KENDRIYA VIDYALAYA SANGATHAN,
RAIPUR REGION

CLASS-X
SCIENCE(086)

(STUDY CAPSULE)

VOL-II

SESSION-2025-26

तत् त्वं पूषन् अपावृणु
केन्द्रीय विद्यालय संगठन

SESSION-2025-26

KENDRIYA VIDYALAYA SANGATHAN, RAIPUR REGION

OUR MENTORS

Mrs. P.B.S.USHA

Deputy Commissioner
Kendriya Vidyalaya Sangathan,
Regional Office, Raipur

Shri. Vivek Kumar Chauhan
Assistant Commissioner
Kendriya Vidyalaya Sangathan,
Regional Office, Raipur

Shri. Ravindra Kumar,
Assistant Commissioner
Kendriya Vidyalaya Sangathan,
Regional Office, Raipur

COURSE COORDINATOR

Mrs. Bhubneshwari

Principal, K.V.,C.I.S.F,
Utai, Bhilai, Dist.-Durg(C.G.)

RESOURCE PERSON

1. Mrs. Juhi Chakraborty, TGT(Science), K.V.Bilaspur
2. Mrs. Sunita Minj, TGT(Science), K.V.Raipur NO.-01

VETTED BY:

1.Subir kumar Sinha, PGT(Bio), PM Shri K.V.Jnajgir
2.Manoj Posham, PGT(Bio), K.V.Kawardha
3.Swati Singh, TGT(Science), K.V.Raigarh
4.Anurudh Singh, TGT(Science), K.V.Kirandul
5. Ashok Kushwaha, TGT(Science), K.V.Jhagrakhand

CONTENT DEVELOPER TEAM FOR VOL-II (2025-26)

S.NO.	CHAPTER'S NAME	NAME OF TEACHER	NAME OF KENDRIYA VIDYALAYA
1.	**CHEMICAL REACTION AND EQUATION**	MANISHA	K.V. MAHASAMUND
2.	**ACIDS, BASES AND SALTS**	NISHA SINGH	K.V. JASHPUR
3.	**METALS AND NON METALS**	ANURUDH SINGH	K.V. KIRANDUL
4.	**LIFE PROCESSES**	RESHMA TOPPO & SWATI SINGH	K.V. KORBA NO.III (SECL) & K.V. RAIGARH
5.	**CARBON AND ITS COMPOUND**	B. A. LOKHANDE	K.V. SUKMA
6.	**CONTROL AND COORDINATION**	SNIGDHA KIRTANIA	K.V. RAIPUR NO.1 (S-I)
7.	**HOW DO ORGANISMS REPRODUCE?**	GEETA MALI	K.V. DURG
8.	**HEREDITY**	SUBIR KUMAR SINHA	K.V.JANJGIR
9.	**LIGHT REFLECTION & REFRACTION**	ASHISH VERMA	K.V. BIJAPUR
10.	**HUMAN EYE AND COLOURFUL WORLD**	RAKESH KUMAR	K.V. NARAYANPUR
11.	**ELECTRICITY**	A.K. KUSHWAHA	K.V. JHAGRAKHAND
12.	**OUR ENVIRONMENT**	KIRAN VISHWAKARMA	K.V. AMBIKAPUR
13.	**MAGNETIC EFFECTS OF ELECTRIC CURRENT**	GANESH RAM KAWADE	K.V. KURUD

INDEX

S.NO.		Page No.
	Message From Our Mentor Deputy Commissioner, KVS,Raipur Region	i
	Content Development team	ii
	Syllabus 2025-26	iii
	NAME OF CHAPTERS	
1.	**CHEMICAL REACTIONS AND EQUATIONS**	
2.	**ACIDS ,BASES AND SALTS**	
3.	**METALS AND NON-METALS**	
4.	**CARBON AND ITS COMPOUNDS**	
5.	**LIFE PROCESSES**	
6.	**CONTROL AND COORDINATION**	
7.	**HOW DO ORGANISMS REPRODUCE**	
8.	**HEREDITY**	
9.	**LIGHT: REFLECTION AND REFRACTION**	
10.	**THE HUMAN EYE AND THE COLOURFUL WORLD**	
11.	**ELECTRICITY**	
12.	**MAGNETIC EFFECTS OF ELECTRIC CURRENT**	
13.	**OUR ENVIRONMENT.**	
	WORKSHEETS	
	Worksheets of ALL CHAPTERS	
	MIND MAPS	
	Mind Maps of All Chapters	
	CBSE Q. PAPERS/PREVIOUS YEARS QUESTIONS	
	PREVIOUS YEARS QUESTION PAPERS SCIENCE (O86) (2024-25)	

COURSE STRUCTURE

SCIENCE(086)

CLASS X (2025-26)

(Annual Examination)

Time: 03 Hours **Marks: 80**

Unit No.	Unit	Marks
I	Chemical Substances-Nature and Behaviour	25
II	World of Living	25
III	Natural Phenomena	12
IV	Effects of Current	13
V	Natural Resources	05
	Total	**80**
	Internal assessment	**20**
	Grand Total	**100**

Theme: Materials

Unit I: Chemical Substances - Nature and Behaviour

Chemical Reactions and Equations: Chemical reactions, Chemical equation, Balanced **chemical equation, types of chemical reactions: combination, decomposition, displacement, double displacement, precipitation, endothermic exothermic reactions, oxidation and reduction.**

Acids, Bases and Salts: Acids and Bases – definitions in terms of furnishing of H+ and OH– ions, identification using indicators, chemical properties, examples and uses, neutralization, 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 Non-metals: Properties of metals and non-metals; Reactivity series; Formation and properties of ionic compounds; Basic metallurgical processes; Corrosion and its prevention.

Carbon and its Compounds: Covalent bonds – formation and properties of covalent compounds, Versatile nature of carbon, Hydrocarbons – saturated and unsaturated Homologous series. Nomenclature of alkanes, alkenes, alkyne and carbon compounds containing functional groups (halogens, alcohol, ketones, aldehydes). Chemical properties of carbon compounds (combustion, oxidation, addition and substitution reaction). Ethanol and Ethanoic acid (only properties and uses), soaps anddetergents.

Theme: The World of the Living

Unit II: World of Living

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

Control and co-ordination in animals and plants: Tropic 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.

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 (Derivationnot required); Magnification. Power of a lens.

Functioning of a lens in human eye, defects of vision and their corrections, applications ofspherical mirrors and lenses.

Refraction of light through a prism, dispersion of light, scattering of light, applications in daily life (excluding colour of the sun at sunrise and sunset).

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, Direct current. Alternating current: frequency of AC. Advantage of AC over DC. Domestic electric circuits.

Theme: Natural Resources

Unit V: Natural Resources

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

Note for the Teachers:

The NCERT text books present information in boxes across the book. These help students to get conceptual clarity. However, the information in these boxes would not be assessed in the year-end examination.

PRACTICALS

Practical should be conducted alongside the concepts taught in theory classes. LIST OF EXPERIMENTS

1. A. Finding the pH of the following samples by using pH paper/universal indicator: **Unit-I**

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

B. Studying the properties of acids and bases (HCl & NaOH) on the basis of their reaction with: **Unit-I**

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

2. Performing and observing the following reactions and classifying them into: **Unit-I**

a) Combination reaction
b) Decomposition reaction
c) Displacement reaction
d) Double displacement reaction

- Action of water on quicklime
- Action of heat on ferrous sulphate crystals
- Iron nails kept in copper sulphate solution
- Reaction between sodium sulphate and barium chloride solutions

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

Unit-I

a) $ZnSO_4$ (aq)
b) $FeSO_4$ (aq)
c) $CuSO_4$ (aq)
d) $Al_2 (SO_4)_3$ (aq)

Arranging Zn, Fe, Cu and Al (metals) in the decreasing order of reactivity based on theabove 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.** **Unit-IV**

5. Determination of the equivalent resistance of two resistors when connected in series and parallel. **Unit-IV**

6. Preparing a temporary mount of a leaf peel to show stomata. **Unit- II**

7. Experimentally show that carbon dioxide is given out during respiration. **Unit-II**

8. Study of the following properties of acetic acid (ethanoic acid): **Unit- I**

a) Odour
b) solubility in water
c) effect on litmus
d) reaction with Sodium Hydrogen Carbonate

9. Study of the comparative cleaning capacity of a sample of soap in soft and hard water. **Unit- I**

10. Determination of the focal length of: **Unit-III**

a) Concave mirror
b) 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 andinterpret the result. **Unit - III**

12. Studying (a) binary fission in *Amoeba,* and (b) budding in yeast and Hydra with the help of prepared slides. **Unit-II**

13. Tracing the path of the rays of light through a glass prism. **Unit-III**

14. Identification of the different parts of an embryo of a dicot seed (pea, gram or red kidney bean). **Unit-II**

Question Paper Design (Theory)

Class X (2025-26)

Science (086)

Theory (80 marks)

Competencies	**Total**
Demonstrate Knowledge and Understanding	50 %
Application of Knowledge/Concepts	30 %
Formulate, Analyze, Evaluate and Create	20 %

Note:

- Typology of Questions: VSA including objective type questions, Assertion – Reasoning type questions; SA; LA; Source-based/ Case-based/ Passage-based/ Integrated assessment questions.
- An internal choice of approximately 33% would be provided.

Internal Assessment (20 Marks)

- **Periodic Assessment** - 05 marks + 05 marks
- **Subject Enrichment** (Practical Work) - 05 marks
- **Portfolio** - 05 marks

Suggestive verbs for various competencies

- **Demonstrate Knowledge and Understanding**

  State, name, list, identify, define, suggest, describe, outline, summarize, etc.

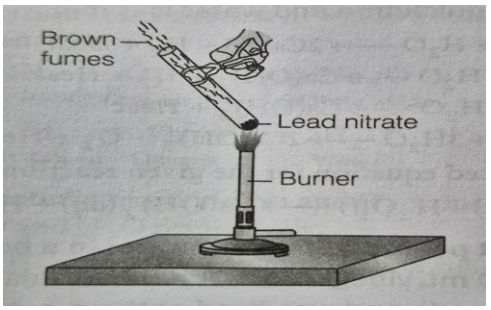
- Application of Knowledge/Concepts

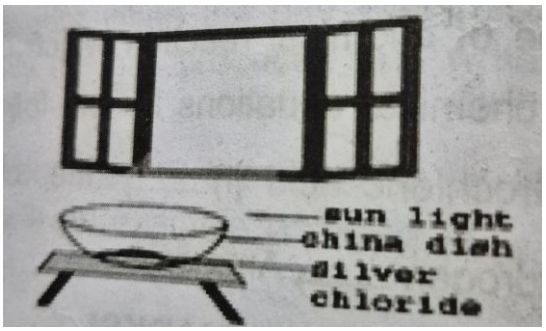
  Calculate, illustrate, show, adapt, explain, distinguish, etc.

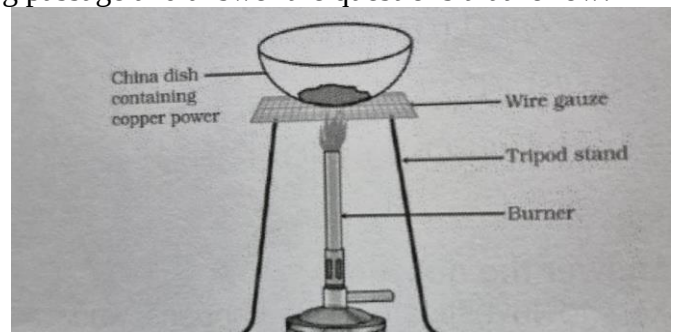
- Formulate, Analyze, Evaluate and Create,Interpret, analyze, compare, contrast, examine, evaluate, discuss, construct, etc.

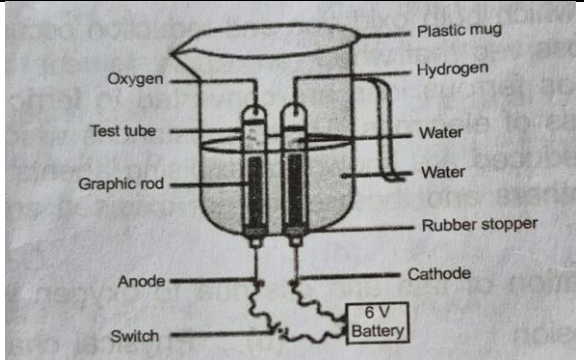
CHAPTER -1- CHEMICLAL REACTIONS AND EQUATIONS

VOLUME – 2

Q. NO.	QUESTIONS
	MULTIPLE CHOICE QUESTIONS(1 MARKS)
1.	The chemical reaction between quicklime and water is characterized by: (a) evolution of hydrogen gas (b) formation of slaked lime precipitate (c) change in temperature of mixture (d) change in colour of the product
2.	An iron nail is dipped into a blue copper sulphate solution. After some time, the solution turns pale green, and the nail gets a reddish layer. What is the correct observation? A) It is a double displacement reaction B) Iron is less reactive than copper C) Iron displaces copper from copper sulphate D) Copper dissolves iron
3.	A white precipitate forms when two colorless solutions are mixed. This is an example of: A) Combination reaction B) Decomposition reaction C) Precipitation reaction D) Redox reaction
4.	In which one of the following situations a chemical reaction does not occur? (a) Milk is left open at room temperature during summer. (b) Grapes get fermented. (c) An iron nail is left exposed to humid atmosphere. (d) Melting of glaciers.
5.	The emission of brown fumes in the given experimental set-up is due to.  (a) thermal decomposition of lead nitrate which produces brown fumes of nitrogen dioxide (b) thermal decomposition of lead nitrate which produces brown fumes of lead oxide (c) oxidation of lead nitrate forming lead oxide and nitrogen dioxide (d) oxidation of lead nitrate forming lead oxide and oxygen
6.	To balance the following chemical equation the values of x and y should respectively be $2\ NaOH + XAl_2O_3 \rightarrow {}_yNaAlO_2 + H_2O$ (a) 1, 4 (b) 1, 2 (c) 2, 4 (d) 2, 3
7.	$MnO_2 + XHCI \rightarrow MnCl_2 + y\ H_2O + zCl_2$ In order to balance the above chemical equation, the values of x, y and z respectively are (a) 6, 2, 2 (b) 4, 1, 2 (c) 4, 2, 1 (d) 2, 2, 1

8.	On placing a copper coin in a test tube containing green ferrous sulphate solution, it will be observed that the ferrous sulphate solution: (a) turns blue, and a grey substance is deposited on the copper coin. (b) turns colourless and a grey substance is deposited on the copper coin. (c) turns colourless and a reddish-brown substance is deposited on the copper coin. (d) remains green with no change in the copper coin
9.	The process of respiration during which breakdown of glucose occurs to produce carbon di oxide and energy is a type of: (a) Exothermic process (b) Reversible process (c) Physical process (d) Endothermic process
10.	Mehul took some silver iodide in a china dish and exposed it to light. He observed photolytic decomposition of the reactant. What will be the colour of lodine produced in the reaction? $2AgI(s) \rightarrow 2Ag(s) + I_2(g)$ (a) Grey (c) Black (b) Yellow (d) Purple
	Assertion-Reasoning Question (1 Mark) **Out Of the following statements, mark the correct answer** **(a) Both Assertion and Reason are True and Reason is the correct explanation of the Assertion.** **(b) Both Assertion and Reason are True but Reason is not the Correct explanation of the Assertion.** **(c) Assertion is True but the Reason is False.** **(d) Assertion is false but Reason is true**
11.	Assertion : Silver chloride turns grey in sunlight. Reason : Silver is one of the least reactive metals.
12.	Assertion(A): Chips manufacturers usually flush bags of chips with oxygen to prevent chips from getting oxidized Reason(R): Use of antioxidants prevents rancidity
	VERY SHORT ANSWER QUESTION (2 MARKS)
13.	Why do fire flies glow in the dark?
14.	A metal salt MX on exposure to light split to form metal M and a gas X2. The gas so produced is used in making bleaching powder. The salt MX is itself used in black and white photography.  (i) Identify metal M and gas X_2 (ii) Mention the type of chemical reaction involved when salt MX is exposed to light.
15.	A substance X which is an oxide of the element having atomic number 20 is used in cement factory. The element is an important component of bones also On treatment with water it forms a solution which turns red litmus to blue Identify X and also write the chemical reaction involved.
16.	Zinc liberates hydrogen gas when reacted with dilute hydrochloric acid whereas on adding copper metal to hydrochloric acid no reaction is observed. Justify.

17.	Two-gram ferrous sulphate crystals are heated in a dry test tube. (a) List two observations (b) Name the type of chemical reaction which occurs in this case.
	SHORT ANSWER QUESTION (3 MARKS)
18.	Silver article turns black when it is exposed to air for a few days. It can be cleaned with toothpaste and the silver article regains its shine. a) Why do silver articles turn black? b) Identify the black substance formed c) Give the chemical formula of the black substance formed.
19.	Complete the missing components/variables given as x and y in the following reactions: (a) $2Pb(NO_3)2(s) \rightarrow xPbO(s) + yNO_2(g) + O_2(g)$. (b) $Fe_2O_3(s) + xAl(s) \rightarrow Al_2O_3(s) + yFe(I)$ (c) $4NH_3 + XO_2 \rightarrow 4NO + YH_2O$
20.	Maahi mixed quick lime and water: (a) Give the chemical formula and the chemical name of quick lime. (b) Give the balance equation for the above-mentioned reaction (c) Is it a combination reaction or decomposition reaction? Give reason.
21.	State the type of chemical reaction with chemical equation that take place in the following: (a) Magnesium ribbon is burned in air (b) Electric current is passed through water (c) Ammonia and hydrogen chloride gas is mixed
22.	A person wanted his house to be white washed. He bought 10 kg of quick lime from the market and dissolved in 30 L of water. On adding lime to water he noticed that the water started boiling even when it was not heated. Give reason for his observation. Write the corresponding equation and name the product formed.
	CASE BASED QUESTION (4 MARKS)
23.	I. Read the following passage and answer the questions that follow:  Redox reactions are an important class of reactions. The oxidation and reduction reactions occur simultaneously in a redox reaction. The activity in which copper powder is taken in a china dish and heated helps in understanding redox reaction. 1. Observe the given figure and write what happens when copper powder is heated in a China dish. 2. Mention your observation if hydrogen gas is passed over the heated material obtained in the above reaction? 3. Identify the substance oxidised and the substance reduced in the reaction in 2nd case given above. Write the chemical reaction for this 2 case.
24.	Tejaswini took a plastic mug having two rubber stoppers fitted in it. She then inserted two carbon electrodes in these rubber stoppers and connected these electrodes to a battery. She filled the mug with water and added a fewdrops of sulphuric acid to it and inverted two test tubes over the carbon electrodes. Then electricity is allowed to pass through the solution and the apparatus was left undisturbed for some time.

