

New Bharath Matriculation Higher Secondary School, Tiruvarur

7th Standard

Science Key answer

UNIT – 1

MEASUREMENT

I. Choose the correct answer:

1. Which of the following is a derive of unit? Area
2. Which of the following is correct? 1L = 1000CC
3. SI unit of density is kg/m³.
4. Two spheres have equal mass and volume in the ratio 2:1.The ratio of their density is 2:1.
5. Light year is the unit of Distance.

II. Fill in the blanks:

1. Volume of irregularly shaped objects are measured using the law of Archimedes.
2. One cubic metre is equal to 10,00,000 (or) 10⁶ cubic centimetre.
3. Density of mercury is 13,600 Kg/m³.
4. One astronomical unit is equal to 1.496 x 10¹¹m.
5. The area of a leaf can be measured using a graph sheet.

III. State whether the following statements are true or false:

1. The region covered by the boundary of the plane figure is called its volume. False
2. Volume of liquids can be found using measuring containers. True
3. Water is denser than kerosene. True
4. A ball of iron floats in mercury. True
5. A substance which contains less number of molecules per unit volume is said to be denser. False

IV. Match the items in column-I to the items in column-II:

(1) Column - I	Column - II
i. Area	m ²
ii. Distance	Light year
iii. Density	Kg/m ³
iv. Volume	m ³
v. Mass	Kg

(2) Column - I	Column – II
i. Area	Plane figures
ii. Length	Rope
iii. Density	g/cm^3
iv. Volume	Measuring jar
v. Mass	Amount of a substance

V. Arrange the following in correct sequence:

1. 1L, 100 cc, 10 L, 10 cc

Ans: 10 cc, 100 cc, 1 L, 10 L

2. Copper, Aluminium, Gold, Iron

Ans: Aluminium, Iron, Copper, Gold

VI. Use the analogy to fill in the blank:

1. Area : m^2 : Volume: m^3

2. Liquid : Litre : Solid: cm^3

3. Water : kerosene : Iron : Aluminium

VII. Assertion and reason type questions:

Mark the correct choice as,

- If both assertion and reason are true and reason is the correct explanation of assertion.
- If both assertion and reason are true, but reason is not the correct explanation of assertion.
- Assertion is true but reason is false.
- Assertion is false but reason is true.

1. **Assertion:** Volume of a stone is found using a measuring cylinder.

Reason: Stone is an irregularly shaped object.

- If both assertion and reason are true and reason is the correct explanation of assertion.

2. **Assertion:** Wood floats in water.

Reason: Water is a transparent liquid.

- If both assertion and reason are true, but reason is not the correct explanation of assertion.

3. **Assertion:** Iron ball sinks in water.

Reason: water is denser than iron.

b. If both assertion and reason are true, but reason is not the correct explanation of assertion.

VIII. Give very short answer:

1. **Name some of the derived quantities.**

Area, Volume, Density.

2. **Give the value of one light year.**

One light year = 9.46×10^{15} m

3. **Write down the formula used to find the volume of a cylinder.**

Volume of a Cylinder = $\pi r^2 h$

4. **Give the formula to find the density of objects.**

Density $D = \frac{\text{mass (m)}}{\text{Volume (v)}}$

$$D = \frac{m}{V}$$

5. **Name the liquid in which an iron ball sinks.**

Iron balls sinks in water. The density of an iron ball is more than that of water so it sinks in water.

6. **Name the units used to measure the distance between celestial objects.**

Astronomical unit and light year are the units used to measure the distance between celestial objects.

7. **What is the density of Gold?**

Density of gold is $19,300 \text{ Kg/m}^3$.

IX. Give the short answer:

1. **What are derived quantities?**

The physical quantities which can be obtained by multiplying, dividing or by mathematically combining the fundamental quantities are known as derived quantities.

(or)

The physical quantities which are expressed in terms of fundamental quantities are called derived quantities.

2. Distinguish between the volume of liquid and capacity of a container.

Volume of liquid	Capacity of a container
1. Volume is the amount of space taken up by a liquid. 2. It is measured in cubic units. 3. It is calculated by multiplying the length, width and height of an object.	1. Capacity is the measure of an objects ability to hold a substance like solids, liquid or gas. 2. It is measured in litres, gallons, pounds, etc. 3. Its measurement is cc or ml.

3. Define the density of objects.

Density of a substance is defined as the mass of the substance contained in unit volume

$$\text{Density } D = \frac{\text{mass (m)}}{\text{Volume (v)}}$$

4. What is one light year?

One light year is the distance travelled by light in vaccum during the period of one year.

$$1 \text{ Light year} = 9.46 \times 10^{15} \text{m}$$

5. Define one Astronomical unit.

One Astronomical unit is defined as the average distance between the earth and the sun.

$$1 \text{ Au} = 1.4965 \times 10^6 \text{ km} = 1.496 \times 10^{11} \text{m.}$$

X. Answer the detail:

1. Describe the graphical method to find the area of an irregularly shaped plane figure.

To find the area of an irregularly shaped plane figure, we have to use graph paper.

- (i) Place a piece of paper with an irregular shape on a graph paper and draw its outline.
- (ii) To find the area enclosed by the outline, count the number of squares inside it (M).
- (iii) You will find that some squares lie partially inside the outline.
- (iv) Count a square only if have (p) or more of it (N) lies inside the outline.
- (v) Finally count the number of square, that are less than half. Let it be a

For the shapes in figure we have the following:

$$M = 50, N = 7, P = 4, Q = 4$$

Now the approximate area of the can be calculated using the following formula.

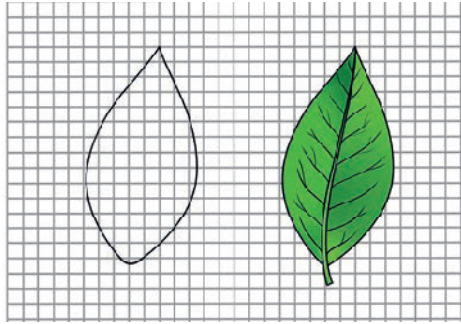
$$\text{Area of the leaf} = M + (3/4) N + (1/2) P + (1/4) Q \text{ sq.cm}$$

$$= 50 + 3/4 \times 7 + 1/2 \times 4 + 1/4 \times 4$$

$$= 50 + 21/4 + 2$$

$$= 52 + 5.25$$

$$= 58.25 \text{ sq.cm} = 0.5825 \text{ sq.cm}$$



Area of an irregularly shaped plane figure

2. How will you determine the density of a stone using a measuring jar?

Determine of density of a stone using a measuring cylinder.

(i) In order to determine the density of solid, we must know the mass and volume of the stone.

(ii) The mass of the stone is determined by a physical balance very accurately. Let it be 'm' grams.

(iii) In order to find the volume take a measuring cylinder and pour in it some water.

(iv) Record the volume of water from the graduations marked on measuring cylinder. Let it be 40 cm^3 .

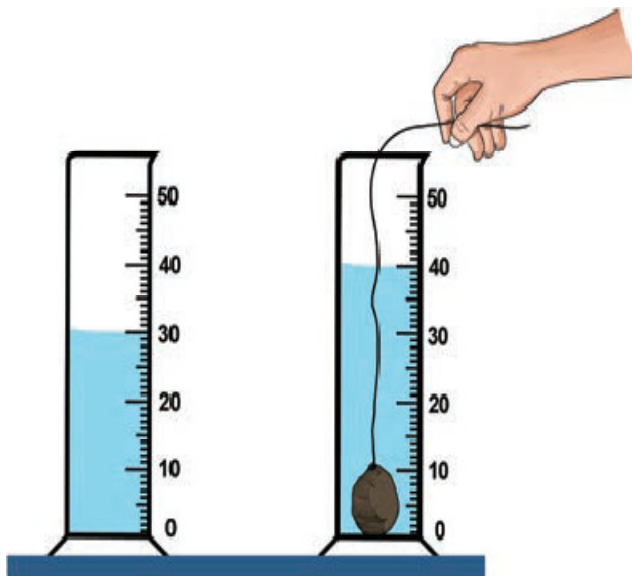
(v) Now the given stone to fine thread and lower it gently in the measuring cylinder, such that it is completely immersed in water.

