Unit.5 Priodic Table

1. Choose the correct answer

1. The periodic table is a way of classify the:			
a. Matter	b. Animals	c. Plants	d. Elements
2. The group number shows the number of _____ in the outer most shell of the elements in group.			
a. Atoms	b. Electrons	c. Protons	d. Neutrons
3. The group I of the periodic tab 4. le contains:			
a. Two elements	b. Four elements	c. Six elements	d. Eight elements
5. Fluorine is present in toothpaste in the form of:			
a. Sodium chloride	b. Sodium bromide	c. Sodium fluoride	d. Sodium iodide
6. The number of electrons in the outermost shell of all the atoms of the elements of group 2 are:			
a. 2	b. 4	c. 6	d. 8

2. Fill ups

I. Beryllium metal is present in group II A.
II. A metal that is very important for all living organism is Zinc.
III. There are only 18 non-metals.
IV. All of the elements in a period have the same number of electron shells.
V. Periodicity means elements with the similar properties appear at regular intervals.

3. Look at the column of the periodic table:

Li
Na
K
Rb
Cs
Fr

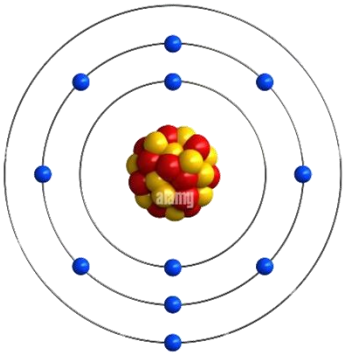
I. What is the name of the group?
Ans: The name of this group is alkali metals.

II. Give reason to your answer in question 1.
Ans: Because they form alkalis when they react with water.

III. What is the period number of sodium?
Ans: The period number of sodium is 3.

IV. Why do potassium and sodium have different period number but same group number?
Ans: The valence electron of Sodium, and Potassium is same but they have different masses. That is why, potassium and sodium have different period number but same group number.

4. Look at the following structure of an atom and answer the following questions:



i. What is the atomic number?
Ans: The atomic number is 11.

ii. What is the group number?
Ans: The group number is 1.

iii. What is the period number?
Ans: The period number is 3.

iv. Using periodic table find the mass number.
Ans. The mass number is 23.

v. Find the name and symbol of elemnt.
Ans. The name of the element is sodium and symbol is Na.

5. True / False

i.	Periodic table consist of 18 horizontal rows.	**F**
ii.	First period consist of only two elements.	**T**
iii.	Non-metals are good conductor of heat and electricity.	**F**
iv.	Metals are solids except mercury.	**T**
v.	Elements of group have similar electronic configuration in valence shell.	**T**

6. Write the uses of the following metals:

Metal	Uses
Sodium	Sodium is used as a heat exchanger in some nuclear reactors, and as a reagent in the chemical industry.
Lithium	Lithium is used in rechargeable batteries for mobile phones, laptops, digital cameras and electric vehicles.
Iron	Iron is used to make bridges, cutting tools, bicycle chains etc.
Calcium	Calcium is used to build and maintain strong bones.
Potassium	Potassium is used for treating and preventing low potassium levels, treating high blood pressure and preventing stroke.
Aluminium	It is useful for wrapping food, chocolate bars and making drink cans, and to make window frames.
Magnesium	Magnesium is used in products that benefit from being lightweight, such as car seats, luggage, laptops, cameras and power tools.
Beryllium	Beryllium is used in gears and cogs particularly in the aviation industry.

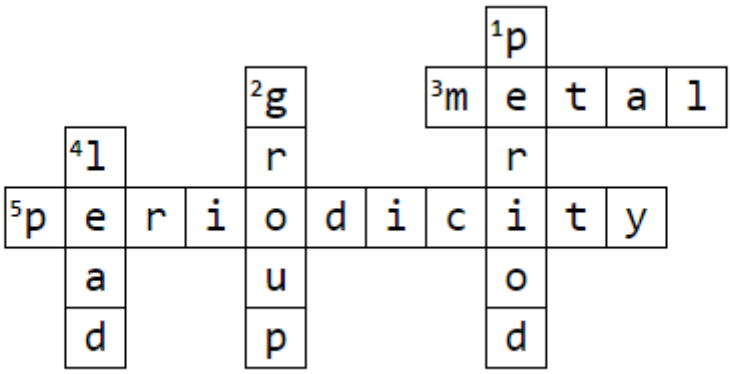
7. Matching Column

Metals	Uses
Aluminium	Used in match industry.
Gold	Used in thermometer.
Phosphorous	To make reflectors of light.
Graphite	To make jewellery.
Mercury	Used in lead pencil.