	 (i) Which electrodes are used in the above-mentioned experiment? (ii) Oxygen is collected at which electrode? (iii) Name the gas which is produced in more quantity and name the type of chemical reaction.
	LONG ANSWER TYPE QUESTIONS (5 MARKS)
25.	A student took blue colored powder of copper (II) nitrate in a test tube and started heating it using a Bunsen burner. When copper nitrate is heated, it loses the water molecule, and then when it is further heated, it decomposes further to give. A black colored copper oxide (black), a brownish and a colorless gas is produced (a) Write the balanced chemical equation of the chemical change mentioned above. (b) Name the type of reaction. Identify the brown gas X evolved. (c)If a moist blue litmus paper is brought near the mouth of the test tube in presence of gas X What will be observed?
26.	What is meant by skeletal type chemical equation? What does it represent? Using the equation for burning of magnesium ribbon, differentiate between a skeletal chemical equation and a balanced chemical equation.
27.	What is corrosion of iron called ? How will you recognise the corrosion of silver? Why corrosion of iron is a serious problem.

ANSWER KEY

MULTIPLE CHOICE QUESTIONS (1 MARKS)

1.c
2.Answer: C) Iron displaces copper from copper sulphate
3.Answer: C) Precipitation reaction
4.Ans :(d) Melting of glaciers
5. (a) Heating of lead nitrate is a decomposition reaction. The reaction takes place as, $2Pb(NO_3)_2$—-> $2PbO+4NO_2+O_2$ The brown fumes is due to nitrogen dioxide.
6. (b) The balanced chemical equation is $2NaOH + Al_2O_3 \rightarrow 2NaAlO_2 + H_2O$ Hence, the value of x and y respectively are 1 and 2.
7. (c) Balanced equation is $MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + Cl_2$ Hence, the values of x, y and z are 4, 2, 1 respectively.
8. Option (D) is correct
9.(a)
10.(d)

ASSERTION-REASONING TYPE QUESTION (1 MARK)

11. Ans :(a) Both Assertion and Reason are True but Reason is not the Correct explanation of the Assertion.
12.Ans :(d) Assertion is false and Reason is true.

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

13.Fire flies have a special kind of substance that is luciferin then undergoes oxidation in the presence of air and an enzyme. This reaction is accompanied by emission of light. Therefore they glow at night.

14. (i) M- silver (Ag), X_2-Chlorine gas
(ii) $2AgCl(s)$ $2Ag(s) + Cl_2(g)$

15. X-Calcium oxide (CaO), Quick lime $CaO(s) + H_2O(I) \rightarrow Ca(OH)_2$

16. Zinc is above hydrogen in reactivity series hence displaces hydrogen from it. But Copper is below hydrogen in reactivity series so does not displace zinc hence no reaction is observed.

17. (a) Green coloured iron sulphate crystals turn colourless and reddish brown iron oxide is formed
(b) Thermal decomposition

SHORT ANSWER TYPE QUESTIONS (3 MARKS)

18. (a) Due to corrosion on exposure to hydrogen sulphide
(b) Silver sulphide
(c) Ag2s

19. (a) $2Pb(NO_3)(s) \text{-----} > 2PbO(s) + 4NO_2(g) + O_2(g)$
(b) $Fe_2O_3(s) + 2Al(s) \text{------} > Al_2O_3(s) + 2Fe(l)$
(c) $4NH_3 + 5O_2 \text{—} > 4NO + 6H_2$

20. (a) CaO, Calcium oxide
(b) $CaO(s) + H_2O(l) \rightarrow Ca(OH)_2(aq)$
(c) Combination reaction as two reactants combine to form a single product

21.(a) $2Mg + O_2 \text{ -> } 2MgO$
(b) $2H_2O \text{—} > 2H_2 + O_2$
(c) $NH_3 + HCl \rightarrow NH_4Cl$

22. It is an exothermic reaction $CaO + H_2O \rightarrow Ca(OH)_2$
Calcium hydroxide (slaked lime)

CASE STUDY BASED QUESTION (4 MARKS)

23. 1. When copper powder is heated in the presence of oxygen, it reacts with oxygen to form copper oxide. The copper oxide is black in colour. It is formed due to due to oxidation of copper.
Chemical equation-2Cu + O2 → 2CuO
2. Reverse reaction occurs and black colour changes to brown again.
3. Substance oxidised -H2
Substance reduced CuO
CuO + H2 —>Cu + H2O

24. i) (b) Graphite
(ii) (b) anode
(iii) (a)hydrogen and the reaction is decomposition reaction

LONG ANSWER TYPE QUESTIONS (5 MARKS)

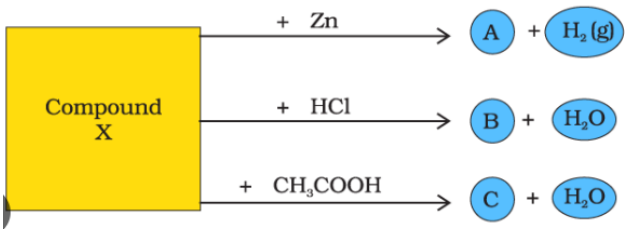
25. (a) $2Cu(NO_3)2\ (s) \text{—} > 2CuO(s) + 4NO_2(g) + O_2\ (g)$,
(b)It is a type of thermal , decomposition reaction.
The brown gas X is nitrogen dioxide, NO_2
(c) Acidic in nature.

26. Skeletal Equations are the equations in which there is only chemical formula of reactants and products but no state mentioned and no balancing of atoms on either side of Equation done.
(a) Mg + O2→ MgO, it is a skeletal equation. Here, the only thing mentioned is the chemical formula of reactant and product and the equation is not balanced.
(b) Balanced chemical equation 2Mg(s) + O2(g) →2MgO(s)

27. a. Rusting
b. Silver - black, copper-green.
c.It causes destruction of car bodies, bridges, railing, etc.
By Painting, alloying, greasing, etc.

	CHAPTER-2- ACIDS, BASE AND SALTS VOLUME - 2
Q.No.	**MULTIPLE CHOICE QUESTIONS**
1	In terms of acidic strength, which one of the following is in the correct increasing order? (a) Water < Acetic acid < Hydrochloric acid (b) Water < Hydrochloric acid < Acetic acid (c) Acetic acid < Water < Hydrochloric acid (d) Hydrochloric acid < Water < Acetic acid
2	When copper oxide and dilute hydrochloric acid react, colour changes to (a) white (b) bluish-green (c) blue-black (d) black
3.	Which of the following statements is correct about an aqueous solution of an acid and of a base? (i) Higher the pH, stronger the acid (ii) Higher the pH, weaker the acid (in) Lower the pH, stronger the base (iv) Lower the pH, weaker the base (a) (i) and (iii) (b) (ii) and (iii) (c) (i) and (iv) (d) (ii) and (iv)
4.	How many water molecules does hydrated calcium sulphate contain? (a) 5(b) 10(c) 7(d) 2
5.	An aqueous solution turns red litmus solution blue. Excess addition of which of the following solution would reverse the change? (a) Baking powder (b) Lime (c) Ammonium hydroxide solution (d) Hydrochloric acid
6.	Methyl orange is (a) Red in acidic medium, yellow in basic medium (b) Yellow in acidic medium, pink in basic medium (c) Colourless in acidic medium, pink in basic medium (d) Pink in acidic medium, colourless in basic medium
7.	'When hydrogen chloride gas is prepared on a humid day, the gas is usually passed through the guard tube containing calcium chloride. The role of calcium chloride taken in the guard tube is to (a) absorb the evolved gas (b) moisten the gas (c) absorb moisture from the gas (d) absorb Cl– ions from the evolved gas
8.	Sodium hydrogen carbonate, when added to acetic acid, evolves a gas. Which of the following statements are true about the gas evolved? (i) It turns lime water milky (ii) It extinguishes a burning splinter (iii) It dissolves in a solution of sodium hydroxide (iv) It has a pungent odour (a) (i) and (ii) (b) (i), (ii) and (iii)

	(c) (ii), (iii) and (iv) (d) (i) and (iv)
9.	Which of the following statements is not correct? (a) All metal carbonates react with acid to give a salt, water and carbon dioxide (b) All metal oxides react with water to give salt and acid (c) Some metals react with acids to give salt and hydrogen (d) Some non-metal oxides react with water to form an acid
10.	Identify the correct representation of reaction occurring during the chloralkali process (a) $2NaCl(l) + 2H_2O(l) \rightarrow 2NaOH(l) + Cl_2(g) + H_2(g)$ (b) $2NaCl(aq) + 2H_2O(aq) \rightarrow 2NaOH(aq) + Cl_2(g) + H_2(g)$ (c) $2NaCl(aq) + 2H_2O(l) \rightarrow 2NaOH(aq) + Cl_2(aq) + H_2(aq)$ (d) $2NaCl(aq) + 2H_2O(l) \rightarrow 2NaOH(aq) + Cl_2(g) + H_2(g)$
	Following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below: (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.
11	**Assertion (A):** During electrolysis of concentrated aqueous solution of sodium chloride, hydrogen is produced at anode and chlorine gas is produced at cathode. **Reason (R):** Ions get attracted to oppositely charged electrodes. **Answer: (d)**
12	**Assertion (A):** Higher the H ion concentration, lower is the pH value. **Reason (R):** The pH of a neutral solution=7, that of a basic solution < 7 and that of an acidic solution. **Answer: (c)**
	VERY SHORT ANSWER TYPE QUESTIONS
13	1 gram of solid sodium chloride was taken in a clean and dry test tube and concentrated sulphuric acid was added to it. (i) Name the gas evolved in the reaction. (ii) What will be observed when this gas is tested with (I) dry, and (II) wet blue litmus paper? Write your conclusion about the nature (acidic/basic) of this gas.
14	State in brief the preparation of washing soda from baking soda. Write balanced chemical equation of the reaction involved.
15	What is baking soda chemically called? Give reaction involved in its preparation. Write one of its uses.
16	What is the colour of $FeSO_4.7H_2O$ crystals? How does this colour change upon heating? Give balanced chemical equation for the changes.
17	A student dropped few pieces of marble in dilute HC1 contained in a test tube. The evolved gas was passed through lime water. (i) What change would be observed in lime water? (ii) Write balanced chemical equation for the above change
	SHORT ANSWER TYPE QUESTIONS
18	Metal compound A reacts with dilute hydrochloric acid to produce effervescence. The gas evolved extinguishes a burning candle. Write a balanced chemical equation for the reaction if one of the compounds formed is calcium chloride?
19	(a) Three acidic solutions A, B and C have p H = 0, 3 and 5 respectively. (i) Which solution has highest concentration of H+ ions? (ii) Which solution has the lowest concentration of H+ ions? (b) How concentrated sulphuric acid can be diluted? Describe the process

20	What is observed when carbon dioxide gas is passed through lime water (i) for a short duration? (ii) for a long duration? Also write the chemical equations for the reactions involved
21	Identify the compound X on the basis of the reactions given below. Also, write thename and chemical formulae of A, B and C 
22	A dry pellet of a common base B, when kept in the open absorbs moisture and turns sticky. The compound is also a by-product of the chloralkali process. Identify B. What type of reaction occurs when B is treated with an acidic oxide? Write a balanced chemical equation for one such solution.
	LONG ANSWER TYPE QUESTION (5 MARKS)
23	A metal carbonate X reacting with acid gives a gas which, when passed through asolution Y, gives the carbonate back. On the other hand, a gas G obtained at the anodeduring electrolysis of brine is passed on dry Y, and it gives a compound Z, used fordisinfecting drinking water. Identity X, Y, G and Z.
24	Consider the following salts: (i) yCI (ii) NH_4X (iii) ZCO_3 (a) What would be the pH of the salt solution if in yCI, y is sodium? Give a reason for your answer. (b) If in salt NH_4X, X is nitrate, then its solution will give what colour with a universal indicator? Why? (c) What would be the change in colour in a blue litmus solution if ZCO_3 is added to it and Z is potassium?
25	(i) What is an universal indicator? (ii)Why common indicators cannot determine pH value of a solution? (iii)What are bases and alkalies?
	CASE BASED QUESTIONS
26	The following questions are source-based/case-based questions. Read the case carefully and answer the questions that follow: Three metal samples of magnesium, aluminium and iron were taken and rubbed with sand paper. These samples were then put separately in test tubes containing dilute hydrochloric acid. Thermometers were also suspended in each test tube so that their bulbs dipped in the acid. The rate of formation of bubbles was observed. The above activity was repeated with dilute nitric acid and the observations were recorded. Answer the following questions: (a) When activity was done with dilute hydrochloric acid, then in which one of the test tubes was the rate of formation of bubbles the fastest and the thermometer showed the highest temperature? (b) Which metal did not react with dilute hydrochloric acid? Give reason. (c) (i) Why is hydrogen gas not evolved when a metal reacts with dilute nitric

	acid? Name the ultimate products formed in the reaction. **OR** (c) (ii) Name the type of reaction on the basis of which reactivity of metals is decided. You have two metals X and Y. How would you decide which is more reactive than the other?
27	Salts play a very important role in our daily life. Sodium chloride which is known as common salt is used almost in every kitchen. Baking soda is also a salt used in faster cooking as well as in baking industry. The family of salts is classified on the basis of cations and anions present in them. (a) Identify the acid and base from which Sodium chloride is formed. (b) Find the cation and the anion present in Calcium sulphate. (c) "Sodium chloride and washing soda both belong to the same family of salts." Justify this statement. **OR** (c) Define the term pH scale. Name the salt obtained by the reaction of Potassium hydroxide and Sulphuric acid and give the pH value of its aqueous solution.
	ANSWER KEY
1.	**a**
2.	**b**
3.	**d**
4.	**d**
5.	**d**
6.	**a**
7.	**c**
8.	**a**
9	**b**
10	**d**
11	**d**
12	**c**
13	(i) The gas evolved is HCl gas. (ii) When tested with: Dry blue litmus paper: No change in colour. Wet blue litmus paper: Turns red. Conclusion: The HCl gas is acidic in nature
14	Sodium hydrogencarbonate (baking soda) on heating gives sodium carbonate which on recrystallisation gives washing soda. $2NaHCO_3(s) \rightarrow Na_2CO_3(s) + H_2O(g) + CO_2(g)$ (Heating baking soda) $Na_2CO_3(s) + 10H_2O(l) \rightarrow Na_2CO_3 \cdot 10H_2O(s)$ (Recrystallization of sodium carbonate)
15	Sodium hydrogen carbonate. $NH_3 + CO_2 + H_2O + NaCl \rightarrow NaHCO_3 + NH_4Cl$ OR $NaCO_3 + CO_2 + H_2O \rightarrow 2NaHCO_3$ It is used as an antacid
16	Pale green is the colour of $FeSO_4.7H_2O$ crystals. It becomes dirty white on heating. $2FeSO_4 \cdot 7H_2O \rightarrow Fe_2O_3 + SO_2 + SO_3 + 14H_2O$
17	i) Lime water will turn milky due to formation of calcium carbonate. (ii) $Ca(OH)_2$ (aq) + CO_2 (g) → $CaCO_3$ (s) + H_2O(l)

18	As one of the compounds formed is calcium chloride, metal compound 'A' is salt of calcium. Burning candle is extinguished by carbon dioxide so carbon dioxide gas is produced by reaction of 'A' with hydrochloric acid. Carbon dioxide is produced by action of HCl on carbonate that means 'A' is calcium carbonate. $CaCO_3 + HCI \longrightarrow CaCl_2 + CO_2 + H_2O$ (Calcium Carbonate) (Calcium Chloride)
19	: (a) (i) Solution A has the highest concentration of H+ ions. (ii) Solution C has the lowest concentration of H+ ions. (b) To dilute concentrated sulphuric acid: Always add the acid to water, not the other way around. Start by pouring some water into a beaker. Gradually add concentrated sulphuric acid in small amounts to the water. Stir the mixture continuously with a glass rod. If the beaker gets hot, cool it by placing it in cold water.
20	i) When CO_2 is passed through lime water for short interval of time, it turns milky due to the formation of insoluble calcium carbonate. $Ca(OH)_2 (aq) + CO_2 (g) \rightarrow CaCO_3 (s) + H_2O (l)$ (ii) If CO_2 is passed for long duration through lime water, the white precipitate formed dissolves due to the formation of soluble calcium hydrogen carbonate and the solution becomes clear. $CaCO_3 (s) + H_2O (l) + CO_2 (g) \rightarrow Ca(HCO_3)_2 (aq)$
21	1) $2NaOH + Zn \rightarrow Na_2ZnO_2 + H_2(g)$ 2) $NaOH + HCl \rightarrow NaCl + H_2O$ 3) $NaOH + CH_3COOH \rightarrow CH_3COONa + H_2O$
22	A compound which is a byproduct of the chlor alkali process is NaOH. Hence compound B is NaOH. When NaOH is treated with acidic oxide neutralization process occurs. For example, if NaOH is treated with carbon-di-oxide, it gives Sodium carbonate. $2NaOH + CO_2 \rightarrow Na_2CO_3 + H_2$
23	X is showing calcium. When calcium carbonate interacts with HCl, it gives outCO_2 gas. $CaCO_3 + 2HCl \rightarrow CaCl_2 + CO_2 + H_2O$ When carbon dioxide CO_2 is passed into lime water, it turns milky due to the formationof Calcium carbonate. $CO_2 + Ca(OH)_2 \rightarrow CaCO_3 + H_2O$ white ppt calcium carbonateThus, solution Y shows lime water If chlorine gas is passed on dry lime water, it gives bleaching powder used to disinfectwater. $2NaCl + 2H_2O \rightarrow 2NaOH + H_2 + Cl_2$ $Ca(OH)_2 + Cl_2 \rightarrow CaOCl_2 + H_2O$ Hence, the metal carbonate X is $CaCO_3$, and Solution Y is lime water $[Ca(OH)_2]$, gas Gis chlorine (Cl_2), Y is dry slaked lime $[Ca(OH)_2]$, Z is bleaching powder $(CaOCl_2)$.
24	(a) If in yCI, y is sodium, the salt formed is NaCl. NaCl is a salt of a strong acid (HCl) and a strong base (NaOH), making it a neutral salt. Hence, the pH of the salt solution would be 7. (b) If in salt NH_4X, X is nitrate, the salt formed is NH_4NO_3. NH_4NO_3 is a salt of a weak base (NH_4OH) and a strong acid (HNO_3). It is an acidic salt and will give an orange-yellow colour with a universal indicator. (c) Potassium carbonate (K_2CO_3) is a basic salt formed from a strong base (KOH) and a weak acid (H_2CO_3). In solution, it hydrolyzes to produce OH^- ions, making the solution basic (pH > 7): $K_2CO_3 + H_2O \rightleftharpoons 2K^+ + HCO_3^- + OH^-$ Since blue litmus paper remains blue in basic solutions and only turns red in acidic