(vi) Record the new level of water. Let it be 60 cm^3 .

$$\begin{aligned} \text{Volume of the solid} &= (60 - 40) \text{ cm}^3 \\ &= 20 \text{ cm}^3 \\ &= V \text{ cm}^3 \text{ (assume)} \end{aligned}$$

Knowing the mass and volume of the stone, the density can be calculated by the formula:

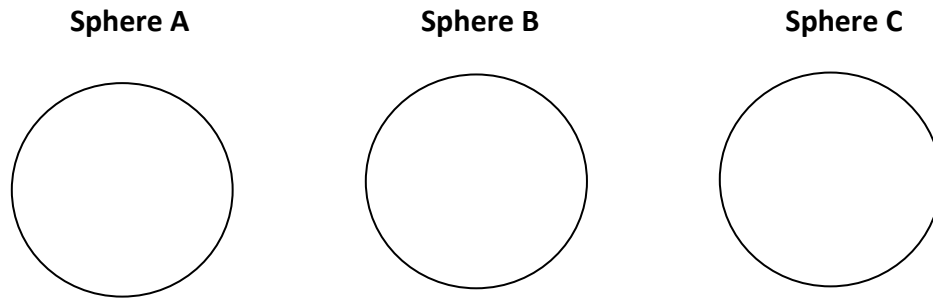
$$\text{Density} = \frac{\text{Mass}}{\text{Volume}} = \frac{m}{V} \text{ g/cm}^3$$



Density of stone using measuring cylinder

XI. Question based higher order thinking skills:

1. There are three spheres A,B,C as shown below.



Sphere A and B are made of the same material. Sphere C is made of a different material. Sphere A and C have equal radii. The radius of sphere B is half that of A. Density of A is double that of C.

(i) Find the ratio of masses of spheres A and B

Ratio of masses of sphere A and B

$$M_A : M_B$$

$$D \times V_A : D \times V_B \quad (\text{Radius of sphere B is half that of A})$$

Let the mass of sphere A = M_A

$$\text{Mass of sphere B} = M_B$$

$$\text{Mass} = \text{Density} \times \text{Volume}$$

$$M_A = D_A \times V_A$$

$$M_B = D_B \times V_B \quad (\text{Density is same})$$

$$\text{Volume of sphere A} = \frac{4}{3} \pi r^3$$

$$\text{Volume of sphere B} = \frac{4}{3} \pi \times \left(\frac{r_A}{2}\right)^3$$

$$D \times \frac{4}{3} \pi r^3 : D \times \frac{4}{3} \pi \left(\frac{r_A}{2}\right)^3 = 1 : 1/8 = 8 : 1$$

(ii) Find the ratio of volumes of sphere A and B

Ratio of volume of spheres A and B

$$V_A : V_B \quad (\text{As Mass is } \propto \text{Volume})$$

$$8 : 1$$

(iii) Find the ratio of masses of spheres A and C

$$M_A : M_C$$

$$2D \times V : D \times V \quad (\text{Density of a A is double that of c})$$

$$2 : 1$$

XII. Numerical Problems:

1. A circular disc has a radius 10 cm. Find the area of the disc in m^2 . (use $\pi = 3.14$)

$$\text{Radius} = 10 \text{ cm} = 0.1 \text{ m}$$

$$\pi = 3.14$$

Area of a circular disc $A = ?$

$$\text{Area of a circle } A = \pi r^2$$

$$= 3.14 \times 0.1 \times 0.1$$

$$A = 0.0314 \text{ m}^2$$

2. The dimension of a school play ground 500 m. Find the area of the ground.

$$\text{The dimension of a school play ground} = l \times b = 800 \text{ m} \times 500 \text{ m}$$

$$\text{Area of the playground } A = l \times b = 800 \times 500 = 4,00,000$$

$$A = 4,00,000 \text{ m}^2$$

3. Two spheres of same size are made from copper and iron respectively. Find the ratio between their masses. Density of copper $8,900 \text{ kg/m}^3$ and iron $7,800 \text{ kg/m}^3$.

$$\text{Density of copper } D_c = 8900 \text{ kg/m}^3$$

$$\text{Density of iron } D_i = 7800 \text{ kg/m}^3$$

$$\text{Volume of copper sphere} = \text{Volume of iron sphere}$$

To find Ratio of masses of copper (M_c) and Iron (M_i)

$$\text{Mass} = \text{Density} \times \text{Volume}$$

$$M_c = D_c \times V, \quad M_i = D_i \times V$$

$$M_c = 8900 V, \quad M_i = 7800 V$$

$$M_c = M_i$$

$$8900 V : 7800 V$$

$$1.14 : 1$$

4. A liquid having a mass of 250 g fills a space of 1000 cc. Find the density of the liquid.

$$\text{Mass of a liquid } M = 250 \text{ g}$$

$$\text{Volume } V = 1000 \text{ cc}$$

Density of the liquid $D = ?$

$$\text{Density } D = \frac{\text{Mass (m)}}{\text{Volume (v)}} = \frac{250}{1000} = 0.25 \text{ g/cc}$$

Density of the liquid = 0.25 g/cc.

5. Sphere of radius of 1 cm is made from silver. If the mass of the sphere is 33g, Find the density of silver. (Take $\pi = 3.14$)

Radius of a sphere $r = 1$ cm

Volume of the sphere $V = ?$

Mass of the sphere $M = 33$ g

Density of silver $D = ?$

$$\text{Density } D = \frac{\text{mass of the sphere (M)}}{\text{Volume of the sphere (V)}}$$

$$\text{Volume (V)} = \frac{4}{3} \pi r^3 = \frac{4}{3} \times 3.14 \times 1 \times 1 \times 1 = 4.187 \text{ (cm}^3\text{)}$$

$$D = \frac{M}{V} = \frac{33}{4.187}$$

Density of silver sphere = 7.889 g/cc

XII. Cross word puzzle:

CLUES – ACROSS

- SI unit of temperature
- A derived quantity
- Mass per unit volume
- Maximum volume of liquid a container can hold

CLUES – DOWN

- A derived quantity
- SI unit of volume
- A liquid denser than iron
- A unit of length used to measure very long distances

	⁽¹⁾ K	E	L	^(a) V	I	N					
				E							
	^(d) L			L		^(b) C					^(c) M
	I		⁽²⁾ V	O	L	U	M	E			E
	G			C		B					R
	H			I		I					C
	T			T		C					U
	Y			Y		M					R
	E				⁽³⁾ D	E	N	S	I	T	Y
⁽⁴⁾ C	A	P	A	C	I	T	Y				
	R					R					
						E					

Additional question and answer

I. Fill it:

1. The Shortest distance between the earth and the sun Perihelion.
2. The largest distance between the earth and the sun Aphelion.
3. The materials with higher density are called Denser.
4. The materials with lower density are called Rarer.
5. The area of irregularly shaped figures can be calculated with help of a Graph sheet.

II. Match it:

1. Rectangle - $l \times b$
2. Triangle - $\frac{1}{2} \times b \times h$
3. Square - $s \times s$
4. Circle - πr^2

III. True or False:

1. Neptune is 30 Au away from sun. True
2. The nearest star to our solar system is proxima centaurti. True
3. The total number of second in one year is 3.15×10^7 s. True

IV. Very short answer:

1. What is the fundamental unit of amount of substance?

Mole (mol)

2. What are the types of physical quantities?

- ❖ Fundamental quantities
- ❖ Derived quantities

3. What are the other units used to measure the volume of liquids?

Gallon, Ounce, Quart

4. Which one of the following has more volume? Iron block or a wooden block of same mass.

Wooden block.

5. What is the distance between the earth and proxima centauri star?

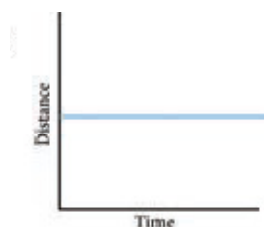
4.22 light years.

UNIT – 2

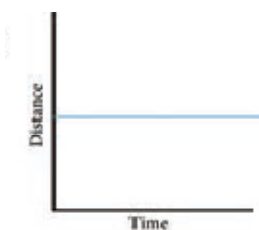
FORCE AND MOTION

I. Choose the correct answer:

1. A particle is moving in a circular path of radius r . The displacement after half a circle would be $2r$.
2. Which figures represent uniform motion of a moving object correctly?



3. Suppose a boy is enjoying a ride on a merry go round which is moving with a constant speed of 10 m/s. It implies that the boy is in accelerated motion.
4. From the given v-t graph it can be inferred that the object is



Moving with uniform acceleration

5. How can we increase the stability of an object? Lower the centre of gravity

II. Fill in the blanks:

1. The shortest distance between the two places is Displacement.
2. The rate of change of velocity is Acceleration.
3. If the velocity of an object increases with respect to time, then the object is said to be in positive acceleration.
4. The slope of the speed–time graph gives Velocity.
5. In neutral equilibrium its centre of gravity remains at the same height when it is displaced.

III. Match the following:

1. Displacement	Metre
2. Light travels through vacuum	Uniform velocity
3. Speed of ship	Knot
4. Centre of gravity of the geometrical shaped object	Geometric centre
5. Stability	Larger base area

IV. Analogy:

1. velocity : metre/ second : : acceleration : metre/second².
2. length of scale : metre : : speed of aeroplane : knot.
3. displacement / time : velocity : : speed / time : acceleration.

V. Give very short answer:

1. **Asher says all objects having uniform speed need not have uniform velocity. Give reason.**

An object moving in uniform circular motion is moving around the perimeter of the circle with a constant speed. While the speed of object is constant, its velocity is changing. eg: Merry-go-round, roller coaster, Planets orbiting the sun.