8. Jumbled Words:

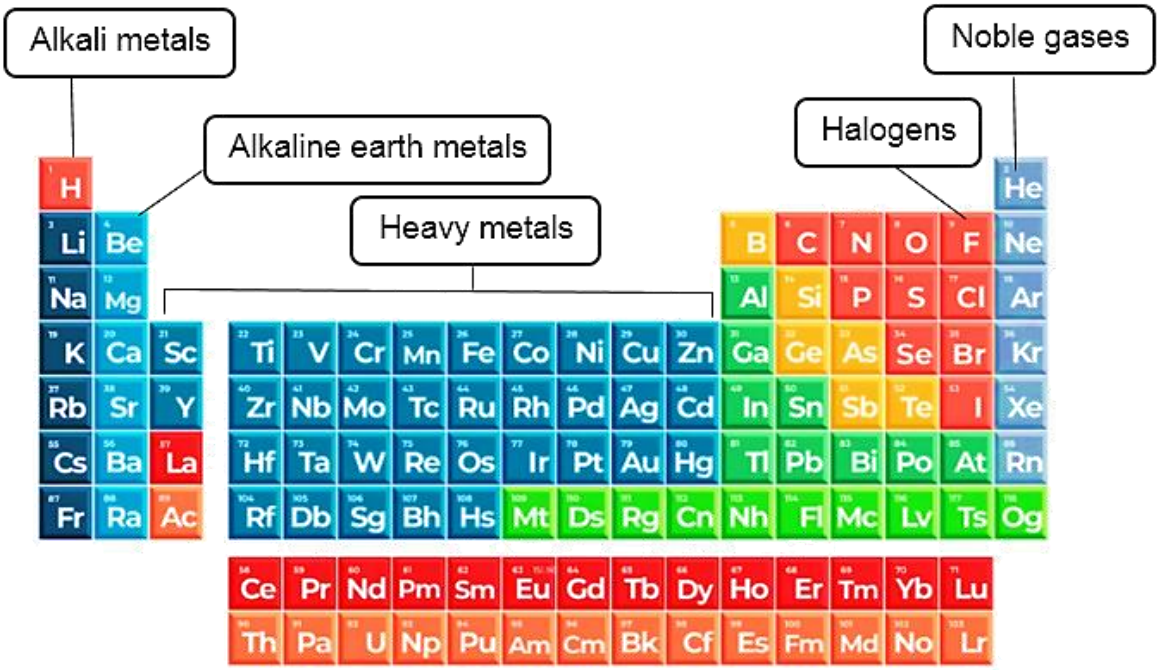
TMELEEN	ELEMENT	RZTLAONHIO	HORIZONTAL
HMCLAIEC	CHEMICAL	TALCEVIR	VERTICAL
OEIDRP	PERIOD	NEGORDYH	HYDROGEN
LKALAI	ALKALI	YENOGX	OXYGEN
ONMLCU	COLUMN	ORDCNCUOT	CONDUCTOR

9. Crosswords:



Across	Down
3. good conductor of heat and electricity	**1.** horizontal rows in periodic table
5. Similar properties appear at regular interval	**2.** vertical column in periodic table
	4. name of heavy metal

10. Label the diagram:



11. Word search:

Periodicity	Groups	Malleable	Density	Melting
Insulator	Ductility	Alkaline	Radioactive	Metalloid

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

N	B	A	Y	M	E	L	T	I	N	G	X

12. Drag and drop:

			
Lithium	Nitrogen	Copper	Lead
			
Oxygen	Phosphorous	Magnesium	Bromine

Metals
Lithium
Copper
Lead
Magnesium

Non-metals
Nitrogen
Phosphorous
Bromine
Oxygen

13. Short answer questions:

1) **List the names of the group 1 elements.**
   Ans: Hydrogen (H), lithium (Li), sodium (Na), potassium (K), rubidium (Rb), cesium (Cs), and francium (Fr).
2) **List the names of the group 2 elements.**
   Ans: Beryllium (Be), magnesium (Mg), calcium (Ca), strontium (Sr), barium (Ba), and radium (Ra).
3) **How many groups and periods are there in the periodic table?**

Ans: There are 18 groups and 7 periods in the periodic table.

4) **What are noble gases?**
Ans: Noble gases are a group of chemical elements with similar properties. They are all odorless, colorless monatomic gases.
5) **What are metalloids?**
Ans: The elements in between metals and non-metals are metalloids. A Metalloid is an element that has some properties of metals and some of non-metals.
6) **How many elements are gases?**
Ans: 11 elements are gases.
7) **How many elements are metals?**
Ans: 93 elements are metals.

14. Long Questions

i. **How are elements arranged in the periodic table?**
Ans: The elements are arranged in order of increasing atomic number. The horizontal rows are called periods and the vertical columns are called groups. Elements in the same group have similar chemical properties.

ii. **Explain the term periodicity.**
Ans: The periodic table is a way of classifying the elements, which shows them in order of their atomic number. When arranged by atomic number, the elements show periodicity, which means elements with similar properties appear at regular intervals.

iii. **Why do elements have different group and period numbers?**
Ans: Elements are arranged in the periodic table according to increasing atomic number, every element contains specific atomic number and mass number. That is why, elements have different group and period number.

iv. **Why is hydrogen not classified in any group in the periodic table?**
Ans: Hydrogen is a non-metal and is placed above group in the periodic table because it has ns^1 electron configuration like the alkali metals. However, it varies greatly from the alkali metals as it forms cations (H^+) more reluctantly than the other alkali metals.

v. Write difference between metals and non-metals.

Ans:

Metal	Non-metal
Metals have shiny surface.	Non-metals have dull surface.
Metals can be malleable (harmed into sheet) and ductile (drawn into wire).	Non-metal cannot be malleable and ductile.
Metals are good conductor of heat and electricity.	Non-metals are poor conductor of heat and electricity,
Metals have high melting and boiling point.	Non-metals have low melting and boiling point.
Metals have high density.	Non-metals have low density.

