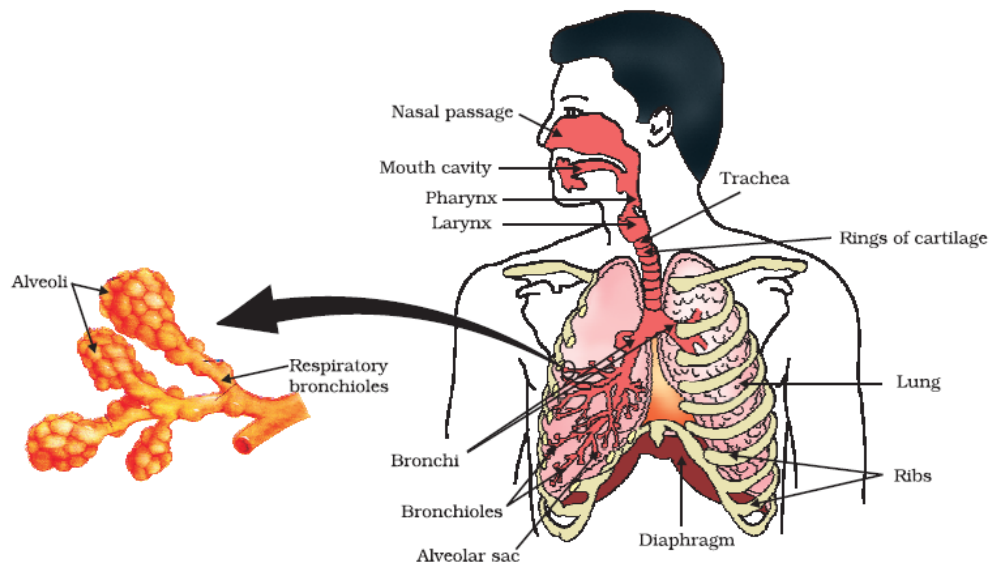


Figure 6.2 Human respiratory system

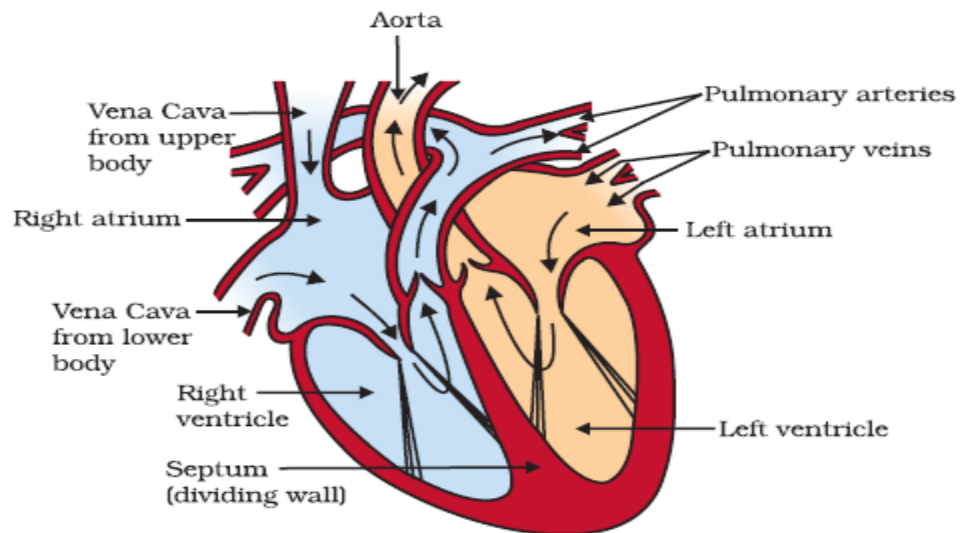


Figure 6.3
Sectional view of the human heart

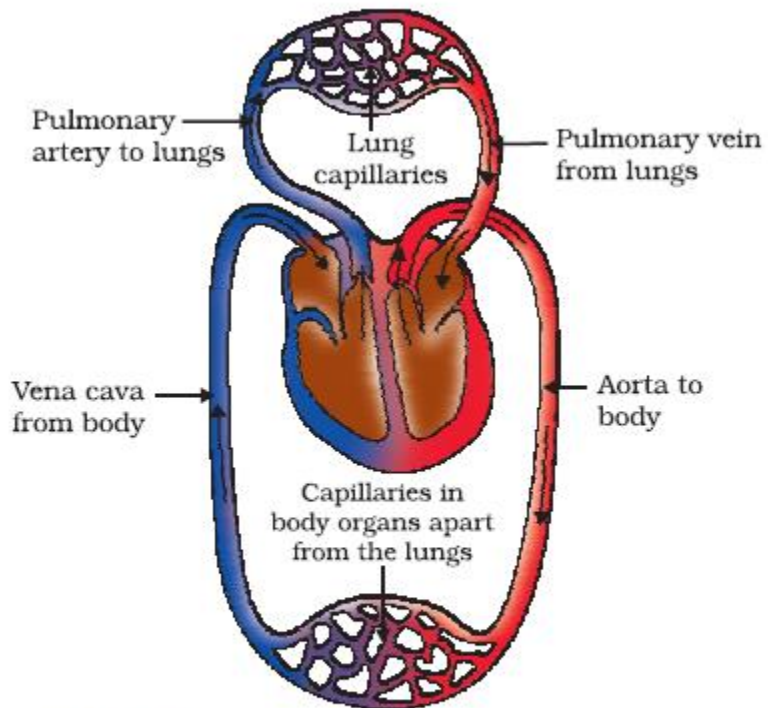


Figure 6.4
Schematic representation of transport and exchange of oxygen and carbon dioxide

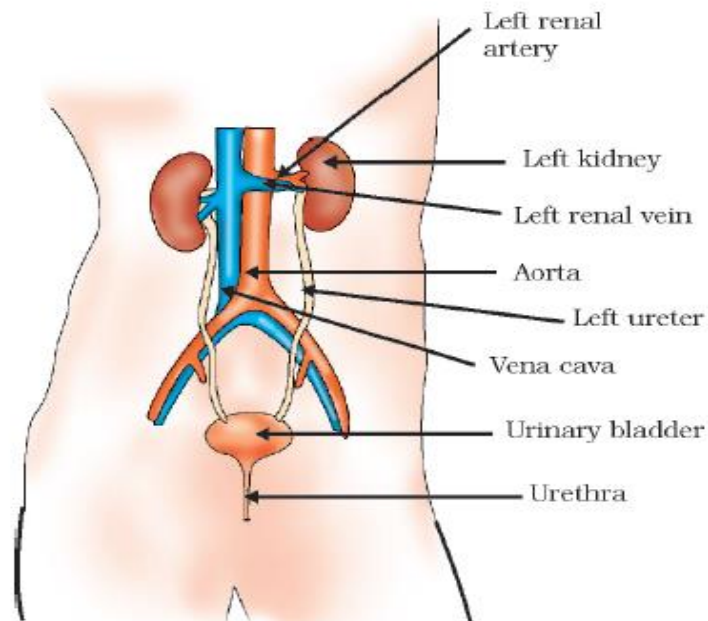


Figure 6.5
Excretory system in human beings

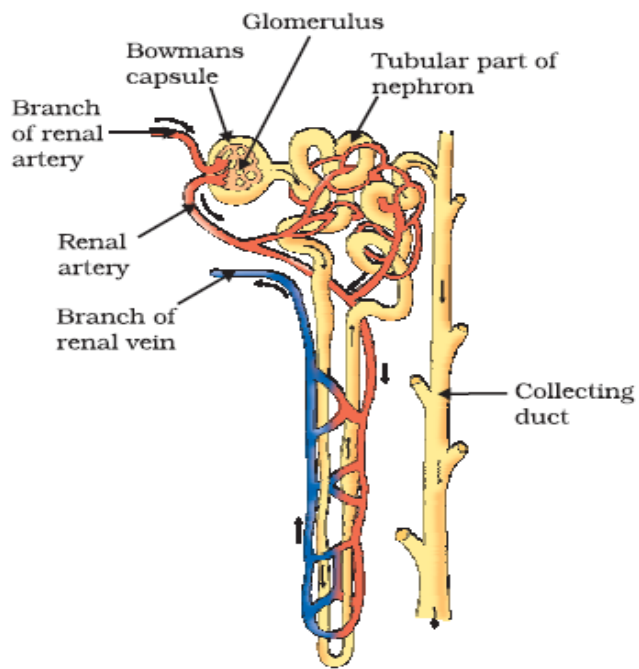
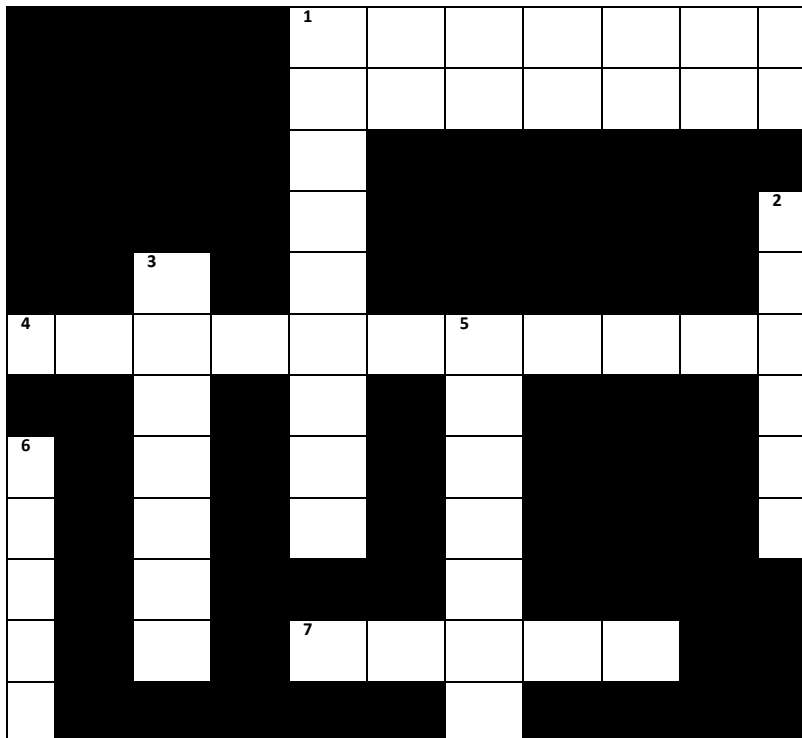


Figure 6.6
Structure of a nephron

CROSSWORD



ACROSS

1. Balloon like structures in the lungs
4. Green pigment in plants
7. Helps in absorption of food
8. Involved in exchange of gases in plants

DOWN

1. Carries oxygenated blood
2. Prevents backflow of blood
3. End product of carbohydrate digestion
5. Helps in clotting of blood
6. Pumps blood to all parts of the body

QUESTION BANK**VERY SHORT ANSWER TYPE (1 MARK)**

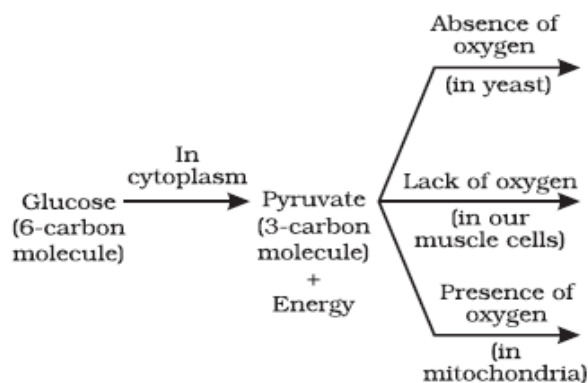
1. Which tissue transports soluble products of photosynthesis?
Ans: Phloem
2. What is the role of saliva in digestion of food?
Ans: Digests starch

SHORT ANSWER TYPE (2 MARK)

1. Differentiate between blood and lymph
Hint: Colour, presence of RBC, direction of flow
2. What is the advantage of a four chambered heart in humans?
Separates oxygenated and deoxygenated blood
3. Give two points of difference between arteries and veins
Hint: Direction of flow, oxygenated/deoxygenated blood, thick/thin wall

SHORT ANSWER TYPE (3 MARK)

- d. Bile (*Emulsifies fat*)
 - e. Hydrochloric acid (*Kills bacteria/acidic medium*)
 - f. Villi (*absorption of food*)
2. Complete the following:



- a) *Ethanol and carbon dioxide*
- b) *Lactic acid*
- c) *Carbon dioxide and water*

3. Write the difference between aerobic and anaerobic respiration?

Aerobic respiration	Anaerobic respiration
1. Takes place in presence of Oxygen.	1. Takes place in absence of Oxygen.
2. End products-Carbon dioxide & Water	2. End products –Ethanol & Carbon dioxide
3. More energy is released.(38ATP)	3. Less energy is released.(2ATP)
4. Takes place in Cytoplasm & Mitochondria	4. Takes place in only in Cytoplasm.
5. Complete oxidation of glucose takes place.	5. Incomplete oxidation of glucose takes place.

4. VALUE BASED QUESTION

Anil was walking in the park when he saw the man next to him collapse suddenly. He rushed him to the hospital where the doctor checked him and told him that he collapsed due to low blood pressure.

- a) What is blood pressure and how is it measured?
Pressure exerted by blood on the arterial wall/sphygmomanometer
- b) What is normal systolic and diastolic pressure?
120/80 mm of Hg
- c) What values are shown by Anil?
Love, caring, presence of mind

LONG ANSWER TYPE (5 MARK)

1. What is double circulation? What is its advantage? Show with labelled diagram.

Hint: Blood flows twice through the heart in one cycle, separation of oxygenated/deoxygenated blood

2. How is urine produced? How is it regulated?

Hint: Filtration, selective reabsorption; Amount of water, with hormonal regulation

MULTIPLE CHOICE QUESTIONS

1. The photosynthetic pigments are located in-

- a) Chloroplasts b) leucoplast c) Nucleus d) ribosomes

2. To show that light is necessary for photosynthesis a science teacher told Raman to cover a leaf with a thick black paper. The reason behind this can be

- a) To destarch the leaf b) to prevent the light from entering the leaf
c) To decolourise the leaf d) to turn leaf blue black

3. It is essential to boil the destarched leaf in alcohol using a water bath because –

- a) Alcohol is highly volatile b) steam from the water bath helps in dissolving chlorophyll
b) c) alcohol is inflammable d) steam from the water bath helps in softening the leaf

4. Stomata are more in number on the -

- a) Upper side of the leaf c) same on both the sides
b) Lower side of the leaf d) margins of the leaf

5. In the experiment to show that CO₂ is released during respiration the partial vacuum is created because – a) Germinating seeds release CO₂ b) germinating seeds utilize CO₂

- c) KOH absorbs CO₂ d) KOH absorbs O₂.

6. While preparing a 6. temporary stained mount of a leaf epidermal peel the extra stain is

- removed by a) Washing with water b) Washing with calcium chloride
c) Soaking with filter paper d) Absorbing by cotton wool

CHAPTER 7-CONTROL AND COORDINATION

Stimulus:-The change in the environment to which an organism respond and react is called stimulus.

Control & co-ordination in animals takes place by :-a) Nervous system) Hormonal system (Endocrine glands)

Parts of Nervous system:-a) Brain b) Spinal cord c) Nerves

Neuron:-Is the structural and functional unit of Nervous system

Parts of Neuron:-a) Dendrites, b) cell body c) Axon

Synapse:-Junction between two adjacent nerves

Reflex action- spontaneous, involuntary and automatic response to a stimulus to protect us from harmful situations. E.g. On touching a hot objects unknowingly we instantly withdraw our hand.

Nervous system-(1) Central Nervous System (CNS)

(2) Peripheral Nervous System (PNS)

(i) Autonomic Nervous System (ii) Voluntary Nervous System

Brain (i) Centre of coordination of all activities (ii) Thinking is involved (iii) Complex process

Parts of Brain- Refer to figure 7.3 page no. 118 of N.C.E.R.T Textbook

Fore brain Cerebrum - (i) Main thinking and largest part of the brain.

(ii) It has 3 main areas-

- a. Sensory area- to receive impulses from sense organs via Receptors
- b. Motor area- control voluntary movements
- c. Association areas- Reasoning, learning & intelligence.

Thalamus- It relays sensory information to the cerebrum.

Hypothalamus- It forms the link between Nervous system & Endocrine system

Mid brain- It connects fore brain and hind brain

Hind Brain- connects the fore brain and hind brain

Cerebellum- controls & coordinates muscular movements, maintaining body posture and equilibrium.

Pons- acts as a bridge between brain and spinal cord

Medulla Oblongata- Controls involuntary actions like blood pressure, salivation, vomiting etc.

Spinal cord: - cylindrical or tubular structure is extending downwards from the medulla oblongata.

Protection of the brain & the spinal cord-

- (i) Bony outer covering: skull for the brain and vertebral column for the spinal cord.
- (ii) Cerebrospinal fluid present in between the three membranes.

Hormones- (i) are chemical messenger secreted by endocrine glands

(ii) Are secreted in small amounts & may act in nearby places or distant places.

(iii) do not take part in the reaction & are destroyed immediately.

Important Endocrine glands, the hormone they secrete & their function

Refer to figure 7.7 page no. 124 of N.C.E.R.T text book

Coordination in plants- only chemical coordination is present in plants.

Tropic movements- the movements of plants in the direction of stimulus (positive) or away from it (negative) are called tropic movements. E.g. Phototropism, Geotropism, Chemotropism.

Refer to figure 7.4 & 7.5 page no. 121 of N.C.E.R.T text book

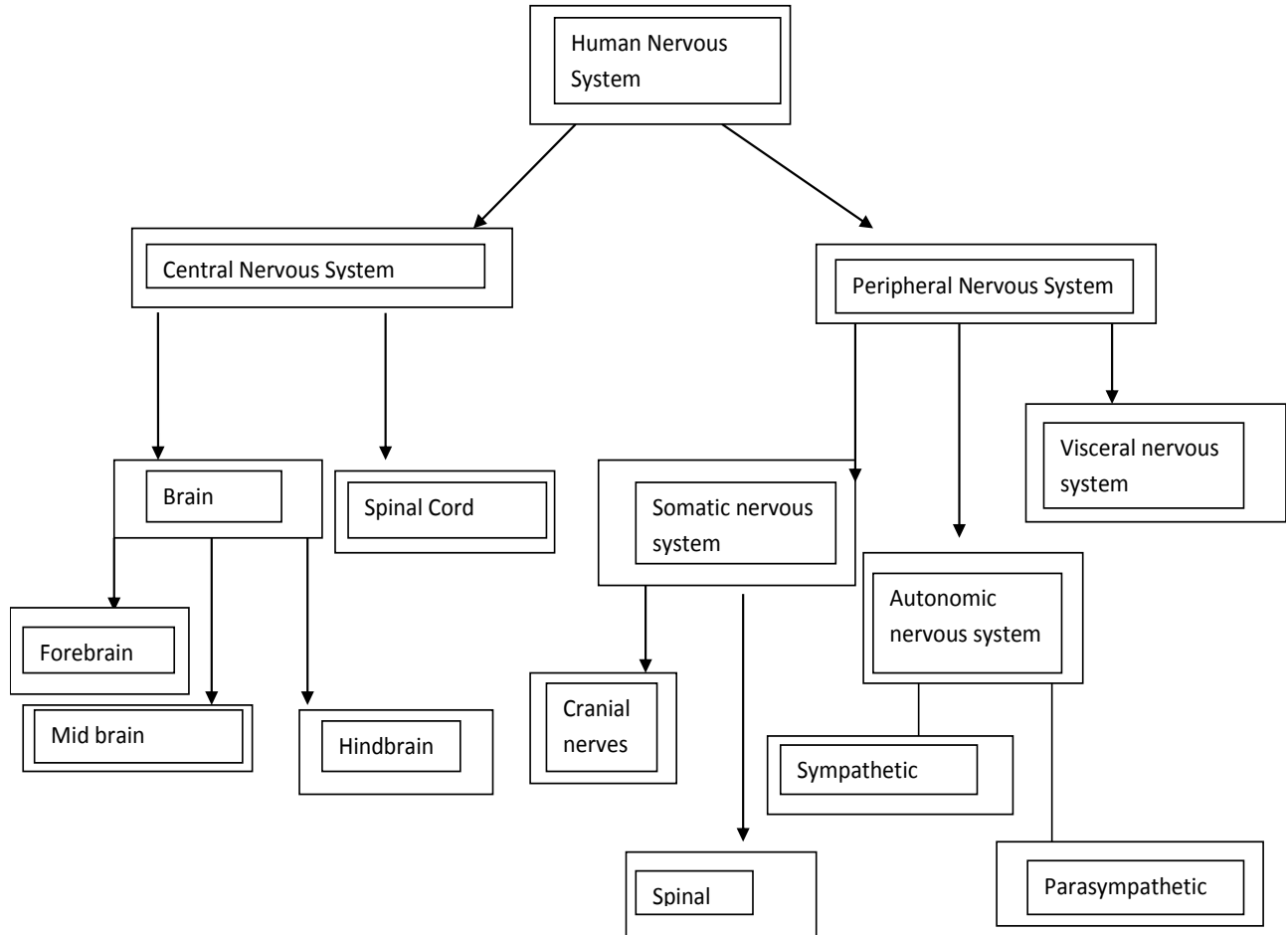
Plant hormones (Phytohormones)

Important Endocrine glands, the hormone they secrete & their function

Refer to figure 7.7 page no. 124 of N.C.E.R.T text book

No.	GLAND	HORMONES	FUNCTION	TARGET SITE
1.	Hypothalamus	i) Releaser hormones (RH) ii) Inhibiting hormones	-Regulates secretion of pituitary hormones.	Pituitary gland
2.	Pituitary Gland	i) Growth hormone (GH)	-Controls growth- dwarfism & gigantism.	-Most tissues
4.	Thyroid Gland	i) Thyroxin ii) Triiodothyronine iii) Thyrocalcitonin (TCT)	-Basal metabolic rate, RBC formation. -Regulates Ca level.	-Body tissues
7.	Adrenal Gland	i) Adrenaline ii) Noradrenalin iii) Corticoids	-Increase alertness, pupillary dilation, piloerection, sweating, and heart beat.	-Body tissues
8.	Pancreas	i) Insulin	-regulates glucose homeostasis, stimulates glycogenesis, controls carbohydrate mellitus	-Tissues
		ii) Glucagon	-maintains glucose levels, stimulates gluconeogenesis. -release of sugar from liver.	
9.	Testis	i) Testosterone ii) Androgens	-develops male reproductive organs & accessory sexual characters. -influence male sexual behavior.	-Male body tissues
10.	Ovary	i) Estrogen	- develops female reproductive organs, accessory sexual characters & female secondary behavior.	-Female body tissues
		ii) Progesterone	-supports pregnancy, stimulates milk secretion.	

MIND MAP



DIAGRAMS

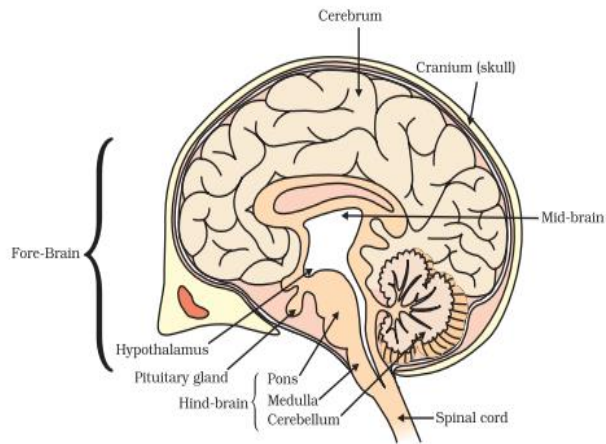
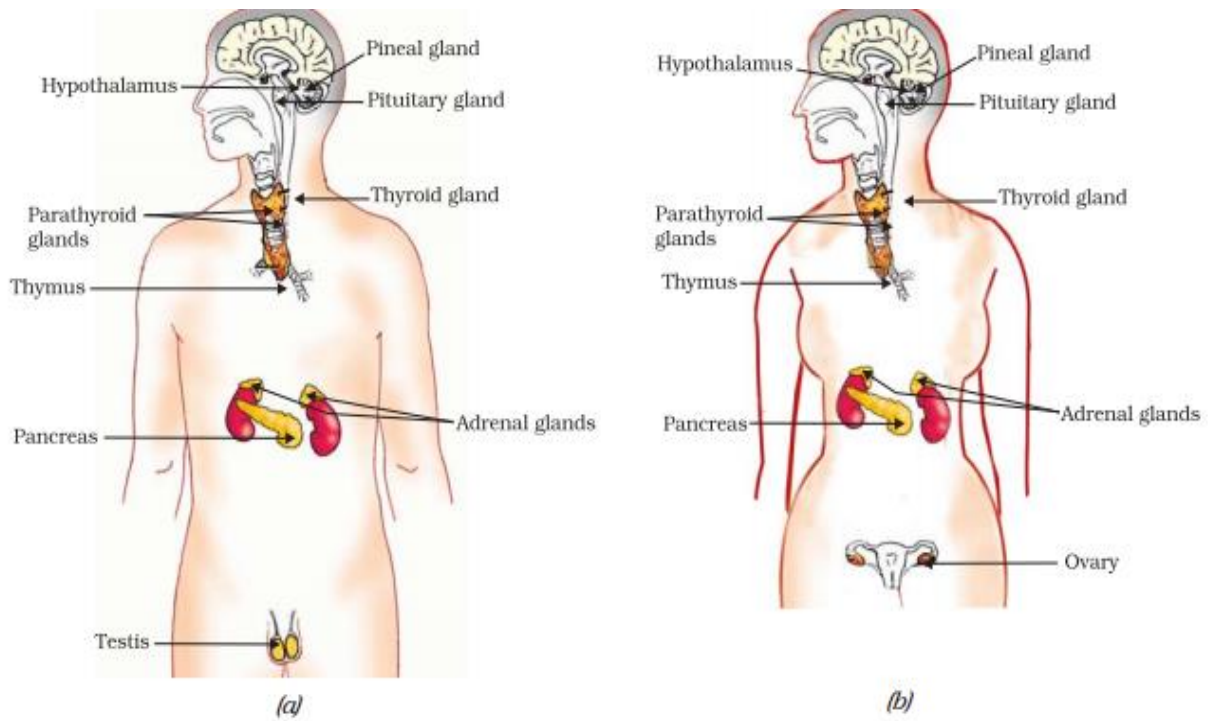
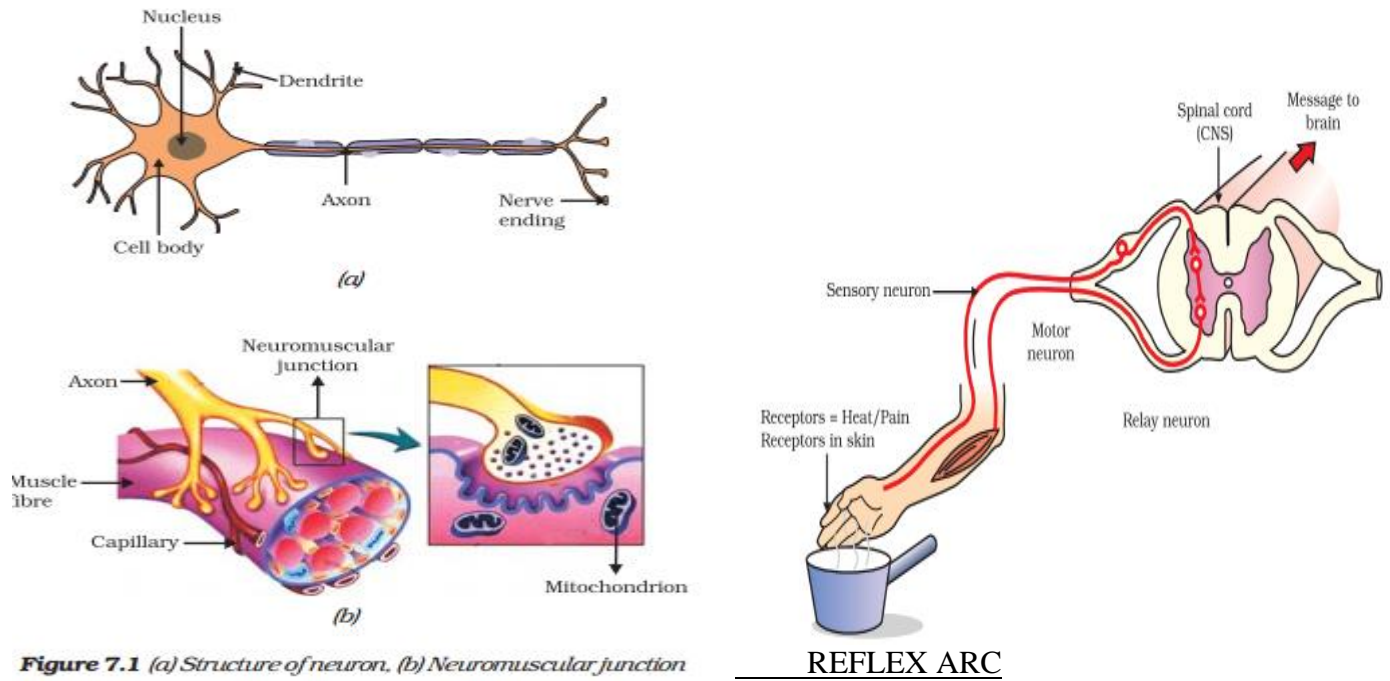


Figure 7.3 Human brain



QUESTION BANK

VERY SHORT ANSWER TYPE QUESTIONS

1. Name the hormone which helps in regulating sugar level in our blood? Name the gland which secretes this hormone?
2. State the main function of abscisic acid
3. Write name of three hormones secreted by the pituitary gland
4. Mention one example of chemotropism.