2. **“Saphira moves at a constant speed in the same direction”. Rephrase the same sentence in fewer words using concepts related to motion.**

She moves in a straight line with constant velocity.

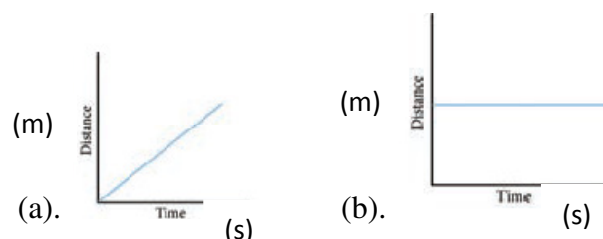
3. **Correct your friend who says that acceleration gives the idea of how fast the position changes.**

There are two possible answers:

1. Velocity gives an idea of how fast the position changes.
2. Acceleration gives an idea of how fast the velocity changes.

VI. Give short answer.

1. Show the shape of the distance – time graph for the motion in the following cases. a. A bus moving with a constant speed. b. A car parked on a road side.



2. Distinguish between speed and velocity.

Speed	Velocity
(i) Speed is the distance travelled by an object in unit time.	Velocity is the distance travelled by an object in unit in a given direction.
(ii) Speed of a moving body can never be zero.	Velocity of a moving body will be zero, if it returns to its original position. (i.e) When its displacement is zero.
(iii) It is a scalar quantity.	It is a vector quantity.
(iv) Speed = $\frac{\text{Distance travelled}}{\text{Time taken}}$	Velocity = $\frac{\text{Displacement}}{\text{Time taken}}$

3. What do you mean by constant acceleration?

A body is said to have constant acceleration, if it travels in a straight line and its velocity increases or decreases by equal magnitude in equal intervals of time. Eg. The motion of a freely falling body.

4. What is centre of gravity?

The centre of gravity of an object is the point through which the entire weight of the object appears to act.

VII. Answer in detail.

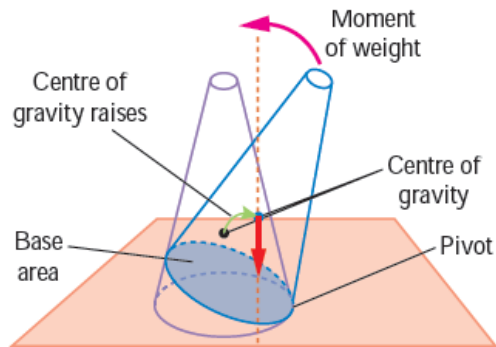
1. Explain the types of stability with suitable examples.

Stability is a measure of the body's ability to maintain its original position. The three types of stability are

- ❖ Stable equilibrium
- ❖ Unstable equilibrium
- ❖ Neutral equilibrium

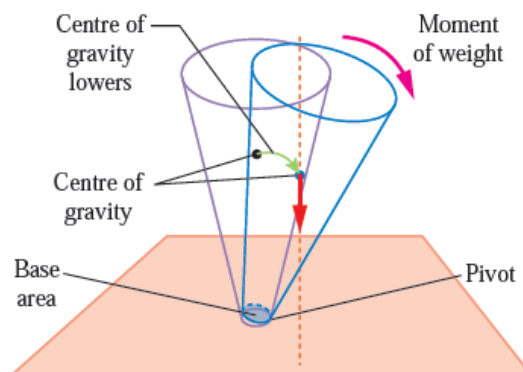
Stable equilibrium:

The frustum can be tilted through quite a big angle without toppling. Its centre of gravity is raised when it is displaced. The vertical line through its centre of gravity still falls within its base. So it can return to its original position.



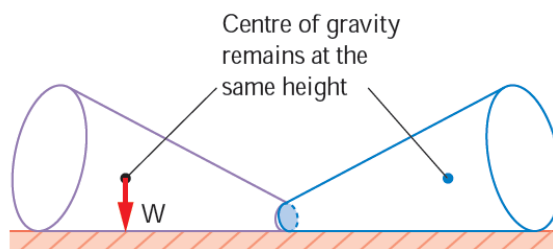
Unstable equilibrium:

The frustum will topple with the slightest tilting. Its centre of gravity is lowered when it is displaced. The vertical line through its centre of gravity falls outside its base.



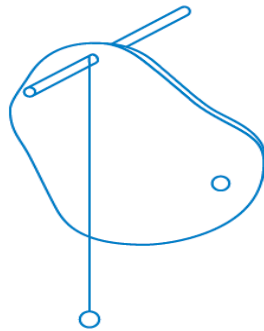
Neutral equilibrium:

It causes frustum to topple. The frustum will rolls about but does not topple. Its centre of gravity remains of the same height when it is displaced. The body will stay in any position to which it has been displaced.



2. Write about the experiment to find the centre of gravity of the irregularly shaped plate.

- i. Make three holes in the lamina.
- ii. Suspend the lamina from the optical pin through one of the holes as shown.
- iii. Suspend the plumb line from the pin and mark the position of the plumb line on the lamina.
- iv. Draw lines on the lamina representing the positions of the plumb line.
- v. Repeat the above steps for the holes.
- vi. Label the intersection of three lines as X, position of the centre of gravity of the lamina.



VIII. Numerical problems:

1. Geetha takes 15 minutes from her house to reach her school on a bicycle. If the bicycle has a speed of 2 m/s, calculate the distance between her house and the school.

Time taken = 15 minutes (1 min = 60 sec)

$$= 15 \times 60 = 900 \text{ sec}$$

Speed = 2 m/s

Distance = ?

$$\text{Distance} = \text{speed} \times \text{time} = 2 \times 900 = 1800 \text{ m.}$$

Distance between her house and the school = 1800 m

2. A car started from rest and it is travelling with a velocity of 20 m /s in 10 s. What is its acceleration?

Initial velocity of the car (u) = 0 m/s (car rest)

Final velocity of car = 20 m/s

Time taken = 10 s

$$\text{Acceleration} = \frac{20 - 0}{10} = \frac{20}{10} = 2 \text{ m/s}^2$$

$$\frac{20}{10} = 2$$

Acceleration of the car = 2 m/s²

3. A bus can accelerate with an acceleration 1 m / s². Find the minimum time for the bus to reach the speed of 100 km / s from 50 km / s.

$$\text{Acceleration of the bus (a)} = 1 \text{ m/s}^2$$

$$\text{Initial velocity (u)} = 50 \text{ km/s} = 50 \times 10^3 \text{ m/s}$$

$$\text{Final velocity (v)} = 100 \text{ km/s} = 100 \times 10^3 \text{ m/s}$$

$$\text{Time (t)} = \frac{v - u}{a} = \frac{100 \times 10^3 - 50 \times 10^3}{1}$$

$$= \frac{(100 - 50) \times 10^3}{1}$$

$$t = 50 \times 10^3 \text{ s}$$

IX. Fill in the boxes.

S.No	First move	Second move	Distance (m)	Displacement
1	Move 4 meters east	Move 4 meters west	6m	2m east
2	Move 4 meters north	Move 4 meters south	6m	2m north
3	Move 2 meters east	Move 2 meters west	6m	2m west
4	Move 5 meters east	Move 5 meters west	10m	0(same place)
5	Move 5 meters south	Move 5 meters north	7m	3m south
6	Move 10 meters west	Move 10 meters east	13m	7m west

Additional question and answer:

I. Fill it:

- Distance travelled by a body in a given time can be zero or positive.
- If the velocity of a body does not change, then its acceleration is zero.
- Distance is the length of actual path covered by a body.
- Speed is always positive or zero but never be negative.
- A car increases its speed from 20 km/h to 50 km/h in 10 seconds. Its acceleration is 0.83m/s².

II. Match it:

- Uniform motion - Equal distances covered in equal intervals of time
- Non – uniform motion - Unequal distance covered in equal interval of time.
- The velocity-time graph is a circle - Not possible

4. Straight line parallel to time axis in position – time graph - Body having uniform acceleration

5. Straight line inclined to 45° with time axis is velocity-time graph - Body at rest

III. Very short answers:

1. Is displacement a scalar quantity?

No, It is a vector quantity as it depend on direction.