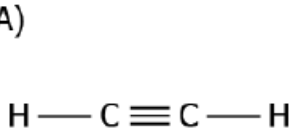
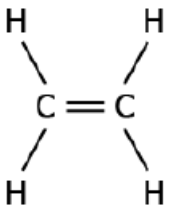
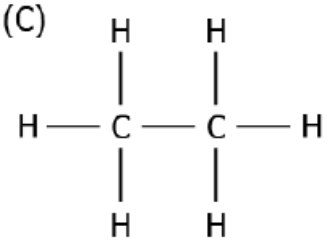
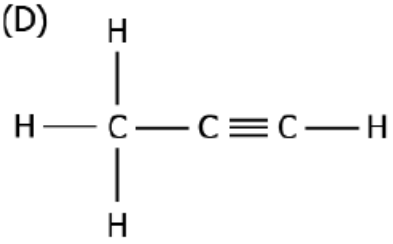
	solutions, adding K_2CO_3 will not change its color—it stays blue
25	(i) Universal indicator is a solution, which undergoes several colour, changes over a wide range of pH. The colour is used to 'indicate' pH directly. Universal indicators are usually mixtures of several indicators. ii Common indicators, such as litmus; methyl orange and phenolphthalein can easily tell, us whether a solution is acidic or alkaline, but they cannot easily tell how much a given acidic solution is stronger than another acidic solution. It means they cannot really tell us the pH value of different acidic or alkaline solutions. (iii) Oxides and hydroxides of metals and metal like radicals (e.g., $NH4^+$ ions) are called bases. Bases ionise to give OH^- ions in aqueous solution. Bases may be soluble or insoluble in water. The soluble bases are called alkalies. Thus all alkalies are bases but all bases are not alkalies. Examples NaOH and Cu $(OH)_2$ both are bases, but, since NaOH is soluble in water, it is an alkali. On the other hand, since Cu $(OH)_2$ is insoluble in water, it is not an alkali. Other examples of alkalies are KOH, Ca $(OH)_2$ and NH_4OH.
26	(a) The test tube with magnesium had the fastest rate of bubble formation and the highest temperature. (b) All three metals react with dilute hydrochloric acid as they are more reactive than hydrogen. (c)(i) Hydrogen gas is not produced when a metal reacts with dilute nitric acid because nitric acid is a strong oxidising agent. It oxidises the hydrogen gas to water. The ultimate products are water and nitrogen oxides. **OR** (c)(i) The type of reaction that determines the reactivity of metals is a displacement reaction. If metal X displaces metal Y from its salt solution, then metal X is more reactive than metal Y, and vice versa
27	**(**a) Acid – HCl, Base – NaOH (b) Cation – $Ca^{2+,}$ Anion – SO_4^{2-} (c) Salts that share the same cation but have different anions are considered part of the same family. For example Sodium chloride (NaCl) Washing soda (sodium carbonate, Na_2CO_3) Both contain the Na+ cation. OR (c) The pH scale measures how acidic or basic a solution is, ranging from 0 (acidic) to 14 (basic), with 7 being neutral. When Potassium hydroxide (KOH) reacts with Sulfuric acid (H2SO4), it produces Potassium sulfate (K2SO4), which is a neutral salt. Its aqueous solution has a pH of approximately 7.

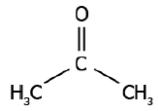
	CHAPTER-2- ACIDS, BASE AND SALTS VOLUME - 2
Q.No.	**MULTIPLE CHOICE QUESTIONS**
1	In terms of acidic strength, which one of the following is in the correct increasing order? (a) Water < Acetic acid < Hydrochloric acid (b) Water < Hydrochloric acid < Acetic acid (c) Acetic acid < Water < Hydrochloric acid (d) Hydrochloric acid < Water < Acetic acid
2	When copper oxide and dilute hydrochloric acid react, colour changes to (a) white (b) bluish-green (c) blue-black (d) black
3.	Which of the following statements is correct about an aqueous solution of an acid and of a base? (i) Higher the pH, stronger the acid (ii) Higher the pH, weaker the acid (in) Lower the pH, stronger the base (iv) Lower the pH, weaker the base (a) (i) and (iii) (b) (ii) and (iii) (c) (i) and (iv) (d) (ii) and (iv)
4.	How many water molecules does hydrated calcium sulphate contain? (a) 5(b) 10(c) 7(d) 2
5.	An aqueous solution turns red litmus solution blue. Excess addition of which of the following solution would reverse the change? (a) Baking powder (b) Lime (c) Ammonium hydroxide solution (d) Hydrochloric acid
6.	Methyl orange is (a) Red in acidic medium, yellow in basic medium (b) Yellow in acidic medium, pink in basic medium (c) Colourless in acidic medium, pink in basic medium (d) Pink in acidic medium, colourless in basic medium
7.	**'**When hydrogen chloride gas is prepared on a humid day, the gas is usually passed through the guard tube containing calcium chloride. The role of calcium chloride taken in the guard tube is to (a) absorb the evolved gas (b) moisten the gas (c) absorb moisture from the gas (d) absorb Cl– ions from the evolved gas
8.	Sodium hydrogen carbonate, when added to acetic acid, evolves a gas. Which of

CHAPTER-3- METAL AND NON METALS
VOLUME – 2

Qu.	MCQS (1 MARK)
Q1	A student studying the chemical properties of metals finds incomplete chemical reacti his book, as shows : MgO + HNO3 ⟶ Which option completes the reaction? (a) $MgO + HNO_3 \longrightarrow Mg_3N_2 + 4H_2O$ (b) $MgO + HNO_3 \longrightarrow Mg + NO_2 + O_2$ (c) $MgO + HNO_3 \longrightarrow Mg(OH)_2 + 2NO_2$ (d) $MgO + HNO_3 \longrightarrow Mg(NO_3)_2 + H_2O$
Q2	When hydrochloric acid is added to barium hydroxide, a white-colored compound is f Which option gives the complete chemical reaction? (a) $HCl + Ba(OH)_2 \longrightarrow BaCl_2 + 2HOH$ (b) $2HCl + Ba(OH)_2 \longrightarrow BaCl_2 + 2HOH$ (c) $2HCl + Ba(OH)_2 \longrightarrow BaH_2 + 2HCl + O_2$ (d) $HCl + 2Ba(OH) \longrightarrow 2BaCl_2 + 2HOH + O_2$
Q3	When calcium oxide is added to water, it completely dissolves in water without formi bubbles. What products are formed in this reaction? (a) Ca and H_2 (b) Ca and H_2O_2 (c) $Ca(OH)_2$ (d) CaH_2
Q4	Which of the following ore is concentrated by froth floatation process? (a)$ZnCO_3$ (b)ZnO (c)ZnS (d)$FeSiO_3$
Q5	A student adds an equal amount of copper sulphate solution in two beakers. He adds z beaker P and silver in beaker Q. The student observes that the color of the solution in b P changes while no change is observed in beaker Q. Which option arranges the metals increasing order of reactivity? (a) Ag<Zn<Cu (b) Zn<Cu<Ag (c) Ag<Cu<Zn (d) Cu<Ag<Zn
Q6	Which of the following oxide(s) of iron would be obtained on prolonged reaction of ir steam? (a) FeO (b) Fe_2O_3 (c) Fe_3O_4 (d) Fe_2O_3 and Fe_3O_4
Q7	Which one of the following properties is not generally exhibited by ionic compounds? (a) Solubility in water (b) Electrical conductivity in solid state (c) High melting and boiling points (d) Electrical conductivity in molten state
Q8	A researcher conducts an experiment to obtain zinc from its ore. Which option gives th process that the researcher must perform?

CHAPTER-4- CARBON AND ITS COMPOUNDS
VOLUME – 2

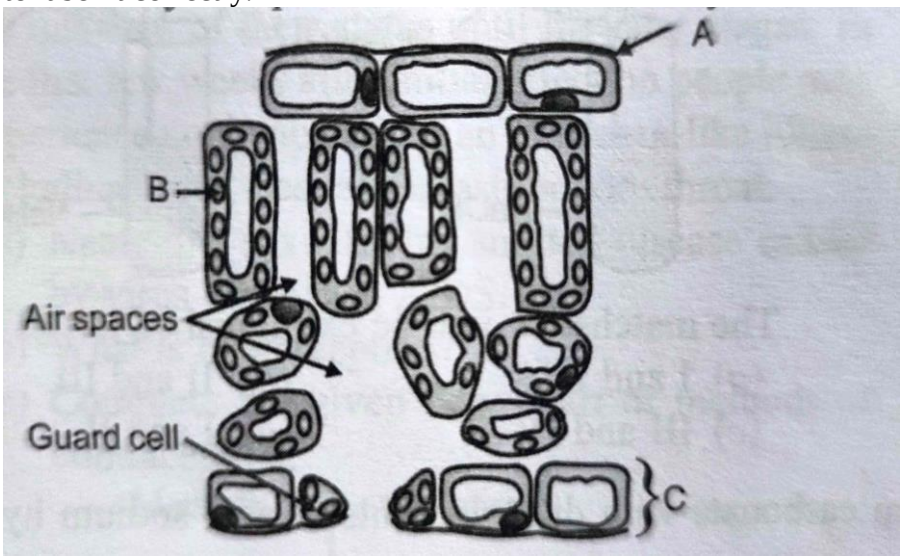
UE	MCQ
	The electronic configuration of an element is found to be 2, 4. How many bonds can one carbon atom form in a compound? (a) 1 (b) 2 (c) 4 (d) 6 Correct Answer: Option (c)
	The following chemical reaction shows the addition of chlorine to methane in the presence of sunlight: $CH_4 + Cl_4 \rightarrow X$ What is likely to be the product of the reaction represented by "X"? (a) $CH_4 + H_2SO_4$ (b) $CH_3Cl + HCl$ (c) $CHCl_3 + HCl$ (d) $CH_3Cl + H_2SO_4$ Correct Answer: Option (b)
	The image represents the structure of a few hydrocarbon compounds. (A)  (B)  (C)  (D)  Which of these compounds can be classified as alkynes? (a) Only (A) (b) Only (B) (c) Both (A) and (D) (d) Both (B) and (C)

	CHAPTER- CARBON AND ITS COMPOUNDS **VOLUME – 2 (HA) QUESTIONS** **SET - A**
Q.N.	**MULTIPLE CHOICE QUESTIONS (1 MARK)**
1	The allotrope of carbon which is a good conductor of heat and electricity is (a) Diamond (b) Graphite (c) Charcoal (d) None of these Answer (b)
2	How many double bonds are there in a saturated hydrocarbon? (a) One (b) Two (c) Three (d) Zero Answer:(d)
3	. In a diamond, each carbon atom is bonded to four other carbon atoms to form (a) A hexagonal array (b) A rigid three-dimensional structure (c) A structure in the shape of a football (d) A structure of a ring Answer.(b)
4	C_3H_8 belongs to the homologous series of (a) Alkynes (b) Alkenes (c) Alkanes (d) Cycloalkanes Answer:(c)
5	Which of the following will undergo an addition reaction? (a) CH_4 (b) C_3H_8 (c) C_2H_6 (d) C_2H_4 Answer:(d).
6	The following image represents a carbon compound  Which functional group is present in the compound? (a) Alcohol (b) Aldehyde (c) Carboxylic acid (d) Ketone Answer: (d)
7	Which of the following is the molecular formula of cyclobutane**?** (a) C_4H_{10} (b) C_4H_6 (c) C_4H_8 (d) C_4H_4 Answer: (c)
8	Methane, ethane and propane are said to form a homologous series because all are**:** (a) Hydrocarbons (b) Saturated compounds (c) Aliphatic compounds (d) Differ from each other by a CH_2 group

CHAPTER –5- LIFE PROCESSES

VOLUME-2

SET-2

QUE	MCQs	MARKS
1	Which of the following statements correctly explains why autotrophs do not need to ingest food ? a) They absorb food from the soil. b) They obtain energy from digestion of complex food. c) They synthesize food using light, water and carbon dioxide. d) They use food stored in roots.	1
2	Adi drew the cross-section of a leaf but forgot to label it fully. Help him to label it correctly.  a) A-Lower epidermis; B-Nucleus; C- Upper epidermis. b) A- Upper epidermis; B-Chloroplast; C-Lower epidermis. c) A-Upper epidermis; B-Vacuole; C-Lower epidermis. d) A-Lower epidermis; B-Chloroplast; C-Upper epidermis.	1
3	In which of the following processes does the body produce less energy per glucose molecule ? a) Aerobic respiration b) Anaerobic respiration in muscles. c) Photosynthesis. d) Fermentation in yeast.	1
4	Why are the walls of the left ventricle thicker than those of the right ventricle ? a) Because it holds more blood. b) Because it pumps blood only to lungs. c) Because it pumps blood to the whole body. d) Because it has to store oxygen.	1
5	A student conducted an experiment on a green plant leaf by covering part of it with black paper and keeping it in sunlight for 6 hours. Then the leaf was tested with iodine solution. Which part of the leaf will turn blue-black and why ? a) Covered part , because it had no sunlight. b) Uncovered part, because starch was formed there.	1

CHAPTER –5- LIFE PROCESSES
VOLUME-2
SET -1

QUE	MCQs	MARKS
1	Read the following two statements and answer the question. i) Gastroparesis is a disease in which the muscles of the stomach become paralysed and cannot contract or relax. ii) Foods high in fat can delay the process of digestion and the emptying of the stomach. Which of the following food would be advised to a patient suffering from gastroparesis? (a) Soups and juices only (b) Soups and chicken salads only (c) Fried chicken and fried rice (d) Ice cream and milk only	1
2	A plant gets rid of excess water through transpiration. Which is a method used by plants to get rid of solid waste products? (a) Shortening of stem (b) Wilting of leaves (c) Shedding of yellow leaves (d) Expansion of roots into the soil	1
3	The entire surface of single-celled living organisms is in contact with the environment, so they do not need specific organs to (i) Take in food (ii) Exchange gases (iii) Remove waste materials (iv) Synthesise their food (a) (i) and (iii) (b) (i), (ii) and (iv) (c) (i), (iii) and (iv) (d) (i), (ii) and (iii)	1
4	Many processes happen in the bodies of living organisms. Those processes which involve the building up of complex molecules from simpler ones are called anabolism. Those which involve the breakdown of complex molecules into simpler ones are called catabolism Which of the following life processes can be considered as an example of anabolism? (a) Digestion (b) Respiration (c) Transpiration (d) Photosynthesis	1
5	A large quantity of one of the following is removed from our body by lungs: (a) CO_2 and H_2O (b) CO_2 only (c) H_2O only (d) Ammonia	1
6	A student adds boiled and cooled starch solution to test tubes A and B. Saliva is added to A, while B is kept as control. After 15 mins, iodine is	1

CHAPTER-6-CONTROL AND COORDINATION
VOLUME-2

. Mohan saw a person was not able to walk properly after consuming alcohol. Which part of the br is responsible for this condition?

a) Cerebrum b) Cerebellum c) Medulla d) Hypothalamus

ANS - B

The junction where the axon terminal of one neuron meets the dendrites of another neuron is calle

a) Dendrite b) Synapse c) Axon d) Impulse

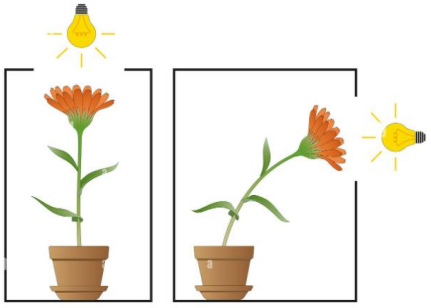
ANS - B

Which of the following is the correct sequence of components in a reflex arc?

a) Receptor → Effector → Sensory neuron → Motor neuron
b) Receptor → Sensory neuron → Motor neuron → Effector
c) Receptor → Motor neuron → Sensory neuron → Effector
d) Receptor → Motor neuron → Effector → Sensory neuron

ANS -B

Akshay potted some germinated seeds in a box with one open side facing sunlight. After 2-3 days, noticed the shoot bending towards light. What type of tropism is this?



a) Hydrotropism b) Phototropism c) Geotropism d) Chemotropism

ANS- B

Rohan's grandfather takes insulin regularly. Which mixed gland is responsible for its secretion?

a) Thyroid b) Pituitary c) Pancreas d) Adrenal

ANS - C

During a reflex action, you pull your hand back from a hot object. Which of the following happens first?

	CHAPTER-7-HOW DO ORGANISMS REPRODUCE? **VOLUME-2**
	Q. No. 1 to 12 are Multiple Choice questions (MCQ).
1.	The correct sequence of reproductive stages seen in flowering plants is – (a). Gamete, embryo, zygote , seedling (b). Zygote , embryp , gamete , seedling (c).Seedling, embryo, zygote , gamete (d).Gamete, zygote , embryo, seedling
2.	The number of chromosomes in parents and offsprings of a particular species r constant due to – (a) .Doubling of chromosomes after zygote formation (b). Halving of chromosomes during gamete formation (c) Doubling of chromosomes after gamete formation (d) halving of chromosomes after gamete formation
3.	Which among the following statements are true for sexual reproduction in flow plants ? (i) It require two types of gametes. (ii) Fertilisation is a compulsory event . (iii) It always results in formation of gamete. (iv) Offsprings formed are clones. (a) (i) and (iv) (b) (i), (ii) and (iv) (c) (i) , (ii) and (iii) (d) (i), (ii) and (iv)
4.	Which among the following is not a function of testes at puberty? (i) formation of germ cells (ii) secretion of testosterone hormone (iii) development of placenta (iv) secretion of estrogen (a) (i) and (ii) (b) (ii) and (iii) (c) (iii) and (iv) (d) (i) and (iv)
5.	Vasectomy is practised in – (a) males (b) females (c) in both males and females

CHAPTER-8- HEREDITY
VOLUME-2
QUESTIONS

In which of the following mode of reproduction the number of successful variations are maximiz
(A) Asexual Reproduction
(B) Sexual reproduction
(C) Both (a) and (b)
(D) none of the above

Match Column -I with Column-II and select the correct option from the choice provided.