(SHORT ANSWER TYPE QUESTIONS)2 MARK

1. Name the following:
 - a) Necessary for thyroid glands
 - b) Necessary to maintain sugar level of the body
- 2) Draw the diagram of a nerve cell and label the following on it:(a) Nucleus (b) Dendrites
- 3) How does our body maintain blood sugar level?

SHORT ANSWER QUESTIONS (3 MARK)

1. A compound of iodine is compulsorily added to common salt in small quantity.
 - (a) Why is it important for us to have iodised salt in our diet.
 - (b) Name the disease caused by its deficiency.
 - (c) Write the symptoms of the disease.
2. What is reflex action? Describe the steps involved in reflex action.
- 3) Name the following:

Response of plants to light, chemical and water.

VALUE BASED QUESTION

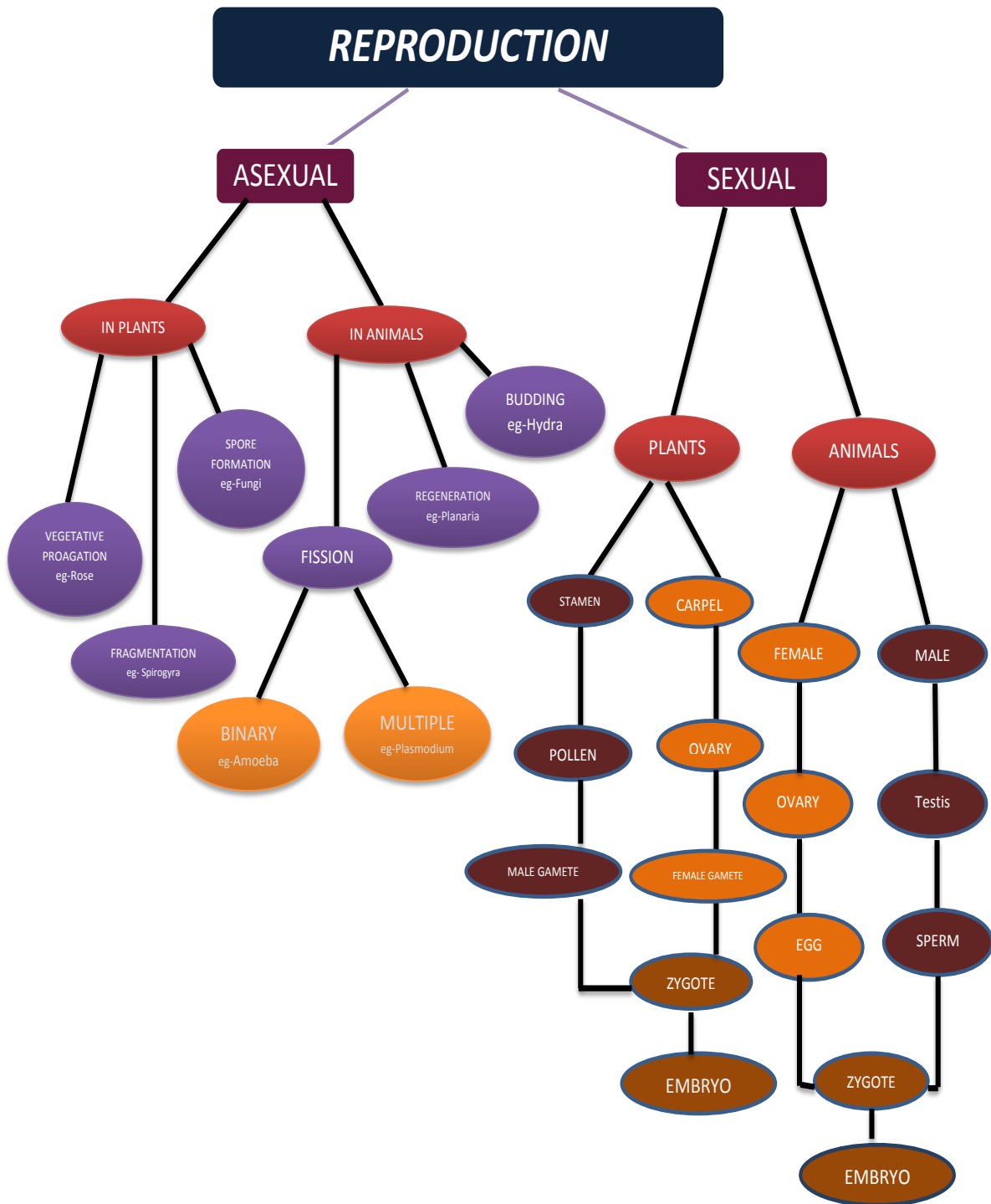
Ritesh is fond of eating pickles. As he hears the name of pickles, watering starts in his mouth. His friends used to make fun of him. When the same process or event was executed to the dog of Ritesh, the result was different. Now answer the following questions:

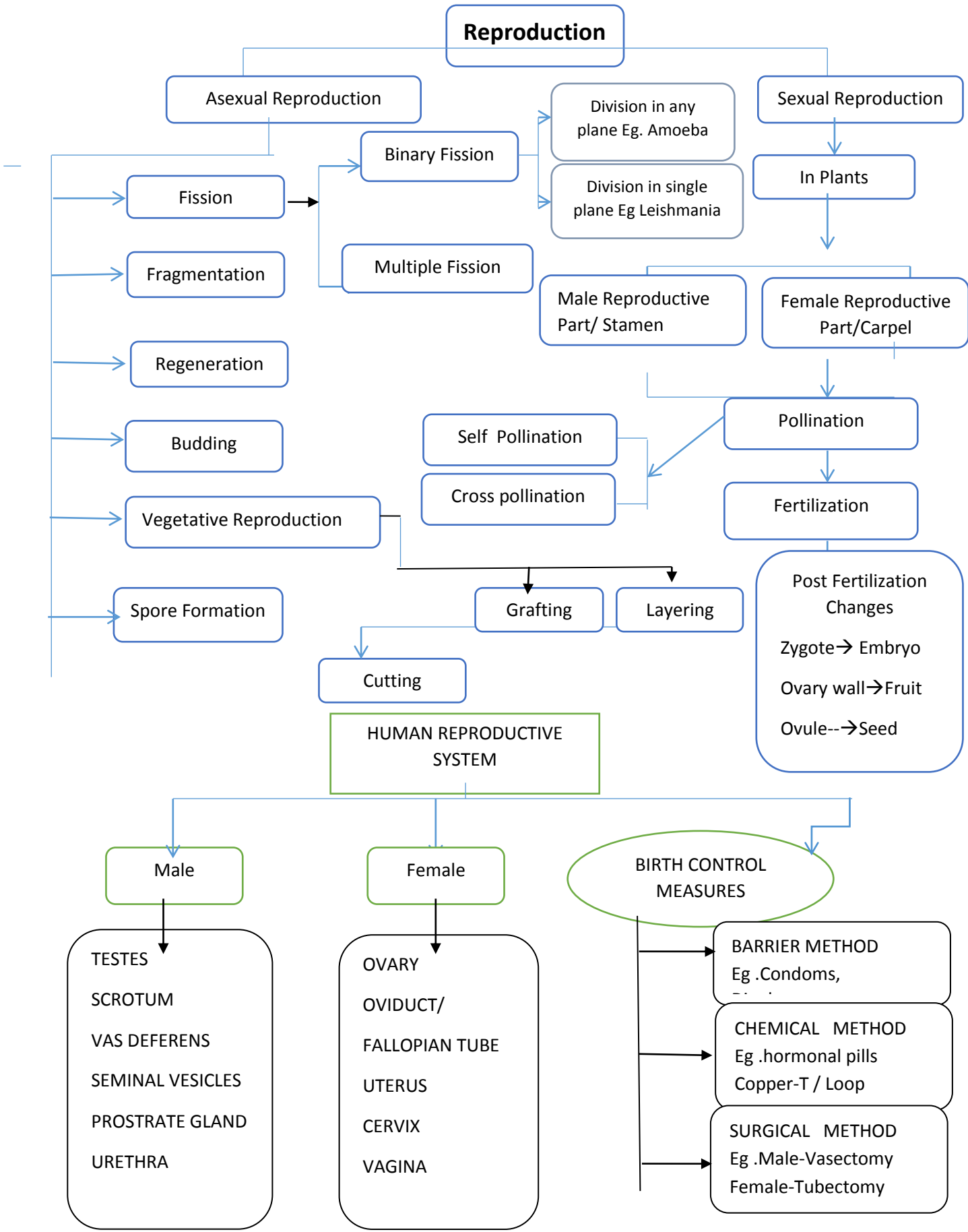
- (i) What is the biological term for the watering of Ritesh in his mouth?
- (ii) Why did the dog of Ritesh not water from mouth in the same events?
- (iii) What is the value shown by his friends?

LONG ANSWER QUESTIONS (5 Mark)

1. Name the plant growth hormone which is synthesized at the shoot tip. Explain briefly why a plant bends towards light during its growth.
2. Draw the diagram of human brain and label the parts. Write the function of cerebellum and pons
3. What is reflex action? Describe the steps involved in reflex action.
- 4) Name the following: Response of plants to light, chemical and water.

CHAPTER:8 HOW DO ORGANISMS REPRODUCE





1. Advantages of Vegetative Propagation

It allows quicker and easy propagation/exact copy of the parent/ seedless plant propagation.

2 Disadvantages of Vegetative Propagation

Vegetative propagation doesn't favour much variation and evolution of new species.

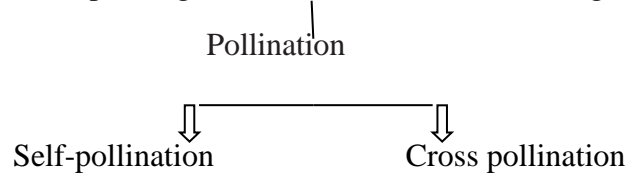
3. Regeneration is the ability of an organism to regenerate the lost part.(eg: arm regeneration in star fishes).Sometimes, an organism can be made from its fragmented body parts .e.g. *Planaria*.

4Flower is the reproductive part of the plant .A complete flower has four whorls-sepals, petals, stamens and carpels.

5 Unisexual flowers and bisexual flowers

Unisexual flowers	Bisexual flowers
Have either stamen or carpel e.g. Water melon, papaya	Have both stamen and carpel e.g. hibiscus, rose

6**Pollination:** Transfer of pollen grains from anther lobe to the stigma of the flower.



7 Post pollination changes in plants

Growth of pollen tube/motion of male gametes towards the ovule/ fertilisation

8. Fertilised ovule develops in to seed and ovary develops into fruit

9. Unisexual and bisexual organisms

Unisexual organisms	Bisexual organisms (Hermaphrodites)
Have only male or female reproductive organs e.g Human beings, cats, dogs	Have both male and female reproductive organs. e.g. Flatworms ,earthworms ,leeches.

10. The fusion of male and female gamete is called fertilisation.

11.Parts and functions

Male	Female
<u>Testis</u> :sperm production	<u>Ovary</u> : Egg production
<u>Vas deferens</u> :Sperm conducting path	<u>Fallopian tube</u> :Site of fertilisation
<u>Urethra</u> :Common passage for urine and sperms	<u>Uterus</u> :Site of implantation
<u>Seminal vesicle and prostate gland</u> : Nutrition and mobility	<u>Vagina</u> : Opening of birth canal

12. On reaching puberty ,one egg is produced every month by one of the ovaries. The release of egg by the ovary is called ovulation, which takes place at 12-16th day of menstrual cycle. During that time ,if sexual contact takes place, sperm fuses with the egg producing zygote which get implanted in the uterus at 32 cell stage.

13.It is through placenta glucose and oxygen are given to the developing embryo and waste materials are removed from embryo and given to the mothers blood.

14 Common birth control measures

- (a) Physical barrier methods like condoms and vaginal diaphragm/chemical methods like oral or vaginal pills/ surgical methods like tubectomy in females and vasectomy in males/IUCD e.g. Copper T

15 .STD are sexually transmitted diseases spread through sexual contact with the infected Person. Common bacterial STDs are syphilis and gonorrhoea.. AIDS (Acquired Immuno Deficiency Syndrome) and warts are examples of viral STDs.

IMPORTANT DIAGRAMS

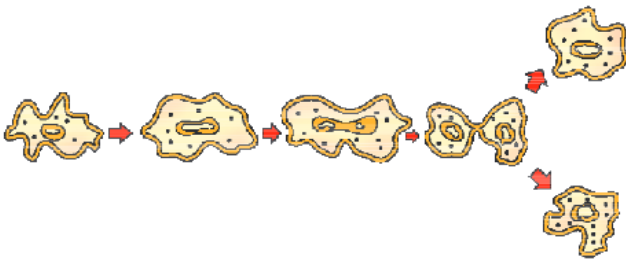


Figure 8.1 Binary fission in Amoeba

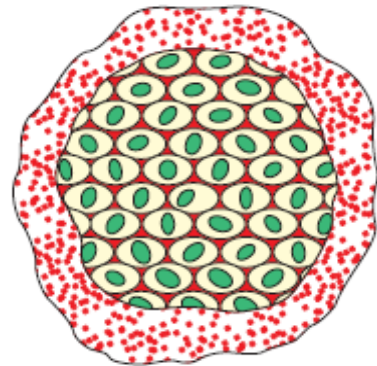


Figure 8.2
Multiple fission in Plasmodium

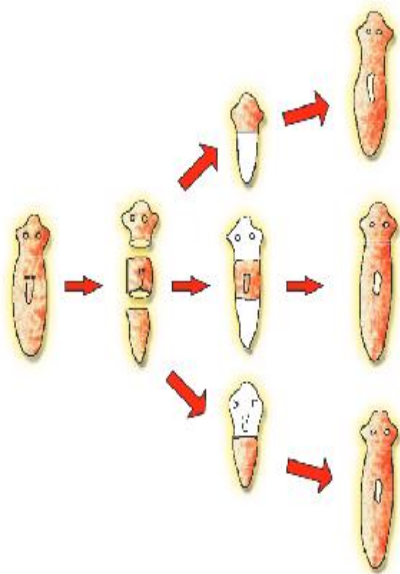


Figure 8.3 Regeneration in Planaria

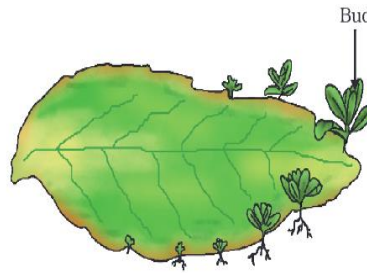


Figure 8.5
Leaf of Bryophyllum with buds

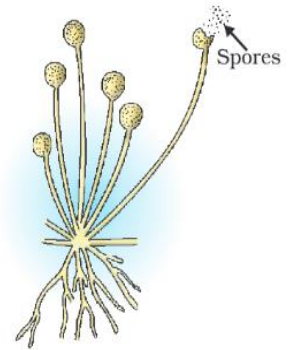


Figure 8.6
Spore formation in Rhizopus

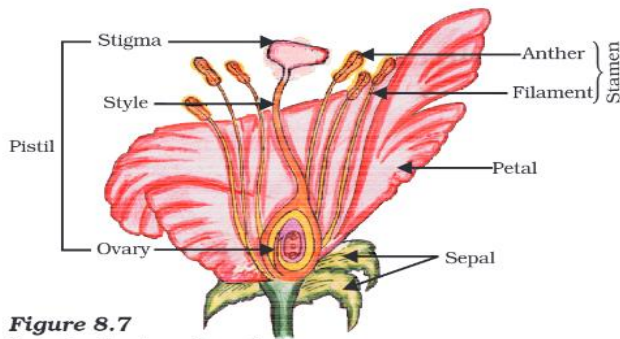


Figure 8.7
Longitudinal section of flower

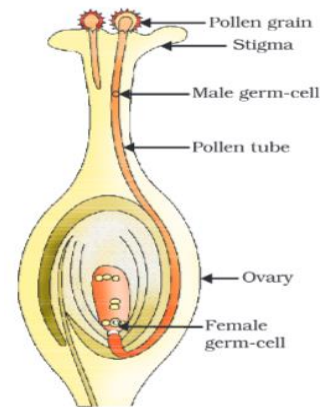


Figure 8.8
Germination of pollen on stigma

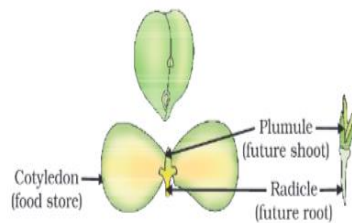


Figure 8.9
Germination

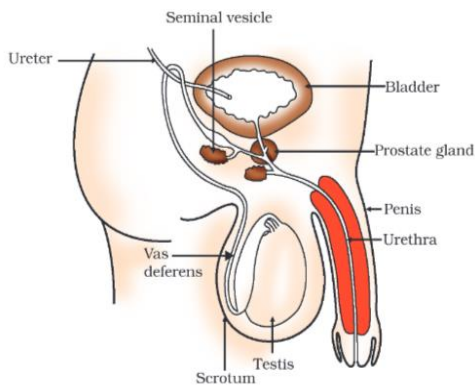


Figure 8.10 Human-male reproductive system

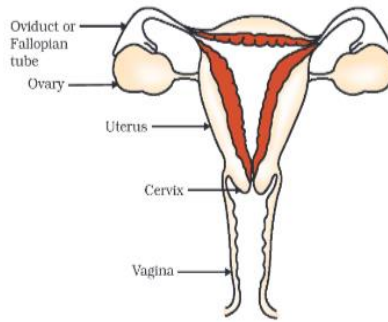
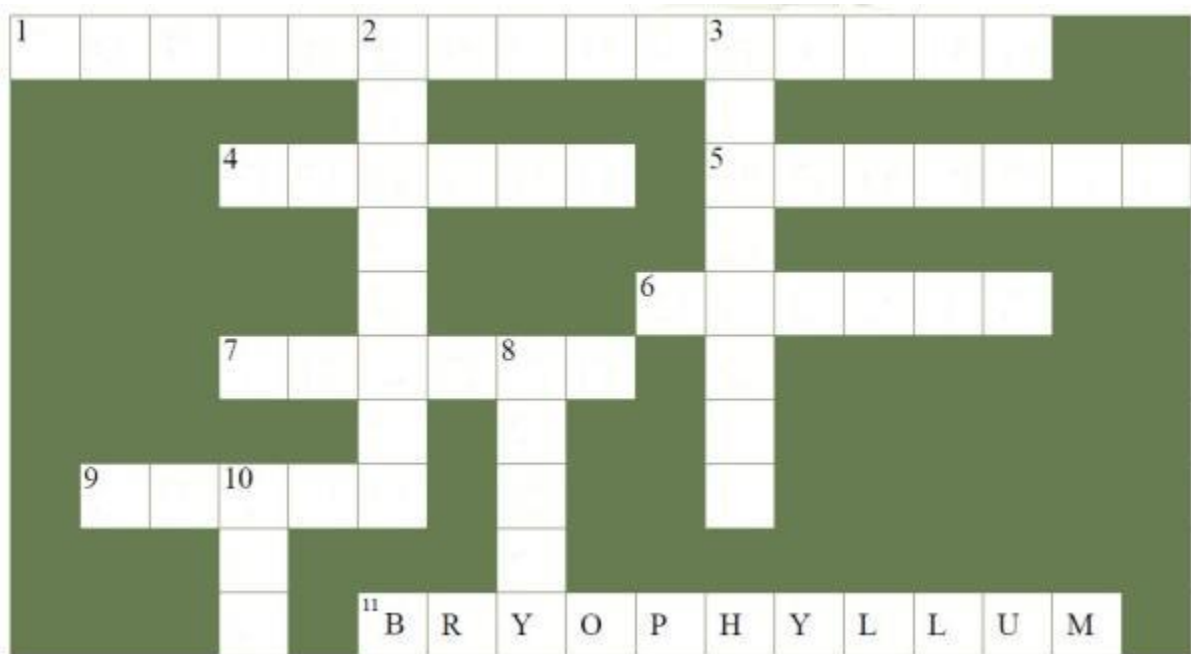


Figure 8.11 Human-female reproductive system

CROSSWORD



Across

- 1. Plasmodium reproduces by this method
- 4. Male reproductive part of a flower
- 5. Also called 'future shoot'
- 6. Female reproductive part of a flower
- 7. A contraceptive that creates a mechanical barrier
- 9. An organism that reproduces by budding and regeneration
- 11. The leaves of this plant produce buds for reproduction

Down

- 2. Embryo gets rid of waste through
- 3. A STD
- 8. The lower flask shaped part of the carpel.
- 10. I am the blue print of life

QUESTION BANK

Very short answer questions (1 mark)

1. Name the plant in which vegetative propagation takes place by leaves.

Ans) Bryophyllum.

2. Write scientific term for the following:

a) Release of ovum from ovary.

Ans) Ovulation

2. Onset of menstrual cycle in a female.

Ans) Menarche.

3. Where does fertilization takes place in human female?

Ans.) Oviduct (fallopian tube)

Short answer questions (2 mark)

1 .What is the importance of DNA copying in reproduction?

Ans. DNA copying is essential for transferring genetic material from one generation to another.

2. How is pollination different from fertilization?

Ans. Pollination is the process of transfer of pollen grains from the anther lobe to the stigma of the flower, while fertilization is the process of fusion of male gamete and female gamete to form the zygote.

3. What is the role of seminal vesicles and the prostate gland?

Ans: Seminal vesicle and prostate gland help in nutrition and mobility of sperms.

Short answer questions (3 mark)

1. What are the advantages of vegetative propagation?

Ans: Quick/easy/economical method/can creates exact copies of the parent/only method for the propagation of seedless plants.

2. How does the embryo get nourishment inside the mother's body?

Ans: the embryo gets nutrition, oxygen and gets rid of waste materials through Placenta.

3a) What is AIDS?

b) Name the causative organism?

c) List the important modes of transmission of the disease.

Ans .a) Acquired immuno deficiency syndrome.

b) HIV (human immunodeficiency virus)

c) i) Sexual contact

- ii) Through infected blood transfusion
- iii) Contaminated syringes.
- iv) Infected mother to child.

4. What are the different methods of contraception?

Ans. a) Barrier method: condoms used by males /vaginal diaphragm used by females.

b) Chemical method: e.g oral pills /vaginal pills used by females

c) Surgical method: vasectomy in males /tubectomy in females

5. Sankalp is a student of class 10, who is very much neglected by his relatives. The reason for their behavior was death of his parents after suffering from a disease called AIDS. He is well taken care by his teachers and class mates. **(VBQ)**

a) What values were shown by his teachers and classmates?

Ans. Caring/ knowledge of biology.

b) Will the disease called AIDS spread by sitting close to each other or by hand shaking with each other?

Ans) No, the disease wont spread by hand shake.

c) List two ways of transmission of the disease.

Ans) i) Sexual contact ii) Infected blood

Long answer questions (5 mark)

1 . Explain the process of fertilization in plants with the help of neat labeled diagram

Ans. Hints : Formation of pollen tube ,movement of male gametes towards the ovule.
Fertilisation: Fusion of male and female gamete.