2. Give one examples for non-uniform acceleration.

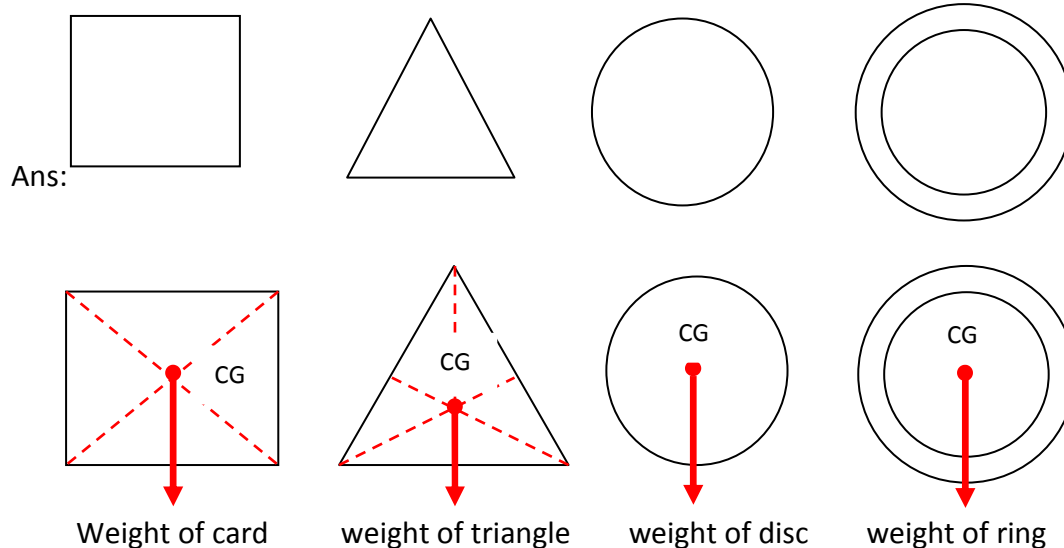
The motion of a car on a crowded road.

3. Mention any two conditions for stability of a body?

- Increases the area of its base
- Lower its centre of gravity.

IV. Detail:

1. Draw the centre of gravity of the following regular shaped objects.



2. Mention the typical speed of the following?

Tortoise	0.1 m/s
Falling raindrop	9-10 m/s
Cycling	20-25 km/h
Cheetah running	31 m/s
Person watching	1.4 m/s

UNIT – 3

MATTER AROUND US

I. Choose the correct answer:

1. Which one of the following is an example of a metal? Iron.
2. Oxygen, hydrogen, and sulphur are examples of which of the following? Non-metals.
3. Which of the following is a short and scientific way of representing one molecule of an element or compound? Chemical formula.
4. The metal which is a liquid at room temperature Mercury.
5. An element which is always lustrous, malleable and ductile metal.

II. Fill in the blanks:

1. The smallest particle of matter that can exist by itself is Atom.
2. A compound containing one atom of carbon and two atoms of oxygen is Carbon-di-oxide.
3. Graphite is the only non-metal conducts electricity.
4. Elements are made up of same kinds of atoms.
5. Symbols of some elements are derived from Latin or Greek names of the elements.
6. There are 118 number of known elements.
7. Elements are the simplest form of pure substances .
8. The first letter of an element always written in capital letter .
9. Molecule containing more than three atoms are known as poly atomic molecules.
10. Nitrogen is the most abundant gas in the atmosphere.

III. Analogy:

1. Mercury: liquid at room temperature:: Oxygen: gas at room temperature .
2. Non metal conducting electricity: Graphite:: Metal conducting electricity: Copper
3. Elements: combine to form compounds::Compounds: combine to form mixtures.
4. Atoms: fundamental particle of an element:: Molecules: fundamental particles of a compound.

IV. True of False.

1. Two different elements may have similar atoms. False
2. Compounds and elements are pure substance. True
3. Atoms cannot exist alone; They can only exist as groups called molecules. False

4. NaCl represents one molecule of sodium chloride. True

5. Argon is mono atomic gas. True

V. Answer in brief:

1. Write the chemical formula and name the elements presents in the following compounds.

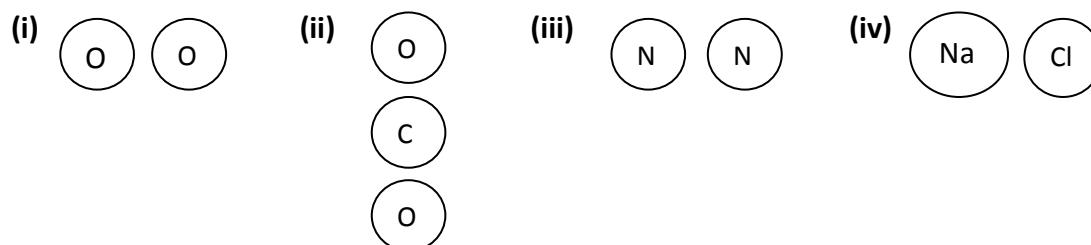
(a) Sodium chloride – NaCl – Sodium, Chloride

(b) Potassium hydroxide – KOH – Potassium, Hydrogen

(c) Calcium oxide – CaO – Calcium, Oxygen

(d) Sulphur dioxide – SO₂ – Sulphur, Oxygen

2. Classify the following molecules as the molecules of element or compounds.



Molecules of element

1 and 3

Molecules of compound

2 and 4

3. What do you understand by chemical formula of a compound? What is its significance?

A chemical formula is a symbolic representation of one molecules of an element or a compound. The chemical formula tells us the types of atoms and the number of each types of atoms in one molecules of substance.

4. Define the following terms with example of each:

(a) Element

Matter in its simple form is called an element. It cannot be broken down.

ex. Iron ore

(b) Compound

Two or more element are chemically based bonded together is called compound.

ex. Water

(c) Metal

Element or materials may be flattened into thin sheets are called as metals.

ex. Iron

(d) Non- metal

Non-metal are generally dull and soft

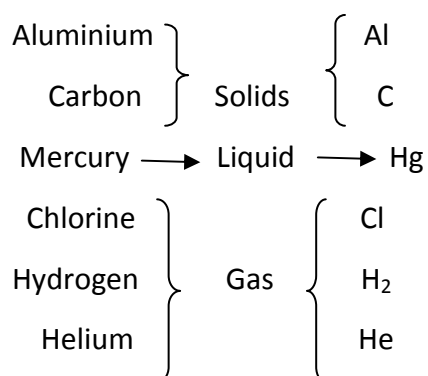
ex. Carbon

(e) Metalloids

Metalloids exhibit the properties of both metals and non-metal.

ex. Silicon

5. Write the symbols for the following element and classify them as solid, liquid and gas



6. Classify the following as metals, Non-metals and metalloids

Metals - Sodium, Silver, Iron, Copper

Non-metals - Nitrogen, Carbon, Chlorine

Metalloids - Bismuth, Silicon

7. Classify the following as elements and compounds:

Element - Iodine, Lithium

Compounds - Water, Common salt, Sugar, Carbon dioxide

8. Write the chemical formula for the following elements

Hydrogen – H₂

Nitrogen – N₂

Ozone – O₃

Sulphur – S₈

9. What are elements? What are they made of? Give two examples.

Matter in its simplest form is called element. It cannot be broken down. Elements are made up of atoms.

ex. Iron, Silver

10. Define Molecules.

A molecule is made up of two or more atoms chemically combined.

11. What are compounds? Give two examples.

A compound is a pure substance that is formed when the atoms of two or more elements combine chemically in definite proportions.

ex. Water, Salt

12. Give an examples for the elements derived from their Latin names.

Gold – Aurum – Au

Copper – Cuprum – Cu

13. What is atomicity of elements?

In chemistry atomicity is used to implies the total number of atoms present in one molecules of an element.

14. Calculate the atomicity of H_2SO_4 .

A molecule of sulphuric acid (H_2SO_4) consists of 2 hydrogen atom, 1 sulphur atom and 4 oxygen atoms. Hence its atomicity is $2+1+4=7$

VI. Answer in detail:

1. Differentiate metals and non-metals.

Metals	Non-Metals
1. Metals are lustrous. They have a shiny surface.	1. Non-metals are non lustrous. They non shiny surfaces.
2. Metals are generally hard.	2. Non-metals are generally soft.
3. Most metals are bendable.	3. Non-metals are generally non bendable.
4. Most metals can be bent, beaten into sheets and they can drawn into wires.	4. Non-metals are non ductile.
5. Most metals are good conductors of electricity and heat.	5. It is bad conductors of electricity and heat.
6. It making ringing sound when struck.	6. Does not make any sound when they struck.

2. Explain the characteristics of compound.

- A compound is formed only when the constituent elements combine in a fixed proportion.
- The properties of a compound are different from those of its constituent elements.
- A compound cannot be broken down by physical methods.
- This is because a compound is made up of different elements that are chemically combined.
- Sodium chloride cannot be separated by physical methods such as filtration.
- A compound can be separated into its constituent elements by chemical methods only.

3. Describe the different ways in which we can write the symbols of element. Give approximate examples.

- Chemical symbols usually consist of one or two letters. ex. Carbon – C
- The symbols of most elements correspond to the first letter of their English name. ex oxygen – O, Hydrogen – H
- When there is more than one element that begins with the same letter, symbols take two letters. The first letter is capitalised while the second letter has a lower case. For ex. Hydrogen – H, Helium – He
- The symbols for some elements are derived from their Latin names. For ex. The symbol for gold is AU after its Latin name Aurum. Similarly, the symbols for copper is Cu after its Latin name Cuprum.