Unit.6 Chemical Rections

1. Choose the correct answer.

2. Magnesium combines with oxygen to form:			
a. Magnesium oxide	b. Oxygen	c. Water	d. Acid
3. When two elements or compounds react to form a new single compound, the reaction is called a:			
a. Neutralization reaction	b. Addition reaction	c. Combustion reaction	d. Displacement reaction
4. What are the names of the products when silver nitrate reacts with sodium chloride?			
a. Sodium nitrate and water	b. Sodium nitrate and silver chloride	c. Sodium nitrate and oxygen	d. Water and silver chloride
5. Reactions in which heat is given out are called:			
a. Endothermic reaction	b. Exothermic reaction	c. Displacement reaction	d. Double displacement reaction
6. Which statement is correct about hydrochloric acid?			
a. Hydrogen gas combines with chlorine gas to form water.			
b. Hydrogen gas combines with chlorine gas to form hydrochloric acid.			
c. Hydrogen chloride is formed by decomposition of potassium chlorate.			
d. Hydrogen gas combines with oxygen gas to form hydrochloric acid.			

2. Fill in the blanks:

I. Substances which react together are called reactants.
II. When an alkali reacts with acid, salt and water are formed and this reaction is called neutralization.
III. Heat is absorbed in an endothermic reaction.
IV. In magnesium oxide, magnesium and oxygen elements are found.
V. Photosynthesis is a type of endothermic reaction because heat is absorbed.

3. Complete word equations for the following reactions.

I. **Magnesium + oxygen ⟶**
Ans: Magnesium + oxygen ⟶ Magnesium oxide

II. **Sodium hydroxide + hydrochloric acid ⟶**

Ans: Sodium hydroxide + hydrochloric acid ⟶ Sodium chloride + water

III. **Silver nitrate + sodium chloride ⟶**
Ans: Silver nitrate + sodium chloride ⟶ Sodium nitrate + Silver chloride

IV. **Calcium oxide + water ⟶**
Ans: Calcium oxide + water ⟶ Calcium hydroxide

V. **Methane + oxygen ⟶**
Ans: Methane + oxygen ⟶ Carbon dioxide + water

4. Complete and balance the following equations:

I. **$N_2 + O_2$ ⟶**
Ans: $N_2 + O_2 \longrightarrow 2NO$

II. **Mg + HCl ⟶**
Ans: $Mg + 2HCl \longrightarrow MgCl_2 + H_2$

III. **$H_2 + O_2$ ⟶**
Ans: $2H_2 + O_2 \longrightarrow 2H_2O$

IV. **Mg + $FeSO_4$ ⟶**
Ans: $Mg + FeSO_4 \longrightarrow MgSO_4 + Fe$

V. **Mg + O_2 ⟶**
Ans: $2Mg + O_2 \longrightarrow 2MgO$

5. Balance the following equation:

I. **$H_2 + Cl_2$ ⟶ HCl**
Ans: $H_2 + Cl_2 \longrightarrow 2HCl$

II. **Na + Cl_2 ⟶ NaCl**
Ans: $2Na + Cl_2 \longrightarrow 2NaCl$

III. **$CH_4 + O_2$ ⟶ $CO_2 + H_2O$**
Ans: $CH_4 + 2O_2 \longrightarrow CO_2 + 2H_2O$

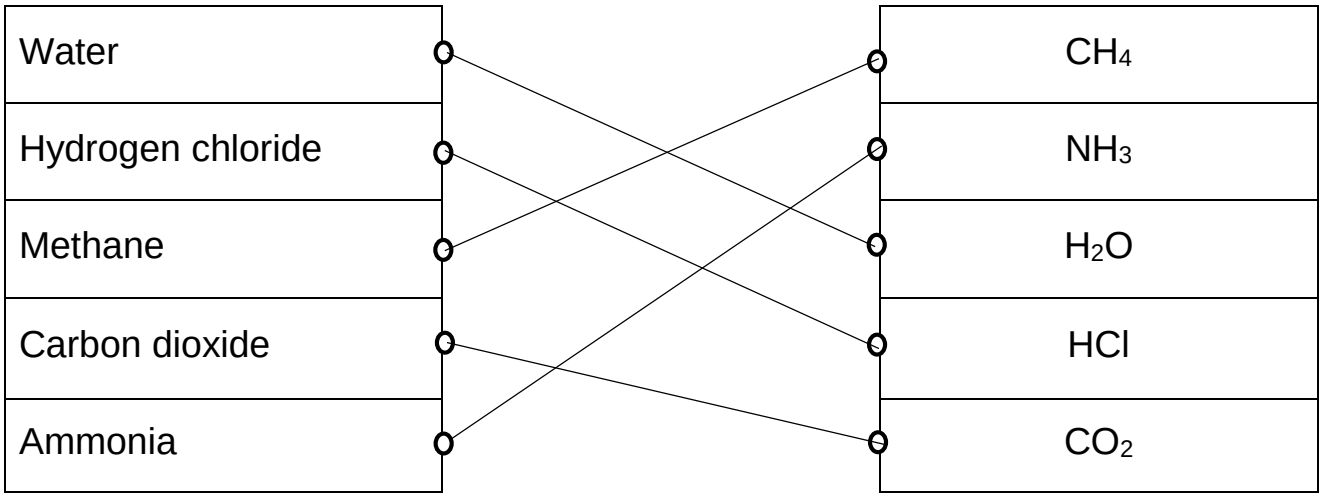
IV. **$Mg(OH)_2 + H_2SO_4$ ⟶ $MgSO_4 + H_2O$**
Ans: $Mg(OH)_2 + H_2SO_4 \longrightarrow MgSO_4 + 2H_2O$