Neat labelled diagram: fig 8.8

10. Describe the different methods of asexual reproduction seen in animals with the help of neat labelled diagrams.

Ans. Description for the following:

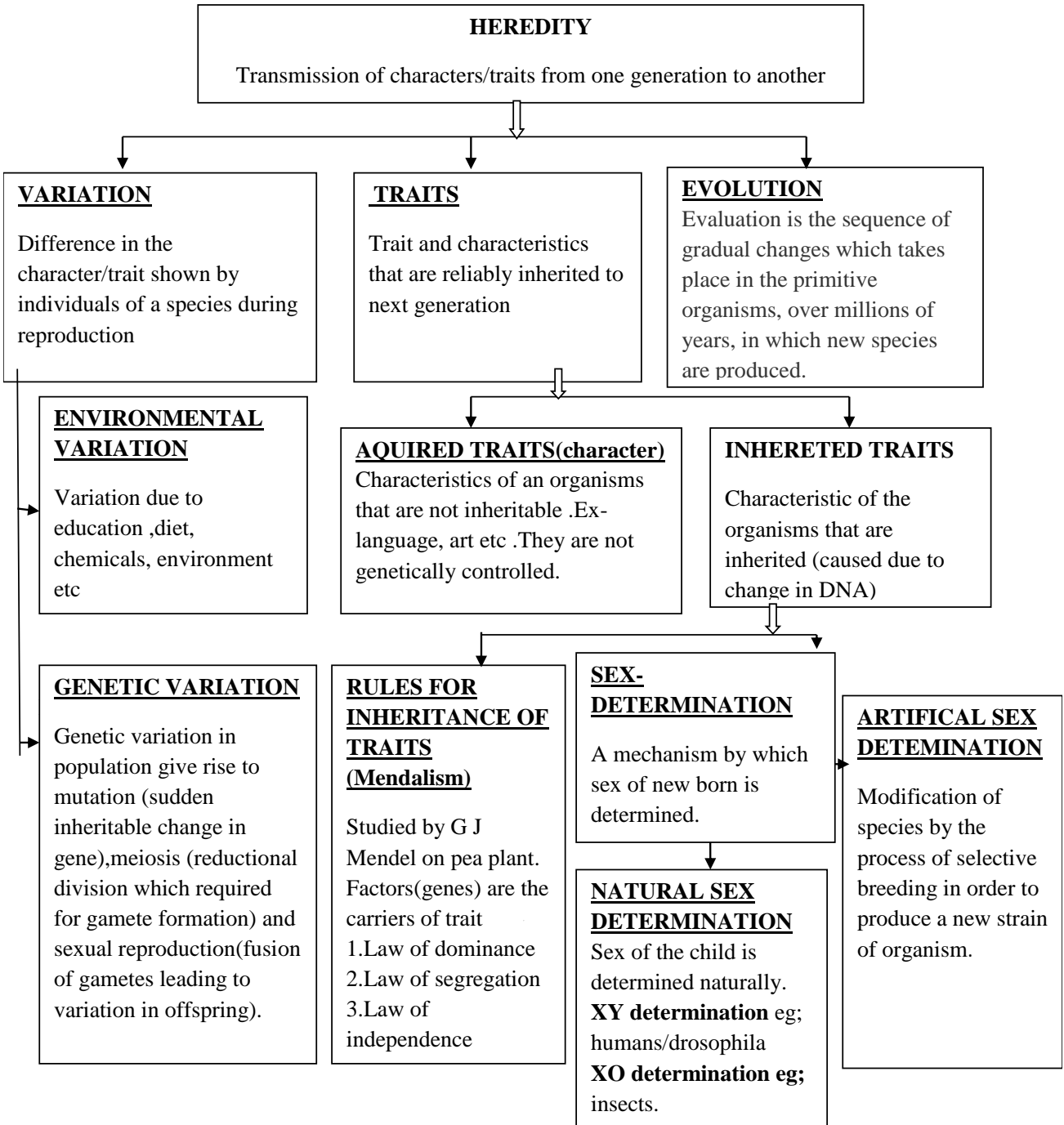
1. Fission : binary and multiple fission
2. Regeneration
3. Bud formation

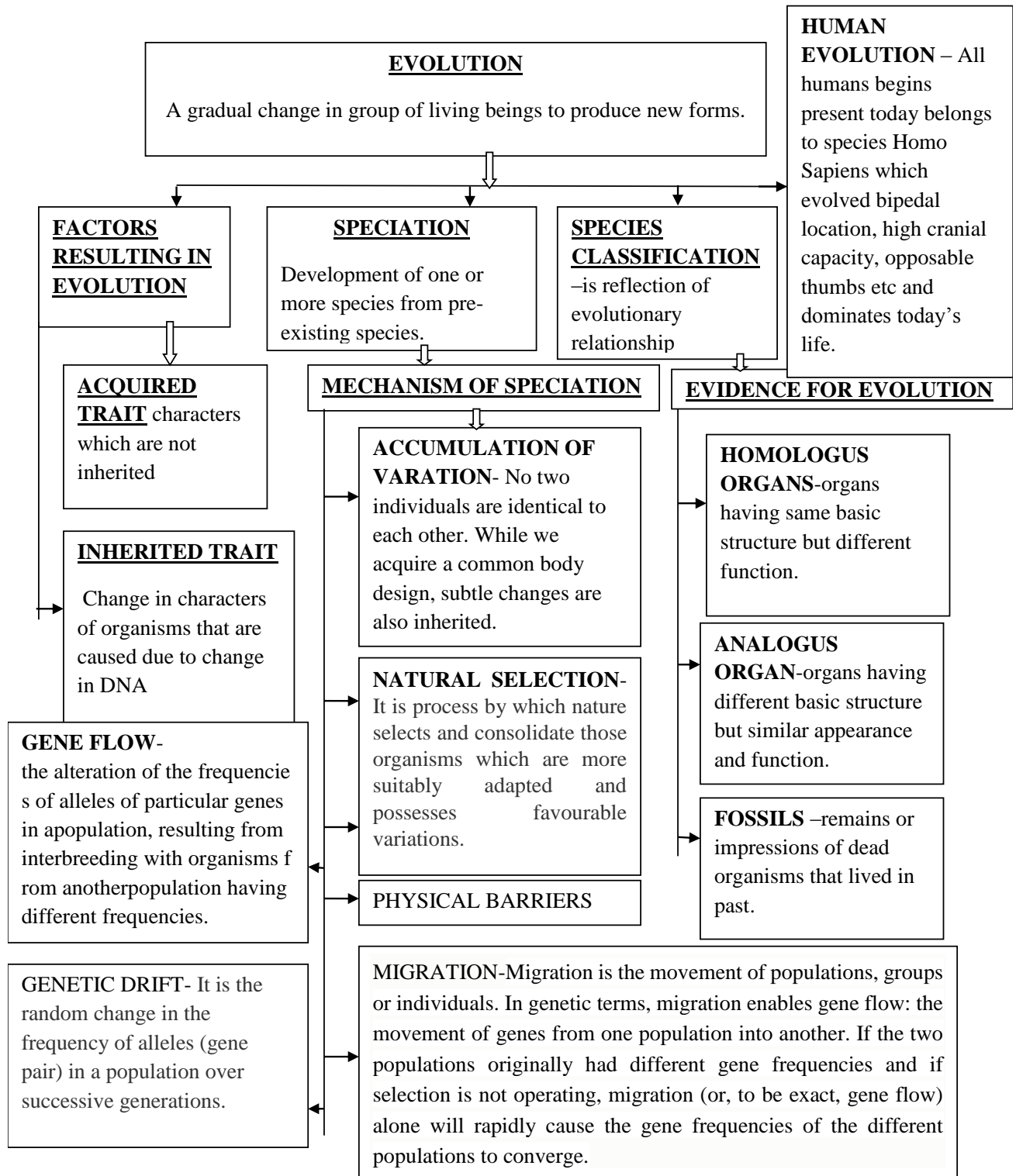
Fig :8.1 ,8.2 ,8.3, 8.4

CHAPTER-9

HEREDITY AND EVOLUTION

FLOW CHART





DEFINITIONS:-1) GENE- Functional unit of DNA.

2) GENOTYPE- Genes inherited from both the parents, may or may not be expressed are called genotype.

3) PHENOTYPE-Expressed structural and functional traits as a result of genes as well as environment

4) FOSSIL- Dead remain of plant and animal.

CROSSWORD

						1				
									4	
5										
		3								
						2				
6										
				7						

DOWN

- 1. An individual having two different alleles for the same trait.
- 4. Reductional division which required for gamete formation.

ACROSS

- 2. A functional unit of trait.
- 5. Organs having different basic structure but similar appearance and function.
- 6. Sudden changes in the genetic form of organisms which are passed on to the next generation.
- 7. Remains or impressions of dead organisms that lived in past

UP

- 3. Theory of inheritance of acquired character is given by

Answer the following questions (1 mark)

1. Mention the ways by which variant genotypes are produced in an organism?
2. How are fossils helpful in developing evolutionary relationships?

Answer the following questions (2 mark)

1. How do Mendel's experiments show that traits may be dominant or recessive?
2. Does genetic combination of father play a significant role in determining the sex of the child? Show with the help of a flow chart.

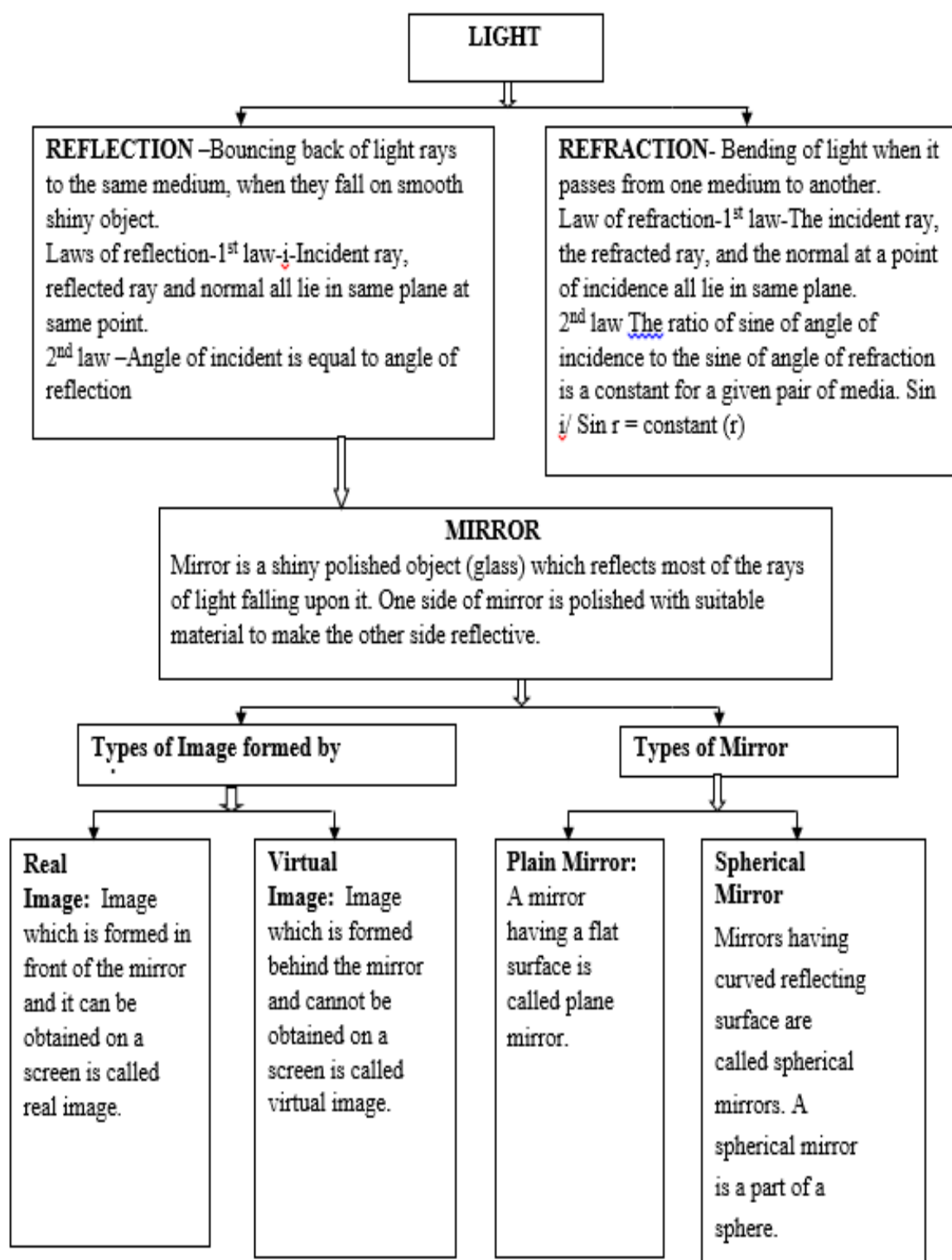
Answer the following questions (3 mark)

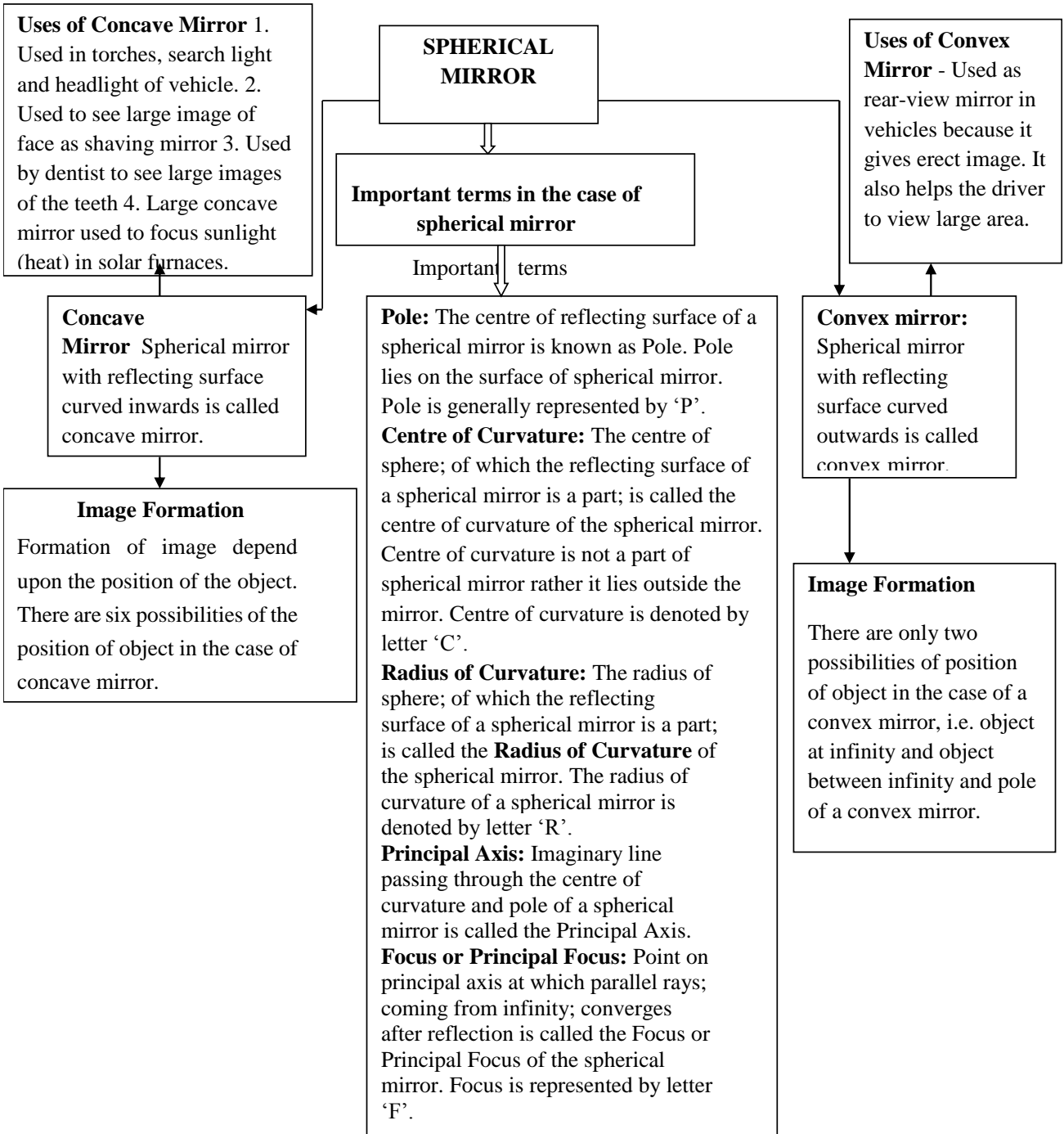
- 1) Sameer's father is a wrestler and has a well-built body. He was awarded as Mr. India when he was young. Sameer is his only son. As Sameer grew older, everyone expected him to have the same body built up as his father. But he is thin. His friends tease him and he feels depressed by it.
- a) Is it true that a wrestler's son should also have heavy muscles?
 - b) What type of character is it ; acquired or inherited?
 - c) What are the values shown by Sameer's friends? **(VBQ)**
- 3) When a tall plant is crossed with a dwarf plant .What will be the ratio of tall to dwarf plants in F1 generation? Show with a help of Mendel's cross.**[HOTS]**

Answer the following questions (5 marks)

1. How has the method of 'artificial selection' by humans helped in the evolution of different vegetables?
2. How do Mendel's experiments show that traits are inherited independently?

LIGHT - REFLECTION AND REFRACTION





Sign Convention for Reflection by Spherical Mirror

1. The object is always placed to the left side of mirror.
2. All distance should be measured from pole (P); parallel to principal axis.
3. Take 'P' as origin. Distances measured Right of the origin (+ x - Axis) are taken positive and Left of the origin (- x-Axis) are taken negative
4. Perpendicular to and above principal axis (+y-Axis) are taken positive Perpendicular to and below principal axis (-y-Axis) are taken negative.

IMAGE FORMATION BY CONCAVE MIRROR FOR DIFFERENT POSITION

IMAGE FORMATION BY CONVEX MIRROR FOR DIFFERENT POSITION

SPHERICAL MIRROR

POSITION OF THE OBJECT	POSITION OF THE IMAGE	SIZE OF THE IMAGE	NATURE OF THE IMAGE
At infinity	At the focus F	Highly diminished, point-size	Real and inverted
Beyond C	Between F and C	Diminished	Real and inverted
At C	At C	Same size	Real and inverted
Between C and F	Beyond C	Enlarged	Real and inverted
At F	At infinity	Highly Enlarged	Real and inverted
Between P and F	Behind the mirror	Enlarged	Virtual and erect

See figure - 10.1

POSITION OF THE OBJECT	POSITION OF THE IMAGE	SIZE OF THE IMAGE	NATURE OF THE IMAGE
At infinity	At the focus F, behind the mirror	Highly diminished, point-size	Virtual and erect
Between infinity and pole P of the mirror	Between P and F, behind the mirror	Diminished	Virtual and erect

See figure - 10.2

Index of Refraction, n
 $n=c/v$
 c : the speed of light in a vacuum 3×10^8 m/sec
 v : speed of light in the medium.
 n : medium's index of refraction

Centre of curvature - A lens, either a convex lens or a concave lens has two spherical surfaces. Each of these surfaces form a part of sphere. The centre of these two spheres are called centre of curvature represented by C and C'
Principal axis - Imaginary straight line passing through the two centres of curvature
Optical Centre - The central point of lens is its optical centre (O). A ray of light, when passes through 'O' it remains undeviated i.e. it goes straight.
Aperture -The effective diameter of the circular outline of a spherical lens.
Focus of lens - Beam of light parallel is principal axis, after refraction from 1) Convex lens, converge to the point on principal axis, denoted by F, known as Principal focus 2) Concave lens, and appear to diverge from a point on the principal axis, known as principal focus.

CONVEX LENS- A lens may have two spherical surfaces, bulging outwards, is called double convex lens (or simply convex lens. It is also known as converging lens

REFRACTION

Spherical Lens a transparent material bound by two surface, of which one or both surfaces are spherical, forms a lens.

CONCAVE LENS -A lens bounded by two spherical surfaces, curved inwards is known as double concave lens (or simply concave lens) It is also known as diverging lens because it diverges the light.

POSITION OF THE OBJECT	POSITION OF THE IMAGE	SIZE OF THE IMAGE	NATURE OF THE IMAGE
At infinity	At the focus F_2	Highly diminished, point-size	Real and inverted
Beyond $2F_1$	Between F_2 and $2F_2$	Diminished	Real and inverted
At $2F_1$	At $2F_2$	Same size	Real and inverted
Between F_1 and $2F_1$	Beyond $2F_2$	Enlarged	Real and inverted
At F	At infinity	Highly Enlarged	Real and inverted
Between P and F	Behind the mirror	Enlarged	Virtual and erect

See figure – 10.3

Object position	Image position	Size of image	Nature of image
At infinity	At the focus F_1	Highly diminished point size	Virtual and erect
Between infinity and optical centre of the lens	Between F_1 and O	diminished	Virtual and erect

See figure – 10.4

The degree of convergence or divergence of light ray achieved by a lens is known as power of a lens. It is defined as the reciprocal of its focal length Represented by P i.e. $P=1/f$, SI unit – Dioptr (D),

IMPORTANT FORMULAE

- Relationship between focal length and radius of curvature of a mirror $f=R/2$
- Mirror formula $1/v + 1/u = 1/f$ (V-image distance , U-object distance, f-focal length)
- Magnification produced by mirror $m = - h'/h = - v/u$
- Snell's law $\frac{n_2}{n_1} = \frac{\sin i}{\sin r} = {}_1n_2$
- Absolute refractive index $n = c/v$
- Lens formula $1/v - 1/u = 1/f$
- Magnification produced by lens $m = h'/h = v/u$
- Power of lens $P = 1/f$ when focal length is in cm $P=100/f$ D

RAY DIAGRAMS

Fig 10.1

NATURE, IMAGE AND ITS FORMATION (CONCAVE MIRROR)

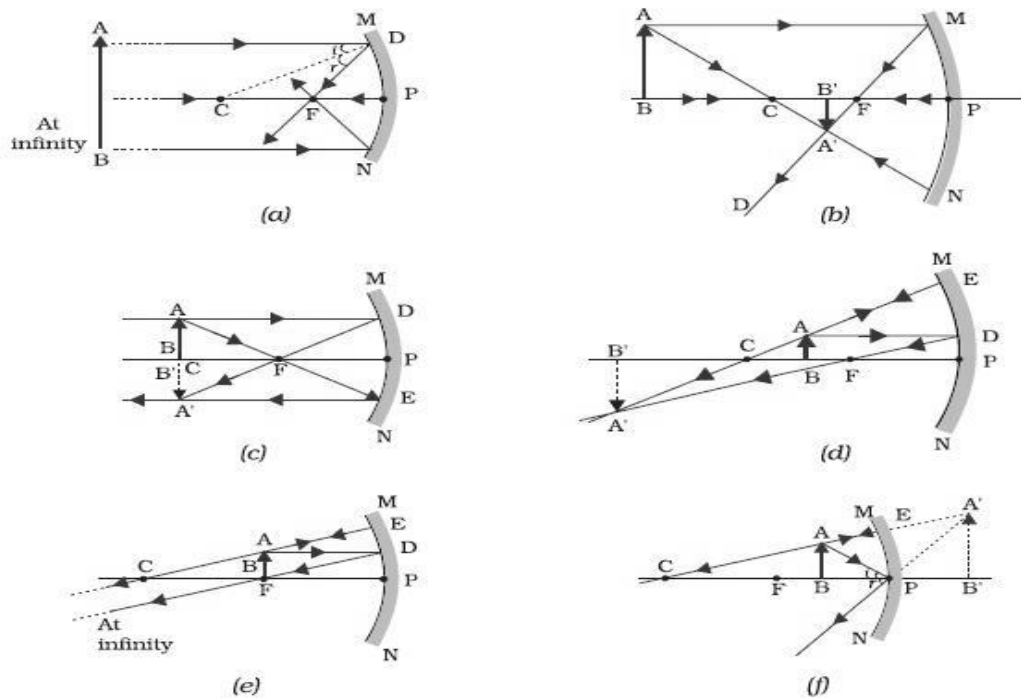
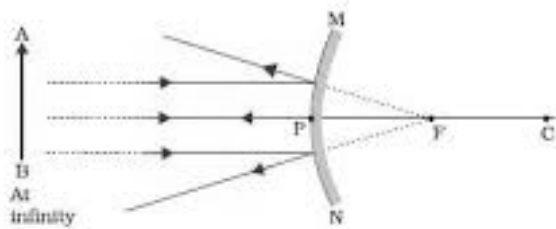


FIG - 10.2

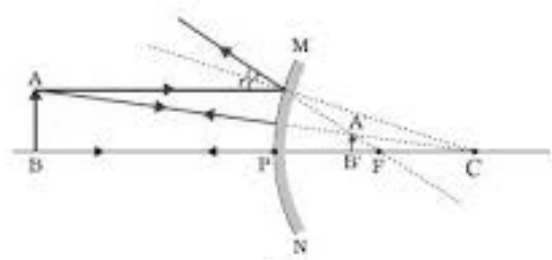
NATURE, IMAGE AND ITS FORMATION (CONVEX MIRROR)

Object at infinity



(a)

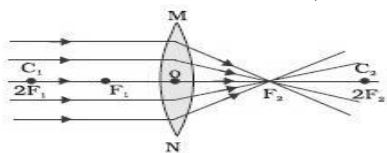
Object between infinity and pole



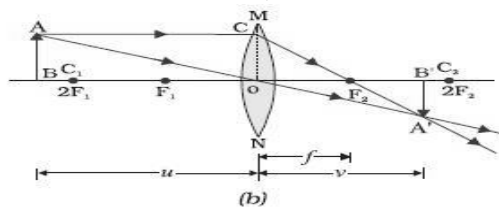
(b)

Fig- 10.3

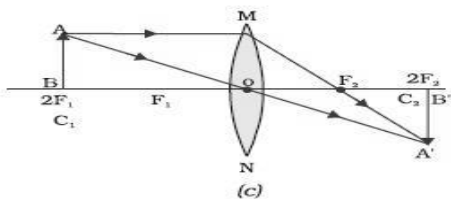
NATURE, IMAGE AND ITS FORMATION (CONVEX LENS)



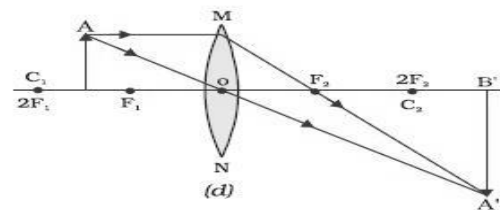
(a)



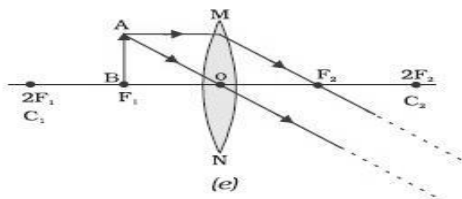
(b)



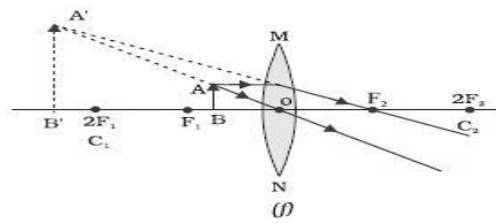
(c)



(d)



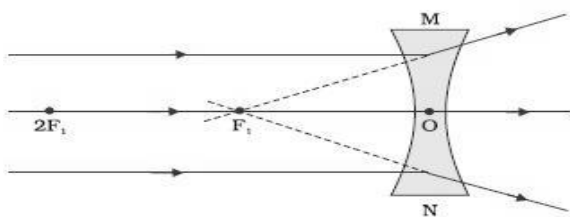
(e)



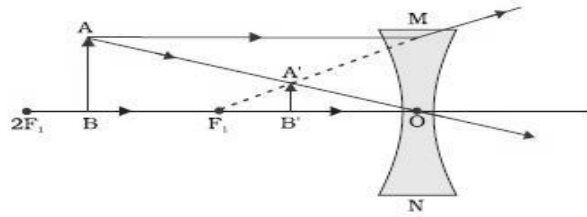
(f)

Fig-10.4

NATURE, IMAGE AND ITS FORMATION (CONCAVE LENS)



(a)

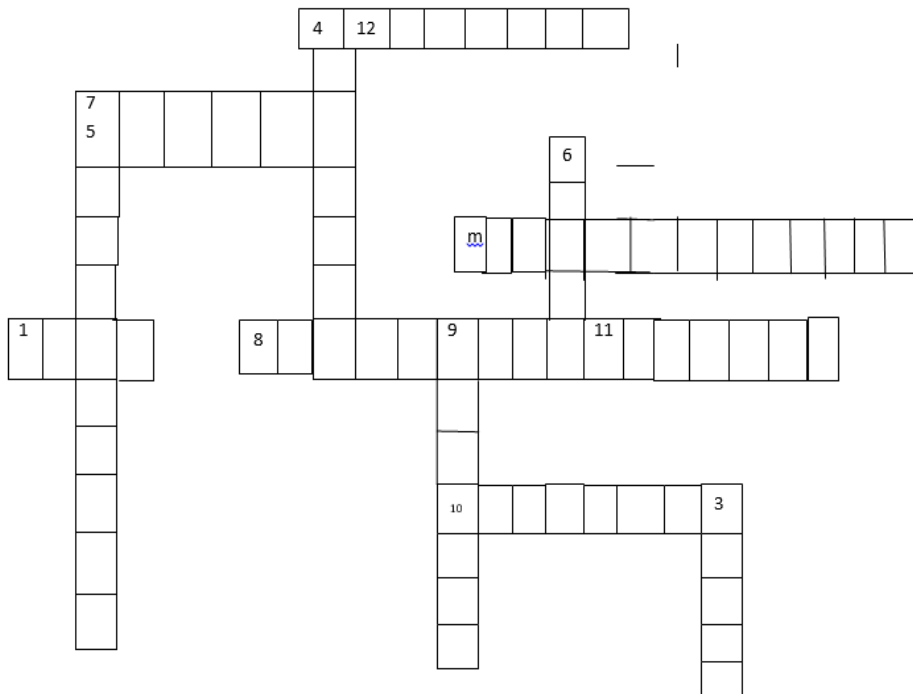


(b)

a) Object at infinity

b) Object (any point between infinity and O)

CROSSWORD



Across

- 1 A transparent medium bounded by the spherical surfaces.
2. Ratio of height of the image to the height of object
5. The medium where the speed of light is less.
8. An instrument which is used to see details of distant object.
10. The refractive index is equal to the reciprocal of sine of this angle.
11. Unit of power
12. The mirror used by dentist to see patient's teeth

Down

3. Form of energy that enables to see.
4. The nature of the image formed by the convex lens when the object is placed between optical centre and focus.
6. A converging lens.
7. The size of the image formed by the concave lens.