4. Difference between elements and compound:

Elements	Compounds
An element is the simplest substance.	A compound is a chemical substance formed by the combination of two or more elements.
Elements combine to form compounds.	Compound can be split into elements.
Atoms are the fundamental particle of an element.	Molecules are the fundamental particles of a compound.

5. Write any five characteristics of compound.

- i. A compound is formed only when the constituent elements combine in a fixed proportion.
- ii. The properties of a compound are different from those of its constituent elements.
- iii. A compound cannot be broken down by physical methods.
- iv. A compound can be separated into its constituent elements by chemical methods only.
- v. Compound exhibit properties entirely different from the properties of their constituent element.

6. Comparative properties of metals and non-metals. Give three examples of each.

Metals	Non - Metals
1. Metals are generally hard and shiny elements. 2. All metals, except mercury are solids at room temperature. 3. Metals are malleable can be bent or beaten into sheets. 4. Metals are good conductor of heat and electricity. 5. Examples: Copper, Iron, Gold	1. Non-metal are generally dull and soft. 2. Non-metals such as oxygen, hydrogen and chlorine are gases at room temperature. Non-metals such as carbon, iodine, sulphur and phosphorus are solids at room temperature. Bromine is the only non-metals that liquid at room temperature. 3. Non-metals are non bendable. 4. Non-metals are poor conductors of heat and electricity. 5. Examples: Carbon, Iodine, Sulphur

7. Write down the properties of metalloids.

Metalloids exhibit the properties of both metals and non-metals. Metalloids are solid at room temperature.

In metalloids, silicon and Germanium are semiconductors metalloids mixed with metals can form alloys.

VII. Rewrite the sentence in correct form:

1. Elements contain two or more kinds of atoms and compounds contain only one kind of atom.

Compounds contains two or more kinds of atoms and elements contains only kind of atom.

VIII. Higher order thinking questions:

1. Lists the metals, non-metals and metalloids which you use in your house, schools. Compare their properties.

	Metals	Non-metals	Metalloids
Used in House	Aluminium	Iodine	Antimony
Used in School	Iron	Chlorine	Silicon
Properties	Hard and shiny Conduct electricity and heat	Dull and soft Non-conductors of electricity and heat	Shiny Semi-conductors conducts heat

2. What changes take place in the movement and arrangement of particles during heating process?

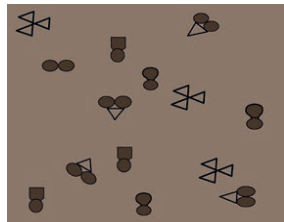
When solid is heated, the particles gain energy and vibrate vigorously. The particles move slightly further apart from one another.

This causes the volume of matter to increase. This process is called expansion.

The matter begins to expand when heated. The volume increases due to the greater distance between the particles. But the size of the particles remains the same.

During heating or expansion, the mass of matter does not change.

3. In the diagram below, the circle, square and triangle represent the atoms of different elements.



Identify all combinations that represent.

a. A molecule of a compound



b. A molecule of an element consisting of two atoms



c. A molecule of an element consisting of three atoms



4. Akash noticed that the metal latch on gate was difficult to open during hot sunny days. However, it was not difficult to open the same latch at night. Akash observed that the latch and the gate are exposed to the sun during the day time.

a. Formulate a hypothesis based on the information provided.

b. Briefly state how you would test the hypothesis.

(a) Hypothesis: The matter begins to expand when heated. But the mass of matter does not change.

(b) At night due to low temperature matter does not expand. During hot sunny days due to high temperature the matter expands. So the metal latch on gate was difficult to open.

IX. Assertion-reason questions:

Directions: Please refer to the following instructions:

- A. Both statements are true and the 2nd statement is a correct explanation of the 1st statement.
- B. Both statements are true but the 2nd statement is NOT a correct explanation of the 1st statement.
- C. The 1st statement is false while the 2nd statement is true.
- D. Both statements are false.

Assertion	Reason
Oxygen is a compound	Oxygen cannot be broken down into anything simpler
Hydrogen is an element	Hydrogen cannot be broken down into anything simpler
Air is a compound	Air consists of carbon dioxide
Air is a mixture of elements only	Only nitrogen, oxygen and neon gases exist in air
Mercury is solid in room temperature	Mercury is a non-metal

- Ans: 1. C
2. A
3. C
4. A
5. D

Addition Question and Answer

I. Fill in the blanks:

- 1. Graphite refill used in pencil is made up of elements called Carbon.
- 2. Even the best of optical microscope we cannot see atoms.
- 3. Nearly 74% of the atoms in the universe are hydrogen atoms.
- 4. Bismuth is used as medicine for treating diarrhoea.
- 5. In 118 known elements 94 element occur naturally.

II. True or False:

- 1. Dalton was the first scientist to use the symbols for elements in a very specific sense. True
- 2. Each molecules of water has been hydrogen atoms combined with one oxygen atom. True
- 3. On melting the solid changes to liquid state. True

III. Match it:

1. Magnesium and phosphorus - Crackers
2. Sulphur - Manure
3. Gallium - Mobile phones
4. Silicon - Computer chips

IV. Short answer:

1. What is an atom?

The smallest unit of element that exhibits the properties of the element is called as atom.

2. What happens when matter is heated?

The matter begun to expand when heated.

3. What are the elements there in human body?

Oxygen, Carbon, Hydrogen, Nitrogen, calcium, and Phosphorus.

4. What elements are there in air?

Nitrogen, Oxygen, Argon, CO_2 , Neon, He, Methane.

V. Detail:

1. How do hot – air balloons float?

When air inside the hot air balloons is heated with a burner, it expands.

The expansion causes the density of the air inside the balloons to decrease.

Hence the air inside the balloon has a lower density than the air outside of the balloon.

Thus difference in density allows the hot air balloon to float.

UNIT – 4

ATOMIC STRUCTURES

I. Choose the appropriate answer:

1. The basic unit of matter is Atom.
2. The subatomic particle which revolves around the nucleus is Electron.
3. Proton is positively charged.
4. The atomic number of an atom is Number of protons.
5. Nucleons consist of protons and neutrons.

II. Fill in the blanks.

1. The smaller particles found in the atom is called Subatomic particles.
2. The nucleus has protons and neutrons.
3. The electrons revolve around the nucleus.
4. If the valency of carbon is 4 and that of hydrogen is 1, then the molecular formula of methane is CH₄.
5. There are two electrons in the outermost orbit of the magnesium atom. Hence, the valency of magnesium is 2

III. Match the following:

1.	Valency	Electrons in the outermost Orbit
2.	Neutral Particle	Neutron
3.	Iron	Fe
4.	Hydrogen	Monovalent
5.	Positively charged Particle	Proton

IV. True or False:

1. The basic unit of an element is molecule. False
2. The electrons are positively charged. False
3. An atom is electrically neutral. True
4. The nucleus is surrounded by protons. False

V. Complete the analogy:

1. Sun: Nucleus, planets: Electrons.
2. Atomic number: Number of protons, Mass number: number of protons and neutrons.
3. K: Potassium, C: Carbon.

VI. Assertion and reason:

1. **Assertion:** An atom is electrically neutral.

Reason: Atoms have equal number of protons and electrons.

Answer: Both are true and Reason is the correct explanation of Assertion.

2. **Assertion:** The mass of an atom is the mass of its nucleus.

Reason: The nucleus is at the centre.

Answer: Both are true and Reason is the correct explanation of Assertion.

3. **Assertion:** The number of protons or the number of neutrons is known as atomic number.

Reason: The mass number is the sum of protons and neutrons.

Answer: Assertion is false but the Reason is true statement.

Correct statement: The number of protons and neutrons is mass number.

VII. Give very short answer:

1. **Define - A atom.**

The atom is the smallest particles of a chemical element that retains its chemical properties.

2. **Name the sub-atomic particles.**

Proton, Electron, Neutrons.

3. **What is atomic number?**

The number of electrons or protons in an atom is called the atomic number of that atom. It is denoted by the letter Z.

4. **What are the characteristics of proton?**

The proton is the positively charged particle and it's located in the nucleus. Its positive charge is of the same magnitude as that of the electron's negative charge.

5. **Why neutrons called neutral particles?**

Neutrons are the particles in an atom that have a neutral charge. They are not positive like protons. They are not negative like electrons. So they are called as neutral particles.

VIII. Answer briefly:

1. **Distinguish Isotopes from Isobar.**

Isotopes	Isobar
Isotopes are atoms of the same element thus have same atomic number but different mass number. Ex. Hydrogen has three isotopes protium with deuterium, tritium atomic number 1 but mass number 1,2,3.	Isobar is such atoms which have same mass number but different atomic numbers. Thus isobars are different elements. Ex. Calcium and Argon are isobar as they have atomic number 20 and 18 but their mass number is 40.