V. **$KClO_3$ ⟶ KCl + O_2**
Ans: $2KClO_3 \longrightarrow 2KCl + 3O_2$

6. True / False:

1. When each atom shares three electrons, a triple covalent bond is formed.	T
2. Ionic bond found between non-metal and metal.	T
3. Hydrogen gas react with oxygen gas to form salt.	F
4. New substances that are formed during a chemical reaction is called products.	T
5. One or more new substances are formed in physical change.	F

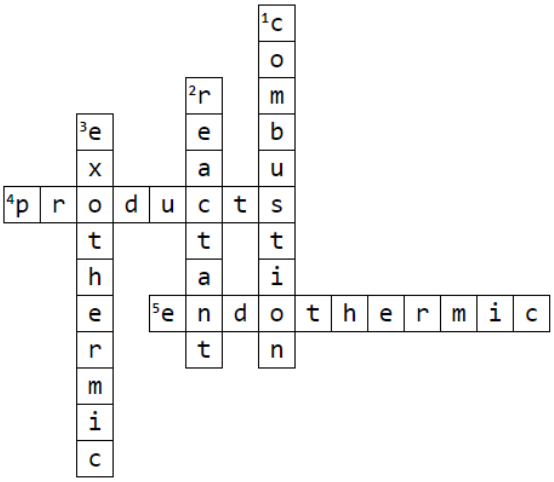
7. Matching the substances with their formulas.



8. Jumbled Words:

DNUOPMOC	COMPOUND	MDIOUS	SODIUM
TLOANVCE	COVALENT	EPHTLUAS	SULPHATE
TTLEOCAITCESR	ELECTROSTATIC	ETSRNATCA	REACTANTS
TICRATAON	ATTRACTION	DPRCTOSU	PRODUCTS
MUENGMSAI	MAGNESIUM	DDOTNAII	ADDITION

9. Crosswords:



Across	Down
4.new substances formed in chemical reaction	1.burning process
5.heat is absorbed	2.substances react with each other in chemical reaction
	3. heat is given out

10. Word search:

Reaction	**Neutralization**	**Oxidation**	**Bonding**
Organic	**Energy**	**Scientist**	**Equation**

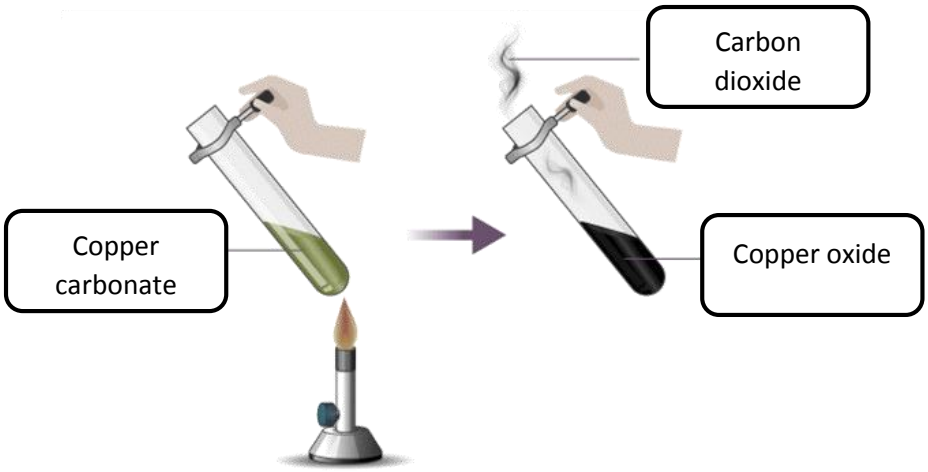
N	Q	W	E	R	T	Y	U	I	O	E	P	K	J
E	N	E	R	G	Y	A	S	D	F	Q	G	H	J
U	K	L	M	N	B	V	B	C	X	U	Z	A	S
T	D	F	G	H	J	K	O	L	P	A	O	I	U
R	E	A	C	T	I	O	N	U	Y	T	R	E	S
A	Q	W	E	R	T	R	D	Y	U	I	Z	X	C
L	C	V	B	N	M	G	I	Q	S	O	Z	X	I
I	M	H	T	R	D	A	N	S	Z	N	G	I	E
Z	P	K	N	B	F	N	G	R	S	A	Q	W	N
A	Q	W	E	R	T	I	G	N	M	K	J	H	T
T	A	C	G	T	Y	C	X	F	S	T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

11. Drag and drop

			
Burning of wood	Rusting of iron	Melting of ice	Baking of bread
			
Cutting of wood	Cooking of food	Shredding paper	Crushing paper

Physical change	Chemical change
Melting of ice	Burning of wood
Cutting of wood	Rusting of iron
Shredding paper	Baking of bread
Crushing paper	Cooking of food

12. label the diagram:



13. Comprehension:

When chemical bonds between atoms are formed or broken, chemical reactions occur. The substances that are introduced into a chemical reaction are known as reactants, and the substances that are produced at the end of the reaction are known as products. To indicate the direction of the chemical reaction, an arrow is drawn between the reactants and products. The reactants are on the left-hand side whereas the products formed are on the right-hand side. The reactants and products are connected by a one-headed or two-headed arrows. For example, a reaction

A + B → C + D

Here, A and B are the reactants, which react to form the products C and D.