9. The lens having negative power

Answer the following questions (1 mark)

1. Refractive index of water is $\frac{4}{3}$ and that of the glass is $\frac{3}{2}$ with regard to air. What is the refractive index of glass with respect to the water? [Ans ► $\frac{9}{8}$]
2. What is the power of concave lens of focal length 200cm?
3. The radius of curvature of spherical mirror is 20cm. What is its focal length?
4. What is the angle of reflection when a ray of light fall normally on a plane mirror?
5. What is the magnification produced by a plane mirror.
6. What is the nature of image formed by concave mirror if magnification produced by mirror is +3.

Answer the following questions (2 mark)

- 1 An object 2cm high produce areal image 3 cm high, when placed at a distance of 15cm from concave mirror. Calculate the position of the image. (HOTS)
- 2 . The power of a focal length is $-4D$. State the nature of lens and any two characteristics of the image formed by the lens.
3. State two examples based on phenomenon of refraction of light in everyday life situation.
4. Distinguish between real and virtual image.
5. Name the type of mirror used in the following situations:
 - a) Headlights of car
 - b) Rear – view mirror of vehicles
6. An object is placed at a distance of 10 cm from convex mirror of focal length 15 cm. Find the position and nature of image.

Answer the following questions (3 mark)

1. The refractive indices of alcohol and turpentine oil with respect to air are 1.36 and 1.47 respectively. Find the refractive index of turpentine oil with respect to alcohol. In which of the two media the speed of light will be more.
2. a) Define power of a lens and give its unit.

b) A convex lens forms a real and inverted image of needle at a distance of 50cm from it. Where is the needle placed in front of this lens if the size of the image is equal to the size of the object? Also find power of the lens
3. Two thin lenses of focal lengths $+20$ cm and -15 cm are kept in contact. What is the focal length and power of the combination?
4. An object 2 cm high is placed at a distance of 16 cm from a concave mirror which produces a real image 3cm high.
 - a) Find the position of the image
 - b) What is the focal length of mirror?

VALUE BASED QUESTIONS

Four friends were on the way from Bangalore to Chennai. Nishu was driving the car and saw from his mirror that the car which was behind their car had met an accident. He suddenly applies breaks His friends asked him to leave the situation as it is. But Nishu did not agree and got down and asked his friend for help.

All of them took the injured person to the nearest hospital. After taking first aid from hospital the victim thanked them for saving his life.

Using above passage answer the following question

- a) Name the type of mirror from which Nishu saw accident.
- b) Why is this mirror used as a rear view mirror in vehicles?
- c) What can you learn from Nishu's character?

Answer the following questions (5 mark)

1. Draw a ray diagram in each of the following cases to show the formation of an image, when an object is placed

- a) Between optical centre and principal focus of a convex lens.
- b) Between F and 2F of concave lens
- c) At 2F of convex lens

Write the characteristic of image formed in each case.

2. A 1 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 20cm. The distance of the object from the lens is 15cm. Find the nature, position, size and magnification of the image. (HOTS)

3. Find the size, nature and position of image formed when an object of size 1 cm is placed at a distance of 15 cm from concave mirror of focal length 10 cm.

4. Draw the ray diagram for the different positions of the images formed by concave mirror.

CHAPTER 11-HUMAN EYE AND COLOURFUL WORLD

Power of accommodation:

- Ability of the eye lens to adjust its focal length.
- Relaxation of ciliary muscles \rightarrow lens becomes thin \rightarrow increase in focal length.
- Contraction of ciliary muscles \rightarrow lens becomes thick \rightarrow focal length decreases.

Near Point (N): The point at closest distance, at which an object can be seen clearly by the eye is called Near Point (N) of the eye. The distance of the near point of a normal eye is called the least distance of distinct vision. It is represented by d . For a normal eye, value of least distance of distinct vision is $d=25\text{cm}$.

Far Point (F): The most distant point at which an object can be seen clearly is called Far Point (F) of the eye. For a normal eye, far point lies at infinity.

Rods: Respond to the intensity of light and enable vision in dim light.

Myopia or Near-sightedness:

- Eye cannot see distant objects clearly.
- Image of distant object forms in front of retina.
- Reasons: (i) Excessive curvature of eye lens.
(ii) Elongation of eyeball

Correction: using concave lens

Hypermetropia or Far-sightedness:

- Eye cannot see nearby objects clearly.
- Image of object nearby forms behind retina.
- Reasons: (i) Focal length of eye lens is too long.
(ii) Eyeball becomes small

Correction using convex lens

Presbyopia:

- Eye suffers from myopia as well as from hypermetropia.
- Due to gradual weakening of ciliary muscles and diminishing flexibility of eye lens.
Correction using bifocal lens

Cataract: Milkiness of eye lens due to aging can be cured by surgery

Dispersion of Light:

Splitting of light into its component colours.

White light disperses into its seven-colour components in the order VIBGYOR (violet, Indigo, Blue, Green, Yellow, Orange, And Red).

Red light bends least, Violet the most.

Rainbow is formed due to refraction, dispersion and total internal reflection of sunlight by tiny droplets of water

Atmospheric Refraction: Refraction of light by the earth's atmosphere Twinkling of stars, Advanced sunrise, Delayed sunset, Flattening of disc of sun at sunrise and sunset are due to atmospheric refraction

Tyndall effect:

- When a beam of light strikes fine particles in air, path of the beam becomes visible.
- Very fine particles scatter mainly blue light while particles of larger size scatter light of longer wavelengths

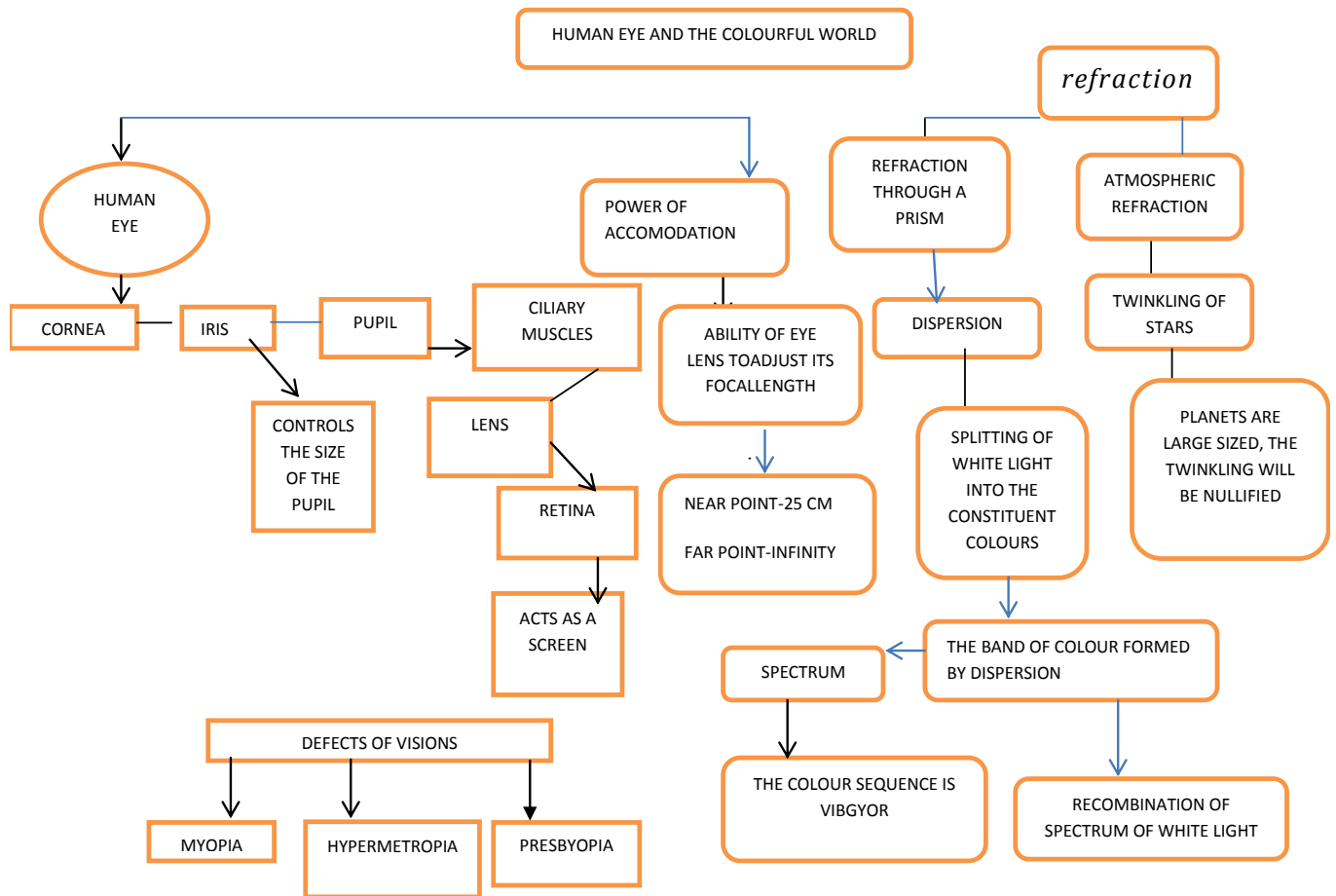
DEFECTS OF VISION

S. No	Name of defect	Type of defect	Reason	Remedy
1.	Myopia	Nearsightedness	(i) Elongation of eye ball. (ii) Excessive curvature of lens.	Use of concave lens.
2.	Hypermetropia	Farsightedness	(i) Longer focal length of eye lens. (ii) Shortening of eye ball.	Use of convex lens.
3.	Presbyopia	Decrease in power of accommodation	Ageing, leading to weak ciliary muscles and loss of flexibility of eye lens.	Use of eye glasses having bifocal lens.
4.	Cataract	Milkiensness of eye lens	Ageing, leading to partial or complete loss of eye sight.	Surgery.

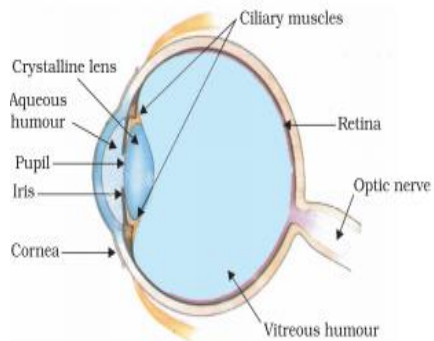
SOME NATURAL PHENOMENON & CAUSES

S.No.	Phenomenon	Reason
1.	Multicolored light coming out of a triangular slab	Dispersion of light
2.	Rainbow	Refraction, dispersion of light and total internal reflection flight in rain drops
3.	Twinkling of stars, Advanced sunrise, Delayed sunset ,Flattening of disc of sun at sunrise and sunset	Atmospheric refraction of sunlight
4.	Blue colour of sky ,Reddening of sun at sun rise and sunset Tyndall effect	Scattering of light

Mind map



HUMAN EYE



TWINKLING OF STARS

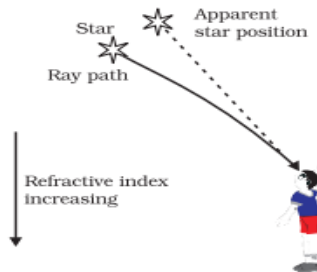
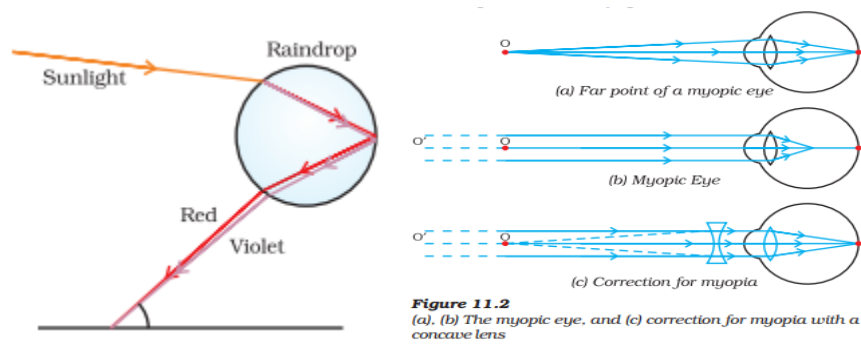
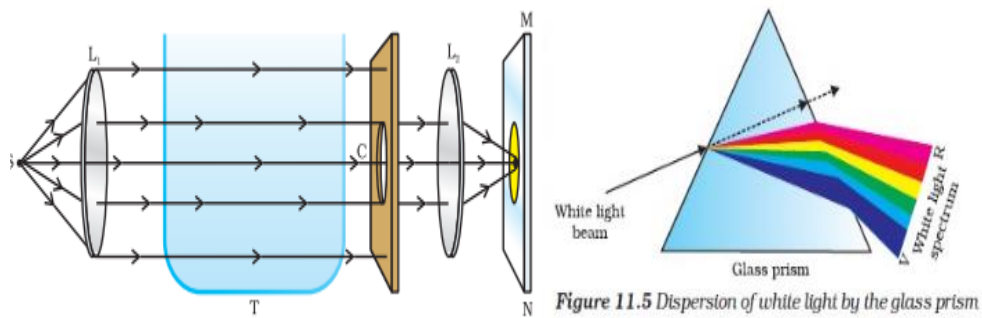


Figure 11.9
Apparent star position due to atmospheric refraction

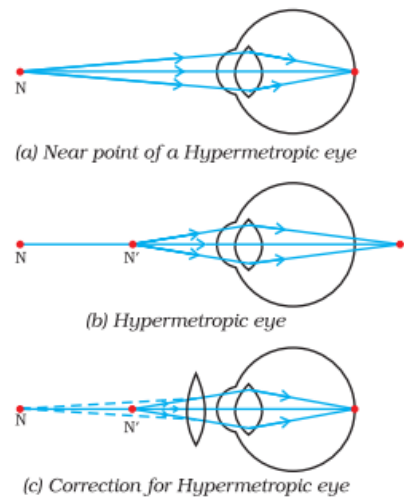
FORMATION OF RAINBOW MYOPIA



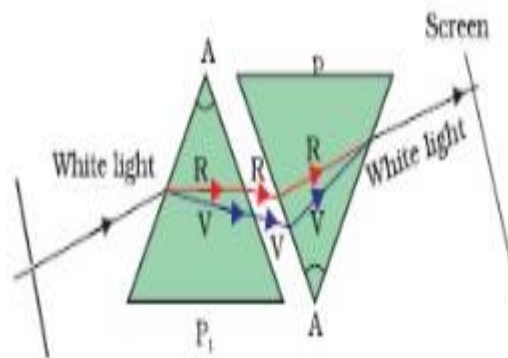
SCATTERING OF LIGHT DISPERSION OF WHITE LIGHT



HYPERMETROPIA



RECOMBINATION



QUESTION BANK

1 mark questions (very short answer questions)

1. What is the far point and near point of the human eye with normal vision?
Answer: For normal vision, the near point is about 25cm and far point is infinity. Thus, a normal eye can see objects clearly that are between 25cm and infinity.
2. List the three phenomenon of light which is responsible for formation of rainbow in sky?
Answer: Refraction, dispersion and total internal reflection.

2markquestions

1. Why are 'danger' signal lights red in colour?

Answer: Danger signals are red in colour because the red coloured light having lower wavelength is scattered the least by fog or smoke. Therefore, it can be seen clearly from a distance.

2. Give reasons why the planets do not twinkle

Ans Planets are much closer to the earth as compared to the stars they are bigger when we observe them from earth. Planets are made up of large number of point sources. Due to atmospheric refraction each point source will appear to twinkle, the total effect will be nullified.

Short Answer Type Questions (3marks)

1. A person needs a lens of power 4.5 D for correction of her vision.

- (a) What kind of defect in vision is she suffering from?
- (b) What is the focal length of the corrective lens?
- (c) What is the nature of the corrective lens?

Answer: (a) Hypermetropia. (b) $f = 1/4.5 = 0.22\text{m}$
(c) Convex lens

VALUE BASED QUESTION

Dolly and Ritu are two friends studying together in V grade. They prefer to sit together. Dolly is uncomfortable reading the blackboard when they are sitting on the last bench. Dolly is depressed fearing that she may turn blind one day. Ritu explains her that the problem may be due to some minor eye defect and there is no cause for worry. Dolly accompanied by Ritu visits the doctor who prescribes spectacles of suitable power for her. Dolly is now all smiles and thanks Ritu.

Read the above passage and answer the following questions:

- (i) What values are displayed by Ritu ?
- (ii) Name the defect of eye Dolly is suffering from.
- (iii) What could be the cause of this defect?
- (iv) The far point of Dolly is 50cm. What is the power of the lens she should use to read from the blackboard?

Answer: (i) Ritu has displayed concern for her friend. She is helpful

ii) Dolly is suffering from myopia or short sightedness.

(iii) Two possible causes of this effect are:

Increase in size of eye ball or decrease in focal length of eye lens.

(iv) Here, $x=50\text{cm}$ $f=-50\text{cm}$ $p=100/f=100/-50=-2\text{D}$

Long answer type questions (5mark)

1. Explain myopia and hypermetropia with the help of ray diagrams and show how these defects can be corrected?

Answer: (a) Explanation of Myopia and Hypermetropia

(b) Fig.11.2&11.3 NCERT TEXTBOOK

(c) The type of lens: Concave lens, convex lens

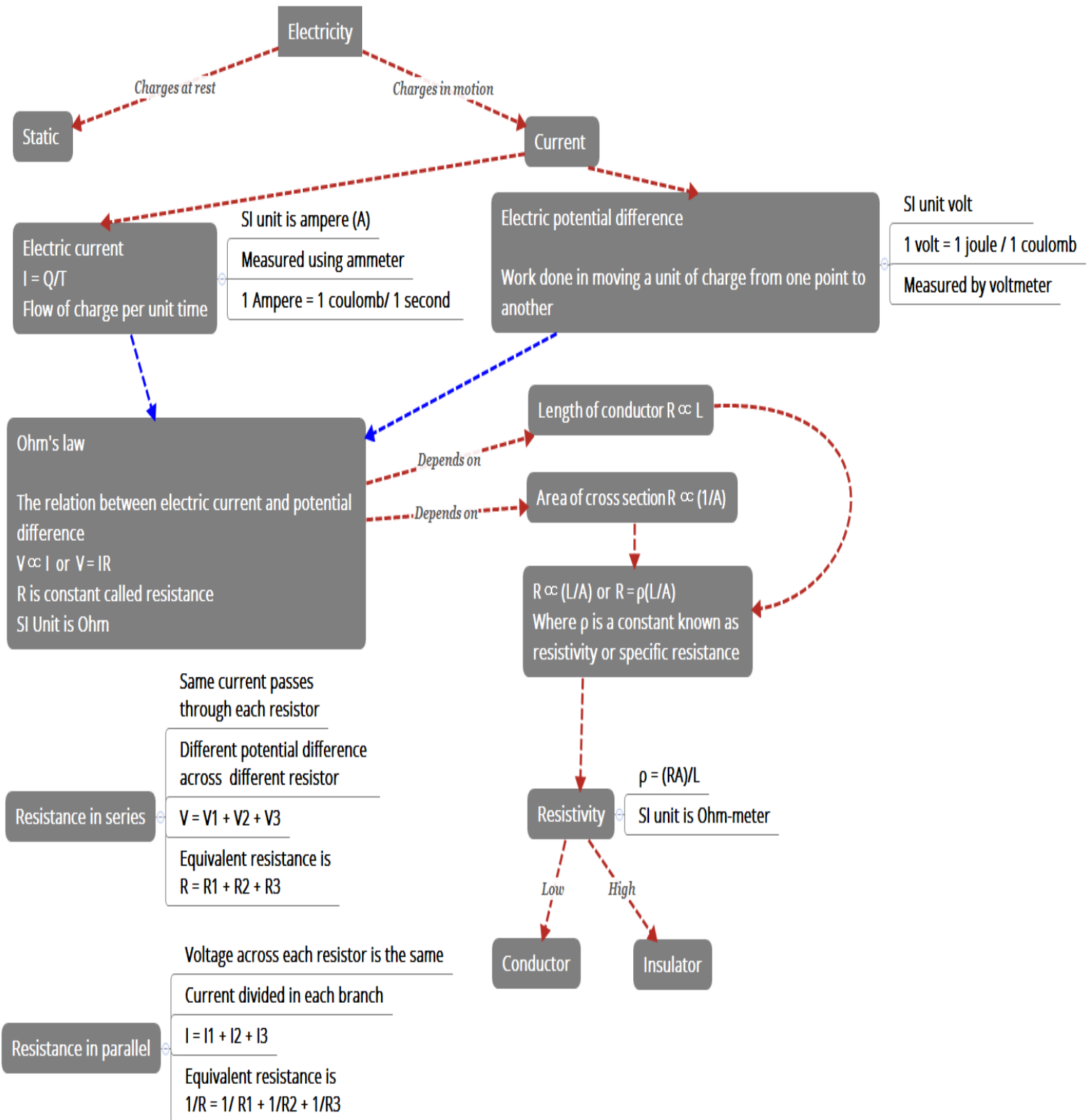
2. What is meant by dispersion and recombination? Explain with the help of a diagram? What is a spectrum? Name the various colours of spectrum of white light in proper sequence.