Column-I	Column-II
a. The passing of traits from parents to offspring b. Expression of the Characteristics like eye color, height, etc. c. Differences in traits among individuals d. Traits which comes from parents called as	(i) Inherited traits (ii) Variation (iii) Traits (iv) Heredity

(A) a-(ii), b-(i),c- (iv),d-(iv)
(B) a-(iii),b-(ii),c- (i), d-(iv)
(C) a-(iii),b-(iv),c-(ii),d-(i)
(D) a-(iv),b-(iii),c-(ii),d-(i)

Rahul is a student of class ten. He visited a field of sugarcane where he observed a field of sugar very little variations in comparison with number of animals including human beings. Which of the option is/are correct reason regarding his observation.
(A) Mode of reproduction in sugarcane may be by stem cutting (asexual reproduction) whereas including human being reproduce sexually
(B) Both sugarcane plants and animals including human being reproduce sexually.
(C) Mode of reproduction in sugarcane is sexual whereas animals including human being asexually
(D) None of the above.

Which of the following factors forms the basis for evolutionary processes.
(A) Selection of variants by environmental factors
(B) Selection of similar characteristics by environmental factors
(C) Selection of closely related characters by environmental factors
(D) Selection of closely related characters by sociological factors

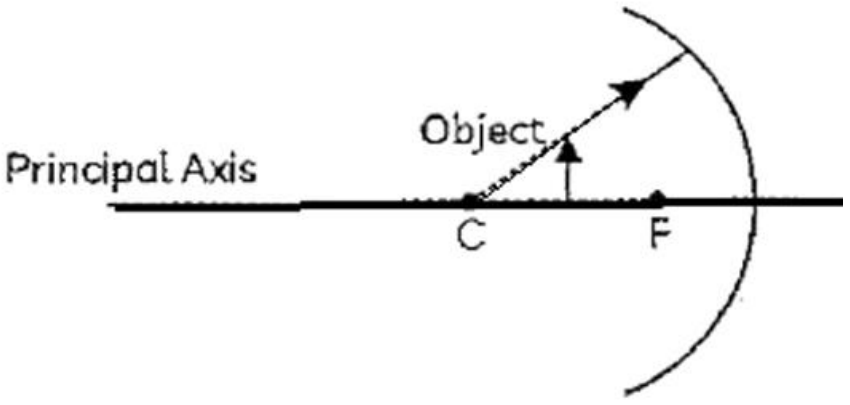
Which of the following is NOT a characteristics of heredity?
(A) Traits are passed from parents to offspring
(B) Traits are determined by environmental factors
(C) Traits are influenced by genes

CHAPTER –8- HEREDITY

VPLUME-1

S.No.	Multiple Choice Questions
1	Which Parent's gamete carries the determinant factor that decides the sex of the offspring human beings and through what chromosomal configuration ? **or** Which of the following determines the sex of a child in humans? a) Egg b) Sperm c) Ovary d) Uterus Ans: b) Sperm
2	"Under standard human sex determination mechanisms, the inheritance of a paternally derived X chromosomes by the zygote leads to the development of which sexual phenotype?" **Or** A zygote which has an X-chromosome inherited from the father will develop into: a) Boy b) Girl c) Either boy or girl d) Cannot be determined Ans: b) Girl
3	Out of 23 chromosomal pairs in humans. How many are categorized as other than autoson chromosome which participating in the determination genetic sex. **Or** The number of pair(s) of sex chromosomes in human beings is: a) 1 b) 2 c) 23 d) 22 **Ans: a) 1**
4	Which one of the following is a recessive trait? a) Tallness in pea b) Round seed c) Green pod d) White flower in pea **Ans: d) White flower in pea**
5	What is the expected phenotypic ratio among the F2 progeny resulting from a classical Mendelian monohybrid cross involving two heterozygous individuals? **Or** The phenotypic ratio of a monohybrid cross is: a) 1:2:1

LIGHT: REFLECTION AND REFRACTION
VOLUME - 2

	MULTIPLE CHOICE QUESTIONS
1.	A student places a candle beyond the centre of curvature of a concave mirror. The image formed will be: A. Virtual, erect and magnified B. Real, inverted and magnified C. Real, inverted and diminished D. Virtual, erect and same size
2.	Which of the following statements is true for the phenomenon where light reflects when going from a denser medium to a rarer medium? A. It occurs when light moves from rarer to denser medium B. It occurs when angle of incidence is less than critical angle C. It occurs when light is incident at 90° D. It occurs when angle of incidence is greater than the critical angle
3.	.The focal length of a concave mirror is –15 cm. What is the relation between f, v and u? A. $1/f = 1/v - 1/u$ B. $f = v \times u$ C. $1/f = 1/u - 1/v$ D. $f = v - u$
4.	In a ray diagram for a convex lens, an object placed between F and O will produce: A. Real, inverted, diminished image B. Virtual, erect, magnified image C. Real, inverted, magnified image D. Virtual, inverted, same-size image
5.	Identify the correct conclusions that can be drawn based on the diagram of the concave mirror given below.  I) the image of the object will be inverted

CHAPTER-10-The Human Eye and the Colourful World

Volume - 2

Section-A **Question 1 to12 are multiple choice questions. Only one of the choices is correct. Select and write the correct choice as well as the answer to these questions.**		
1) Ans:-	A person went for a medical check-up and found that the curvature of his eye lens was increasing. Which defect is he likely to suffer from? (a) Myopia (b) Cataract (c) Presbyopia (d) Hypermetropia (a)	
2) Ans:-	A person gets out in the sunlight from a dark room. How does his pupil regulate and control the light entering the eye? (a) The size of the pupil will decrease, and less light will enter the eye (b) The size of the pupil will decrease, and more light will enter the eye (c) The size of the pupil will remain the same, but more light will enter the eye (d) The size of the pupil will remain the same, but less light will enter the eye (a)	
3) Ans:-	At noon, the sun appears white as (a) Light is least scattered (b) All the colours of white light are scattered away (c) Blue colour is scattered the most (d) Red colour is scattered the most (a)	
4) Ans:-	The light sensitive cell present on retina and is sensitive to the intensity of light is: A. Cones B. Rod cell C. Both cone and rod cells D. None (b)	
5) Ans:-	Which of the following statements about the blind spot in the eye is true? a) It is located in the centre of the retina. b) It is the area where the optic nerve exits the eye. c) It is responsible for detecting colour and fine details. d) It controls the amount of light that enters the eye. b)	
6) Ans:-	A person cannot see distinctly objects kept beyond 2 m. This defect can be corrected by using a lens of power (a) + 0.5 D (b) – 0.5 D (c) + 0.2 D (d) – 0.2 D (b)	
7)	The deflection of light by minute particles and molecules of the atmosphere in all direction is called _____ of light. (a) Dispersion	

CHAPTER-11- ELECTRICITY

VOLUME-2

SECTION - A

MULTIPLE CHOICE QUESTIONS:-

A charge of 100 C flows through a bulb in 5 minutes. How much current is flowing through the bulb?

A. 500 A
B. 100 A
C. 20 A
D. 0.3 A

Correct Answer: Option (C)20 A

A conducting wire carries 1021 electrons in 4 minutes. What is the current flowing through the wire?

A. 40 A
B. 7 A
C. 4 A
D. 0.7 A

Correct Answer: Option (D) 0.7 A

Work of 14 J is done to move 2 C charge between two points on a conducting wire. What is the potential difference between the two points?

(a) 28 V
(b) 14 V
(c) 7 V
(d) 3.5 V

Correct Answer: Option (c)

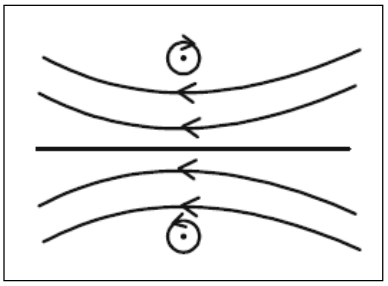
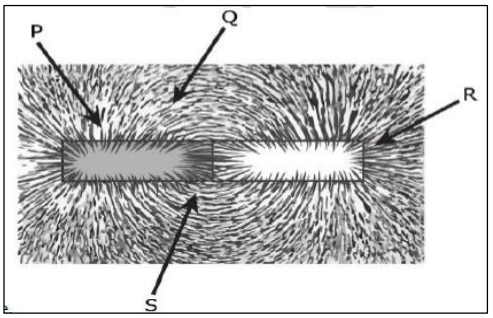
In order to move a charge of 3 C between two points on a conducting wire, 12 J of work is done. How much increase or decrease in the voltage will increase the work done on the same amount of charge to 36 J?

(a) -12 V
(b) -8 V
(c) +8 V
(d) +12 V

Correct Answer: Option (c)

CHAPTER-12-MAGNETIC EFFECTS OF ELECTRIC CURRENT
VOLUME-2

MCQ

1.	The current carrying device which produces a magnetic field similar to that of a bar magnet is : (A) A straight conductor (B) A circular loop (C) A solenoid (D) A circular coil Ans(C) A solenoid
2.	The magnetic field inside a long straight solenoid-carrying current (A) is zero (B) decreases as we move towards its end (C) increases as we move towards its end (D) is the same at all points Answer:(D) Is the same at all points.
3.	At the time of short circuit, the current in the circuit (A) reduces substantially (B) does not change (C) increases heavily (D) varies continuously Answer: (C) Increases heavily.
4.	The Given below represents magnetic field caused by a current carrying-conductor which is:  (A) a long straight wire (B)a circular coil (C) a solenoid (D) a short straight wire Ans (B)a circular coil
6.	A student places some iron filings around a magnet. The iron fillings arrange themselves as shown in the image. The student labelled four different regions around the magnet. Where would be the magnetic be the strongest?  (A) P (B) Q (C) R (D) S Ans: (C) R

CHAPTER 13: MAGNETIC EFFECTS OF ELECTRIC CURRENT

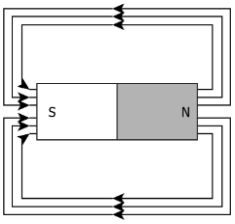
(VOL-2) (TYPE 1)

Section-A

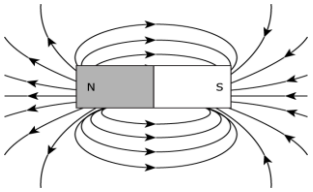
ıs 1 to 12 are multiple choice questions. Only one of the choices is correct. Select and write the correct
s well as the answer to these questions.

. student learns that magnetic field strength around a bar magnet is different at every
ɔint. Which diagram shows the correct magnetic field lines around a bar magnet?

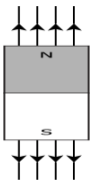
)



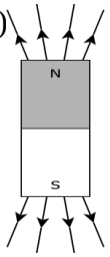
(b)



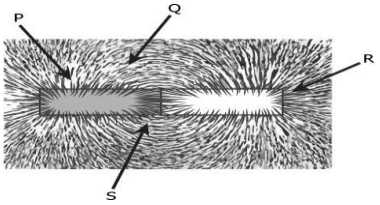
(c)



(d)



. student places some iron fillings around a magnet. The iron fillings arrange themselves
; shown in image.

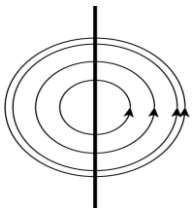


The student labelled four different regions around the magnet. Where would be the magnetic be the strongest?

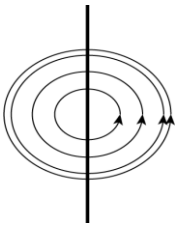
(a) P (b) Q (c) R (d) S

. student placed a magnetic compass around a straight current carrying wire. The
udent noticed when he moved the compass away from the wire, the deflection in
ɔmpass decreases. How would be the magnetic field lines around the conductor?

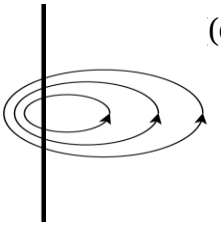
(a)



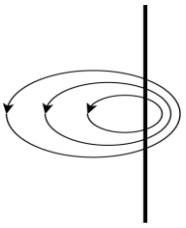
(b)



(c)

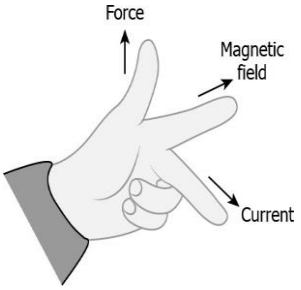


(d)



he image shows the Fleming's left-hand rule.

s



CHAPTER -13- OUR ENVIRONMENT
VOLUME-02

Section-A

Questions 1 to 12 are multiple choice questions.

1.

A student wants to classify these into abiotic components from biotic Components separately. Which option correctly shows the classification done by the student?

(a)

Biotic Component	Abiotic Component
Rain, grass, bacteria, fungi	Water, fungi, sunlight, air

(b)

Biotic Component	Abiotic Component
Grass, bacteria, fungi, butterfly	Water, rain, sunlight, air

(c)

Biotic Component	Abiotic Component
Air, grass, butterfly, fungi	Water, fungi, sunlight, rain

(d)

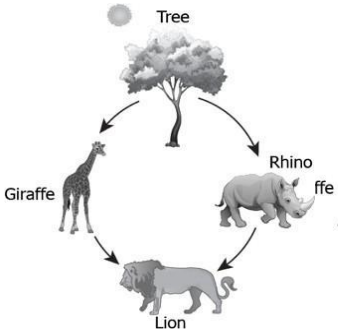
Biotic Component	Abiotic Component
ain, grass, bacteria, fungi	Water, butterfly, sunlight, Air

2. Which statement shows interaction of an abiotic component with a biotic component in an ecosystem?
(a)A grasshopper feeding on a leaf. (b) Rain water running down into the lake.
(c)An earthworm making a burrow in the soil. (d)A mouse fighting with an other mouse for food.

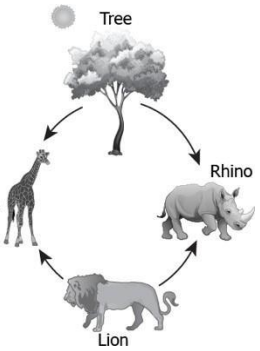
3. The table shows some organisms including plants ,animal and how they get energy. Which option shows the correct model made based on the table?

Organism	How the organism gets energy
Tree	Sunlight
Lion	Giraffe, rhino
Rhino	Tree
Giraffe	Tree

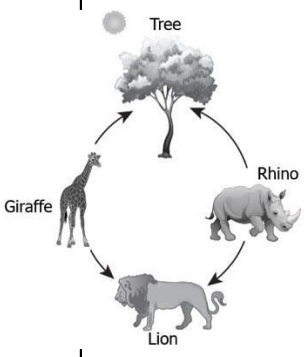
(a)



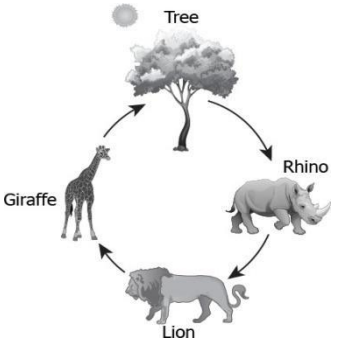
(b)



(c)

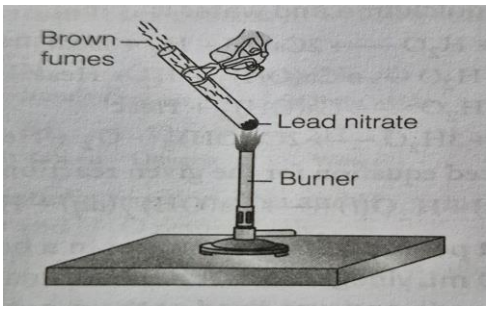


(d)



CHAPTER -1- CHEMICLAL REACTIONS AND EQUATIONS

VOLUME – 2

Q. NO.	QUESTIONS
	MULTIPLE CHOICE QUESTIONS(1 MARKS)
1.	The chemical reaction between quicklime and water is characterized by: (a) evolution of hydrogen gas (b) formation of slaked lime precipitate (c) change in temperature of mixture (d) change in colour of the product
2.	An iron nail is dipped into a blue copper sulphate solution. After some time, the soluti turns pale green, and the nail gets a reddish layer. What is the correct observation? A) It is a double displacement reaction B) Iron is less reactive than copper C) Iron displaces copper from copper sulphate D) Copper dissolves iron
3.	A white precipitate forms when two colorless solutions are mixed. This is an example A) Combination reaction B) Decomposition reaction C) Precipitation reaction D) Redox reaction
4.	In which one of the following situations a chemical reaction does not occur? (a) Milk is left open at room temperature during summer. (b) Grapes get fermented. (c) An iron nail is left exposed to humid atmosphere. (d) Melting of glaciers.
5.	The emission of brown fumes in the given experimental set-up is due to.  (a) thermal decomposition of lead nitrate which produces brown fumes of nitrogen dio (b) thermal decomposition of lead nitrate which produces brown fumes of lead oxide (c) oxidation of lead nitrate forming lead oxide and nitrogen dioxide (d) oxidation of lead nitrate forming lead oxide and oxygen
6.	To balance the following chemical equation the values of x and y should respectively l $2\ NaOH + XAl_2O_3 \rightarrow {}_yNaAlO_2 + H_2O$

CHAPTER - 1
CHEMICAL REACTIONS AND EQUATIONS
WORKSHEET (VOLUME-2)

TIME:20min MM:18

Multiple choice questions (1*4=4)

1. What type of reaction is represented by the following equation? $2Pb(NO_3)_2 \rightarrow 2PbO + 4NO_2 + O_2$
   A) Combination reaction
   B) Displacement reaction
   C) Decomposition reaction
   D) D) Double displacement
2. Rancidity is caused due to:
   A) Fermentation
   B) Oxidation of fats and oils
   C) Dehydration
   D) D) Reduction of fats
3. Which of the following is an exothermic process?
   a) Photosynthesis
   b) Melting of ice
   c) Burning of natural gas
   d) Electrolysis of water
4. Assertion (A) White silver chloride turns grey in sunlight.