1. **Define reactants.**
   Ans: The substances that are introduced into a chemical reaction are known as reactants
2. **How chemical reaction occurs?**
   Ans: When chemical bonds between atoms are formed or broken, chemical reactions occur.

15. Short answer questions:

I. **What is a chemical reaction?**
   Ans: A chemical reaction is a process in which reactants react chemically and convert into products.
   Reactants ⟶ Products

II. **State the law of conservation of mass? Explain with an example.**
   Ans: The law of conservation of mass states that during a chemical reaction matter can neither be created nor be destroyed.
   For example: The carbon atom in coal becomes carbon dioxide when it is burned. The carbon atom changes from a solid structure to a gas but its mass does not change.

III. **What are the types of energy changes in chemical reactions?**
   Ans: There are two types of energy changes in a chemical reactions.
   i. Endothermic reactions
   ii. Exothermic reactions

IV. **Give another name for combustion.**
   Ans: Combustion is also known as burning.

V. **Which three things are needed for combustion to occur?**
   Ans: The three things which needed for combustion are fuel, heat and oxygen.

VI. List three chemical reactions which are definitely not useful.
Ans: Corrosive reactions from acids and alkalis. Explosive reactions or sudden combustions, such as LPG explosions. Oxidizing reactions, such as ozone reactions with organic tissues.

VII. Name the types of bond that is formed by sharing of electrons between atoms.
Ans: Covalent bond is formed by sharing of electrons between atoms.

VIII. What are ionic compounds?
Ans: Ionic compounds are compounds made up of ions that form charged particles when an atom (or group of atoms) gains or loses electrons.

16. Long answer questions.

i. How can you tell whether a chemical reaction has taken place?
Ans: There are five signs of a chemical change:

- Color Change.
- Production of an odor.
- Change of Temperature.
- Evolution of a gas (formation of bubbles)
- Precipitate (formation of a solid)

ii. Explain the types of reaction with examples.
Ans:

Types of Chemical Reactions	Explanation	General Reaction
Combination reaction	Two or more compounds combine to form one compound.	$A + B \rightarrow AB$
Decomposition reaction	The opposite of a combination reaction – a complex molecule breaks down to make simpler ones.	$AB \rightarrow A + B$

iii. If a fuel, such as methane burns in air, what is produced?
Ans: When methane burns in the air it has a blue flame. In sufficient amounts of oxygen, methane burns to give off carbon dioxide and water.
Methane + Oxygen $\longrightarrow$ Carbon dioxide + Water
$CH_4 + 2O_2 \longrightarrow CO_2 + 2H_2O$

iv. Differentiate exothermic and endothermic reaction.

Exothermic	Endothermic
Exothermic reaction releases nergy into the urrounding of the system.	Endothermic reaction absorbs energy from the surrounding that is in the form of heat.
Examples: • Combustion • Rusting	Example: • Photosynthesis

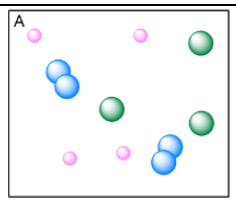
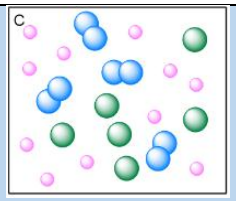
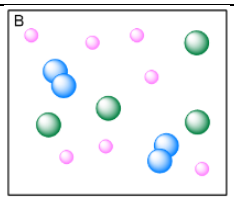
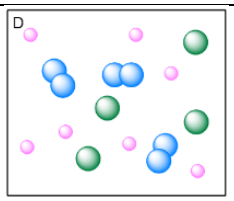
v. What holds the bonded atoms together?

Ans: The atoms in most molecules are held together by strong attractive forces called chemical bonds. These bonds are formed through the interaction of valence electrons of the combining atoms. There are main two types of chemical reactions.

1. Ionic bond
2. Covalent bond

Unit.7 Force and Pressure

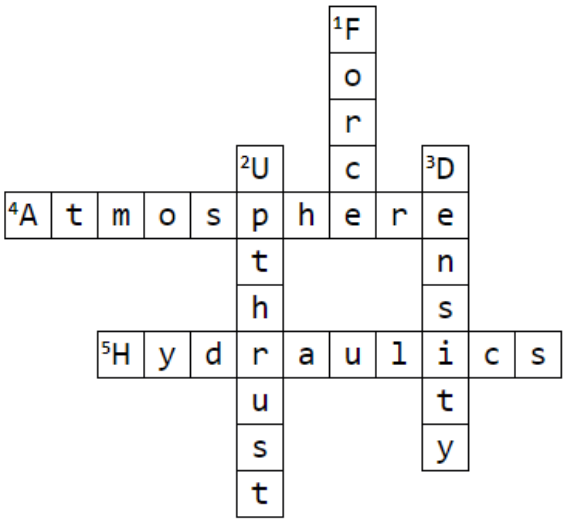
1. Choose the correct answer.