2. What are isotones? Give one example.

Isotones are the atoms of different elements with same number of neutrons.

$$^{13}\text{C}_6 \text{ Neutrons} = 13 - 6 = 7$$

$$^{14}\text{C}_7 \text{ Neutrons} = 14 - 7 = 7$$

3. Differentiate mass number from atomic number.

Atomic number	Mass number
The number of electrons or protons in an atoms is called atomic of that atom. It is denoted by Z. Ex. Helium has 2 protons and two electrons. hence its atomic number will be 2.	The number of protons and neutrons present in its nucleus is called mass number of atom. It is denoted by A. Ex. Sodium has 11 protons and 12 neutrons. hence its mass number $A = 11 + 12 = 23$

4. The atomic number of an element is 9. It has 10 neutrons. Find the element from the periodic table. What will be its mass number?

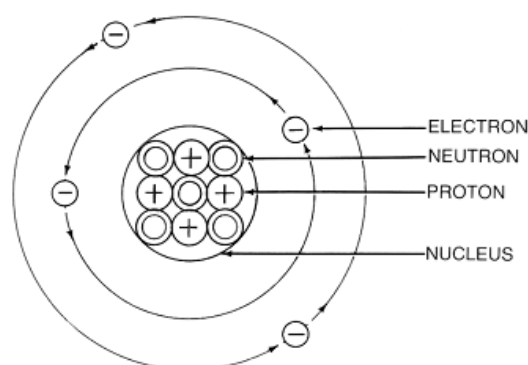
The element is Fluorine. Its mass number $A = n + p = 10 + 9 = 19$

Mass number of Fluorine = 19

IX. Answer in detail:

1. Draw the structure of an atom and explain the position of the sub-atomic particles.

Structure of an atom



Position of the subatomic – particles atom consist of three sub-atomic.

Particles: 1. Protons

2. Electrons

3. Neutrons

1. The nucleus of atom contains the protons and neutrons.
2. The outermost regions of the atom are called electron shells and contain the electrons.
3. The protons have positive charge while neutrons have a neutral charge.
4. Electrons circle around the nucleus of an atom they are negatively charged.

2. The atomic number and the mass number of an element is 26 and 56 respectively. Calculate the number of electrons protons and neutrons in its atom. Draw the structure.

Atomic number $Z = 26$

Mass number $A = 56$

No. of protons $P = ?$

No. of electrons = ?

No. of neutron $N = ?$

Name of the element is iron (Fe)

No. of proton $(P) = 26$

Mass number $A = n + p$

$$56 = n + 26$$

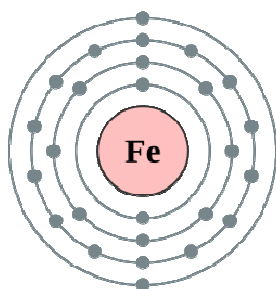
$$n = 56 - 26$$

No. of neutrons, $n = 30$

In an element No. of protons and No. of electrons is equal.

No. of electrons = No. of protons = 26

Structure of iron:



3. What are nucleons? Why are they called so? Write the properties of the nucleons?

Nucleons are sub-atomic particles which are located in the nucleus of atoms.'

Neutron and proton exist within the nucleus of the atom together they are called as nucleons

Properties of Nucleons:

- (i). Nucleons have same mass as if they were identical particles that differ only in their electric charge.
- (ii). The proton carries a charge +1 and the neutrons are neutral.
- (iii). The size nucleon is about 1.6 fm (Femto meters)
- (iv). The force that holds the nucleus together is very short range.

4. Define valency? What is the valency of the element with atomic number 8? What is the compound by the element with hydrogen?

- (i). Valency is defined as the combining capacity of an element.
- (ii). Valency of the element with atomic number: 8

Name of the element: oxygen: 0

Atomic number: 8

Valency: 2

Water (H₂O) is the oxide of hydrogen and most familiar oxygen compound.

X. Higher Order Thinking Skills:

1. An atom of an element has no electron will that atom have any mass or not? Can an atom exist without electron? If so then give example.

- (i). Atoms with no electrons will have mass, because mass depends on number of protons and neutrons though it has no electron.
- (ii). Atoms can exist without electrons, matter is build out of neutrons, protons and electrons. Matter becomes stable only if it is electrically neutral.
- (iii) So atoms without electrons do exist and must have their own states.
- (iv). Ex. He²⁺. It has 2 protons and 2 neutrons but no electrons.

2. What is common salt? Name the elements present in it. Write the formula of common salt. What are the atomic number and the mass number of the elements? Write the ions in the compound.

- (i) Common salt is mostly sodium chloride. The ionic compound with the formula NaCl, representing equal proportions of sodium and chlorine.
- (ii) Elements presents is common salt: sodium & chlorine.
- (iii) Formula of common salt: NaCl Atomic number & Mass number of NaCl

Atomic number of Na = 1 Atomic number of Cl = 17 Mass number of Na = 23 Mass number of Cl = 35

(iv). Ions present in the compound: sodium ion Na^+ and chloride ion Cl^- .

Additional Questions

I. Fill in the blanks:

1. Molecule is made up of two or more atoms.
2. The average diameter of an atom is 1\AA .
3. Whose theory does not propose anything about the positive and negative charges of an atoms Dalton.
4. One nanometre is equal to 10^{-9}m .
5. Who discovered the existence of the negatively charged particles is an atom?
J.J.Thomson.
6. J.J.Thomson's atom model is also called as Plum pudding model.
7. Proton was discovered by Rutherford.
8. J.J.Thomson compared an atom to a watermelon.
9. According to John Dalton, atom is a hard, solid, ball and it is indivisible.
10. The particles that makes up the atom are called subatomic particles.

II. True or False:

1. A neutron is a neutral particle. True
2. Most of the space in an atom is occupied by electrons. True
3. Rutherford used beta particles in his scattering experiment. False

III. Match it:

1. Proton (p) - Rutherford
2. Electron (e) - J.J.Thomson
3. Neutron (n) - James Chadwick

IV. Short answer:

1. What is a neutron?

Neutron is an elementary particle that contains carries no charge.

2. What are valence electrons?

The number of electrons present in the outermost shell of an atom is known as valence electrons.

3. What is the mass of a proton?

$1.6726 \times 10^{-27}\text{Kg}$

4. Is the structure of the atom the same as the structure of the solar system?

Yes it is similar to the solar system. It has a core centre called nucleus and it has paths called orbits around the nucleus.

5. What are the limitations of Thomson's model of an atom?

J.J.Thomson's theory does not propose anything about the positive and negative charges of an atom. Hence it was not able to explain many of the properties of substance.

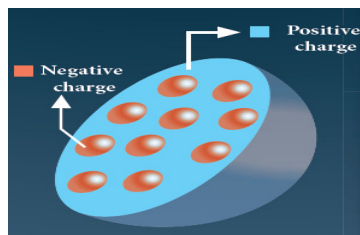
V. Detail:

1. What was the model of an atom proposed by Thomson?

J.J.Thomson's theory proposed that the atom has positively charged part liked the red part of the watermelon and in it are embedded, like the seeds, negatively charged particles which he called electrons.

According to this theory as the positive and negative charges are equal, the atom as a whole does not have any resultant charge.

Thomson's greatest contribution was to prove by experimentation the existence of the negatively charged particles or electrons in an atom.



UNIT – 5 REPRODUCTION AND MODIFICATION IN PLANTS

I. Choose the appropriate answer:

1. Vegetative propagation by leaves takes place in bryophyllum.
2. Asexual reproduction in yeast is budding.
3. Reproductive part of a plant is Flower.
4. Pollinators are Wind, water, insect.
5. Climbing roots are seen in betel, black pepper.

II. Fill in the Blanks:

1. The male reproductive part of a flower is Androecium .
2. Ovary is the basal swollen part of the Gynoecium.
3. After fertilization the ovule becomes seeds.
4. Breathing roots are seen in avicennia plants.
5. Onion and Garlic are example of bulb.

III. True (or) False:

1. A complete flower has four whorls. True
2. The transfer of pollen to the stigma is known as pollination. True
3. Conical shaped root is carrot. True
4. Ginger is an underground root. False
5. Leaves of Aloe vera are fleshy and store water. True

IV. Match the following:

1. Petal - Attracts insects
2. Fern - Spore
3. Phylloclade - Opuntia
4. Hooks - Bignonia
5. Sucker - Chrysanthemum

V. Answer very briefly:

1. Write two types of reproduction in plants.

- i. Sexual Reproduction – ex: Hibiscus
- ii. Asexual Reproduction – ex: Potato

2. What are the two important parts of a flower?

- i. Androecium - Male Reproductive organ
- ii. Gynoecium - Female Reproduction organ

3. Define – pollination.

Transfer of pollen grains from the another to the sigma is called pollination.

4. What are the agents of pollination?

Wind, water, insects, birds, and animals.