Reason (R) : Copper reacts with zinc sulphate to form copper sulphate and zinc is deposited.

Following question 4 have two statements – Assertion (A) and Reason (R).

Answer these questions by selecting the appropriate option given below:

(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

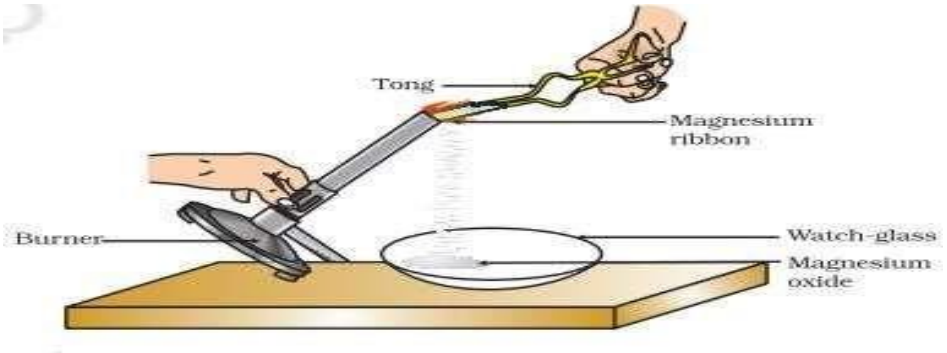
Very short answer type questions (2*3=6)

5. Why is more hydrogen gas collected than oxygen in the electrolysis of water

   ---

   ---

6. Observe the figure and write the type of the reaction and mention nature of the product.



WORKSHEET(VOLUME-2)

TIME:20min MM:14

Multiple choice questions (1*4=4)

1. Which of the following is a strong acid?
   A. Acetic acid
   B. Citric acid
   C. Hydrochloric acid
   D. Carbonic acid
2. Which of the following is used to test whether a solution is acidic or basic?
   A. Sodium carbonate
   B. Litmus paper
   C. Baking soda
   D. Sodium hydroxide
3. Which of the following gives a salt and water on reaction with an acid?
   A. Base
   B. Metal oxide
   C. Metal carbonate
   D. All of the above
4. Which gas is evolved when an acid reacts with a metal?
   A. Oxygen
   B. Hydrogen
   C. Nitrogen
   D. Carbon dioxide

Short answers type questions (2*3=6)

Q 5. Why does an aqueous solution of an acid conduct electricity? What happens to an acid or base in a water solution?

……
……
……

Q 6. Identify the acid and base in the following reactions and give balanced equations:

i) $HCl + NaOH \rightarrow NaCl + H_2O$

……
……

ii) $H_2SO_4 + 2KOH \rightarrow K_2SO_4 + 2H_2O$

……
……

Long answer type questions (1*4=4)

Q.7. A chemical factory releases its waste water into a nearby pond. The pH of the pond water dropped to 4, affecting aquatic life. The local authorities added a certain compound to neutralize the acidic water.

Answer the following questions:

a) What does the pH value of 4 indicate about the pond water?

CHAPTER – 3 METALS AND NON-METALS

WORKSHEET (VOLUME-2)

TIME:20MIN MM=14

Multiple choice questions (1*4=4)

Q.1 Which of the following metals is present in the anode mud during the electrolytic refining of copper? (a) Sodium
(b) Aluminum
(c) Gold
(d) Iron

Q.2 Which of the given properties is generally not shown by metals?
(a) Electrical conduction
(b) Sonorous in nature
(c) Dullness
(d) Ductility

Q.3 An element reacts with oxygen to give a compound with a high melting point. The compound is soluble in water. The element is likely to be
(a) calcium
(b) carbon
(c) iron
(d) silicon

Following question no. 4 consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:
(a) Both A and R are true and R is the correct explanation of A (b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

Q.4. Assertion (A) : Hydrogen gas is not evolved when a metal reacts with nitric acid.
Reason (R) : Nitric acid is a strong oxidising agent.

Short answer type questions (2*3=6)

Q.5. During extraction of metals, electrolytic refining is used to obtain pure metal.

(i) Which material will be used as anode and cathode for refining of silver metal by this process?
……
……

(ii) Suggest a suitable electrolyte also.
……
……

(iii) In the electrolytic cell where is pure silver deposited after passing electric current?
……
……

CHAPTER – 4 -CARBON AND ITS COMPOUNDS

WORKSHEET(VOLUME-2)

TIME:20MIN MM=16

Multiple Choice Questions (1*4=4)

Q1. Which of the following is a saturated hydrocarbon?
A) Ethene
B) Ethyne
C) Ethane
D) Propene

Q2. Which process converts unsaturated hydrocarbons into saturated hydrocarbons?
A) Fermentation
B) Saponification
C) Hydrogenation
D) Substitution

Assertion and Reason :

Choose:
A) Both Assertion and Reason are true, and Reason is the correct explanation of Assertion.
B) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
C) Assertion is true, but Reason is false.
D) Assertion is false, but Reason is true.

Q3.Assertion (A): Carbon forms a large number of compounds.
Reason (R): Carbon atoms form four strong covalent bonds and can catenate.

Q4.Assertion (A): Soaps are more effective in hard water than detergents. Reason (R): Soaps form scum with hard water, reducing their effectiveness.

Short answer question (2*2=4)

Q5. Write the molecular formula of the first member of the homologous series of alkanes.
……
……

Q6. Name the process by which ethanol is converted to ethanoic acid
……
……
……
……

Case Study Based Question (1*4=4)

Q7.Read the passage and answer the questions below:
A student is preparing soap in the lab by heating castor oil with sodium hydroxide. On cooling and adding salt, solid soap separates out. The teacher explains that this is a process called saponification. She also shows how soap does not lather well with hard water, while detergent works fine.
1. Name the type of reaction used in soap preparation.
……
……

CHAPTER-5-LIFE PROCESSES –

WORKSHEET (VOLUME-2)

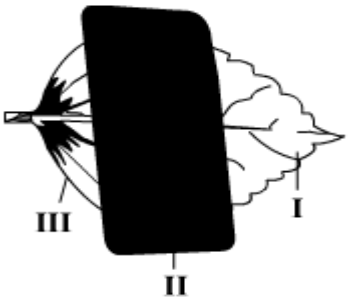
Time: 30 minutes **Max. Marks : 20**

Multiple Choice Questions (1Mark)

1. The breakdown of pyruvate to give carbon di-oxide, water and energy takes place in
   (a) cytoplasm
   (b) mitochondria
   (c) chloroplast
   (d) nucleus

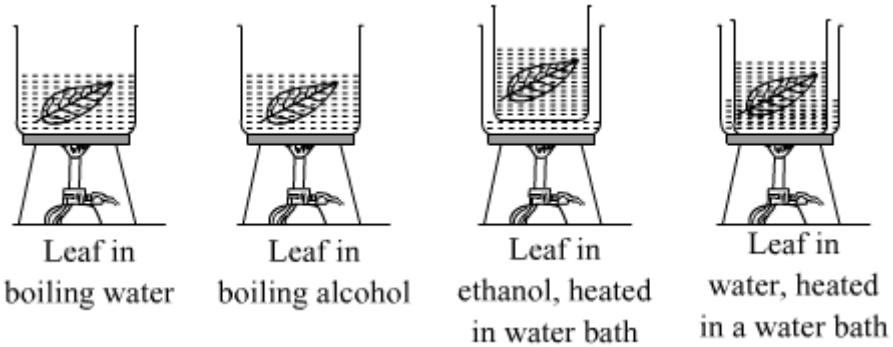
2. In respiration, air passes through
   (a) Pharynx → nasal cavity → larynx → trachea bronchi → bronchioles
   (b) Nasal cavity → pharynx → larynx → trachea → bronchi → bronchioles
   (c) Larynx → nasal cavity' → pharynx → trachea
   (d) Larynx → pharynx trachea → lungs

3. Given alongside is a sketch of a leaf partially covered with black paper and which is to be used in the experiment to show that light is compulsory for the process of photosynthesis. At the end of the experiment, which one of the leaf parts labelled I, II and III will become blue when dipped in iodine solution?



   (a) I only
   (b) II only
   (c) I and III
   (d) II and III

4. Out of the following figures, choose the one showing the correct procedure for removing chlorophyll from the leaf in the experiment 'light is necessary for photosynthesis'



The correct procedure is .
   (a) A
   (b) B

CHAPTER-6- CONTROL AND COORDINATION

WORKSHEET (VOLUME-2)

CLASS :X **SUBJECT: SCIENCE(086)**

NAME OF STUDENT:……. ROLL NO. ……

MAXIMUM MARKS : 15 **MARKES OBTAINED:…….**

……

The plant hormone whose concentration stimulates the cells to grow longer on the side of the shoot which is away from light is : 1

(A) Cytokinins (B) Gibberellins (C) Adrenaline (D) Auxins

ANS: ……

2. The correct sequence of events when someones hand touches a hot object unconsciously : 1

(A) Receptors in skin-→ Motor neuron--→ Relay neuron-→ SensoryNeuron--→ Effector muscle in arm

(B) Receptors in skin-→ Relay neuron--→ Sensory neuron -→Motor neuron ---→Effector muscle in arm

(C) Receptors in skin-→Sensory neuron -→Relay neuron --→Motor Neuron--→ Effector muscle in arm

(D) Receptors in skin --→ Sensory neuron--→ Effector muscle in arm-→Motor neuron --→Relay neuron

ANS: ……

3. A plant growth inhibitor hormone which causes wilting of leaves is called :

(A) Auxin (B) Cytokinin (C) Abscisic acid (D) Gibberellin 1

ANS:…….

4. Identify which of the following statements about thyroxin is **incorrec**t? 1

(a) Thyroid gland requires iodine to synthesize thyroxin.
(b) Thyroxin is also called thyroid hormone.
(c) It regulates protein, carbohydrates and fat metabolism in the body.
(d) Iron is essential for the synthesis of thyroxin.

ANS:……..

5.. **Assertion (A) :** In our actions of writing or talking, our nervous system communicates with the muscles.

Reason (R) : Cranial nerves and spinal nerves form the peripheral nervous system. 1

CHAPTER-7-HOW DO ORGANISMS REPRODUCE?

WORSHEET- 1(VOLUME-2)

Time: 30 minutes **Max. Marks : 20**

Multiple Choice Questions (1Mark)

1. 1. Nerves throughout the body other than Brain and spinal cord form ___.
   A) CNS B) PNS C) ANS D) AAS

2. The growth of pollen tubes towards ovules is due to____.

   A) hydrotropism B) phototropism

   C)chemotropism D) geotropism

3. In reflex action, the reflex arc is formed by

   A) Muscles - receptor – brain B) Muscles - effector – brain

   C) Receptor - spinal cord – muscles D) Spinal cord - receptor – muscles

4. .Which of the following statements are true about brain?

   i. The main thinking part of brain is hind brain

   ii. Centers of hearing, smell, memory, sight etc. are located in fore brain

   iii. Involuntary actions like salivation, vomiting, blood pressure are controlled by the medulla in the hind brain

   iv. Cerebellum does not control posture and balance of the body.

   A. (i) and (ii) B. (i), (ii) and (iii)

   C.(ii) and (iii) D. (iii) and (iv)

5. Posture and balance of the body is controlled by

   A) Pons B) Medulla oblongata

   C) Cerebellum D) Cerebrum

6. Offspring formed by asexual method of reproduction have greater similarity among themselves because

   (i) asexual reproduction involves only one parent

   (ii) asexual reproduction does not involve gametes

   (iii) asexual reproduction occurs before sexual reproduction

CHAPTER:-8-HERIDITY

WORKSHEET :2(VOLUME-2)

CLASS :X **SUBJECT: SCIENCE(086)**

NAME OF STUDENT:……. ROLL NO. ……

MAXIMUM MARKS : 15 **MARKES OBTAINED:……**

……

1. Chromosomes: 1

(i) Carry hereditary information from parents to the next generation

(ii) Are thread like structure located inside the nucleus of an animal cell

(iii) Always exist in pairs in human reproductive cells

(iv) Are involved in the process of cell division.

Correct statements are :

a) (i) and (ii) (b) (iii) and (iv) (c) (i),(ii), (iii) (d) (i) and (iv)

ANS……
……..

2. If pea plants with round and green seeds (RRyy) are crossed with pea plants having wrinkled and yellow seeds (rrYY), the seeds developed by the plants of F1 generation will be : 1

(A) 50% round and green (B) 75% wrinkled and green

(C) 100% round and yellow (D) 75% wrinkled and yellow

ANS:
……

3. In a cross between two tall pea plants a few dwarf pea plants were also 1

obtained in F1 generation. It is possible only if the gene combination of

the parental plants is :

(A) TT and Tt (B) TT and tt (C) Tt and tt (D) Tt and Tt

ANS:
……

4. A man with blood group A marries a woman with blood group 'O' so the possibilities of their daughters blood group can be : 1

a) B and A only b) AB AND A only

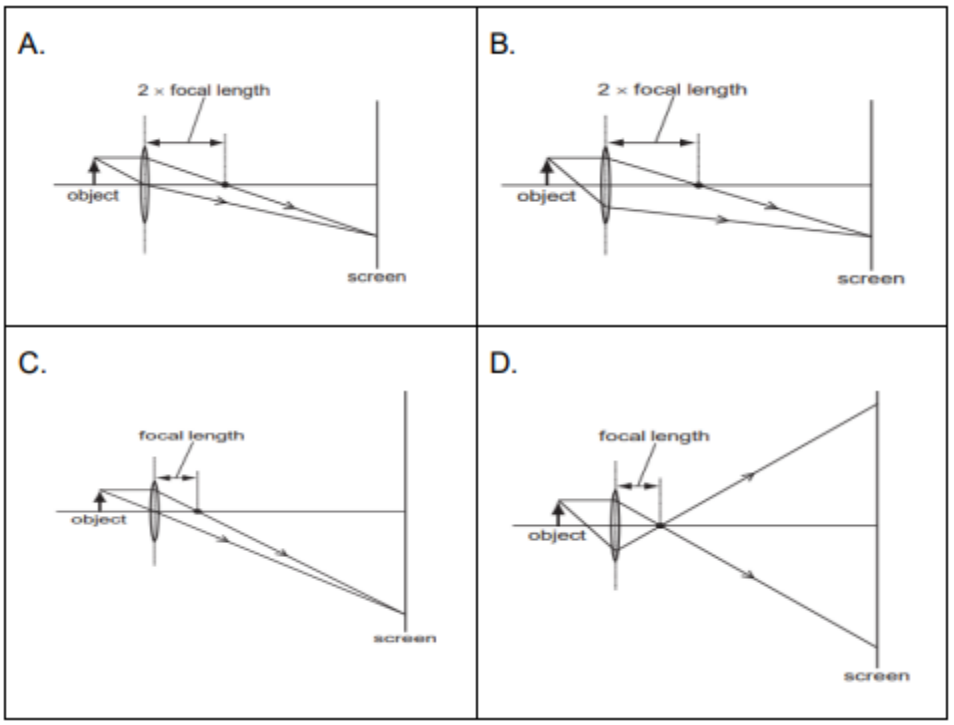
c) O only d) O AND A only

CHAPTER-9-- LIGHT REFLECTION REFRACTION

WORKSHEET – (VOL-02)

SECTION A : MCQ (1 mark each)

1. Which diagram shows the image formation of an object on a screen by a converging lens?



2. Magnification produced by a convex mirror is always-

a. more than 1. **b.** less than 1. **c.** equal to 1. **d.** more or less than 1.

3. Power of the lens is -4D, and its focal length is :

a. 4 m b. -40m c. -0.25 m d. -25 m

In **(Q.no.4 & 5)** a statement of Assertion is followed by a statement of reason . Mark the correct choice as :

(a) Both A and R are true, and R is the correct explanation of A.
(b) Both A and R are true, but R is not the correct explanation of A.
(c) Assertion is true but R is false.
(d) R is true but A is false.

4. Assertion: Higher the refractive index of a medium or denser the medium, the lesser the velocity of light in that medium.
Reason: Refractive index is directly proportional to velocity.

---

5. Assertion: A point object is placed at a distance of 26 cm from a convex mirror of focal length 26 cm. The image will not form at infinity.
Reason: For the above given system the equation $\frac{1}{u} + \frac{1}{v} = \frac{1}{f}$ gives v = infinity

---

CHAPTER-10-HUMAN EYE AND THE COLOURFUL WPRLD

WORKSHEET – (VOLUME-2)

SECTION A : **MCQ (1 mark each)**

1. A person who cannot see distant objects clearly. His vision can be corrected by using spectacles containing -

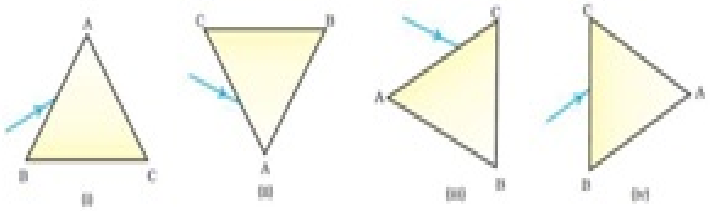
a. concave lenses **b.** plane lenses **c.** contact lenses **d.** convex lenses

2. A ray of light travelling in air fall obliquely on the surface of calm pond , it will -

a) Turns back on the original path b) Go into water without deviating from its path

c) Deviate towards the normal d) Deviate away from the normal

3. A prism ABC (with BC as base) is placed in different orientations. A narrow beam of white light is incident on the prism as shown in below figure. In which of the following diagrams, after dispersion, the third colour from the top of the spectrum corresponds to the colour of the sky?



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

In **(Q.no.4 & 5)** a statement of Assertion is followed by a statement of reason. Mark the correct choice as:

(a) Both A and R are true, and R is the correct explanation of A.
(b) Both A and R are true, but R is not the correct explanation of A.
(c) A is true but R is false.
(d) R is true but A is false.

4. Assertion (A): A normal human eye can clearly see all the objects beyond certain minimum distance.
Reason (R) : The human eye has capacity of adjusting the focal length of eye lens.