1. If the object is stationary or moving at a uniform speed, then the forces acting on it.			
Ⓐ Are balanced	Ⓑ **Are balanced**	Ⓒ Are changing	Ⓓ Remain same
2. Upthrust is the force experienced by objects when they are placed into _____.			
Ⓐ Space	Ⓑ **Fluid**	Ⓒ Box	Ⓓ Vacuum
3. Weight of the body can also be called _____.			
Ⓐ The pull of moon	Ⓑ Mass	Ⓒ The push of gravity	Ⓓ **The pull of gravity**
4. Pressure can be calculated by using the equation.			
Ⓐ **Pressure=force /area**	Ⓑ Pressure=area x 10N	Ⓒ Pressure=force x area	Ⓓ Pressure=area/force
5. Which one of the following box will have greater pressure?			
 Ⓐ	 Ⓑ	 Ⓒ	 Ⓓ

2. Fill in the blanks.

i. Liquid pressure is due to the **collision** between the liquid particles and the surfaces of a container.
ii. As liquids cannot be compressed, they can be used to transmit forces. This feature of liquid is used in **hydraulic** system.
iii. SI unit of density is **kg/m^3**.
iv. Mass is measured in grams or kilograms using a **physical balance**.
v. Another name for the upthrust force is the **buoyant** force.

3. Crosswords



Across

4. Ocean of air
5. Transmit forces in liquid

Down

1. Push or pull
2. Upward force
3. Mass by volume

4. Jumbled Words

i. INKS — SINK
ii. MOSPHEREAT — ATMOSPHERE
iii. UPRUSTHT — UPTHRUST
iv. LPASAC — PASCAL
v. FRECO — FORCE

5. Words Search

Find the following word in the words search.

Volume	Density	Liquid	Pressure	Float

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

6. Columns

Match substances with their densities.

Substances		**Densities (kgm^{-3})**
Iron		920
Glass		7900
Ice		2500
Air		1000
Water		1.3

7. Write "T" for the true and "F" for the false statement.

i.	Another name for upthrust is buoyant force.	T
ii.	Pressure at any depth in the liquid is different.	F
iii.	The gas molecules are in constant motion.	T
iv.	The unit of density is pascal.	F
v.	Pressure is inversely proportional to area.	T

8. Drag and Drop

Look at the pictures and write the names in the relevant column.

				
Mercury barometer	**Aneroid barometer**	**Jackhammer**	**Hydraulic lift**	**Altimeter**

9. Comprehension

Answer the following questions after reading the paragraph.

The pressure exerted by liquid is called liquid pressure. The liquid pressure at a point is due to weight of the liquid above it. The liquid at lower depth has to bear the entire weight of the water above it. Pressure at any depth in a liquid is the same. Liquid pressure increases with depth. Liquid pressure acts in all directions. The upward force acting on an object when placed in the fluid is known as Upthrust. It is also known as buoyant force. Upthrust is always equal to the weight of the fluid displaced by the object.

i. What is buoyant force?

Ans: The upward force acting on an object when placed in the fluid is known as Upthrust. It is also known as buoyant force..

ii. What are the important factors of liquid pressure?

Ans: Pressure at any depth in a liquid is the same. Liquid pressure increases with depth. Liquid pressure acts in all directions.

iii. What is the reason of liquid pressure?

Ans: The liquid pressure at a point is due to weight of the liquid above it. The liquid at lower depth has to bear the entire weight of the water above it.

10. Short answer questions.

i. Define force.

Ans. A force is a push or a pull which can change state of rest or state of motion, force can also cause an object to undergo a change in speed, a change in direction, or a change in shape.

ii. What is pressure?

Ans. Pressure is the amount of force exerted normally per unit area. In other words, pressure depends on the force and the area of contact of that force.

iii. A force of 500 N is spread over an area of 25 m^2. What is the pressure?

Ans. Solution:

$$Force = F = 500\ N$$

$$Area = A = 25\ m^2$$

The pressure can be find out by using the following formula:

$$Pressure = \frac{Force}{Area} = \frac{F}{A}$$

$$Pressure = \frac{500\ N}{25\ m^2}$$

$$Pressure = 20\ N/m^2$$

iv. Why do the camel's feet not sink into the sand?

Ans. The camel's feet do not sink into the sand because of their large surface area.

v. What are the uses of hydraulic system?

Ans. A hydraulic system is use to produce a force to shape a sheet of metal. It is also use to make different objects like coins, engraved name plates and car doors etc.

vi. What is the relation of area and pressure?

Ans. The pressure is inversely related to area. Bigger the area, smaller will be the pressure and vice versa.

vii. Name the instrument used to measure atmospheric pressure.

Ans. Barometer is the instrument used to measure atmospheric pressure.

11. Long answer questions.

i. Explain the floating or sinking of objects.

Ans. Upthrust is the force experienced by objects when they are placed into a fluid. An object will float on a liquid if the upthrust force equals the weight of the water it displaces. An object will sink in a liquid if the upthrust force is less than the weight of the water it displaces. Another name for the upthrust force is buoyant force.

ii. How can be measure pressure?

Ans. The pressure can be find out by using the following formula:

$$Pressure = \frac{Force}{Area} = \frac{F}{A}$$

Pressure is measured in newtons per square meters (**N/m^2**). This unit is also called a pascal (**Pa**).

If a force of 1 newton is spread over an area of 1 m^2, then it exerts a pressure of 1 pascal (1 Pa).

iii. Explain the pressure in liquids.

Ans. All objects exert a pressure on the surface that supports them. If you go swimming you can feel the pressure of the water.