5. Give example for Corm and Tuber

- a. Corm – Ex: Colocasia
- b. Tuber – Ex: Potato

6. What is tendril?

In climbs, the leaf of plant is modified into elongated structure to help the plants to climb efficiently. Ex: Pison sativum (Peas)

7. What are thorns?

Leaves are reduced to spines, known as thorns. Ex: Opuntia.

VI. Answer briefly:

1. Differentiate bisexual flower from unisexual flower?

Bisexual flower	Unisexual flower
(i) Complete flower	(i) Incomplete flower
(ii) Four whorls-calyx, corolla, stamen and pistil are present.	(ii) Any of the four whorls is missing.

2. What is cross pollination?

Pollen grains are transferred from anther of one flower to the stigma of another flower of the same kind or different plant.

3. Write notes on phyllode.

In *Acacia auriculiformis*, petioles expand to form leaf like structure. They carry out the function of the leaf (photosynthesis).

VII. Answer in details:

1. Write down a brief account on pollination.

Pollination: Transfer of pollen grains from the anther to the sigma is called pollination.

Types of pollination:

Artificial pollination: When pollen grains are transferred artificially to the stigma of the flower.

Natural pollination: When pollen grains are transferred naturally to the stigma of the flower. They are of two types.

(i) Self pollination

(ii) Cross pollination

Self Pollination	Cross pollination
(i) Pollen grains are transferred from the anther to the stigma of the same flower or to another flower of the same plant.	(i) Pollen grains are transferred from the anther of one flower to stigma of another flower of the same kind or different plant.
(ii) Plants do not need to produce pollen grains in a large quantity for self pollination.	(ii) Plants need to produce pollen grains in larger quantities to increases the chance of pollination.
(iii) It does not produce changes in the characteristic of new plants.	(iii) Cross pollination does introduce variations in characteristics of new plants.

2. Explain the underground stems.

In underground modified stem, Whole stem is buried under the ground. It has definite growth. There are four types of underground stems.

1. Rhizome, 2. Corm, 3. Tuber, 4. Bulb

Rhizome:

It is an underground thick stem with nodes and internodes with scale leaves at the node.

It grows horizontally and has an irregular shape.

It has buds.

It gives rise to new stem and leaves.

ex. Ginger and Turmeric.

Corm:

This underground stem is round in shape and flat at top and bottom.

It is a condensed form of rhizome and bears one or more buds in the axis scales leaves.

Daughter plants arise from their buds.

ex. Colocasia

Tuber:

It is an enlarged, shaperical underground stem that stores food.

It has many dormant buds on its surface known as eyes.

If we plant a part of tuber with the bud, it grows into a new plant.

ex. Potato.

Bulb:

It is a condensed stem which is disc like and stores food in the fleshy leaves.

The bulb has two types of leaves:

Fleshy leaves

Scaly leaves

The upper part of the stem has a terminal bud and it is covered by many scaly leaves.

The inner fleshy leaves store food as seen in garlic and onion.

VIII. Higher order questions:

1. Ginger is considered to be a stem, not a root. Why?

Ginger is considered to be a stem because, It is a Rhizome with node and internodes with scale leaves at the node.

It has a bud and give rise to new stem and leaves.

2. What will happen if pollen grain of rose gets deposited on stigma of lily flower? Will pollen germination takes places? Why?

No, pollen germination takes place because pollen tube will not be formed to reach the ovary.

There is incompatibility between rose and lily and so no fertilisation.

IX. Assertion and reasoning types of question:

1. **Assertion:** Pollination and fertilization in flowers, produces fruits and seeds.

Reason: After fertilization the ovary becomes fruit and ovule becomes seed.

Answer: Both are correct

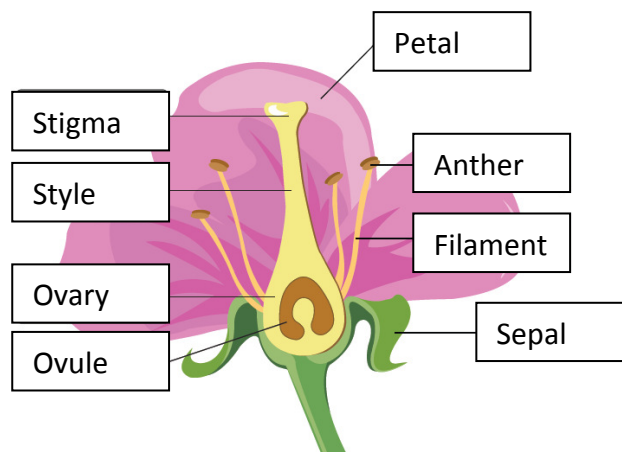
2. **Assertion:** An example for conical root is carrot.

Reason: It is an adventitious root modification.

Answer: Assertion is correct, Reasoning is incorrect.

X. Picture Based question.

i. Label the picture given below:



ii. Identify the four plants shown in the following table Name the different modifications in each of them.

Name	Modification
1. Garlic	Underground stem – store food
2. Turnip	Roots – for storage
3. Rose plant	Leaves reduced to spines – for photosynthesis
4. Maize	Stilt roots – Mechanical supports from nodes.

Additional questions and answers

I. Fill in the blanks:

1. Custard apple is made up of many fruits, aggregated together.
2. Spirogyra reproduces by fragmentation.
3. Prop roots are seen Banyan trees.
4. Plants that grown in nitrogen deficient places traps.
5. Orchids have the smallest seeds in the plant kingdom.

II. Match it:

- | | | |
|--------------|---|-----------------|
| 1. Nepenthes | - | Attract insects |
| 2. Offset | - | Eichhornia |
| 3. Stolon | - | Wild strawberry |
| 4. Runner | - | Vallarai |
| 5. Velamen | - | Epiphytic root |

III. Answer the following:

1. What are the unfavourable conditions for spore formation? Give examples.

Scarcity of water

High temperature

Nutrient deficiency in soil

ex. Algae, Fungi, Moss, Ferns.

2. What is modification?

In some plants root, stem and leaves change their shape and structure to perform special functions like storage of food, Mechanical support, Protection etc.

3. Write a short note on pneumatophores.

Avicennia is a tree which grows in Mangroves or swamps

They have roots which are seen above the ground for the purpose of gaseous exchange.

These roots are erect, peg like structures with numerous pores through which air circulates.

These roots are called breathing roots, or pneumatophores.

IV. Detail:

1. Explain the process of fertilization in detail.

Fertilization:

Through pollination, pollen grains reach stigma. Substances produced on the stigma causes the pollen grain to germinate. During the germination a tube develops from the pollen grains that carries male gametes that reaches female gamete inside the ovary through the styles. Male gamete fuses with the female gamete to form Zygote. This process is called fertilization.

Unit – 6

HEALTHS AND HYGIENE

I. Choose the appropriate answer:

1. Ravi has sound mind and physically fit body. It refers to health.
2. Sleep is not only good for body, but it is also good for mind.
3. Our living place should be clean.
4. The tobacco chewing causes periodontitis.
5. The first aid is to relieve the pain.

II. Fill in the Blanks:

1. A group of people living together in a particular area is called community.
2. I am green colour box with garbage. Who am I? Biodegradable dustbin.
3. Eyes are considered as windows to the world.
4. The hair follicles produce oil which keeps the hair smooth.
5. Tuberculosis is caused by the bacterium mycobacterium tuberculae.

III. True or False:

1. All food should be covered. True
2. Chicken pox also known as Leucoderma. False
3. Stomach ulcer is a non- communicable disease. True
4. Rabies is a fatal disease. True
5. First – degree burns damage the whole skin. False

IV. Match the following:

1.	Rabies	Hydrophobia
2.	Cholera	Cramps in legs
3.	Tuberculosis	Mycobacterium
4.	Hepatitis	Yellow Urine
5.	Typhoid	Salmonella

V. Analogy:

1. First degree burn: epidermis :: second degree burn: Dermis
2. Typhoid : Bacteria :: Hepatitis : Virus
3. Tuberculosis : air :: Cholera : Water

VI. Consider the following statements and choose the correct option.

1. **Assertion (A)** : Oral hygiene is good.

Reason (R) : Sound teeth and healthy gums with healthy surrounding tissues.

Answer: Both A and R are true.

2. **Assertion (A)** : Chicken pox is a viral communicable disease.

Reason (R) : Characterized by rashes on the whole body, fever, head ache and tiredness.

Answer: Both A and R are true.

VII. Answer very briefly:

1. **What is hygiene?**

Hygiene is defined as the branch of health which is concerned with the individuals adjustment to the physiological needs of the body and minds for the attainment of the maximum level health.

2. Write about the right way of protecting the eyes.

- (i) Do not rub the eyes
- (ii) Do not work on TV/ computer for a long time
- (iii) Use cold water for cleaning the eyes.
- (iv) Eat carrot and fruits like orange, sweet lemon and lemon.

3. How to keep your hair clean and healthy?

The regular hair wash and massage of the scalp will remove the dead skin cells, excess oil and dust.

Rinsing the hair well with clear water and using good toothed comb for hair dressing is highly essential for their maintenance.