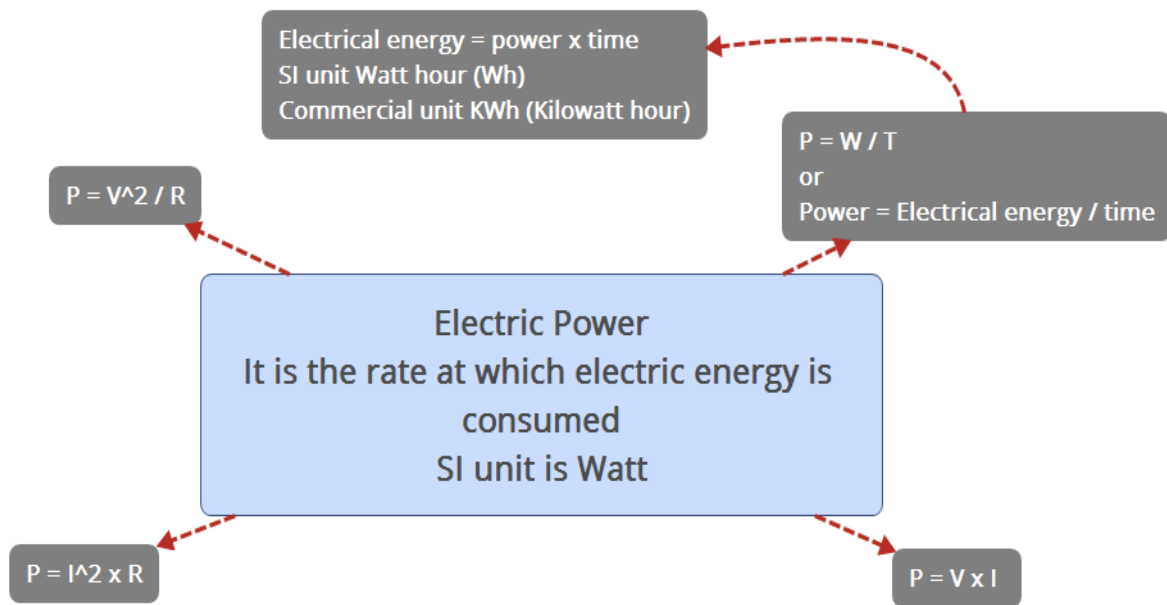
Answer: The splitting of white light into its component colours on passing through a prism is called dispersion. When an inverted prism is kept in the path of these seven colours, they combine to form white light. This is called recombination. The band of seven colours formed due to dispersion of white light is called 'spectrum'. Seven colours of spectrum are violet, indigo, blue, green, yellow, orange and red also known as 'VIBGYOR'

(Fig11.5&11.6 NCERT TEXT BOOK)

CHAPTER 12 : ELECTRICITY

MIND MAPS





1KWh = 1 unit

1 KWh = 3.6×10^6 joule

HEATING EFFECT OF CURRENT

Joule's law of heating

$H = I^2RT$ (I = Current, R = Resistance, T = Time)

PRACTICAL APPLICATIONS OF HEATING EFFECT

1. Examples of devices which work on this effect
 - a. Toaster
 - b. Oven
 - c. Heating iron
 - d. Heater
2. Electric bulb produces light due to this effect by heating up tungsten (Tungsten is the filament in the bulb). It has a high melting point and is covered by a glass bulb. Inert atmosphere is provided by filling the bulb with nitrogen or argon (Inert gases)
3. Fuse (Used in electric circuits) works on this effect

FORMULAE

		<u>SI unit</u>
1. $I = Q/T$	(Calculation of current)	Ampere
2. $V = W/Q$	(Calculation of potential difference)	Volt
3. $V = IR$	(Ohm's law, R is resistance)	Ohm
4. $\rho = RA/L$	(Calculation of resistivity)	Ohm metre
5. $R = R_1 + R_2 + R_3$	(Resistance in series)	Ohm
6. $R = 1/R_1 + 1/R_2 + 1/R_3$	(Resistance in parallel)	Ohm
7. $H = I^2RT$	(Joules law of heating)	Joule
8. $P = VI = I^2R = V^2/R$	(Calculation of power)	Watt
9. $E = P \times t$	(Electric energy)	Watt second (Joule)

DIAGRAMS

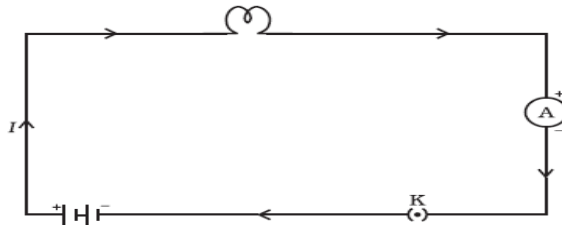


Figure 12.1
A schematic diagram of an electric circuit comprising - cell, electric bulb, ammeter and plug key

Table 12.2 Symbols of some commonly used components in circuit diagrams

Sl. No.	Components	Symbols
1	An electric cell	
2	A battery or a combination of cells	
3	Plug key or switch (open)	
4	Plug key or switch (closed)	
5	A wire joint	
6	Wires crossing without joining	
7	Electric bulb	
8	A resistor of resistance R	
9	Variable resistance or rheostat	
10	Ammeter	
11	Voltmeter	

ACROSS

- 1 .Rate of flow of charge
- 2 .Ratio of potential difference to the current
- 6 .Rate of consumption of electrical energy
- 7 .SI unit of power

DOWN

- 1 .Closed path for flow of electricity
- 3 .SI unit of electric current
- 4 .SI unit of charge
5. SI unit of potential difference

QUESTION BANK

VERY SHORT ANSWER TYPE (1 MARK)

1. Calculate the amount of charge flowing in a wire if it draws a current of 2A in 10 minutes.

$$\begin{aligned} \text{Ans: } & 2 \times 10 \times 60 \\ & = 1200 \text{ C} \end{aligned}$$

2. What happens to resistance of a conductor if area of cross-section is doubled?

Ans: It halves

3. Which device helps to maintain a potential difference across a conductor?

Ans: Cell or battery

SHORT ANSWER TYPE (2 MARK)

1. Draw a circuit diagram having the following components

- a. Bulb
- b. A two cell battery
- c. Ammeter
- d. A closed key

Ans: Refer diagram 12.1

2. Why are heating elements made of alloys rather than metals?

Ans: High resistivity, does not oxidise at high temperatures

3. What do we mean when we say that potential difference between two points is 1 volt?

Ans: Definition

SHORT ANSWER TYPE (3 MARK)

1. If three resistors of 6Ω , 9Ω and 21Ω are connected in series to a 12V battery, find

- a) The total resistance of the circuit.
- b) The current flowing through the circuit.
- c) The potential difference across the 21Ω resistor.

Ans. a) 36Ω b) $0.33A$ c) $6.93V$

2. What are the advantages of connecting electrical devices in parallel with the battery rather than in series?

Ans: (1) The current required by each device is different which is possible only in parallel.

(2) If one device fails others can still work.

(3) Total resistance in the circuit is decreased

VALUE BASED QUESTION

Rohan had gone to Sohan's house for studying. Sohan was worried about the high electricity bill and was wondering how to reduce it. Rohan suggested using LED bulbs instead of fluorescent bulbs as it consumes less electric energy and switch to solar power. After two months when they met again Sohan was very happy as the number of units consumed and the electric bill had reduced drastically.

1. What is electric power? What is its SI unit?
Rate of consumption of electric energy. SI unit is watt
2. What is the commercial unit used to measure electric energy?
KWh
3. What values were shown by Rohan?
Caring, awareness and conservation of energy

LONG ANSWER TYPE (5 MARK)

1. a) What is the function of fuse in an electric circuit?
b) What would be the rating of the fuse for an electric kettle which is operated at 220V and consumes 500 W power?
c) How is the SI unit of electric energy related to its commercial unit?

*Ans. b) 2.2A flows through the circuit, fuse should be rated 3A.
c) 1 KWh = 3.6×10^6 J*

2. a) State Ohms law. Derive the relation and give graphical representation for it.
b) An electric oven rated at 500W is connected to a 220V line and used for 2 hours daily. Calculate the cost of electric energy per month at the rate of Rs.5 per KWh.

*Ans. a) $V = IR$, linear equation hence straight line passing through origin
b) Energy consumed per day = 1 KWh (P x t) cost for 30 days = $1 \times 5 \times 30 =$
Rs.150.00*

CHAPTER 13- MAGNETIC EFFECTS OF ELECTRIC CURRENT

Magnet is an object that attracts objects made of iron, cobalt & nickel.

When a magnet suspended freely it will align in North-South direction. Like poles repel each other and unlike poles attract each other

Magnets are used: (i) In radio & stereo speakers, (ii) In refrigerator doors, (iii) in audio & video cassettes players, (iv) in hard discs & floppies of computers & (v) in children's toys.

Magnetic field: The area around a magnet where a magnetic force is experienced is called a magnetic field. It is a quantity that has both direction & magnitude.

Magnetic field lines: Magnetic field is represented by field lines. They are lines drawn in a Magnetic field along which a unit North magnetic pole moves. Magnetic field lines are called as Magnetic lines of force.

Refer to figure 13.3 & 13.4 page no. 225 of N.C.E.R.T Text book)

Properties of Magnetic field lines:

(i) They do not intersect each other. (ii) It is taken by convention that magnetic field lines emerge from North Pole and merge at the South Pole. Inside the magnet, their direction is from South Pole to North Pole. Therefore magnetic field lines are closed curves.

Magnetic field lines due to a current through a straight conductor (wire)- consist of series of concentric circles whose direction is given by the Right hand thumb rule.

Right hand thumb rule: If a current carrying straight conductor is held in your right hand such that the thumb points towards the direction of current, then the wrapped fingers show the direction of magnetic field lines.

(Refer to figure 13.7, page no. 228 of N.C.E.R.T Text book)

Magnetic field lines due to a current through a circular loop

(Refer to figure 13.8, page no. 228 of N.C.E.R.T Text book)

The strength of the magnetic field at the centre of the loop (coil) depends on:

(i) The radius of the coil- The strength of the magnetic field is inversely proportional to the radius of the coil. If the radius increases, the magnetic strength at the centre decreases. (ii) The number of turns in the coil: As the number of turns in the coil increase, the magnetic strength at the centre increases, because the current in each circular turn is having the same direction, thus the field due to each turn adds up.

(iii) The strength of the current flowing in the coil: as the strength of the current increases, the strength of the magnetic fields also increases.

Solenoid: (Refer to figure 13.10, page no. 229 of N.C.E.R.T Text book)

(i) A coil of many turns of insulated copper wire wrapped in the shape of a cylinder is called a Solenoid.

Magnetic field produced by a Solenoid is similar to a bar magnet.

The strength of magnetic field is proportional to the number of turns & magnitude of current.

Electromagnet: An electromagnet consists of a long coil of insulated copper wire wrapped on a soft iron core. (Refer to figure 13.11, page no. 229 of N.C.E.R.T Text book)

Fleming's Left hand rule: Stretch the thumb, forefinger and middle finger of left hand such that they are mutually perpendicular. Forefinger points in the direction of magnetic field and centre finger in the direction of current, then the thumb gives the direction of force acting on the conductor.

(Refer to figure 13.13, page no. 231 of N.C.E.R.T Text book)

Electric motor: A device that converts electric energy to mechanical energy.

(Refer to figure 13.15, page no. 232 of N.C.E.R.T Text book)

Principle of Electric motor: When a rectangular coil is placed in a magnetic field and a current is passed through it, force acts on the coil, which rotates it continuously. With the rotation of the coil, the shaft attached to it also rotates.

Electromagnetic induction: Electricity production as a result of magnetism (induced current) is called Electromagnetic induction.

Fleming's Right hand rule:

Stretch the thumb, forefinger and middle finger of right hand such that they are mutually perpendicular. Forefinger points in the direction of magnetic field, the thumb gives the direction of motion of the conductor, then centre finger give the direction of induced current.

Electric generator: A device that converts mechanical energy to electric energy. (Refer to figure 13.19, page no. 236 of N.C.E.R.T Text book)

Electric generator is of two types- (i) A.C generator (ii) D. C generator

Principle of Electric generator: Electromagnetic induction

Domestic electric circuits: (Refer to figure 13.20, page 238 of N.C.E.R.T Text book)

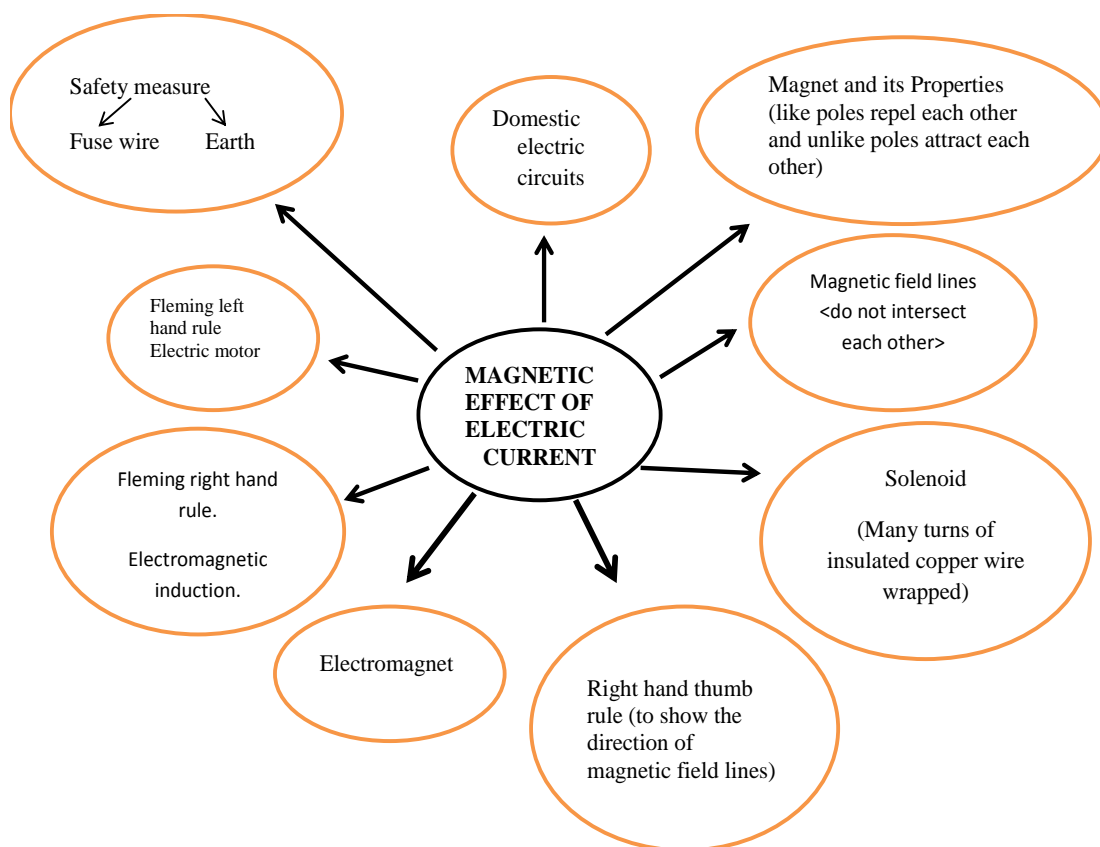
We receive electric supply through mains supported through the poles or cables. In our houses we receive AC electric power of 220V with a frequency of 50Hz.

The 3 wires are as follows- (i) Live wire- (Red insulated, Positive)

(ii) Neutral wire- (Black insulated, Negative) (iii) Earth wire- (Green insulated) for safety measure to ensure that any leakage of current to a metallic body does not give any serious shock to a user.

Short circuit: is caused by touching of live wires and neutral wire

Fuse: is a protective device used for protecting the circuits from short circuiting and over loading



DIAGRAMS

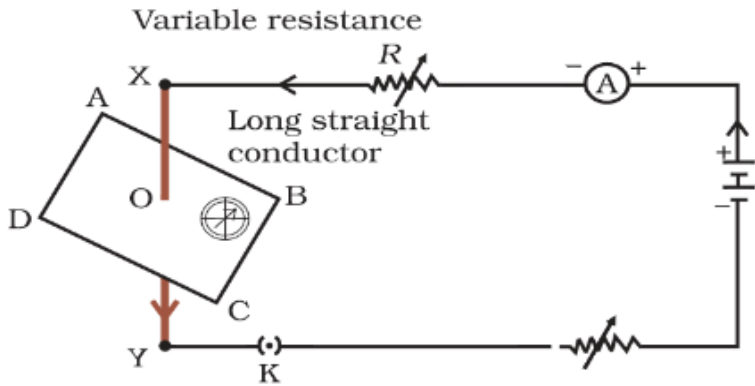


Figure 13.1
Compass needle is deflected on passing an electric current through a metallic conductor

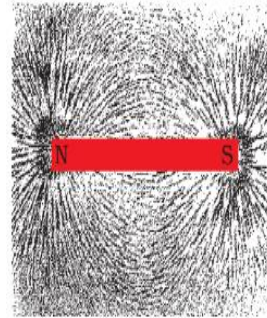


Figure 13.2
Iron filings near the bar magnet align themselves along the field lines.

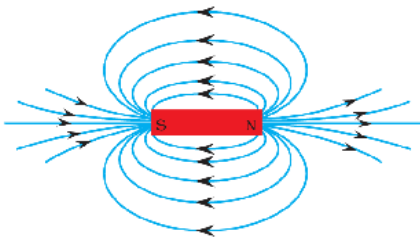


Figure 13.4
Field lines around a bar magnet

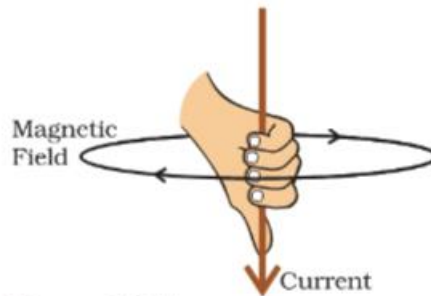


Figure 13.7
Right-hand thumb rule

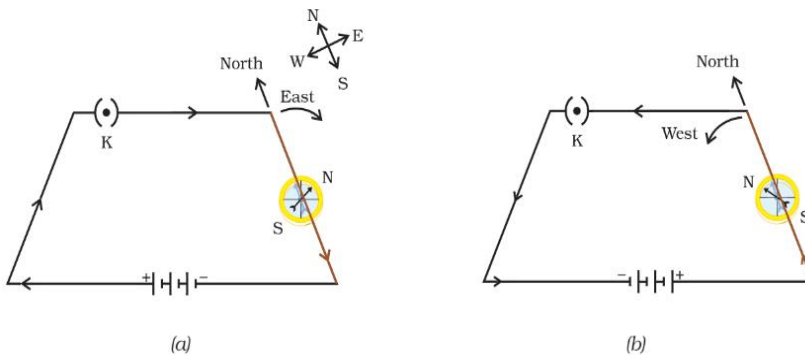


Figure 13.5 A simple electric circuit in which a straight copper wire is placed parallel to and over a compass needle. The deflection in the needle becomes opposite when the direction of the current is reversed.

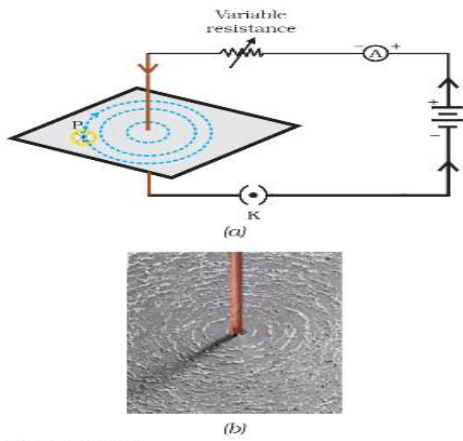


Figure 13.6
 (a) A pattern of concentric circles indicating the field lines of a magnetic field around a straight conducting wire. The arrows in the circles show the direction of the field lines.
 (b) A close up of the pattern obtained.

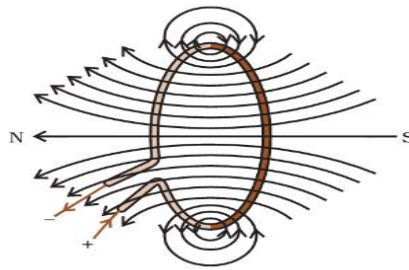


Figure 13.8
 Magnetic field lines of the field produced by a current-carrying circular loop

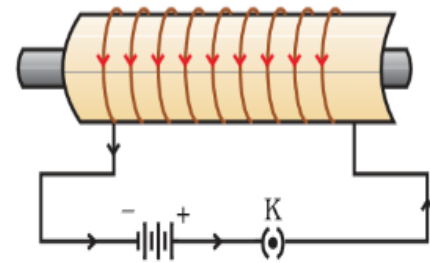


Figure 13.11
 A current-carrying solenoid coil is used to magnetise steel rod inside it - an electromagnet.

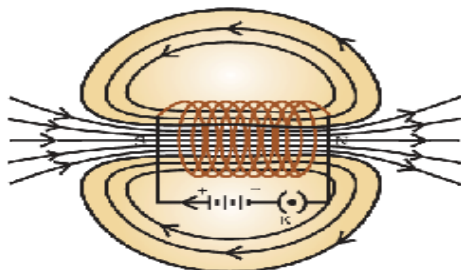


Figure 13.10
 Field lines of the magnetic field through and around a current carrying solenoid.

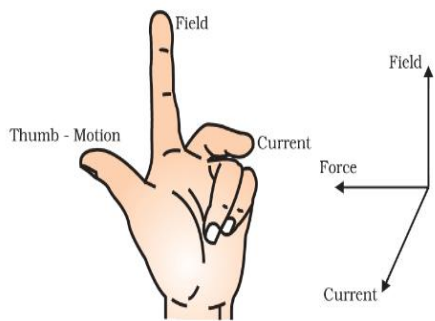


Figure 13.13
Fleming's left-hand rule

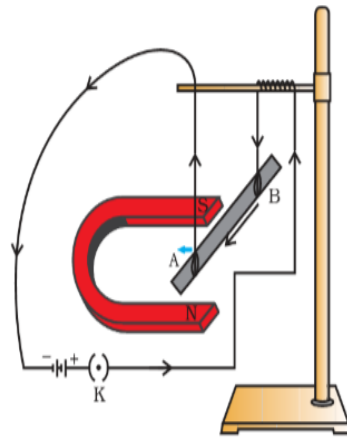


Figure 13.12
A current-carrying rod, AB, experiences a force perpendicular to its length and the magnetic field.

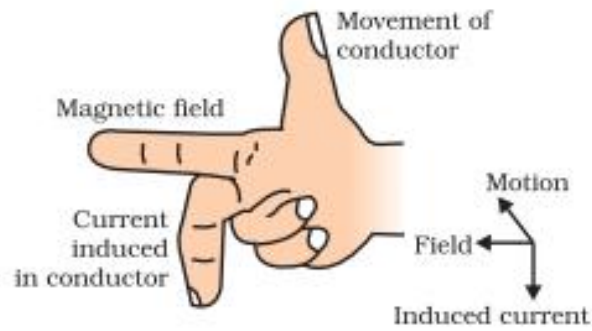


Figure 13.18
Fleming's right-hand rule

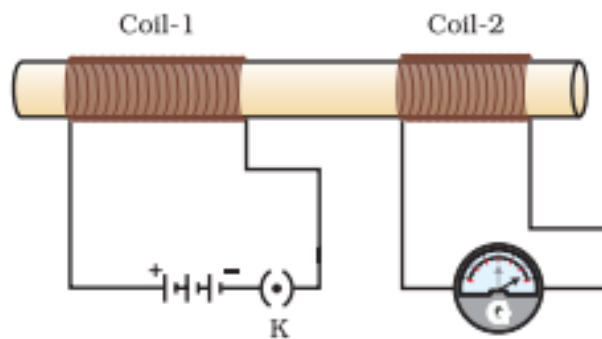


Figure 13.17
Current is induced in coil-2 when current in coil-1 is changed

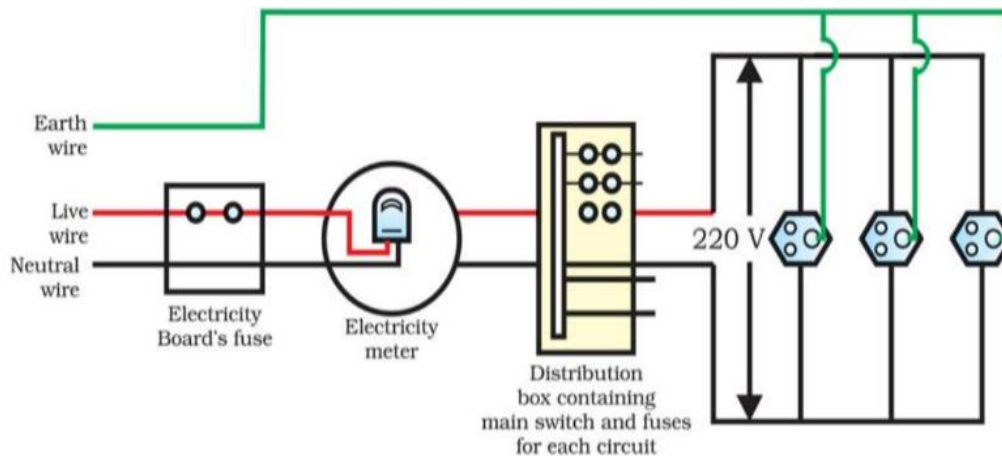


Figure 13.20 A schematic diagram of one of the common domestic circuits

Question Bank

Very Short Answer Type Questions (1mark)

Q.1 What is a solenoid?

Q.2 What is the direction of the magnetic field lines inside a bar magnet?

Q.3 What is the direction of the magnetic field lines outside a bar magnet?

Short Answer Type Questions (2 mark)

Q.1 What is an electromagnet?

Q.2 What is the difference between a direct current and an alternating current? What is the frequency of AC in India?

Q.3 State the rule to find the direction of magnetic field produced around a current-carrying conductor.

Short Answer Type Questions (3 mark)

Q.1 What is the role of fuse, used in series with any electrical appliance? Why should a fuse with defined rating not be replaced by one with a larger rating?

Q.2 Why does a magnetic compass needle deflect when a bar magnet or a current-carrying loop is brought near it.

Q.3 Explain the construction, working and principle applied in D C Motor.

Value Based Question

The students of class 10th were excited as they were shown a documentary on “power consumption” during a Science Fair. The documentary explained that we use Alternating Current in our home and factory which is dangerous if not handled properly. Short circuiting and overloading

are the two main causes for electrical hazards. Short circuiting occurs when the live wire and the neutral wire come into direct contact. In this situation, the resistance of the circuit becomes very small and a very large current flows through the circuit which produces large amount of heat. This heat raises the temperature of the circuit and sparking at the point of short circuiting. Overloading means flow of current in the circuit beyond a specified limit. Overloading occurs due to an accidental rise in the supply voltage. Sometimes overloading is caused by connecting too many appliances of high power rating to a single socket. At the end students were happy as they got lot of information on power use.

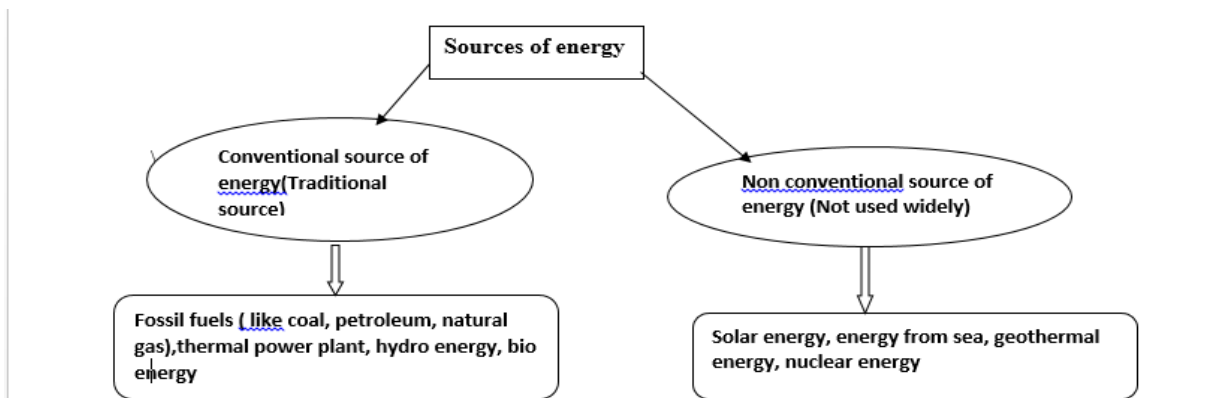
- 1) What causes short circuit?
- 2) What do you mean by the term 'Overloading'?
- 3) What values do the students learn from the Documentary?