1) Pressure at any point of a given depth in a liquid is the same.
2) Pressure increases with depth.
3) Pressure acts in all directions.

It is also the pressure of water which keeps a boat afloat.

iv. What could a furniture maker do to reduce the pressure of the feet of a chair on the carpet?

Ans. To reduce the pressure of the feet of a chair on a carpet, a furniture maker have to increase the size of the chair's footpads or feet. Larger surface areas will distribute the weight more evenly and reduce the pressure on the carpet.

v. Why are dams built with the thicker wall at the bottom and thinner walls at the top?

Ans. The pressure applied to walls of the dam will be a function of the amount of water that is over that particular point on the wall. So water pressure is very large at the bottom due to its large depth. That's why dams are constructed thicker at their bottoms and thinner at their tops.

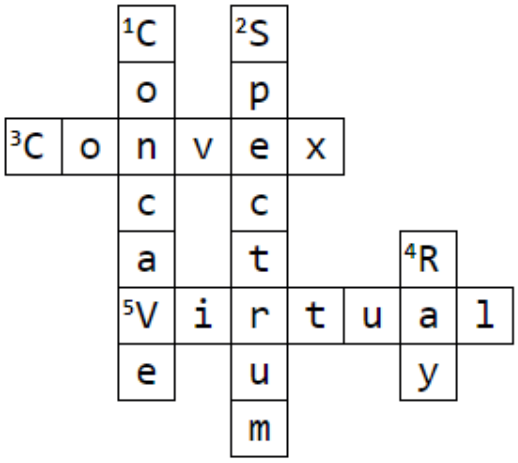
Unit.8 Reflection and Refraction of light

1.Choose the correct answer.

6. Which of the following objects will NOT make a dark shadow?			
Ⓐ Metal spoon	Ⓑ Wooden spoon	Ⓒ Woolly hat	Ⓓ **Glass jar**
7. The reflection produced by a plane mirror is called a:			
Ⓐ **Regular reflection**	Ⓑ Irregular reflection	Ⓒ Unreal reflection	Ⓓ Multiple reflection
8. Which of the following statements about the images produced in a plane mirror is NOT true?			
Ⓐ They are virtual and appear to be behind the mirror	Ⓑ **They are smaller than the object**	Ⓒ They appear to be the same distance behind the mirror as the object is in front of the mirror	Ⓓ They are laterally inverted
9. Which type of image is formed when an object is very close to a concave mirror?			
Ⓐ Virtual, inverted, larger than the object.	Ⓑ **Virtual, upright, larger than the object.**	Ⓒ Virtual, upright, smaller than the object.	Ⓓ Real, upright, larger than the object.
10. Which of the following instruments or devices contain a convex mirror?			
Ⓐ Shaving instrument	Ⓑ An instrument used by dentists	Ⓒ **Mirrors in cars**	Ⓓ **A torch**
11. Which of the following statements about light is correct?			

Ⓐ Light is a form of radiation.	Ⓑ **Light is a form of energy.**	Ⓒ Light rays reflect off your eyes onto objects.	Ⓓ Light rays refract off objects into your eyes.

2. Crosswords



Across

3. Rear-view mirror

5. Behind the mirror

Down

1. Shaving mirror

2. Band of colors

4. Straight line

3. Jumbled Words

vi. ORCOSMICPE MICROSCOPE

vii. DFUSEDFI DIFFUSED

viii. SPTRANEANTR TRANSPARENT

ix. RISPCEALH SPHERICAL

x. GDIVERE DIVERGE

4. Words Search

Find the following word in the words search.

Prism	Incident	Curvature	Virtual	Binocular

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

5. Columns

Match Column A with Column B.

Column A		Column B
Upside down		Reflection
Mirror		Curvature
Center of sphere		Refraction
Lens		Inverted
Prism		Dispersion

6. Fill in the blanks using the given words.

Chemical reaction	Mass	More	Position	Sound

i. Most things appeared colored due to **color subtraction**.

ii. The angle of incidence is **equal** to angle of reflection.

iii. A microscope has **two** convex lenses.

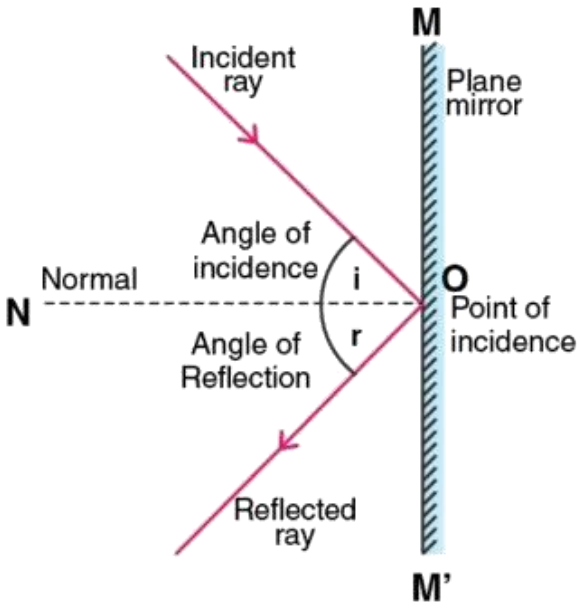
iv. Convex mirrors are called **diverging** mirrors.

v. The line passing through the center and pole of mirror is called **principal axis**.