_____

5. **Assertion(A):** Danger signals are made of red colour.
Reason (R) : Velocity of red light in air is maximum, so signals are visible even in dark.

_____

SECTION B : Very short answer questions (1-2 marks)

6. What is the direction of rainbow formation? What is the position of red colour in rainbow?

_____
_____

7. Why is Tyndall effect shown by colloidal particles? State two instances of observing the Tyndall effect?

_____
_____
_____

8. A student traces the path of a ray of light through a glass prism as shown in the diagram, but leaves it incomplete and unlabelled. Redraw and complete the diagram. Also label on it ∠i, ∠e, ∠r and ∠D.

CHAPTER-11- ELECTRICITY

WORKSHEET: (VOL-2)

CLASS 10	NAME:
SUBJECT – SCIENCE	DATE:

SECTION A: OBJECTIVE TYPE (1 MARK EACH)

1. Which of the following represents voltage?

(a) Work done Current × Time

(b) Work done × Charge

(c) Work done × Time Current

(d) Work done × Charge × Time

……
……..

2. What is the maximum resistance which can be made using five resistors each of 1/5 Ω?

(a) 1/5 Ω

(b) 10 Ω

(c) 5 Ω

(d) 1 Ω

……
……..

3. Electrical resistivity of a given metallic wire depends upon

(a) its length

(b) its thickness

(c) its shape

(d) nature of the material

……
……..

4. Two resistors of resistance 2 Ω and 4 Ω when connected to a battery will have

(a) same current flowing through them when connected in parallel

(b) same current flowing through them when connected in series

(c) same potential difference across them when connected in series

(d) different p

CHAPTER-12- MAGNETIC EFFECT OF ELECTRIC CURRENT

WORKSHEET-(VOLUME-2)

CLASS 10	NAME:
SUBJECT – SCIENCE	DATE:

SECTION A: OBJECTIVE TYPE (1 MARK EACH)

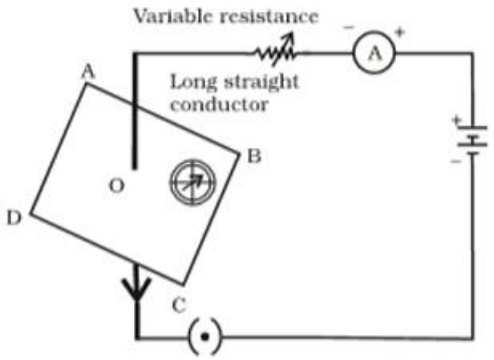
1. If the key in the arrangement is taken out (the circuit is made open) and magnetic field lines are drawn over the horizontal plane ABCD, the lines are

(a) concentric circles

(b) elliptical in shape

(c) straight lines parallel to each other

(d) concentric circles near the point O but of elliptical shapes as we go away from it



ANS.----------

2. A circular loop placed in a plane perpendicular to the plane of paper carries a current when the key is ON. The current as seen from points A and B (in the plane of paper and on the axis of the coil) is anti clockwise and clockwise respectively. The magnetic field lines point from B to A. The N-pole of the resultant magnet is on the face close to

(a) A

(b) B

(c) A if the current is small, and B if the current is large

(d) B if the current is small and A if the current is large

CHAPTER-12-MAGNETIC EFFECT OF ELECTRIC CURRENT

WORKSHEET: (VOLUME-1)

CLASS 10	NAME:
SUBJECT – SCIENCE	DATE:

SECTION A: OBJECTIVE TYPE (1 MARK EACH)

1. Choose the incorrect statement from the following regarding magnetic lines of field

(a) The direction of magnetic field at a point is taken to be the direction in which the north pole of a magnetic compass needle points
(b) Magnetic field lines are closed curves
(c) If magnetic field lines are parallel and equidistant, they represent zero field strength
(d) Relative strength of magnetic field is shown by the degree of closeness of the field lines

ANS.----------

2. The strength of magnetic field inside a long current carrying straight solenoid is

(a) more at the ends than at the centre

(b) minimum in the middle

(c) same at all points

(d) found to increase from one end to the other

ANS.----------

3. The direction of magnetic field produced around a current carrying

straight conductor is determined by using :

(A) Fleming's left hand rule

(B) Left hand thumb rule

(C) Right hand thumb rule

(D) Fleming's right hand rule

ANS.----------

4. The most important safety method used for protecting home appliances from short circuiting or overloading is

(a) earthing

(b) use of fuse

(c) use of stabilizers

(d) use of electric meter

ANS.----------

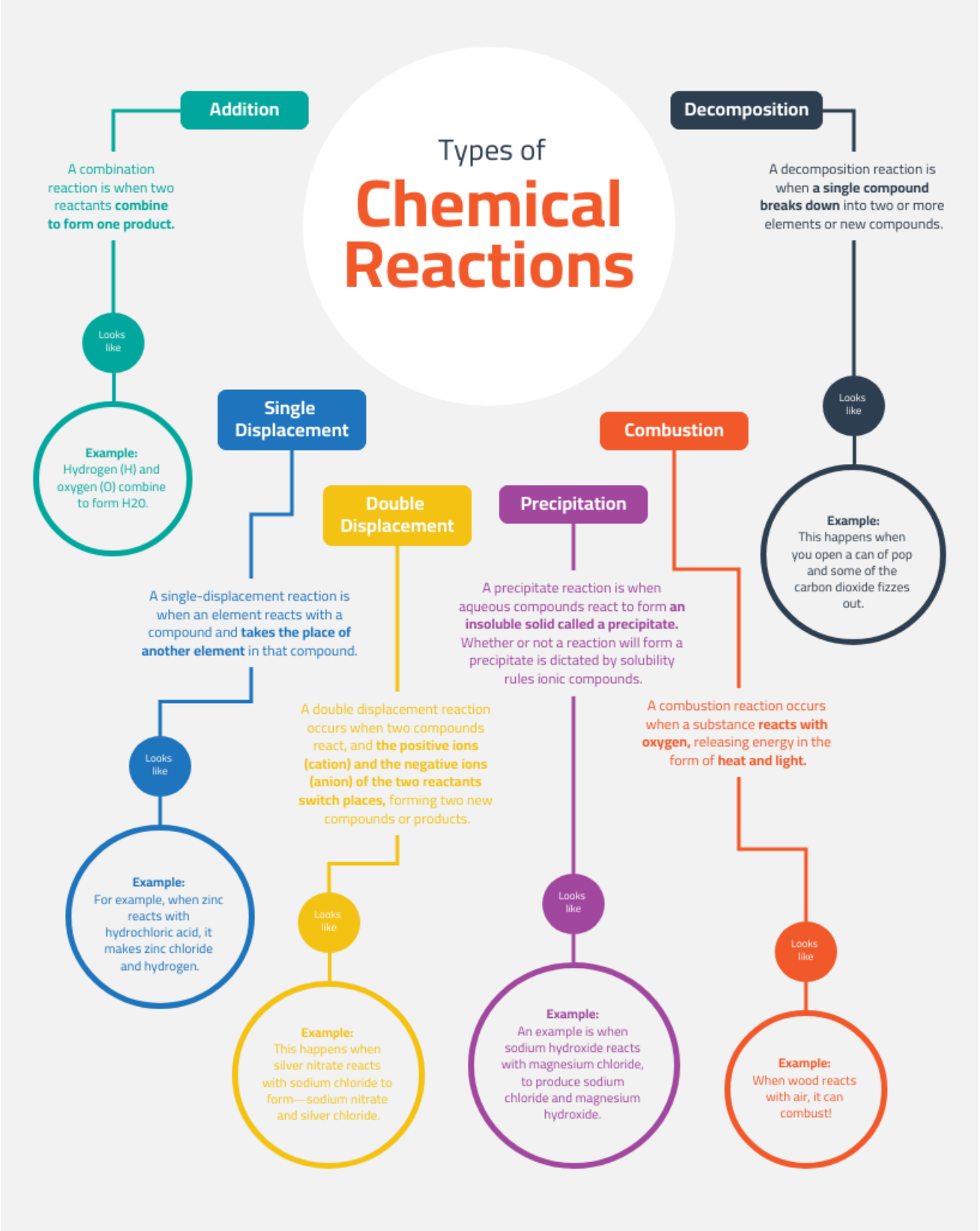
CHAPTER -13- OUR ENVIRONMENT
WORKSHEET-(VOLUME-2)

CLASS 10	NAME:
SUBJECT – SCIENCE	DATE:

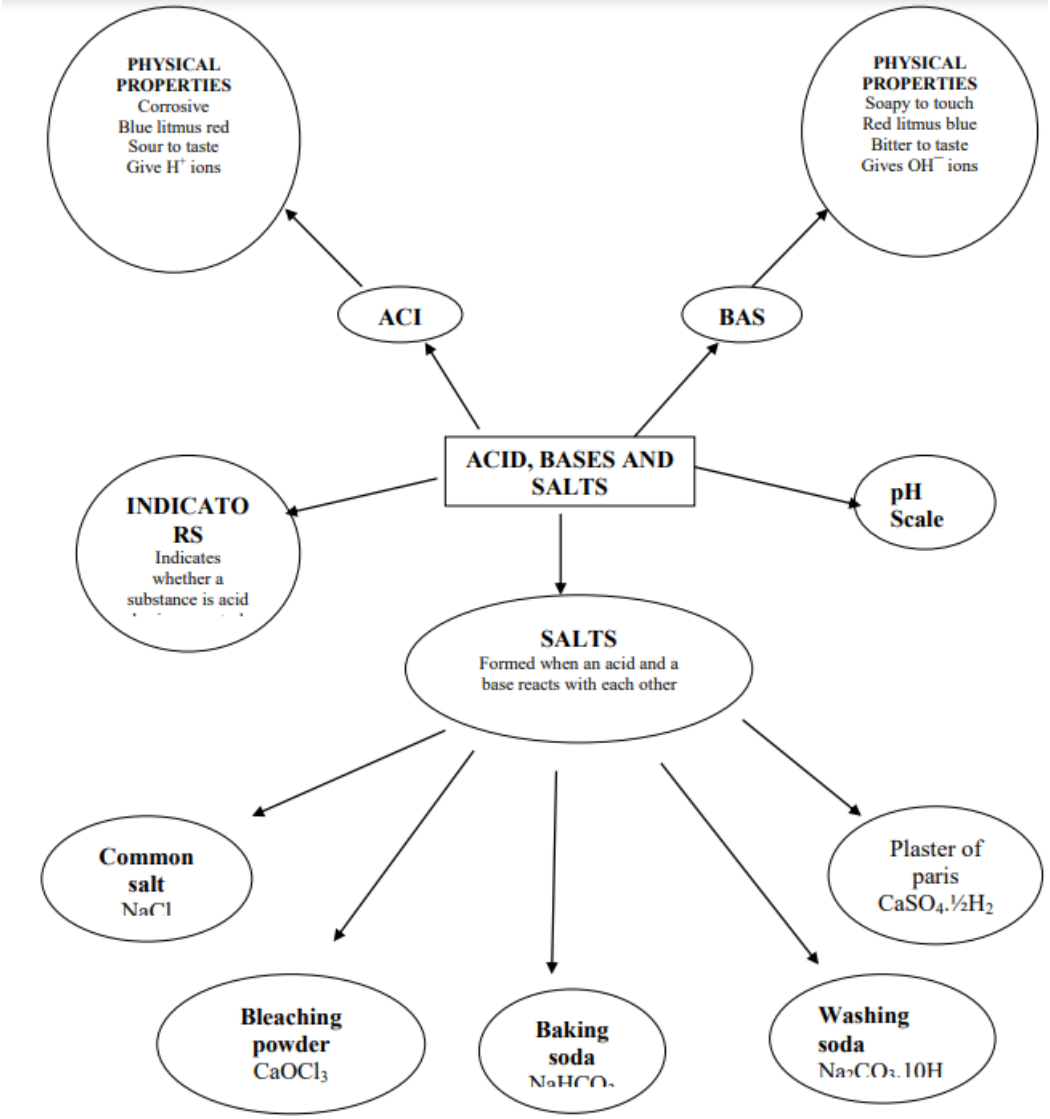
S.N	SECTION –A(MCQ)	MARKS
1	Which of the following contributes to biological magnification? (a) CO_2 (b) Fertilizers (c) Pesticides like DDT (d) Biogas	
2	Energy flow in an ecosystem is: (a) Bidirectional (b) Unidirectional (c) Circular (d) Reversible	
3	What is the percentage of energy passed to the next trophic level in a food chain? (a) 90% (b) 50% (c) 10% (d) 25%	
4	Which of the following can be reused to reduce waste? (a) Plastic carry bag (b) Paper (c) Glass bottle (d) Thermocol	
5	*Choose the correct option:* (a) Both A and R are true, and R explains A. (b) Both A and R are true, but R does not explain A. (c) A is true, R is false. (d) A is false, R is true. **Assertion (A):** Ozone layer prevents harmful ultraviolet rays from reaching Earth. **Reason (R):** UV rays are beneficial for plant photosynthesis.	
6	**Assertion (A):** Energy flow in an ecosystem is unidirectional. **Reason (R):** Energy lost as heat cannot be reused.	
	SECTION –B(VSA)	
7	Which trophic level has the least energy? **Ans-**	
8	What is the role of decomposers in the environment? **Ans-**	
9	Give one reason why the ozone layer is called a protective shield. **Ans-**	
	SECTION –C(SA)	
10	List any three human activities that lead to environmental pollution. **Ans-**	

CONCEPT MAP

CHAPTER-1-CHEMICAL REACTIONS AND EQUATIONS

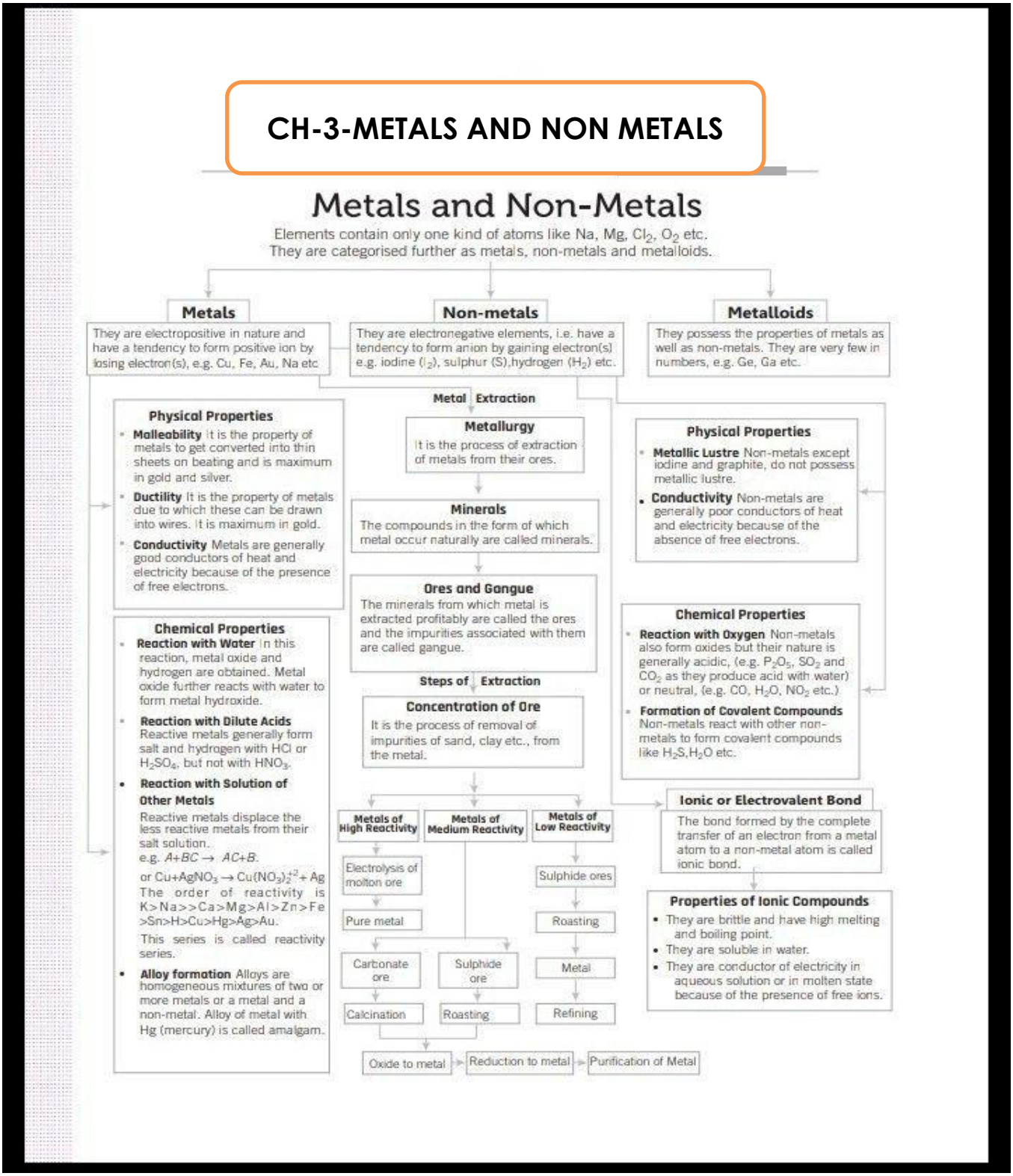


CHAPTER- 2-ACIDS, BASES ASALTS- MIND MAP



CH-3-METALS AND NON-METALS- MIND MAP

CH-3-METALS AND NON METALS



Class X Science
MIND MAP for Carbon and its Compounds

PROPERTIES AND VERSATILE NATURE OF CARBON

- Always forms covalent bonds
- Tetravalent
- Tetrahedral
- 3 allotropes – diamond, graphite and fullerenes
- Catenation – Unique property of self-linking of carbon atoms

Name of compounds	IUPAC Name
Alkene	Alkane – ane + ene = Alkene
Alkyne	Alkane – ane + yne = Alkyne
Haloalkanes	Halo + alkane = Haloalkane
Alcohols	Alkane – e + ol = Alkanol
Aldehydes	Alkane – e + al = Alkanal
Ketone	Alkane – e + one = Alkanone
Carboxylic acid	Alkane – e + oic acid = Alkanoic acid

CARBON AND ITS COMPOUNDS

Chemical properties of Carbon compounds

Combustion
Burning of carbon compound in air

Substitution
Replacement of an atom or a group of atoms in a organic molecule by another atoms or group of atoms

Addition
Addition of two reactants to form a single product

Oxidation
Addition of oxygen

Ethanol

- Colourless, distinct smell and burning taste, soluble in water in all proportions, neutral to litmus
- Reaction with sodium

  $2CH_3CH_2OH + Na \rightarrow CH_3CH_2ONa + H_2$
- Reaction with concentrated H_2SO_4

  $CH_3–CH_2–OH \xrightarrow[H_2SO_4]{Conc.} C_2H_4 + H_2O$
- Combustion

  $C_2H_5OH + 3O_2 \rightarrow 2CO_2 + 2H_2O + Heat$

Soaps

- Sodium salts (or potassium salts) of the long chain carboxylic acids. The ionic group in soaps is $–COO^-Na^+$.
- Not suitable for washing purposes when water is hard.