- A.1) Short circuiting occurs when the live wire and the neutral wire come into direct contact.
 2) Overloading means flow of current in the circuit beyond a specified limit.
 3) Concern for safety /Scientific temperament

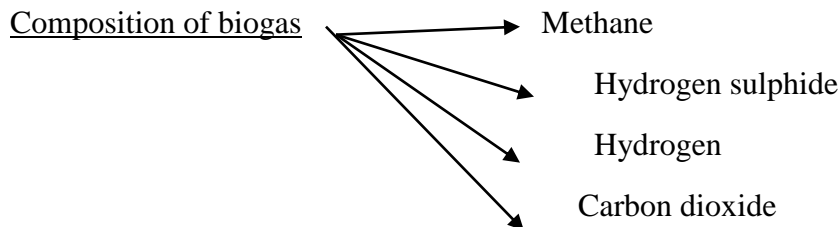
CHAPTER 14- SOURCES OF ENERGY

1. Our energy requirements increase with our standard of living.
2. Characteristics of good source of energy.

High efficiency/easy to use/easy to store and transport/ economical/easily accessible.



4. Fossil fuels are nonrenewable/exhaustible/causes air pollution, acid rain and global warming.
5. Biogas is formed by the decomposition of cow dung, agricultural and domestic wastes.



Advantages of bio gas : Pollution free/Wealth from wastes/No residue/high efficiency.

6. Wind energy : Kinetic energy of the wind is used to do the useful work.

Advantages: Renewable/inexhaustible/pollution free/no residue.

Disadvantages:-High cost of installation/minimum wind speed 15km/h/ maintenance cost high/requirement of large area of land.

7. Solar cells are devices which convert light energy into electric energy.

Advantages:-inexhaustible/pollution free/used in artificial satellites/can be used in remote areas/ low cost of maintenance.

Disadvantages:-Requirement of special grade of silicon/high cost of installation/moderate efficiency.

8. In nuclear power plants, nuclear energy is used for the production of electricity.

Advantage :-Very high efficiency

Disadvantage:-Radioactive emissions/fear of nuclear power plant accidents/disposal of Radioactive wastes.

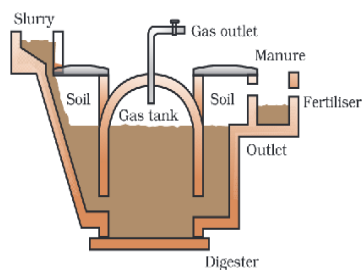
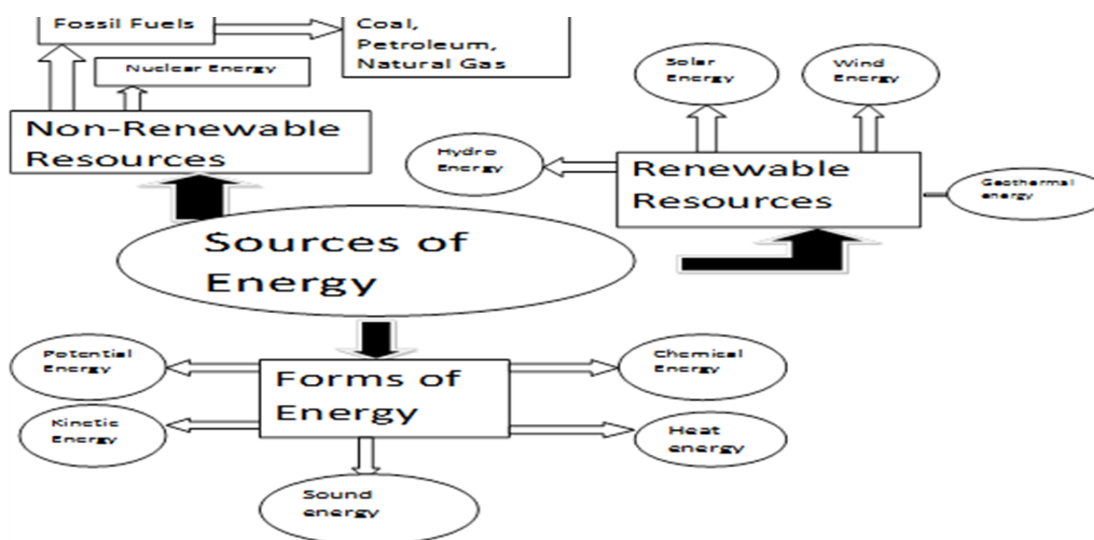


Figure 14.1
Schematic diagram of a bio-gas plant

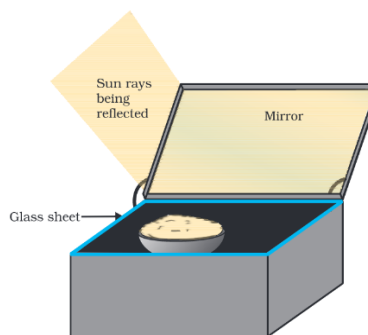


Figure 14.2 A solar cooker

CROSSWORD

Find the hidden words related with the chapter sources of energy.

(You can go across and down)

A	B	F	S	O	S	T	D	N	K	M	G
E	D	W	D	D	M	M	B	C	F	E	E
F	A	G	G	D	K	E	M	M	T	Y	O
Q	E	E	F	F	L	T	F	F	V	U	T
K	D	Q	A	R	I	H	Q	H	R	K	H
L	L	H	D	B	R	A	S	D	F	G	E
S	O	L	A	R	E	N	E	R	G	Y	R
O	Y	G	H	K	J	E	F	K	D	B	M
L	C	L	K	H	G	D	L	K	H	M	A
A	B	I	O	G	A	S	N	J	K	L	L
R	I	Y	T	G	K	H	M	J	K	L	E
C	O	T	E	F	I	S	S	I	O	N	N
E	M	V	C	V	B	M	T	B	V	K	E
L	A	R	T	I	U	K	Y	G	J	L	R
L	S	A	G	F	I	L	U	T	K	I	G
D	S	D	G	G	T	N	I	E	R	T	Y

QUESTION BANK

Very short answer type questions (1mark)

1. Expand OTEC.
- 2 Thermal power plants are set up near coal or oil fields. Give reason

Short answer type questions. (2 mark)

1. Hydrogen has been used as a rocket fuel. Would you consider it a cleaner fuel than CNG? Why or why not?
2. Fire wood is our conventional fuel. List any four reasons of replacing it with the alternate sources of energy.
3. List two advantages and disadvantages each for using wind as a source of energy.

Short answer type questions. (3mark)

1. What is solar cell panel? List two advantages and disadvantages each of using Solar cells for producing electricity.

VALUE BASED QUESTION

Rohan, a class 10 student was helping his mother in her cooking. His mother stressed the importance of using copper bottom vessels for cooking and switching off of gas cylinder regulator after the use.

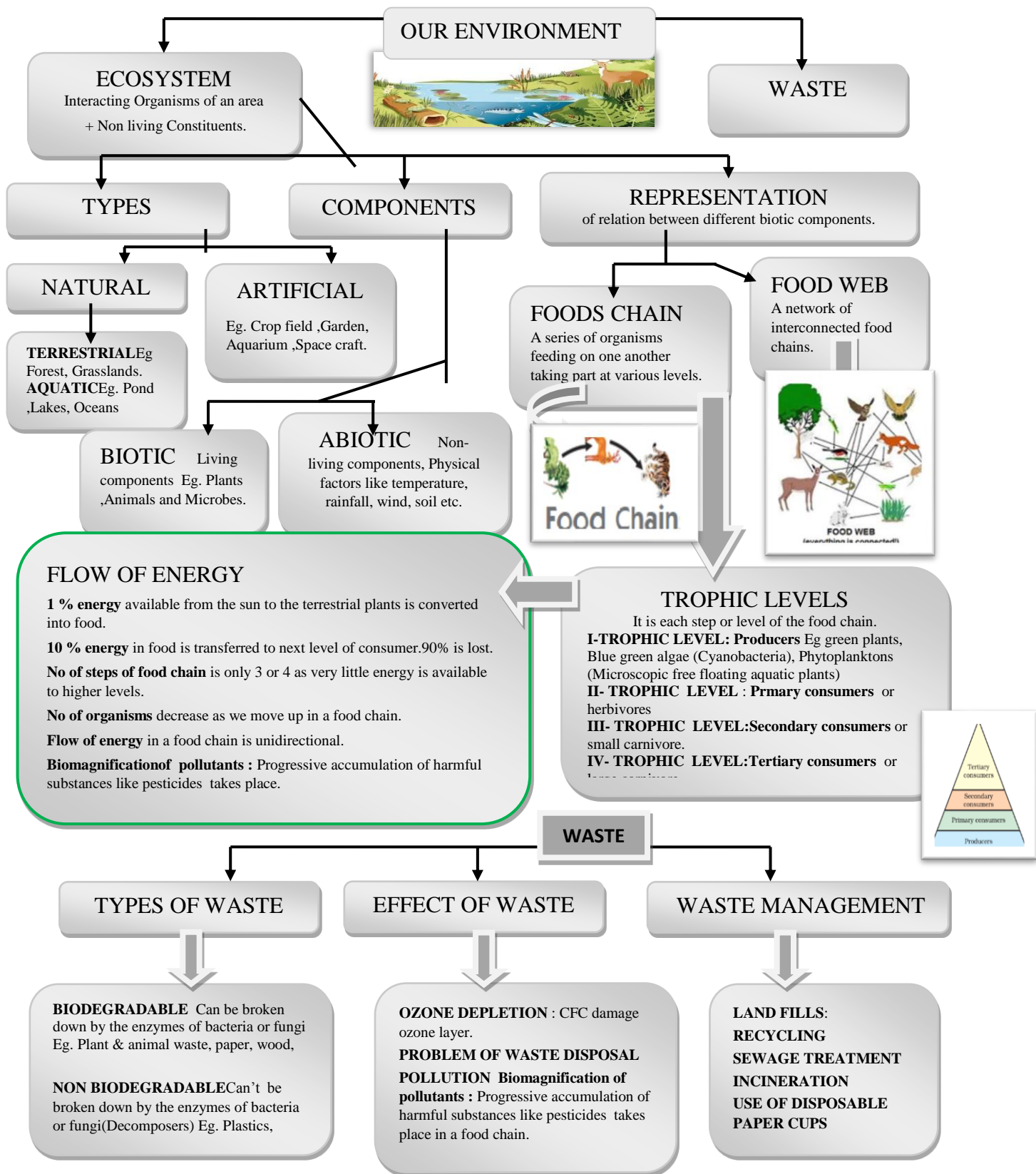
- a) What value is shown by his mother?
- b) Why is Rohan's mother so particular of using copper bottom vessel for cooking?

Long answer type questions. (5 mark)

- 8 Describe the design and function of each part of a solar cooker with the help of a neat labelled diagram.

CHAPTER 15- OUR ENVIRONMENT

GIST OF THE LESSON/FLOW CHART



Environment: Our surrounding is called environment.

- Ecosystem and its components
- Biotic and abiotic components.
- Food chain and food web
- Energy transfer through trophic levels
- Ozone layer and its concerns.

Ecosystem: This is a system of interdependencies among various living beings and non-living things in a given habitat.

Components of Ecosystem: An ecosystem has two types of components, viz. biotic component and abiotic component.

Abiotic Component All the non-living things make the abiotic component of an ecosystem. Air, water and soil are the abiotic components.

Biotic Component All living beings make the biotic component of an ecosystem.

- Green plants play the role of producers; because they prepare the food by photosynthesis.
- Animals and other living beings play the role of consumers; because they take food (directly or indirectly) from plants.
- Bacteria and fungi play the role of decomposers; as they decompose dead remains of plants and animals so that raw materials of organisms can be channelized back to the environment.

Food Chain food chain is a simple representation of transfer of energy from the sun to different biotic components of an ecosystem. Sun is the ultimate source of energy. Green plants convert solar energy into chemical energy during photosynthesis

Producer → Primary Consumer → Secondary Consumer

Food Web: In any ecosystem, there can be many food chains which are interlinked at various levels. Thus, many food chains form a network which is called food web.

Transfer of Energy through a food chain: Different levels in the food chain are called trophic level. Out of the energy consumed by an organism at a particular trophic level, 90% is utilised for its own need and rest 10% is left for the organism of the next trophic level.

Balance in the Ecosystem:

There is a delicate balance in an ecosystem; as far as number of organisms at a particular trophic level is concerned. An increase or decrease in population of any organism can disturb this balance. For example in the following food chain:



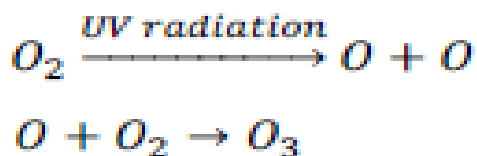
If all the deer are killed in a jungle, the lions would be left with no food. This would endanger the existence of lions. Once the lions and deer would be finished, it would result in population explosion of green plants. If all the lions die in a jungle, it would create another problem. Since no lion would be left to kill the deer, the population of deer would increase substantially. This will finish off all the green plants and finally even the deer would be left with no food for them.

Biodegradable Substances: Substances which can be decomposed by microorganisms are called biodegradable substances. All the organic substances are biodegradable.

Non-biodegradable: Substances which cannot be decomposed by microorganisms are non-biodegradable. All inorganic substances are non-biodegradable.

Ozone Layer Depletion:

Ozone layer is also known as stratosphere. When ultraviolet radiations act on oxygen, the oxygen gets converted into ozone.

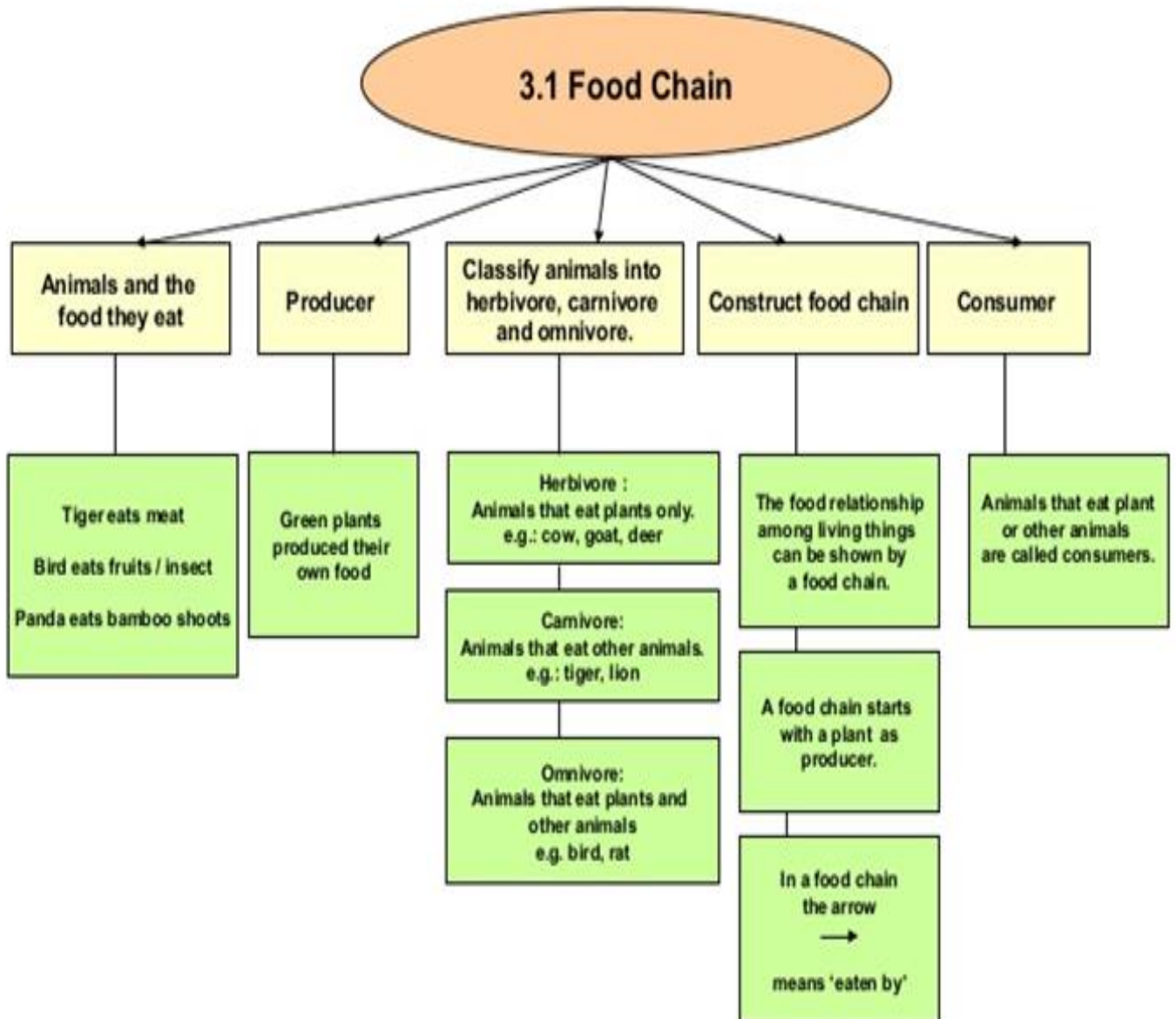


Ozone layer works like a protective shield for living beings.

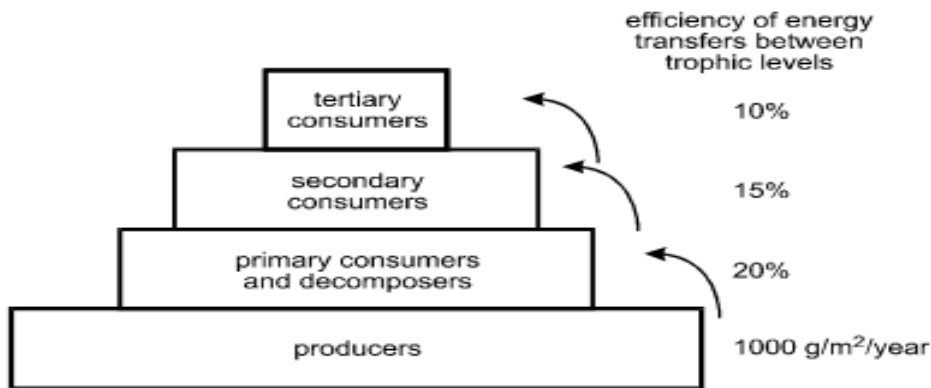
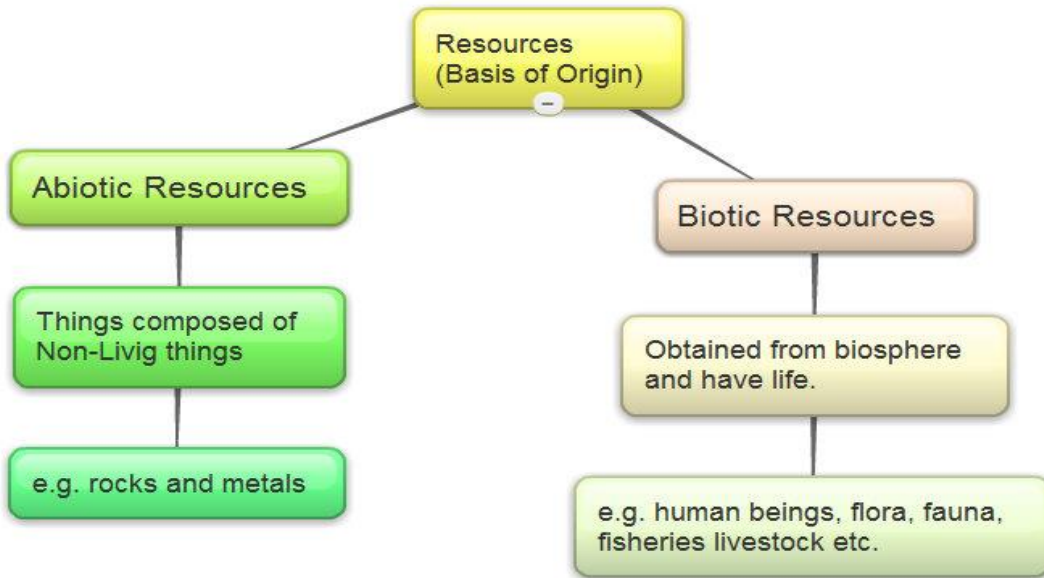
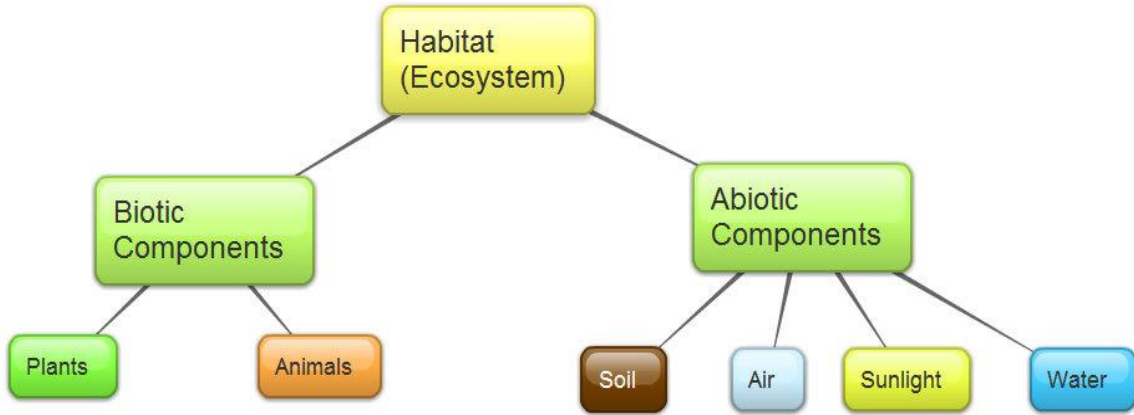
Effect of CFCs: Use of CFCs (Chlorofluorocarbon) has damaged the ozone layer. It is used in refrigerators and aerosol spray.

Problems of Waste Disposal Plastic waste is a serious concern because plastic is non-biodegradable. Proper segregation of wastes before disposal helps us to save our environment.

Mind Map — Our Environment



FLOW CHART



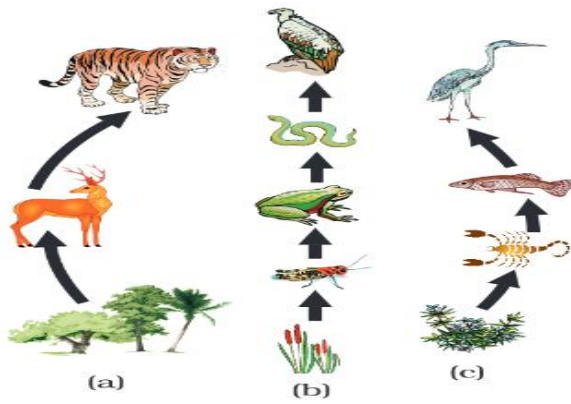


Figure 15.1
*Food chain in nature
 (a) in forest, (b) in
 grassland and (c) in a
 pond*

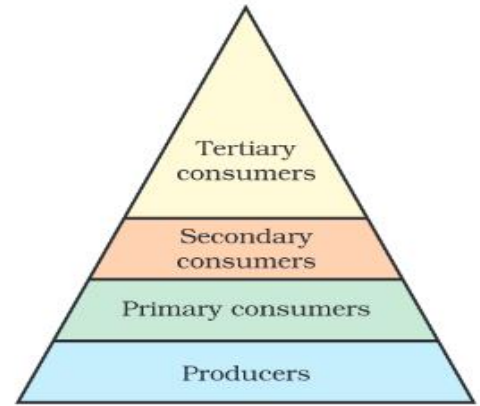


Figure 15.2
Trophic levels

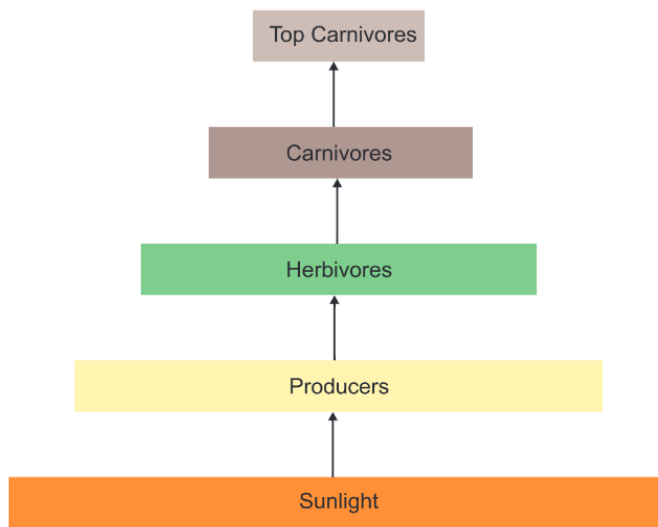
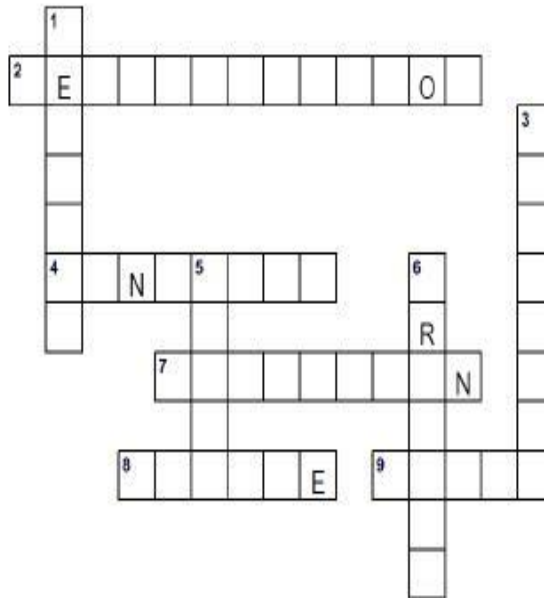


Figure 15.4 *Diagram showing flow of energy in an ecosystem*

ENVIRONMENT PUZZLE

Environment Puzzle

Using the Across and Down clues, write the correct words in the numbered grid below.



ACROSS

2. the act of cutting down or burning trees in a area
4. an area of land where large amounts of waste material are buried under the earth
7. something making land, water or sky dirty
8. to make less rubbish
9. to use something again

DOWN

1. to treat things that have already been used so they can be used again.
3. to keep safe from injury, harm, or destruction
5. a large number of water covering an area that is usually dry
6. to watch and help an animal or the environment

LANDFILL	RECYCLE	PROTECT	PRESERVE
POLLUTION	FLOOD	REDUCE	REUSE
DEFORESTATION			

ENVIRONMENT PUZZLE 2

Find the hidden words from the given grid. Words can go across or down.