7. Write "T" for the true and "F" for the false statement.

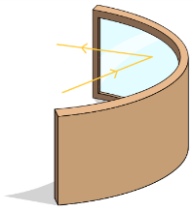
vi.	Speed of light in a vacuum is about 300 million meters a second.	T
vii.	Any mirror with at least on curved surface is called a spherical mirror.	T
viii.	Retina has three types of cells.	F
ix.	Erect image is formed in concave mirror.	F
x.	Midpoint of spherical mirror is known as pole.	F

8. Label the diagram.



9. Drag and Drop

Look at the pictures and write their names in the relevant column.

				
Spectrum	**Concave mirror**	**Binoculars**	**Convex mirror**	**Telescope**

10. Comprehension

Answer the following questions after reading the paragraph and observing the picture carefully.

Light can go through anything transparent, such as air, glass, or water. When light travels from one transparent material to another, it bends or refract. Now take an example of a coin in water. Light is reflected from a coin at the bottom of a tub containing water and travel to the surface. It changes direction when it travels into the air. When seen from above, the coin appears to be higher than it actually is. The depth that the coin appears to be is called the apparent depth which is shallower than the real depth.

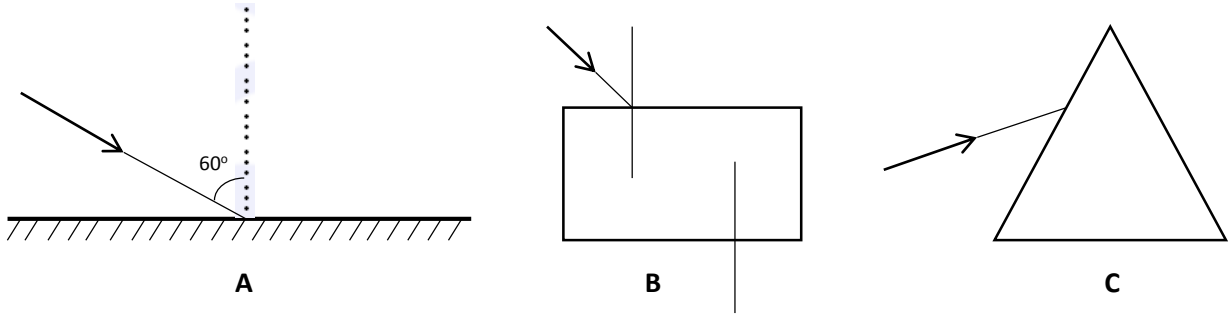
iv. What types of materials allow light to pass?

Ans: Light can go through anything transparent, such as air, glass, or water.

v. What do you know about apparent depth?

Ans: The depth that the coin appears to be is called the apparent depth which is shallower than the real depth

11. There are different properties of light.



i. Identify the name of these properties.

Ans.

A. Reflection of light
B. Refraction of light
C. Dispersion of light

12. Short answer questions.

i. How can we see non-luminous objects?

Ans. Non-luminous objects can be seen by reflecting light onto them, such as using an external light source or relying on ambient light in the environment.

ii. When light is reflected in a plane mirror, what is special about the angles of the incident and reflected rays?

Ans. The angle of incidence is equal to the angle of reflection in a plane mirror.

iii. A boy is looking into a plane mirror. His nose is 30 cm in front of the mirror. How far is his nose from where its image appears to be?

Ans. His nose appears to be 30 cm behind the mirror, as the image distance

iv. State the laws of reflection.

Ans. The angle of incidence is equal to the angle of reflection.

The incident ray, the reflected ray, and the normal all lie in the same plane.

v. Does light travel faster or slower in water than in air? Why is this?Ans. Light travels slower in water than in air because its speed decreases when it passes through the denser mediums like water.

vi. List the effects of refraction?

Ans. The effects of refraction are:

- Bending of light
- Change in direction
- Change in speed

vii. Name the colours in the spectrum of white light.

Ans. The colours in the spectrum of white light are red, orange, yellow, green, blue, indigo and violet.

viii. Describe plane mirrors.

Ans. Plane mirrors reflect light without distortion, maintaining the same size and shape. They produce virtual upright image.

13. Long answer questions.

i. What evidence do you have that light travels in straight lines?

Ans. Shadows are evidence of light travelling in straight lines. We can easily prove that light travels in a straight line because the moment we put some opaque object in front of our eyes, we are unable to see anything on the other side of it.

ii. The image formed by a concave mirror is virtual, upright, and larger than the object. What does this tell you about the distance between the object and the mirror?

Ans. The image formed by a concave mirror is virtual, upright and larger than the object, when an object is placed very close to a concave mirror.

iii. Describe the image formed by a convex mirror.

Ans. The image formed by a convex mirror is always:

- Virtual
- Upright
- Smaller than the object

iv. Differentiate between reflection and refraction.

Ans.

Reflection	Refraction
• Bouncing back of light when it strikes a smooth surface. • The angle of reflection and angle of incidence are same. • Occurs in mirrors.	• Bending of light rays when it travels from one medium to another. • The angle of refraction and angle of incidence are not same. • Occurs in lenses.

v. Discuss the uses of refraction.

Ans. The uses of refraction are listed below:

- A lens uses refraction to form an image of an object for various purposes, such as magnification.
- Spectacles worn by people with defective vision use the principle of refraction.
- Refraction is used in peepholes of house doors, cameras, movie projectors and telescopes.