Detergents

- Sodium salts of long chain benzene sulphonic acids. The ionic group in a detergent is $-SO_3^-Na^+$ or $-SO_4^-Na^+$.
- Can be used for washing even when the water is hard.

Ethanoic Acid

- Colourless, pungent smelling liquid, soluble in water in all proportions
- Reaction with sodium carbonate

  $2CH_3COOH + Na_2CO_3 \rightarrow 2CH_3COONa + CO_2 + H_2O$
- Reaction with sodium hydrogen carbonate

  $CH_3COOH + NaHCO_3 \rightarrow CH_3COONa + CO_2 + H_2O$
- Esterification $CH_3–\overset{O}{\overset{\|}{C}}–OH + H–OCH_2–CH_3 \xrightarrow[\Delta]{Conc.\ H_2SO_4} CH_3–\overset{O}{\overset{\|}{C}}–OCH_2CH_3 + H_2O$
- Hydrolysis $CH_3COOC_2H_5 \xrightarrow{NaOH} C_2H_5OH + CH_3COOH$

CLASS X SCIENCE (2025-26)
CHAPTER 6 LIFE PROCESSES
MIND MAP

LIFE PPROCESSES

RESPIRATION IN ANIMALS (Human Beings)

rts of Human
spiratory system
ostrils, Nasal
ssage
harynx, Larynx
rachea
onchi,
onchioles
lveoli, Lungs
bs
iaphragm

Mechanism of Breathing
-Inspiration
-Gaseous exchange
-Expiration

NUTRITION

Autotrophic Nutrition in Plants.
Process involved is Photosynthesis.

Heterotrophic Nutrition in Animals.
-Ingestion
-Digestion
-Absorption
-Assimilation

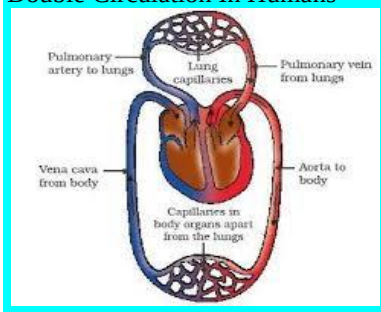
Parts of Alimentary canal
-Mouth
-Pharynx
-Oesophagus
-Stomach
-Small Intestine
-Large Intestine
-Rectum - Anus

TRANSPORTATION

sportation in
s
em
em

Circulatory system in Humans
-Blood
-Heart
_Blood vessels

Double Circulation In Humans



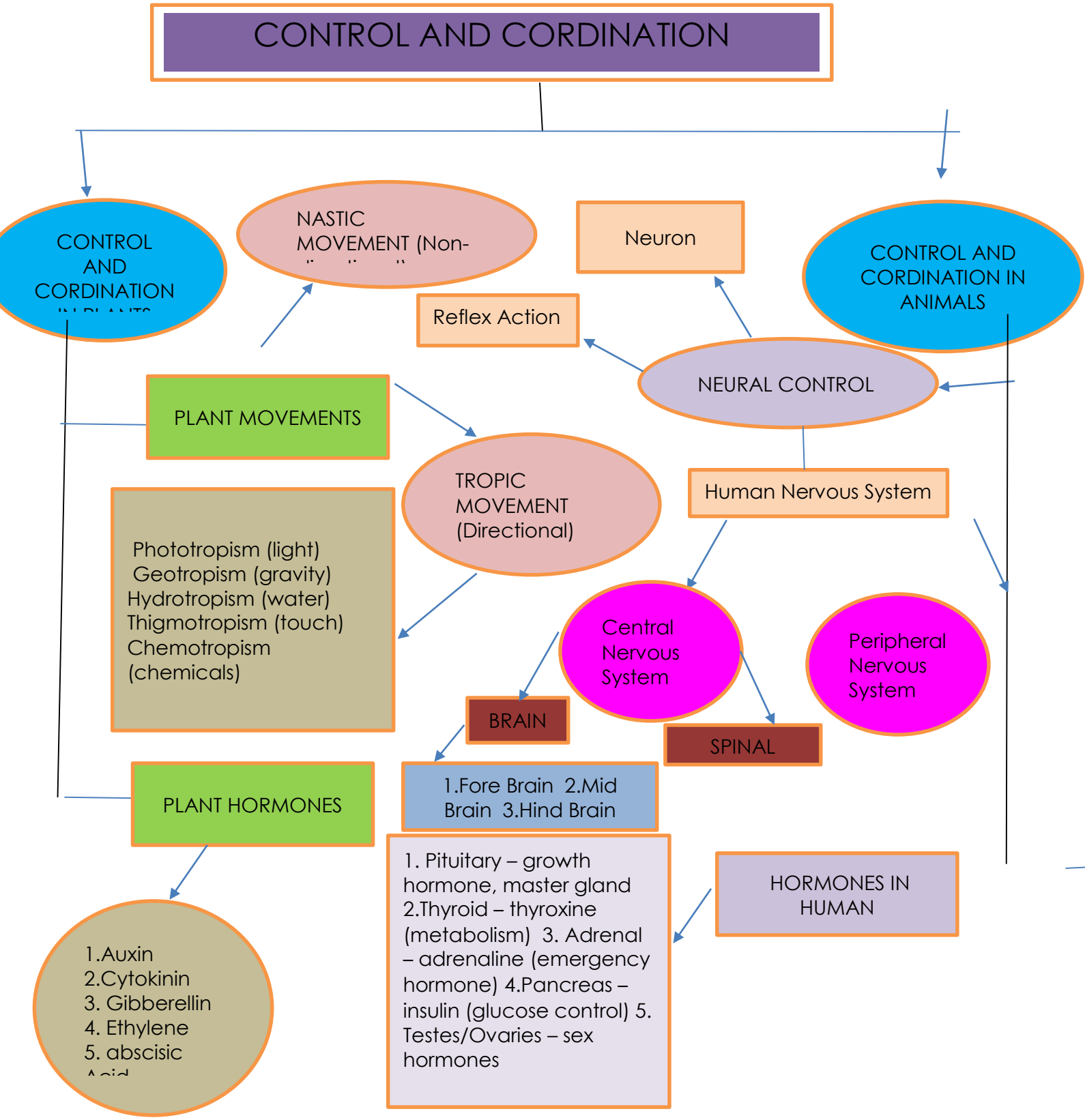
EXCRETION

Basic unit of Kidney- Nephron
Parts of neuron
-Bowman's capsule
-Glomerulus
-PCT
-Loop of Henle
-DCT
-Collecting duct

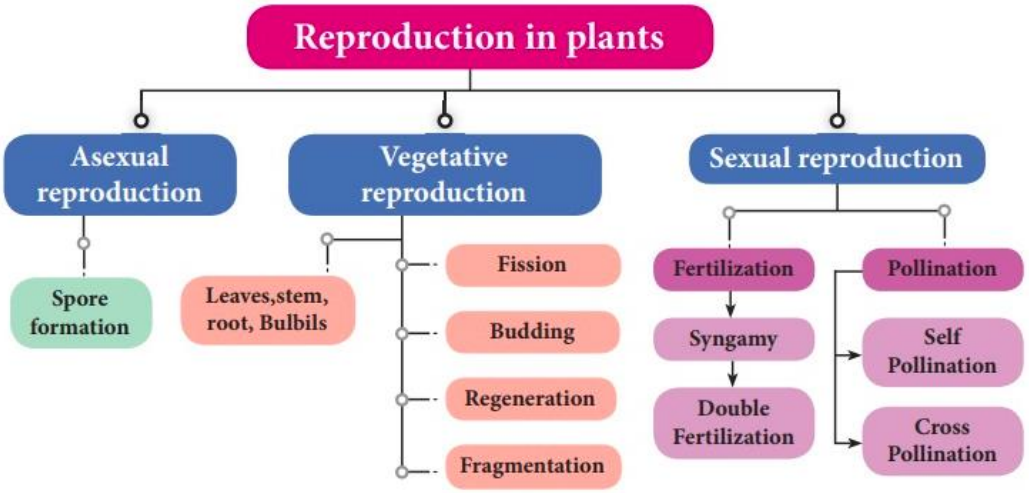
Plants- Transpiration

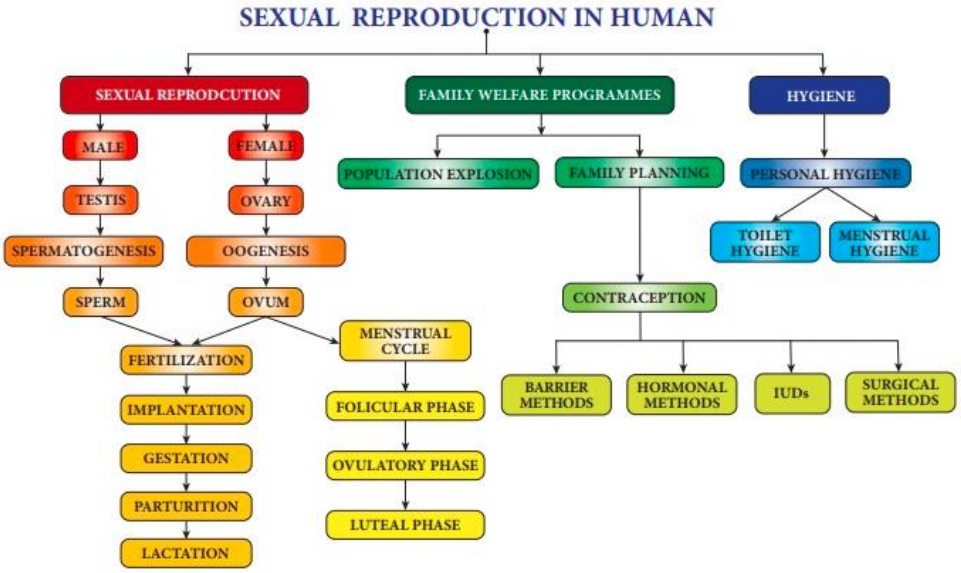
Animals- Kidney helps in formation of Urine

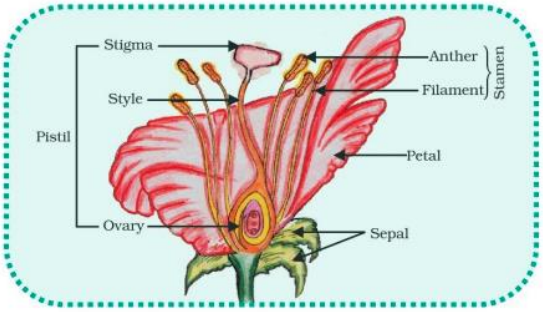
CLASS 10

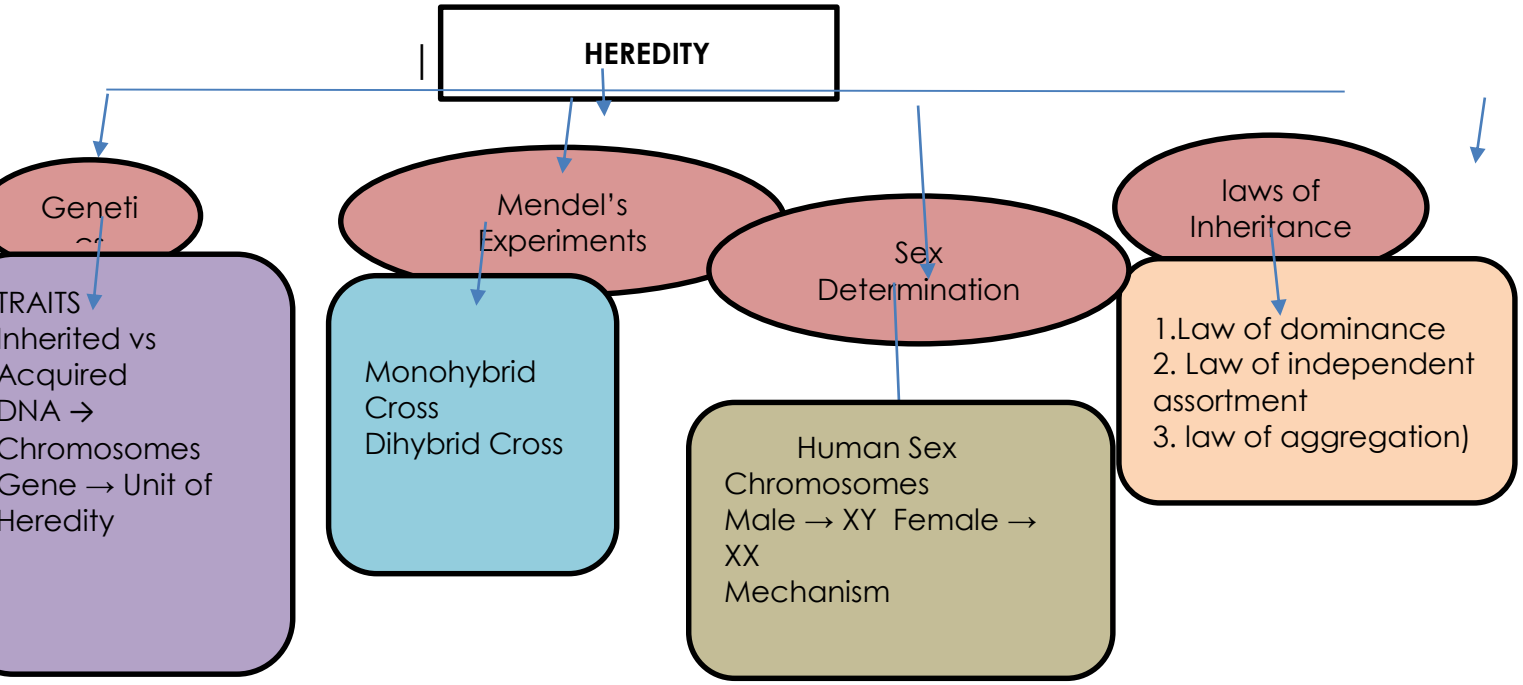

CONTROL AND CORDINATION
CONTROL AND CORDINATION
NASTIC MOVEMENT (Non-
Neuron
CONTROL AND CORDINATION IN ANIMALS
Reflex Action
NEURAL CONTROL
PLANT MOVEMENTS
TROPIC MOVEMENT (Directional)
Human Nervous System
Phototropism (light)
Geotropism (gravity)
Hydrotropism (water)
Thigmotropism (touch)
Chemotropism (chemicals)
Central Nervous System
Peripheral Nervous System
BRAIN
SPINAL
PLANT HORMONES
1.Fore Brain 2.Mid Brain 3.Hind Brain
1. Pituitary – growth hormone, master gland 2.Thyroid – thyroxine (metabolism) 3. Adrenal – adrenaline (emergency hormone) 4.Pancreas – insulin (glucose control) 5. Testes/Ovaries – sex hormones
HORMONES IN HUMAN
1.Auxin
2.Cytokinin
3. Gibberellin
4. Ethylene
5. abscisic

CHAPTER-7-How Do Organisms Reproduce?
MIND MAP








HEREDITY
Geneti
TRAITS
Inherited vs
Acquired
DNA →
Chromosomes
Gene → Unit of
Heredity
Mendel's
Experiments
Monohybrid
Cross
Dihybrid Cross
Sex
Determination
Human Sex
Chromosomes
Male → XY Female →
XX
Mechanism
laws of
Inheritance
1.Law of dominance
2. Law of independent
assortment
3. law of aggregation)

Heredity and Evolution

Gregor Johann Mendel (Heredity)

Monohybrid Cross

Law of Dominance

- It states that recessive alleles will always be masked by dominant alleles.
- In F_1 generation, phenotype of all plants are red.