M	S	C	W	R	I	L	T	C	B	O	O	S	N	M	S	U
S	T	H	R	S	E	O	P	A	E	C	O	M	P	O	S	T
V	E	S	E	H	O	F	O	A	A	E	N	X	T	U	R	T
T	R	P	Q	P	E	R	D	T	E	A	B	N	U	N	C	N
I	E	N	V	I	R	O	N	M	E	N	T	R	A	T	A	H
A	C	N	U	X	E	G	Y	O	G	T	R	B	Y	A	G	T
G	Y	K	I	J	C	S	Z	S	W	D	V	G	Y	I	O	K
O	C	Q	A	Z	L	B	V	P	A	S	C	I	E	N	C	E
L	L	Y	S	R	A	G	T	H	H	A	A	R	N	S	C	N
A	I	B	U	G	K	T	H	E	G	U	K	U	O	I	B	G
T	N	T	S	R	E	E	F	R	B	S	J	S	Y	O	I	B
A	G	G	F	T	S	E	G	E	A	R	T	H	R	S	Y	A
H	X	V	N	L	J	G	D	A	W	R	Y	I	P	L	I	J

Our Environment--- Question Bank

Q. 1 Using Kulhads as disposable cups to serve tea in trains, proved to be a bad idea. Why?

Ans. Making Kulhads on large scales leads to the loss of top soil.

Q. 2 Why is plastic not degraded by bacteria?

Ans. Plastic is not degraded by bacteria because they do not have enzymes to degrade plastic.

Q. 3 DDT has entered food chain. Which food habit is safer- vegetarian or nonvegetarian?

Ans. Vegetarian habit is safer. Being closer to producers, less DDT will accumulate in our body. Bio magnification leads to higher level of DDT in higher trophic levels.

Q. 4 Aquarium requires regular cleaning whereas lakes normally do not. Why?

Ans. Normally a lake has more diverse forms of life and hence a larger number of food chains. This leads to natural cleaning. Thus, the ecosystem is more stable. The aquarium has a very limited number of food chains and unable to sustain itself. But, sometimes there is excessive growth of algae in lake. Then it also needs to be cleaned.

Q. 5 How will accumulation of bio degradable waste effect our environment?

Ans. Accumulation of bio degradable waste will:

- (a) Not let minerals return to mineral pool.
- (b) Become site of pest breeding.

Q 6. Look at the following figures. Choose the correct one and give reason for your answer.

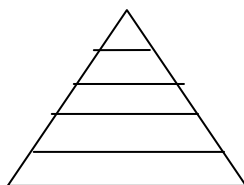


Fig "A"

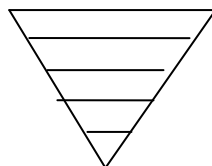


Fig 'B'

Ans :Fig. "A" is correct. • In an ecosystem, the number of individuals at producer level is maximum. This number reduces at each successive level. Therefore, the shape is a pyramid with broader base and tapering apex. • On an average 10% of the food changes into body mass and is available for the next level of consumers.

Q. 7 It is the responsibility of the government to arrange for the management and disposal of waste. As an individual you have no role to play. Do you agree? Support your answers with two reasons.

Ans. I do not agree. As an individual, I also have the responsibility and can contribute in the following ways:- (i) Cut down waste generation. (ii) Make compost pit for bio degradable waste. (iii) Recycle non biodegradable waste.

CHAPTER 16

MANAGEMENT OF NATURAL RESOURCES

Natural resources include total natural environment that support human life and contribute to the production of necessities and comforts to mankind. So natural resources are the components of atmosphere, hydrosphere and lithosphere.

On the basis of abundance and availability, the natural resources are of two types:

- (a) Inexhaustible
- (b) Exhaustible.

We need to manage our natural resources because of the following reasons:

1. The resources of the earth are limited.
2. The proper management of natural resources to prevent exploitation of natural resources
3. The proper management can ensure equitable distribution of natural resources so that all the people can benefit from the development of these resources.
4. The proper management will take into consideration the damage caused to the environment during the 'extraction' or 'use' of the natural resources and find ways and means to minimize this damage.

Conservation of Wildlife

It is very important to conserve wild-life to maintain the ecological balance in nature and to preserve the gene pool.

1. Stringent laws to prevent poaching or capturing of animals.
2. Preservation of habitat of wild animals preserved by establishing National Parks and sanctuaries
3. Regular survey by Forest Department to learn about the population of all species of wild animals and plants
4. Special attention should be paid to the conservation of endangered species of wild animals and birds to prevent their extinction altogether.

Conservation of water:

Advantages of Dams:

1. Regular and round the year water supply to fields
2. Continuous water supply to nearby human settlements
3. Generation of electricity.

Disadvantages of Dams:-

1. Social problems // 2. Environmental Problems// 3. Economic Problems

Conservation of Forests:

- 1. Afforestation // 2. Reforestation// 3. Separation of Commercial Forestry//4. Grazing

Effects of Deforestation:- Removal, decrease or deterioration of the forest cover of an area is called deforestation. It is caused by excessive felling of trees, overgrazing, monoculture, fragmentation and clearing of forests.

Deforestation causes.

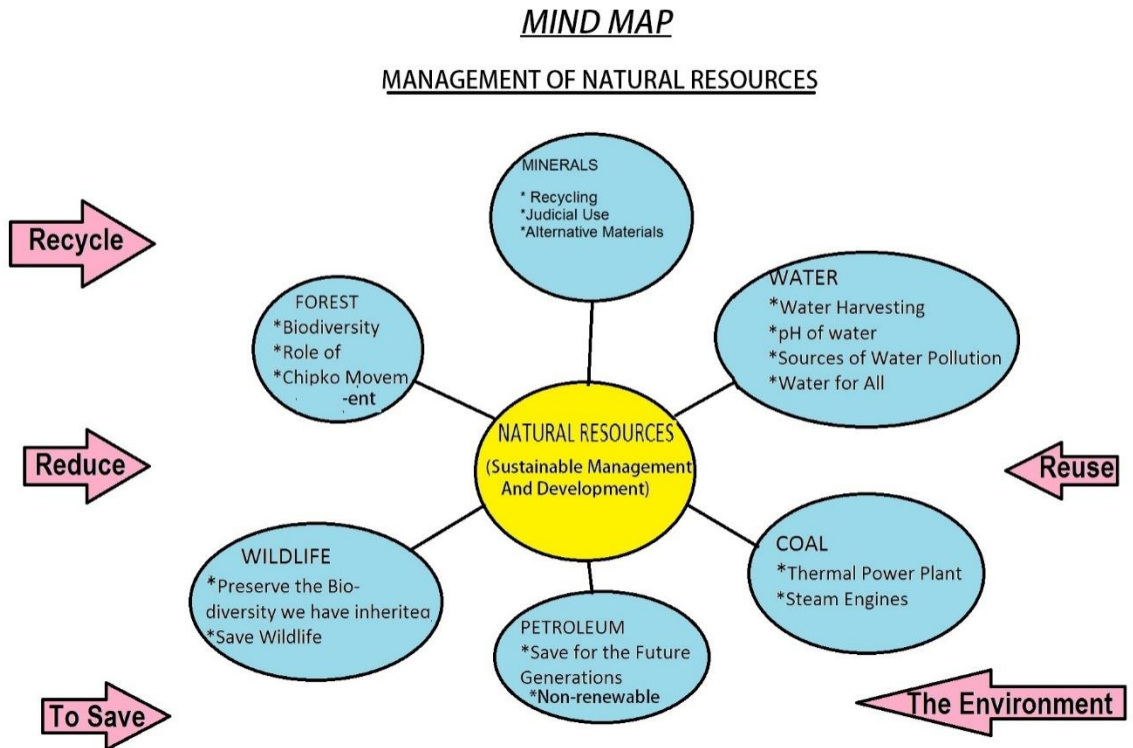
- 1. Soil Erosion.// 2. Desertification. //3. Floods/ /4. Destruction of wildlife//5. Climatic changes.

Chipko Movement:-

Chipko-Movement was born in Nineteen seventees in a small hilly village of the upper reaches of Himalayas. Tribal people of Tehri-Garhwal district of U.P realized the importance of the forests and decided against giving its products to the people of other areas. They stood against the ruthless butchery of nature and the axes of greedy contractors

Rainwater Harvesting:-

Water harvesting is capturing, collection and storage of rain water and surface run off for filling either small water bodies or recharging ground water so that water continues to be available in non-rainy seasons.



(see Fig. 16.1). Coliform is a group of bacteria, found in human intestines, whose presence in water indicates contamination by disease-causing microorganisms.

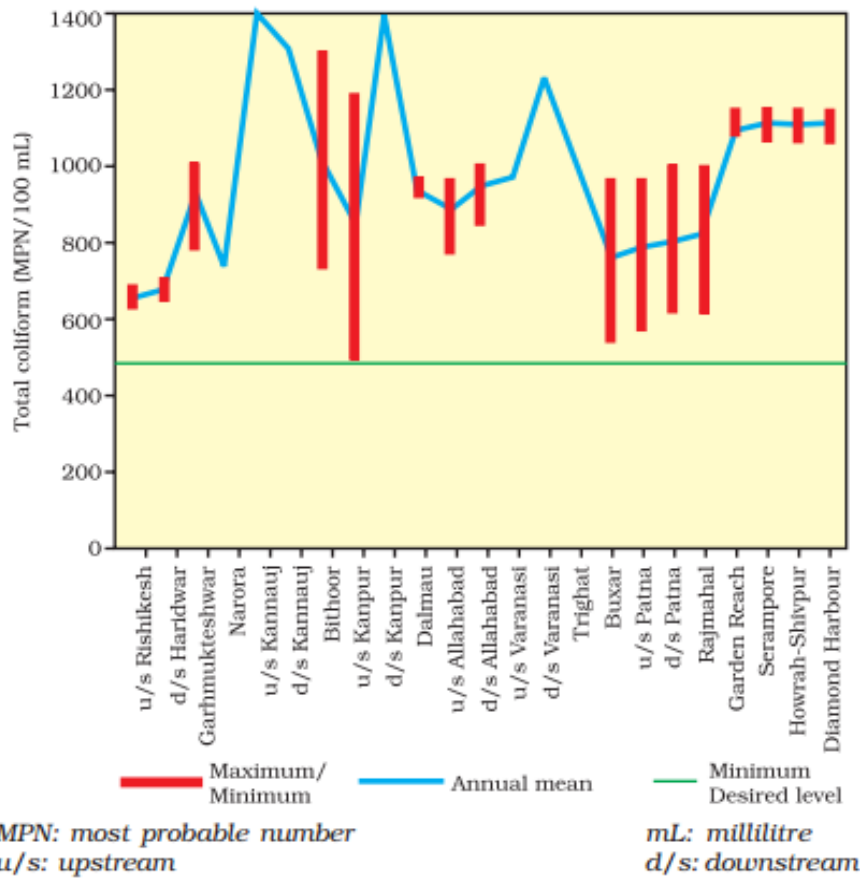


Figure 16.1 Total coliform count levels in the Ganga (1993-1994)

Source: Anon 1996, *Water Quality – Status and Statistics (1993 & 1994)*, Central Pollution Control Board, Delhi, p.11.

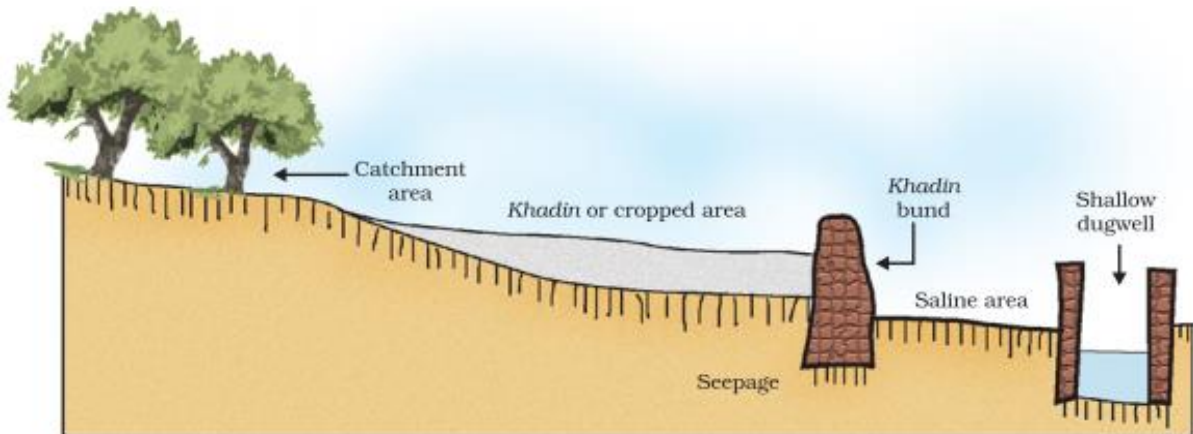
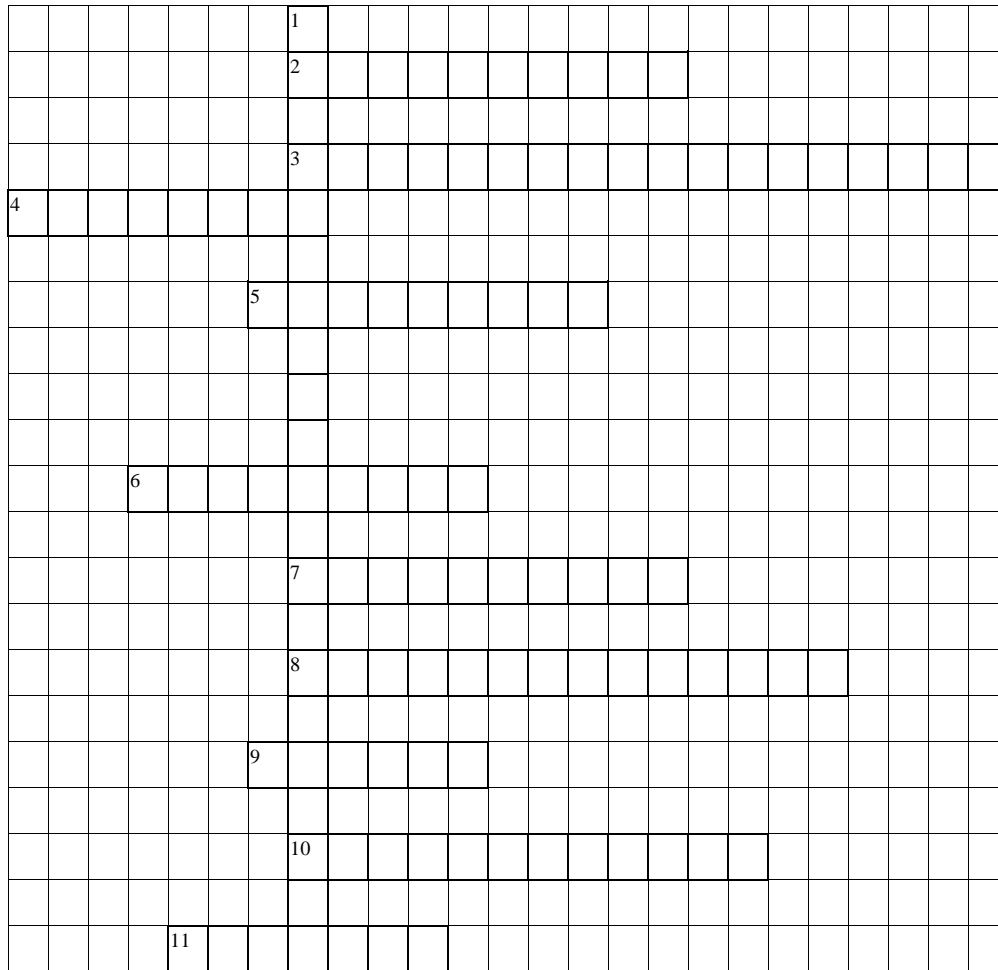


Figure 16.3 Traditional water harvesting system — an ideal setting of the khadin system

Management of Natural Resources

Read the sentence and put correct word in the cross word puzzle



Across

- 2 Soil is the ____ of the earth's surface.
- 3 Natural resources that can be replaced are called
- 4 Non-domesticated animals and uncultivated plants are...
- 5 To use up a supply or abundance of something is called...
- 6 Sustainable agriculture requires ____ of natural processes.
- 7 Many people utilize wildlife resources for ____.
- 8 The ability to maintain something at a certain rate or level is
- 9 Substances washing into water sources is called...
- 10 Preserving and protecting the natural environment is...
- 11 The loss of soil to wind or water is called...

Down

- 1 Resources that cannot be replenished are called

QUESTION BANK

Very Short Answer Type Question (1 mark)

- Q1.What is coliform bacteria?
- Q2.What are the two kinds of natural resources?
- Q3.What are the 3R's in sustainable development?

Short Answer Type Questions (2mark)

- Q1.List any two common methods by which solid wastes of urban areas are disposed off?
- Q2. State an instance where human intervention saved the forest from destruction.
- Q3.Name the stakeholders who have their dependence on forests?

Short Answer Type Questions (3 Mark)

- Q1.How is our holy river Ganga getting polluted? What are its ill effect? What is being done to prevent its pollution?
- Q2.With the help of an example show that reuse strategy is better than recycling.
- Q3.Why is sustainable management of natural resources necessary?
- Q4.Every one of us can do something to reduce our consumption of various natural resources. List 4 activities based on 3-R approach.

Value based question

There are certain NGOs which ask people to donate their used clothes, toys , school books, household items. These NGOs segregate the collected items and distribute them to needy people. What objectives do these NGOs fulfill by these initiatives?

PRACTICE PAPER – I

BLUE PRINT I

Form of Questions					
Unit	VSA (1 Mark)	SA - I (2 Marks)	SA - II (3 Marks)	LA (5 Marks)	Total
Chemical Substances	1(1)	-	3(4)	5(2)	23+*1pbq
World of Living	-	2(1)	3(3)	5(2)	21+*1pbq
Natural Phenomena	-	-	3(1)	5(1)	8 +*2 pbq
Effects of current	1(1)	-	3(1)	5(1)	9+*2 pbq
Natural Resources	-	2(2)	3(1)	-	7(3)
PBQ		2(6)			12(6)
TOTAL	2	18	30	30	80

SCIENCE
PRACTICE PAPER I

Class: X

Time: 3 hours

M M 80

General Instructions:

- (i) The Question paper comprises of two sections, A and B. you are to attempt both the sections separately.
- (ii) All questions are compulsory. However, an internal choice is provided in two questions of 3 marks each and one question of five marks.
- (iii) Question no. 1 to 2 in section A are one marks question. These are to be answered in one word or one sentence.
- (iv) Question number 3 to 5 is two marks question. These are to be answered in about 30 words each.
- (v) Question number 6 to 15 is three marks questions including value-based questions. These are to be answered in about 50 words each.
- (vi) Question number 16 to 21 is five marks questions. These are to be answered in about 70 words each.
- (vii) Question number 22 to 27 is practical based questions and each question carries two marks.

SECTION-A

- 1- Write the name and molecular formula of the fourth member of alkane series.
- 2- Name any two wastes which can be recycled or reused.
- 3- Identify the substance oxidised , substances reduced , oxidizing agent and reducing agent:
$$\text{MnO}_2 + 4\text{HCl} \longrightarrow \text{MnCl}_2 + 2\text{H}_2\text{O} + \text{Cl}_2$$
- 4- Explain how the properties of an alloy are different from those of constituent metals.
- 5- After examining eyes of a person, doctor tells him that he has cataract. State what happens to the eye in such a state? Suggest one method of its correction.
- 6- What happens when dilute hydrochloric acid is added to the following? Write balanced chemical equations.
(a) Bleaching powder (b) Zinc granules (c) baking soda
- 7- Complete the following table:

Element	Group	Period
H		
O		
N		

8 Write three points of difference between anaerobic respiration and aerobic respiration.

OR

State the function of the following components of transport system:

(a) Blood

(b) Xylem

9 (a) Write two points of difference between cerebrum and cerebellum .

(b) Name the nerves that arise from spinal cord and brain respectively.

10 (a) "Chromosomes are heredity carriers". Why do we say so?

(b) Which vital function is not controlled by autosomes?

11 State the type of image formed on eye lens. Explain how image is transferred to brain.

12 Electric current flows through three lamps when arranged in (i) a series (ii) parallel. If the filament of one lamp breaks, explain what happens to the other two lamps in the both cases.

13 With the help of a diagram for experimental set-up, describe an activity to demonstrate that the strength of a magnetic field at a point increase with increase in current in the straight conductor.

OR

Answer the following : a)What is the direction of magnetic field lines outside a bar magnet?

b) The magnetic field lines in a given region are getting crowded. What does it indicates?

c) State one advantages of AC over DC.

14 Biogas is considered to be a boon to the farmers. Give reasons.

15 In a colony, it was decided to remove a green park and construct an air conditioned shopping mall. Children of the colony took out the march against this decision with several placards to make the colony people aware of the importance of green plants. (VBQ)

(a) What is the ill effect of air conditioning?

(b) Design two placard which the children's would have carried?

(c) Is the action taken by the children justified?

(d) How does the ecosystem get affected when plant are removed?

16. Write the names and symbols of two most reactive metals. Explain by drawing electronic structure how any one of them reacts with a halogen. Explain any two physical properties of the compound formed.

17. (A) what are hydrocarbons? Give examples.

(b) Give the structural differences between saturated and unsaturated hydrocarbons with two examples each.

(c) What is a functional group? Give examples of four different functional groups.

OR

What are micelles? Why does it form when soap is added to water? Will a micelle be formed in other solvents such as ethanol also? State briefly how the formation of micelles help to clean the clothes having oily spots.

18. (a) It was observed that the leaves of a plant started getting wilted. Name the tissue which might have been blocked . State the role of this tissue in plant.

(b) Explain opening and closing of stomata with the help of labelled diagrams.

(c) Name the physical phenomenon by which exchange of gases occur between plant body and atmosphere.

19. Draw the diagram of a female reproductive system and label the part:

(a) Which produces egg in female germ cells?

(b) Where the zygote is implanted.

(c) Which is the path for entry of sperms?

20. With the help of a labelled diagram, state and explain the laws of refraction of light.

Light travels through air at a speed of 3×10^8 m/s .On entering in another medium its speed becomes 2×10^8 m/s. Calculate the refractive index of other medium.

21. What does an electric circuit mean? Name a device that helps to maintain a potential difference across a conductor in a circuit. When do we say that the potential difference across a conductor is 1 volt? Calculate the amount of work done in shifting a charge of 2 coulombs from a point A to B having potential difference of 15 volt.

SECTION-B

22. When a student added zinc granules to dilute HCl, a colourless and odourless gas was evolved, which was then tested with a burning matchstick; what would be observed?

23. During an experiment, Amit observed that blue colour of aqueous copper sulphate solution changed to pale green by immersing a metallic rod for some time.

(a) Which metallic rod Amit might have immersed in the solution and what colour would be observed on the rod?

(b) Mention the type of reaction in this case.

24. Ravi followed the following procedure for staining the temporary mount of leaf peel on the slide.

(a) To put a single drop of stain on leaf peel and wash it with water.

(b) Cover the leaf peel with cover slip.

(c) To put a single drop of glycerine on leaf peel.

(d) Observe the slide under microscope.

But the steps are not in order. What should be the correct sequence?

25. How can you distinguish between plane mirror, a concave mirror and convex mirror without touching them?

26. What happens when a) Planaria gets cut into two pieces?

b) A mature spirogyra filament attains considerable lengths?

27. In a voltmeter there are 20 divisions between the 0 mark and 0.5 V mark. Calculate the least count of the voltmeter.

MARKING SCHEME

1. Butane, $C_4 H_{10}$

2. Plastic, paper, glass, metal (Any two)

3. Substance oxidized : HCl

Substance reduced : MnO_2

Oxidising agent : MnO_2

Reducing agent : HCl

4. (a) Alloys are stronger and harder than the constituent metals.

(b) Alloys are more resistant to corrosion

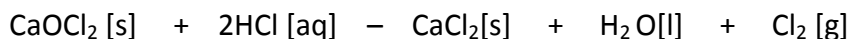
(c) Alloys have lower melting point than the constituents' metals.

(d) Alloys have lower electrical conductivity than pure metals.

5. The crystalline lens of people at old age becomes milky and cloudy. This condition is called cataract.

It is possible to restore vision through a cataract surgery.

6. [a] Calcium chloride and chlorine gas are formed.



Bleaching powder

calcium chloride

9 a)

Cerebrum	Cerebellum
It is the largest and highly developed and prominent part of the brain	It is the second largest part of the brain and lies at posterior part of brain
It is the controlling centre for senses responsible for memory and intelligence	It controls the skeletal muscle activities and maintains equilibrium of body.

(b) Spinal nerves arise from spinal cord and cranial nerves arise from

10.(a) Chromosomes have DNA that is responsible for biological characters.

(b) Sex determination

11. Real and inverted image is formed on retina.

Retina has light sensitive cells. When light falls on them, these receptors get activated and electric signals are generated. These signals are sent to brain for interpretation via optic nerve.

12. (a) In a series combination, if one lamp breaks other lamp stop to glow.

(b) In a parallel combination if one lamp breaks the other lamps glow normally

13.-Take a battery (12 V), a variable resistance (or a rheostat), an ammeter (0-5 A), a plug key, and a long straight thick copper wire

- Insert the thick wire through the centre, normal to the plane of a rectangular cardboard. Take care that the cardboard is fixed and does not slide up or down.

- Connect the copper wire in series with the battery, a plug and a key is shown in the figure.

- Sprinkle some iron filings uniformly on the cardboard. (You may use a salt sprinkler for this purpose)

- Keep the variable of the rheostat at a fixed position and note the current through the ammeter.

- Close the key so that a current flows through the wire. Ensure that the copper wire remains vertically straight.

Gently tap the cardboard a few times. Observe the pattern of the iron filings. You find that the iron filings align themselves showing pattern of concentric circles around the copper wires

Magnetic needle placed at a point gets deflected from NS direction. Deflection increases as current is increased.

OR

a) North pole to South Pole

- b) The strength of magnetic field is higher in this region
- c) A C voltage can be stepped up and transmitted over long distances without much loss of energy.

- 14 a) Farmers can produce clean domestic fuel from the wastes like animal dung, dry leaves, dry plants etc
- b) Spent slurry can be used in the fields as manure to increase the fertility of the soil.
- c) Biogas can be used to generate electricity which can be utilized to run modern machines used in the fields to save time and energy.

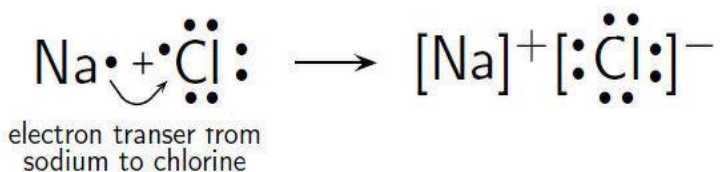
15.(a) They release CFCs that depleted ozone layer.

(b) Green plants are our green lungs; water purifying systems (or any other).

(c) Yes, they are trying to protect the environment.

(d) Food chain is disrupted and drastic climatic changes occur. Major part of biotic component is lost.

16. Most reactive metals are Na (sodium) and K (potassium)

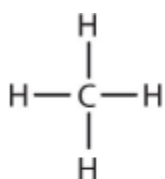


Physical properties

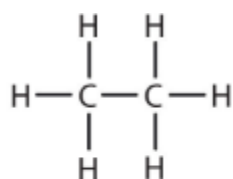
- (a) Physical Nature: Hard and solid due to strong attractive forces between oppositely charged ions.
- (b) High melting point and boiling point because more amount of energy is required to break strong force of attraction.

17. (a) Compounds of carbon and hydrogen are called hydrocarbons . Examples, methane ethane etc.

(b)Saturated hydrocarbons contain carbon-carbon single bond. Unsaturated hydrocarbons contain at least one carbon-carbon double or triple bond



Methane



Ethane



Ethylene



acetylene

(c) Functional group- An atom/ Group of atoms joined in a specific manner which is responsible for the characteristics chemical properties of the organic compounds. Example are hydroxyl group (-OH), aldehyde group (-CHO), carboxylic group (COOH), etc.

OR

Soap molecules have two ends-at one end is the hydrocarbon chain which is water repellent, whereas the other end there is the ionic part which is the water soluble end. When soap is dissolved in water it forms a group of many molecules that are known as micelle.

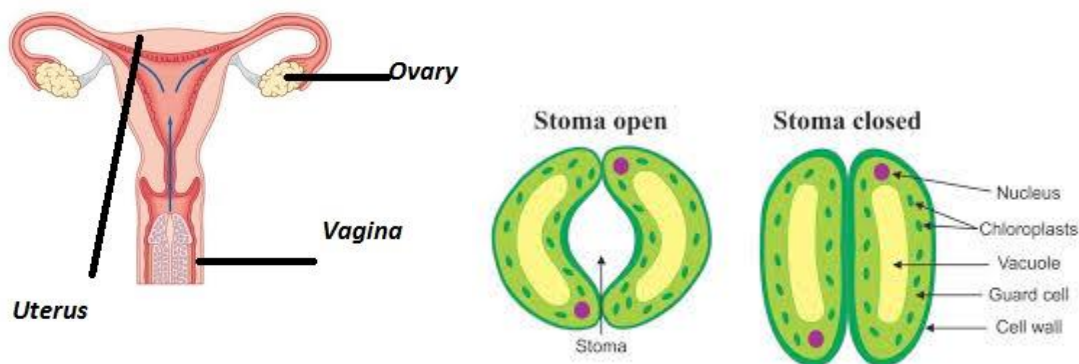
These micelle are formed because their hydrocarbon chains come together and the polar ends are projected outwards.

Micelle formation in ethanol will not occur because the hydrocarbon chain end of the soap will dissolve in ethanol.

Soaps in the form of micelle are able to clean dirty clothes having oily spots, as the oily dirt is collected in the center of micelle, which forms an emulsion in water and on rinsing the water washes away the micelle with the dirt attached to them.

18 (a) Xylem tissue might have blocked. Xylem is water conducting tissue of plants, vessels and tracheids transport raw materials (water and minerals).

(b) The opening and closing of the stomata is influenced by movement of water in the guard cells. When water moves in the guard cells, it swells up and stretches to cause stomatal pore to open. When water out of the guard cells they shrink and their inner walls come closer, stomatal pores close.



Laws of reflection of light:

First law: The incident ray, the refracted ray, and the normal at the point of incidence all lie in the same plane.

Second law [Snell's law]: the ratio of sine of angle of incidence to the sine of angle of refraction is a constant for a given pair of media. i.e., $\sin i / \sin r = \text{constant}$

Refractive index of medium, $u = \text{speed of light in air} / \text{speed of light in medium}$

$$u = 3 \times 10^8 / 2 \times 10^8 = 1.5$$

21. An electric circuit is the path through which electric current flows.

Electric cell or electric battery or electric generator help to maintain potential difference across a conductor in a circuit.

One volt is the potential difference two points in a current carrying conductor when joule of work is done to move a charge of 1 coulomb from one point to other.

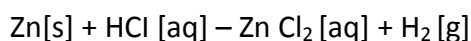
Given, charge, $q = 2$ coulombs

Potential difference, $v = 15$ v Work done, $W = ?$

$$W = V \times Q = 15 \times 2 = 30 \text{ J.}$$

SECTION – B

22. On adding zinc granules to dilute HCl / hydrogen gas is evolved which burns with a pop sound.



23. [a] Amit immersed iron rod in the solution. Reddish brown colour of copper would be observed on the rod.

[b] Displacement reaction

24. a ,c b, d The correct sequence

25. By observing the virtual images formed by three mirrors

i) plane mirror will produce an image of the same size.

ii) Concave mirror will produce a magnified image and

iii) convex mirror will produce a diminished image

26.a) Each piece regenerates into a new planaria.

b) Its filaments break into smaller pieces or fragments gives rise in a new filament.

27. Range of voltmeter, $V_R = 0.5$ V , Number of divisions in voltmeter, $V_N = 20$

Least count of voltmeter = $V_R / V_N = 0.5/20 = 0.025$ V

PRACTICE PAPER – II

BLUE PRINT

S.No	Name of the Chapter	1 VSA	2 SA-I	3 SA-2	5 LA	Number of questions	Total Marks
1.	Chemical Reactions and Equations		1(2)	1(3)		2	5
2.	Acids Bases and Salts			1(3)		1	3
3.	Metals and Non-Metals				1(5)	1	5
4.	Carbon And Its Compounds				1(5)	1	5
5.	Periodic Classification of Elements			1(3)		1	3
6.	Electricity				1(5)	1	5
7.	Magnetic Effects of Electric Current			2(3)		2	6
8.	Light Reflection and Refraction				1(5)	1	5
9.	Human Eye and the Colourful World		1(2)	1(3)		2	5
10.	Life Processes				1(5)	1	5
11.	Control and Coordination		1(2)	1(3)		2	5
12.	How do Living Organisms Reproduce?				1(5)	1	5
13.	Heredity and Evolution	1(1)		1(3)		2	4
14.	Sources of Energy			1(3)		1	3
15.	Our Environment			1(3)		1	3
16.	Management of Natural Resources	1(1)				1	1
	Theory Total	2(1)	3(2)	10(3)	6(5)	21	68
9.	Practical Based Questions		6(2)			6	12
	Total						80

SCIENCE
PRACTICE PAPER II

Time: 3 hours

Max Marks: 80

General Instructions:

1. *The question paper comprises of two sections, A and B and all questions are compulsory.*
2. *There is no overall choice. All questions of section A and B are to be attempted separately.*
3. *Questions 1 & 2 in section A are one mark questions. These are to be answered in one word or one sentence.*
4. *Questions 3 to 5 in section A are two marks questions. These are to be answered in about 30 words each.*
5. *Questions 6 to 15 in section A are three marks questions. These are to be answered in about 50 words each.*
6. *Question no. 14 is a value based question of 3 marks.*
7. *Questions 16 to 21 in section A are five marks questions. These are to be answered in about 70 words each.*
8. *Questions 22 to 27 in section B are on practical based questions. Each question is of two marks.*
9. *Questions 13 and 17 in section A have internal choice; answer only one of the two options given for those particular questions only.*

SECTION – A

(1X2=2)

1. Why are acquired characters not passed on to the next generation?
2. Name the gas produced when coal is burnt in insufficient amount of oxygen.

(2X3=6)

3. Give an equation for a redox reaction. Identify the substances getting oxidised and reduced.
4. Differentiate between sensory and motor nerve.
5. Give reasons for the following-
 - (a) Sky appears dark instead of blue to an astronaut in space.
 - (b) Planets do not twinkle

(3X10=30)

6. How does oxidation affect the metals and fats? What are they called? How can it be prevented?
7. Give the chlor-alkali reaction. Name the gases evolved at the cathode and anode and state one use of each of the gases.
8. (a) State the Modern Periodic law.
(b) How were the anomalies of Mendeleev's classification made into order, in the modern periodic table ?

(c) What are metalloids?

9. What are magnetic field lines? List two of their properties.

10. On what principle does a motor work on? Draw a neat labelled diagram of an motor?

11. What is hypermetropia? What are its causes? How can it get corrected?

Explain with the help of diagram showing hypermetropic eye and its correction using appropriate lens.

12. Plants show response to stimulus by either moving or by growing towards or away from the stimulus. What are these responses called how they are different from each other? Give an example of each.

13. A round and yellow seeded plant (RRYY), is crossed to a wrinkled and green seeded plant (rryy). Find out the phenotypes and genotypes of F₁ and F₂ generation with a cross.

OR

How is the sex of the child in the human determined?

14. Seema is a student of class X. She read in her textbook that certain compounds used as refrigerants and in the deodorants are harmful to the ozone layer. She got concerned as she knew about the importance of the ozone layer in the atmosphere. She also talked to her teacher about her interest in spreading awareness about ozone depletion. Now answer the following questions:

(a) Write the full form of the compounds which harm the ozone layer.

(b) Mention the function of the ozone layer.

(c) How can Seema spread awareness about the ozone layer in her school? Mention any two activities that may help her in doing so.

15. What are the factors that should be taken into consideration for selecting a good source of energy? List any three.

(5X6=30)

16. (i) What is roasting?

(ii) Why does gallium melt when kept on the palm?

(iii) What are the constituents of brass and bronze?

(iv) Why does calcium float when it reacts with water?

(v) What is enrichment of ore?

17. (a) Differentiate between saturated and unsaturated hydrocarbons.

(b) Which of them will undergo substitution reaction? Give an example of a substitution.

(c) What happens when ethanol is heated in presence of acidified potassium dichromate? Also, give the chemical equation and name the compound that it forms.

OR

- (a) A compound X reacts with a compound Y and gives a sweet smelling compound Z in presence of an acid. Identify the compounds X, Y and Z. Write down chemical reaction involved.
- (b) What are vinegar, formalin and denatured alcohol?
- (c) Differentiate between soap and detergents.
18. (a) An object 1cm high produces a real image 2cm cm high when placed at distance of 15 cm from a convex lens. Calculate the position of the image and the magnification and also find the focal length of the lens
- (b) Define the term magnification for spherical mirror. Why is the magnification of plane mirror +1?
- 19.(a)State Ohm's law.
- (b) Define power and give its unit.
- (c) Two lamps, one rated 100 W at 220 volts and the other 80W at 220 volts are connected in parallel to a 220 V supply. What current is drawn from the supply line?
20. a) Name the part of the female body where fertilisation takes place in the human
- (b) Name a bacterial disease that is sexually transmitted.
- (c) What is placenta?
- (d)What is menarche and menopause?
- (e) Give an example of viviparous organism.
21. (a) Draw a neat labelled diagram of the human excretory system.
- (b) What is glycolysis?
- (c) What is the significance of mammals having a four chambered heart?

SECTION – B

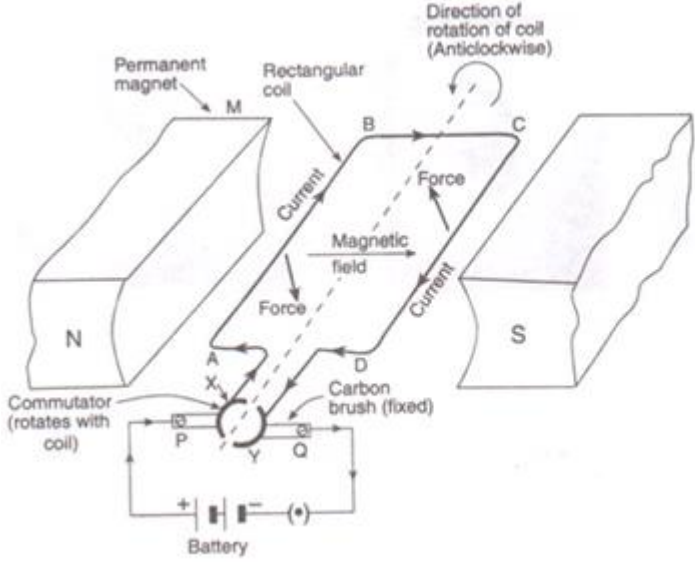
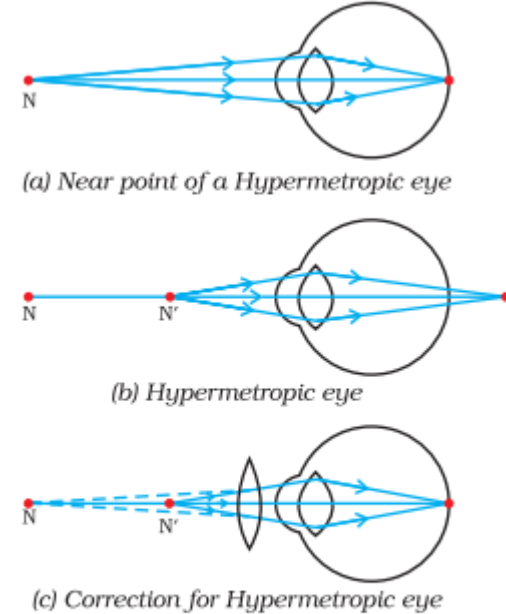
(2X6=12)

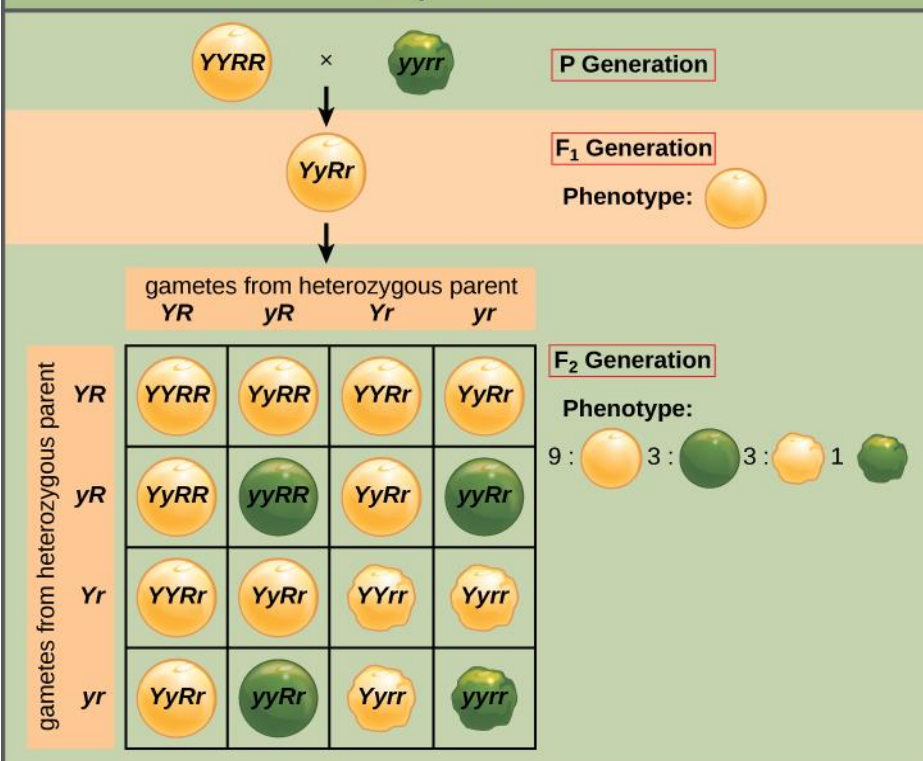
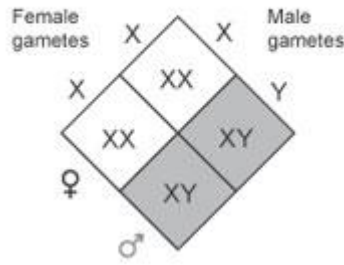
22. Draw a well-labelled diagram of a dicot seed with the embryo.
23. Why is it required to rub the magnesium ribbon with sandpaper before introducing it to the flame? What type of reaction is burning of magnesium classified under?
24. Draw circuit diagram showing three resistors 2Ω , 4Ω and 12Ω are connected in such a way that the resultant resistance is 5Ω .
25. You have to perform displacement reaction in the school laboratory to show zinc is more reactive than copper, name the aqueous solution required for this experiment. State the change in colour and give the chemical reaction involved.

26. Differentiate between aerobic and anaerobic respiration.
27. Draw a ray of light passing through a glass slab to show that the incident ray is parallel to the emergent ray and also show the lateral displacement.

MARKING SCHEME

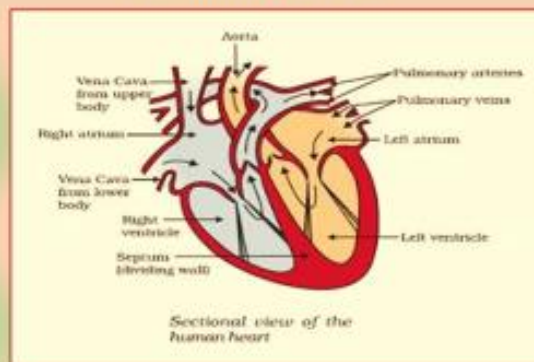
Q.NO	KEY POINTS	<u>MARKS</u>
1.	They are not incorporated the DNA.	1
2.	CO -carbon monoxide	1
3.	$ZnO + C \rightarrow Zn + CO$, ZnO is getting reduced, C is getting oxidised,	1 $\frac{1}{2}$, $\frac{1}{2}$
4.	Sensory nerves carry impulses from the receptors to the brain. Motor nerves carry impulses from the brain to effectors organ .	1 1
5.	(a)As there is no atmosphere the light does not get scattered. (b) light from stars can be considered as a beam of light that undergoes multiple refraction hence appears to flicker whereas planets are closer to us hence a bundle of light rays coming gets refracted indifferent direction hence the total effect gets nullified hence no twinkling of planets	1 1
6.	Metals react with the components of air and lose their lustre –Corrosion Prevention Painting, oiling, galvanizing, greasing Fats react with oxygen and becomes- rancid. Prevention Air tight containers, packaging with nitrogen gas .	1- $\frac{1}{2}$ 1- $\frac{1}{2}$
7.	$NaCl + H_2O \xrightarrow{\text{Electricity}} NaOH + H_2 + Cl_2$ H ₂ at cathode ,used for making fertilizers Cl ₂ at anode, used as disinfectant.	1 1 1
8.	(a) The properties of the elements are periodic function of their atomic number. (b)The elements were arranged according to their atomic number instead of atomic number. (c) Elements that have properties similar to metals and nonmetals.	1 1 1
9.	The imaginary lines around the magnet where its magnetics force is exerted . They are in closed curves. They never intersect each other.	1 1 1
10.	Motor works on the principle that when a current carrying conductor is placed within a magnetic field it experiences a force in a specific direction which is given by Flemings left hand rule.	1

	 <p>Motor Diagram</p>	2
11.	<p>Far sightedness A person having hypermetropia can see things that far clearly but cannot see nearby objects clearly. Causes focal length of lens is too long, eye ball become small Correction use of convex lens.</p>  <p>(a) Near point of a Hypermetropic eye</p> <p>(b) Hypermetropic eye</p> <p>(c) Correction for Hypermetropic eye</p> <p>Figure 11.3 (a), (b) The hypermetropic eye, and (c) correction for hypermetropia</p>	1 1 1
12.	<p>Movement –Nastic movement Growth –Tropic movement Nastic movement – Responses does not depend on direction of the</p>	1 1

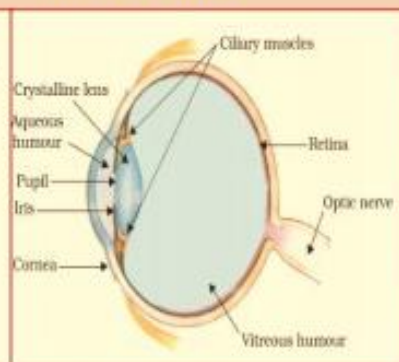
	<p>stimulus, it is usually in the reversible. Tropic movements -- Responses that are either towards or away from direction of the stimulus, it is usually in the irreversible as they involve growth.</p>	1
13.	<p style="text-align: center;">Dihybrid Cross</p>  <p style="text-align: center;">Dihybrid cross</p> <p style="text-align: center;">OR</p> <p>Female produces X-X Gametes Males produces X-Y Gametes</p> <p style="text-align: center;">Humans: XX-XY</p>  <p style="text-align: center;">50% female , 50% male offspring.</p>	<p style="text-align: center;">1</p> <p style="text-align: center;">All RrYy 1</p> <p style="text-align: center;">1</p> <p style="text-align: center;">1</p> <p style="text-align: center;">1 ½</p> <p style="text-align: center;">½</p>
14.	<p>(a)CFC chlorofluorocarbon, (b) it traps the harmful U V radiation coming from the sun (c) Create awareness about saving the ozone layer, not to use aerosol and foams and use –eco-friendly refrigerators that does not make use of CFC.</p>	<p style="text-align: center;">1</p> <p style="text-align: center;">1</p> <p style="text-align: center;">1</p>
15.	<p>(i) Should have high calorific value. (ii)Must not cause pollution, (iii) burn moderately without exploding</p>	

			1/2										
26.	<table border="1"> <thead> <tr> <th>Aerobic</th> <th>Anaerobic</th> </tr> </thead> <tbody> <tr> <td>(i) Takes place in presence of oxygen.</td> <td>(i) Takes place in absence of oxygen.</td> </tr> <tr> <td>(ii) Food is completely broken into CO₂ and water</td> <td>(ii) Food is broken into alcohol and CO₂.</td> </tr> <tr> <td>(iii) 38 ATP of energy is produced</td> <td>(iii) 2 ATP of energy is produced.</td> </tr> <tr> <td>(iv) Takes place in the mitochondria</td> <td>(iv) Takes place in the cytoplasm.</td> </tr> </tbody> </table>	Aerobic	Anaerobic	(i) Takes place in presence of oxygen.	(i) Takes place in absence of oxygen.	(ii) Food is completely broken into CO ₂ and water	(ii) Food is broken into alcohol and CO ₂ .	(iii) 38 ATP of energy is produced	(iii) 2 ATP of energy is produced.	(iv) Takes place in the mitochondria	(iv) Takes place in the cytoplasm.		Any 2x1=2
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27.	<p>Ray diagram of monochromatic light</p>												

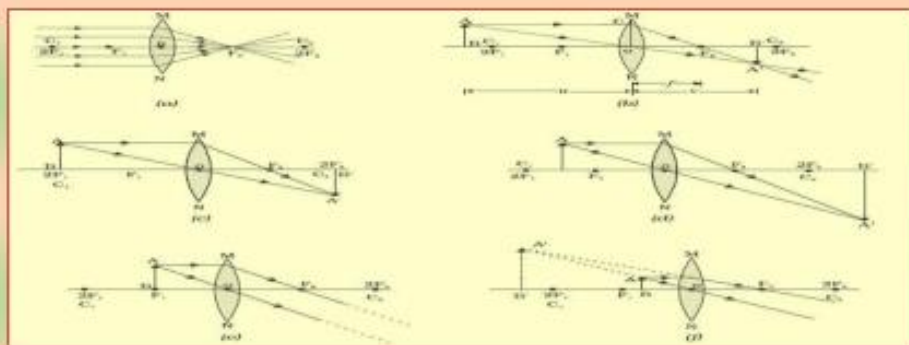
HUMAN HEART



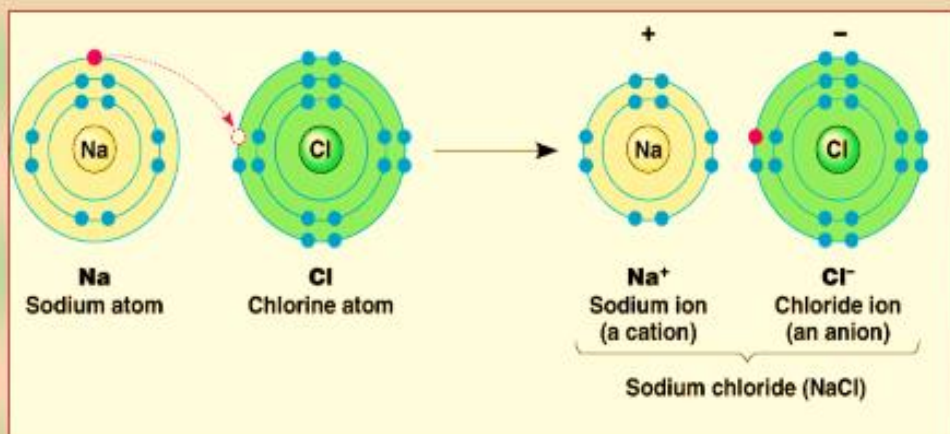
HUMAN EYE



NATURE, IMAGE AND ITS FORMATION (CONVEX LENS)



FORMATION OF NaCl



EXAMINATION TIPS

1. Set your goals. **WRITE YOUR TARGET FOR EACH SUBJECT**
2. Prepare a **study time table** of your own and **adhere to it strictly**.
3. If you are not performing up to your level in a particular subject, **do not postpone studying** for this subject at all.
4. Your plan has to **be realistic**. Do not stuff too many things in a day. Set aside some time in the day for relaxation like playing/ watching television/ listening to music.
5. **Avoid watching too much of television/ accessing internet/using mobiles during exams.**
6. **Practice by Writing**
Practice makes a man perfect. Hence practice writing in all the subjects to score better.
7. **Timing of Studying** - Choose your study timings.
8. **Drawing in Science**
Good drawings fetch you good marks. Practice drawings.
9. **Health is Wealth**
Take care of your health. Eat plenty of fruits and vegetables during your exams and drink plenty of water too.
10. **Revision – a Must**
Revising your lessons will clarify your doubts and boost your confidence.
11. **Prayer/Meditation**
Do devote at least 10 minutes for prayer/meditation as it helps in improving your confidence and concentration.
12. **Go for short Walks**
Take a short walk in the evenings to rejuvenate yourself.
13. **On the Exam Day**
 - * Do not cram till the last minute.
 - * Be ready to go to school well in advance.
 - * Check your compass box, pens, pencils, sharpeners, erasers, scales etc.
 - * 30 minutes prior to the commencement of the exam, close all your books and relax.
 - * While answering the questions, read the questions carefully and attempt the questions that you know first.
 - * Attempt all the questions.

PROMOTION POLICY FOR CLASS IX & X

It is mandatory for students to appear in both the Summative Assessments (SA1 and SA2) and score a minimum of 25% marks in the aggregate of these assessments along with 33% overall marks for qualifying to the next higher class