Law of Segregation

F_2 generation
- Phenotype : 3 Red : 1 White
- Genotype : 1 RR : 2 Rr : 1 rr

F_1 generation
- Phenotype : All red
- Genotype : Rr

Dihybrid Cross

Law of Independent Assortment

F_2 generation
- Phenotype
  1. Round Yellow
  2. Wrinkled Yellow
  3. Round Green
  4. Wrinkled Green
- Genotype
  9:3:3:1

F_1 generation
- Phenotype : All round yellow
- Genotype : Hybrid (RrYy)

Variations

Brings about evolution

Sex determination in humans

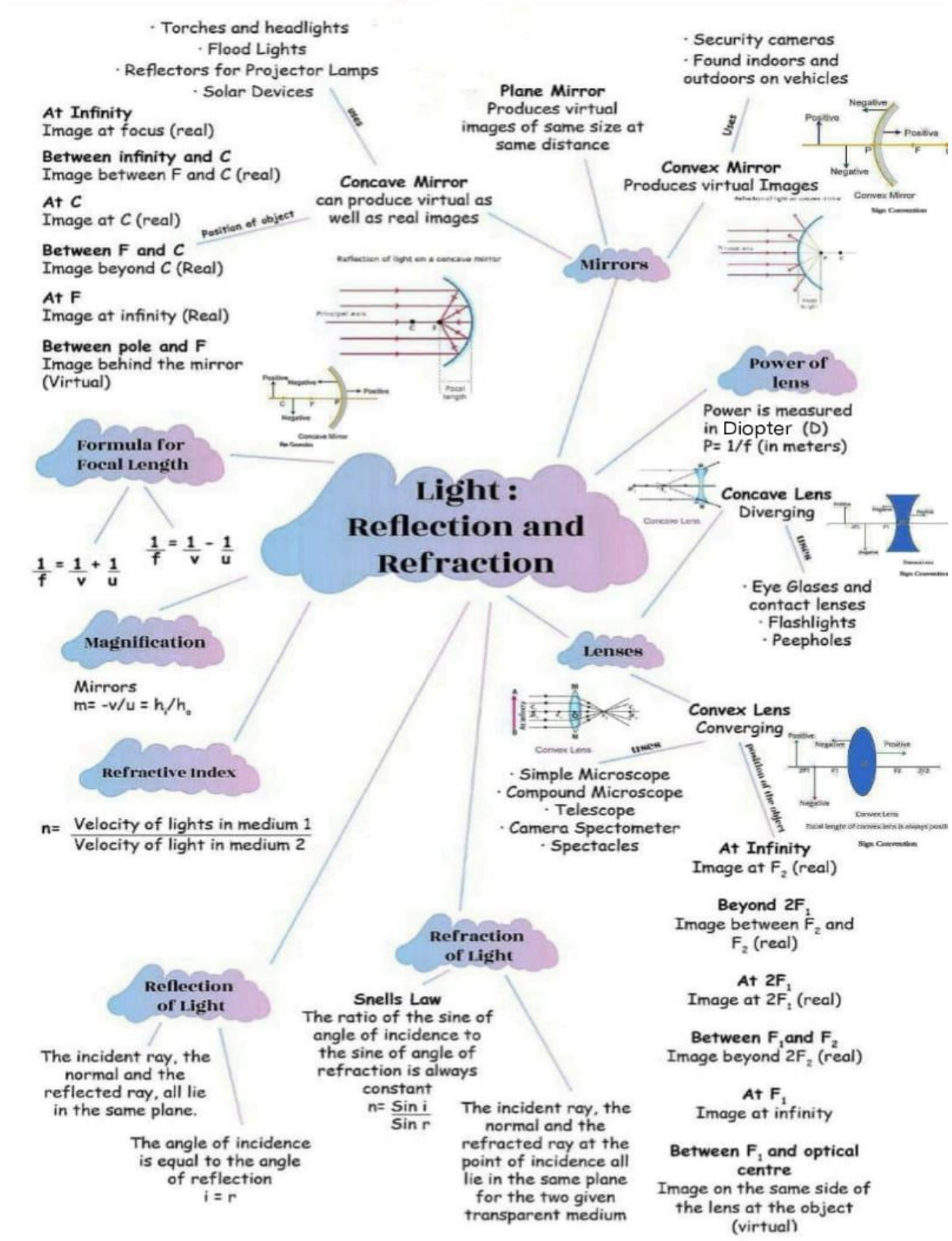
Female: 22+XX
22 autosomes
XX sex chromosome

Male: 22+XY
22 autosomes
XY sex chromosome

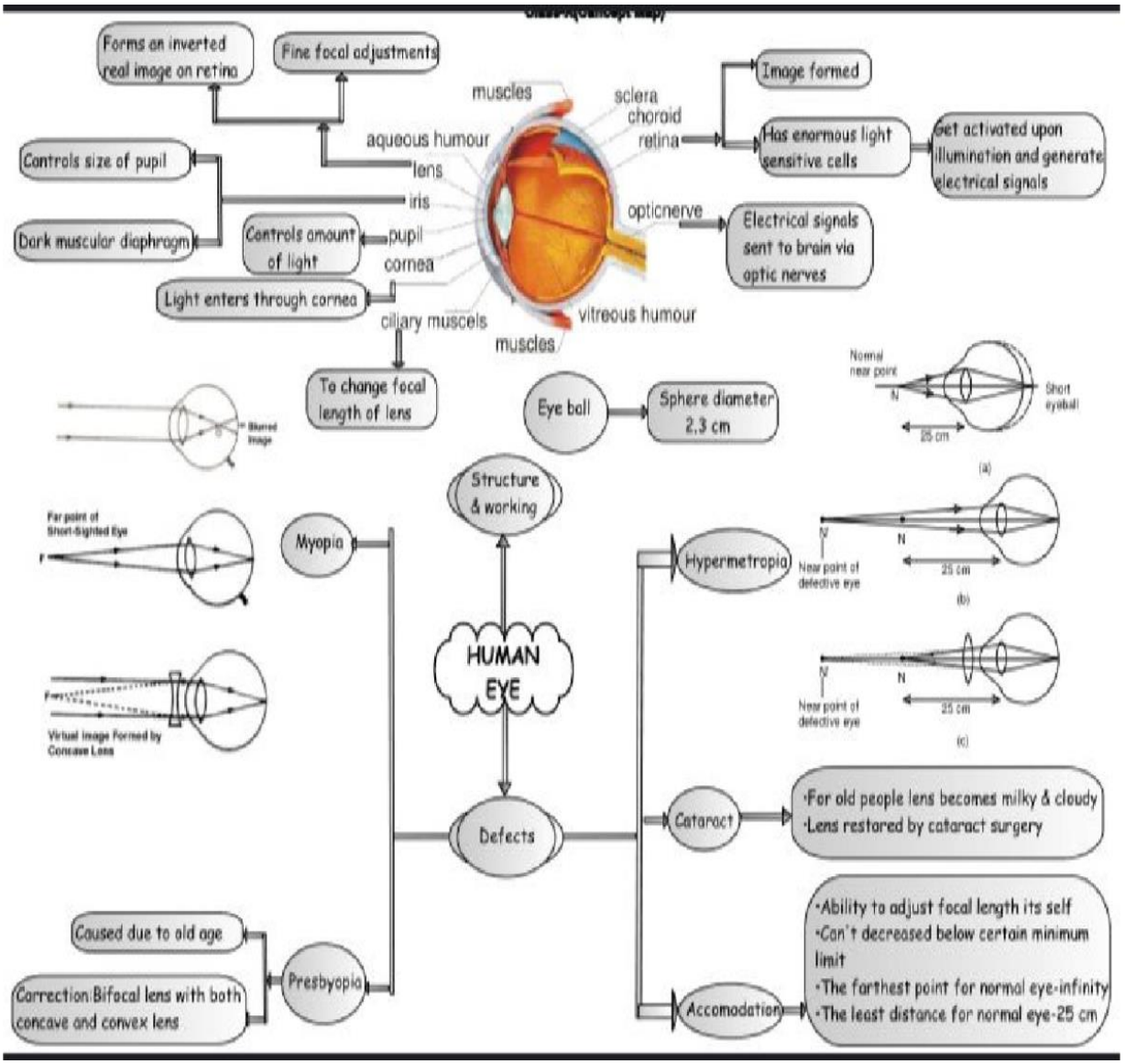
- Child who inherits an X chromosome from his father : Girl (XX)
- Child who inherits a Y chromosome from his father : Boy (XY).

Trace the Mind Map
First Level · Second Level · Third Level

MIND MAP
LIGHT REFLECTION AND REFRACTION



MIND MAP
HUMAN EYE AND THE COLOUR FUL WORLD



NATURAL PHENOMENA

Refraction of light through a glass prism

- A homogeneous, transparent refracting medium bound by atleast two non-parallel surfaces inclined at some angle is called a prism.

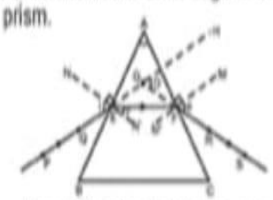
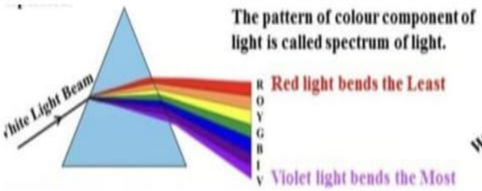


Fig. : Refraction of light through a triangular glass prism

PE - Incident ray
EF - Refracted ray
FS - Emergent ray
∠A - Angle of the prism
∠i - Angle of incidence
∠r - Angle of refraction
∠e - Angle of emergence
∠D - Angle of deviation

Dispersion of Light

- The splitting of white light into its component colours on passing through a transparent medium like a glass prism.
- The white light disperses into its seven colour components in the order VIBGYOR i.e., Violet, Indigo, Blue, Green, Yellow, Orange, Red.
- The red colour has the maximum speed in the prism, so it deviates the least while the violet colour has the minimum speed, so it deviates the most.



The pattern of colour component of light is called spectrum of light.

Red light bends the Least

Violet light bends the Most

Atmospheric Refraction

- The refraction of light caused by the earth's atmosphere.
- Some of the phenomena which occur due to atmospheric refraction are:
  - Twinkling of stars.
  - The stars seem higher than they actually are.
  - Advance sunrise and delayed sunset.

Scattering of Light

- When sunlight enters the earth's atmosphere, the atoms and molecules of different gases in the atmosphere absorb this light and re-emit it in all directions.
- The scattering of light by particles in its path is called Tyndall effect.
- Some phenomena which occur due to scattering of light are :
  - The colour of the sky is blue.
  - The sun appears red at sunrise and sunset.

CHAPTER-11- ELECTRICITY

Electricity

Important Source of Energy

Electric Circuit

- A closed and continuous path through which electric current flows.
- Components of electric circuit are cell/battery, bulb, switch/key, fuse, connecting wire, ammeter, voltmeter, rheostat, galvanometer etc.

Electric Charge

It is a physical quantity of matter which causes it to experience a force when placed near other electrically charged matter.

- A body is negatively charged if it gains electrons.
- A body is positively charged if it loses electrons.
- Its SI unit is coulomb.
- It is a scalar quantity.
- Charges are conserved and quantised.

Electric Current

- Rate of flow of electric charges through a conductor.
- $I = \frac{q}{t}$ or 1 A = 1 C/s.
- Its SI unit is ampere.
- It is a scalar quantity.
- Measured by ammeter

1 mA = 10^{-3} A, 1 μA = 10^{-6} A

Electric Power

- Rate at which electric energy is dissipated or consumed in an electric circuit.
- $P = VI = I^2R = V^2/R$
- Its SI unit is watt.
- 1 W = 1 J/s, 1 kW = 10^3 W
- Commercial unit of electric energy is kWh.
- 1 kWh = 3.6 x 10^6 J

Potential Difference

It is work done per unit charge in moving a unit positive charge between two points.

- $V = \frac{V_A - V_B}{q} = \frac{W}{q}$ or 1 V = 1 J/C
- Its SI unit is volt.
- It is a scalar quantity.
- Measured by voltmeter
- 1 mV = 10^{-3} V, 1 μV = 10^{-6} V
- 1 kV = 10^3 V, 1 MV = 10^6 V

Ohm's Law

The current passing through a conductor is directly proportional to the potential difference across its ends, such that the physical conditions like temperature, density etc., remain unchanged.

$V \propto I$

or $V = RI$

Joule's Law of Heating

The heat produced in a conductor is directly proportional to the (i) Square of the current (I), (ii) Resistance (R) of the conductor and (iii) the time (t) for which the current is passed.

$H \propto I^2 \propto R \propto t$

$H = I^2RT$

- Its SI unit is Joule.

Resistance

Property of a conductor due to which it opposes the flow of current through it.

- $R = \frac{V}{I}$ or 1 Ω = 1 V/A
- Its SI unit is ohm.
- It is a scalar quantity.
- 1 kΩ = 10^3 Ω, 1 mΩ = 10^{-3} Ω

Practical Applications

- Electric bulb (to produce light)
- Electric fuse that protects circuits and appliances.
- Electrical heating appliances.

Factors Affecting Resistance

- Length of the conductor
- Area of cross-section
- Nature of material
- Effect of temperature
- $R = \frac{\rho l}{A}$ (where, ρ is resistivity of conductor)

Resistance in Series

- Maximum effective resistance.
- Two or more resistors are connected end to end.
- Current remains constant but voltage varies.

$V = V_1 + V_2 + V_3$

$R = R_1 + R_2 + R_3$

Resistance in Parallel

- Minimum effective resistance.
- Two or more resistors are connected simultaneously between two points.
- Voltage remains constant but current varies.

$I = I_1 + I_2 + I_3$

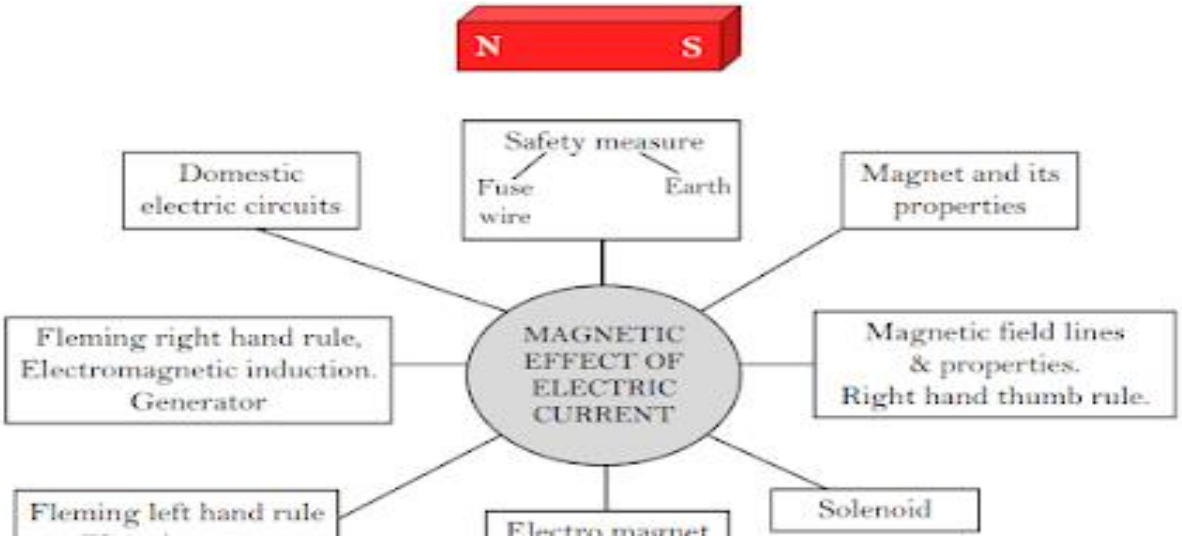
$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$

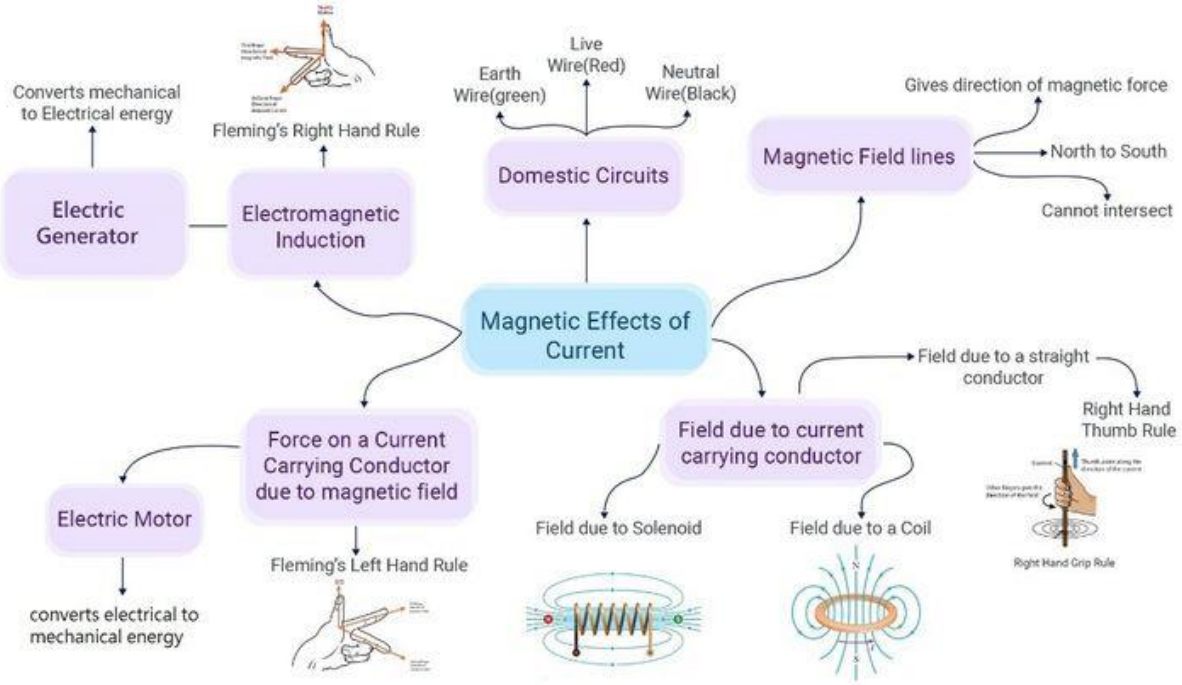
Resistivity

It refers to resistance of a conductor of unit length and cross-sectional area.

- It depends on the nature of the substance and temperature.
- Its SI unit is Ohm-metre (Ω-m).

CHAPTER-12-MAGNETIC EFECT OF CURRENT-MIND MAP





OUR ENVIRONMENT

➤ Structural and functional unit of biosphere comprising living organisms and their non-living environment.
➤ Two basic processes involved in an ecosystem are:
(i) Cycling of material (ii) Flow of energy

Types

➤ **On the basis of nature**:
(I)Natural ecosystems: Operate in nature, e.g., forest ecosystem.
(ii) Artificial ecosystems: Maintained by man, e.g., croplands.
➤ **On the basis of duration**:
(i) Temporary ecosystems: Short-lived ecosystems, e.g.,

Components

➤ Two main components are:
(i) Abiotic or non-living components
(ii) Biotic or living components

Biotic

➤ It includes living organisms.
➤ Three main categories are:
(i) Producers: Produce their own food
(ii) Consumers: Obtain food from producers
(iii) Decomposers: Obtain food from

Energy Flow

➤ Energy interactions between
at different trophic levels.
Food Web: Network formed by

Disturbance in any component of the environment causes an imbalance. This leads to many environmental problems

Ozone Layer Depletion

➤ Thinning of ozone layer which protects earth from harmful UV rays.
➤ Chlorofluorocarbons, halons, methane, nitrous oxide, carbon tetrachloride and chlorine are ozone depleting substances (ODS).
➤ Effects of ozone depletion
(I)Cancers (ii) Cataract in eyes
(iii) Damage to immune system
(iv) Decline in photosynthesis
(v) Increased embryonic mortality

Solid Waste

➤ Solid waste can be categorised into two types:
(i) Biodegradable (can be easily degraded by the action of microorganisms).
(ii) Non-biodegradable (cannot be degraded by the action of microorganisms).
➤ Solid wastes can be disposed off by the following methods:
(i) Landfilling (ii) Recycling of waste
(iii) Composting