4. Sobi frequently playing with her mobile. Suggest your ideas to protect her eye from irritation?

Antibiotic eye drops is used for eye irritation.

5. Give any two communicable disease, which spreads in your locality during monsoon?

Cholera and Typhoid.

6. What first aid will you provide in the case of bruises?

Apply antiseptic cream. Cover with a clean non-sticking cloth or bandages. Need immediate medical attention.

7. Ravi said "Ganga had minor burn, so I washed it with water" Do you agree with his statement? Explain, Why?

Yes, I agree with Ravi's statement. In case of minor burns, The affected area should be washed with cold water and an antiseptic cream should be applied.

VIII. Answer briefly:

1. Why the first aid is essential?

- (i) The first aid is essential
- (ii) To save the life
- (iii) To prevent further, bleeding and determine the condition of the patient.
- (iv) To relieve the pain.
- (v) To provide the medical care available at the earliest.

2. What steps you will follow to keep the Teeth healthy?

- (i) Eat citrus fruits
- (ii) Brush twice a day
- (iii) Floss the teeth to prevent decay

- (iv) Avoid chewing tobacco
- (v) Eat a well – balanced diet.

3. What this picture Explains?



- (i) Do not throw waste and pollute the environment.
- (ii) To protect us from diseases it is essential to maintain environmental hygiene.

4. Distinguish between the following pairs Communicable diseases and Non-communicable diseases

Communicable diseases	Non-communicable diseases
It is spread one person to another.	Do not spread person to person
They are caused by microbes.	They are not caused by microbes.
Ex. Tuberculosis, Chicken pox.	Ex. Cancer, Anaemia

5. Name the mode of transmission of communicable disease.

Air, Water, Food, Vectors (insects and other animals)

6. Your friend says that her hair is thin, spares and lost very often. Suggest your ideas to reduce this problem.

To keep the hair clean and healthy:

The regular hair wash and massage of the scalp will remove the dead skin cells, excess oil and dust.

Rinsing the hair well with clear water and using good toothed comb for hair dressing is highly essential for their maintenance.

IX. Answer in detail:

1. Write about any three Communicable diseases in details.

(i) Tuberculosis

TB is caused by mycobacterium tuberculae and spreads from one person to another person through air by spitting and prolonged contact with sharing materials of the patient.

The symptoms are fever, weight loss, chronic cough, bloody spitting and difficulty in breathing.

Prevention and Treatment:

BCG vaccination

Giving special attention to the patient.

Regular medication like DOT

(ii) Cholera:

Cholera is caused by vibrio cholera and spread through the consumption contaminated food or water.

The symptom of cholera is vomiting, severe diarrhea and cramps in legs.

Prevention and Treatment:

Washing hands before eating

Drinking boiled water

Avoid eating uncovered food from street vendors.

Getting vaccination against cholera.

(iii) Hepatitis:

It is most dangerous and fatal diseases caused by Hepatitis virus-A,B,C,D,E.

Its mode of transmission is contaminated water, sharing of needles and blood transfusion.

The symptoms of hepatitis is loss of appetite, vomiting, eyes and urine in yellow colour.

Prevention and Treatment:

Drinking boiled water

Proper cleaning of hands

2. List the situations in which first aid is given. What would you do if a person suffers from skin burns?**(i) The situations for first aid,**

3. To save the life
4. To prevent further bleeding and determine the condition of the patient.
5. To relieve the pain
6. To provide a medical care available at the earliest.

(ii) First AID for burning:

In case of minor burns the affected area should be washed with cold water and an antiseptic cream should be applied.

In case of severe burns, where deeper layers of tissues get destroyed and blisters appear, use of water should be avoided.

The burnt area should be covered with a clean non-sticking cloth or bandages. Larger burns need immediate medical attention.

It is very important to keep a fire extinguisher readily available.

7. How the diseases are transmitted from one person to the other person?

Communicable diseases:

Communicable diseases are those that spread one person to another.

Healthy person must be protected from people with communication diseases.

Diseases spread through contaminated air, water, food or vectors,

Diseases caused by Bacteria:

TB:

It is caused by mycobacterium tubeculae and spreads person to another through air by spitting and prolonged contact with sharing materials of the patient.

Cholera:

It is caused by vibrio cholera and spread through the consumption contaminated food or water.

Typhoid:

It is caused by salmonella typhi and spreads by contaminated food and water.

Diseases caused by virus:

Viral diseases are extremely wide spread infection caused by many types of viruses.

Hepatitis:

It is made of transmission is contaminated water, sharing of needles and blood transfusion.

Chicken pox:

This diseases spreads through air and contact with an infected person.

Rabies:

The bite of the infected dog, rabbit, monkey, cat, etc.

The virus present in the saliva of dog enters the brain via neurons.

X. Higher order thinking question:

1. A person is sleeping during day time. Why does this happen with some people that they feel sleepy during day time in office or in the classroom? Have you ever come across such situation? Explain.

Reasons for sleepy during day time:

High fatty food

Depression

Diabetes

Anaemia

Nutritional deficiencies

Negative thoughts

Powerful tablets

Additional Questions

I. Fill it:

1. Penicillin notatum is a fungus.
2. Rheumatism is a Non-communicable disease.
3. Loss of appetite anorexia.
4. Extreme fear for water Hydrophobia.
5. Loss of pigmentation Leucoderma.

II. Short answer:

1. Define disease.

A disease is the functional or physical change from a normal state that affects the health of a person by causing disability or discomfort.

2. What are the causes for the development of disease?

Infection caused by diseases causing microbes.

Lack of balanced diet.

Poor lifestyle and unhealthy habits.

Malfunctioning of one or more body parts or organs.

3. What are aim of vaccine?

A vaccine is a biological preparation of provide active acquired immunity to a particular disease.

4. Write a note on “Dengue”.

Dengue is spread by mosquitoes of aedes aegypti caused by Den-1,2 virus belonging to the type flavi virus.

It decreases counting of the blood platelets of human blood.

It has a maximum flight range of 50 – 100 m in and around the places.

III. Detail:

1. Tabulate the diseases affecting the eye causative agents and their remedial measures.

S.No	Name of the diseases	Causative agents	Impacts	Remedial measures
1	Night blindness	A lack of vitamin A, A disorder of cells in you.	Makes it hard to see well at night or in pair light.	Eat foods rich in anti-oxidant vitamins and minerals.
2	Pink eyes	Cause by virus and bacteria.	One/ both eyes can be affected. It can be spread by contaminated and sneering.	Anitibiotic eye drops, ointments home remedy.
3	Colour blindness	Genetic condition.	Difficult to distinguishing between colour inability to see shades of same colour.	There is no known cure for colour blindness. lenses and glasses with filters.

UNIT – 7

VISUAL COMMUNICATIONS

I. Choose the correct answer:

1. Which is the following is an for an animation? visual communication.
2. Who uses the Photoshop software more? Photographer
3. Which option is used in the Microsoft Photostory to upload the photos? Import Pictures

4. Which technology shows the computer-drawn pictures as real picture. Virtual Reality
5. Which technology uses pixels to create pictures? Raster
6. Which software is used to create symbols? Vector Graphics

II. Match the following:

1. Animations - Visual communication
2. Raster - Pixels
3. Vector - Illustrator
4. Virtual Reality - 3D
5. Video story - Microsoft photostory

III. Answer the briefly:

1. What is Raster Graphics?

Raster graphics are created on the basis of pixels.

The Photos taken by camera and the photos scanned by a scanner are of the Raster type.

When we enlarge this type of photos we could see the pictures as rectangular layers or grids.

2. Write notes on 2D and 3D pictures.

The 2D images have only two dimensions – length and height.

But 3D have length, height and width 3D images appear in front of our eyes like it happens in the real world.

3. Differentiate between Raster and Vector.

S.No	Raster Graphics	Vector Graphics
1	Raster graphics are created on the basis of pixels.	Vectors graphics are created on the basis of mathematics
2	Raster file types are .png, .jpg, .gif, .tiff, .psd	Vector types are .eps, .ai, .pdf, .svg, .sketch
3	Software used to edit Raster graphics is adobe Photoshop	Software used for vector graphic images. Adobe illustrator, Sketch.

4. With the help of Microsoft Photostory how will you create a video?

Microsoft photostory can be used to make videos using photos. First we have upload the photos and then select music for the video.

Step 1: Open the application of Microsoft photostory in that select begin a new story and click on next.

Step 2: Click import picture in the next screen. Now the files in our computer will appear. select saved pictures for videos.

Step 3: No we can input small text which is apt to the pictures. Then click on next and give animation to the videos. We can give audio effect also to these images after finishing this click on next.

Step 4: To provide background music, we can select a music file through select music and click on next.

Step 5: Next select a title for the story and select the place where it has to be saved in your computer. Then, through SETTINGS, change the format of the video.

Step 6: Now our video is ready to view. Click view your story. you can see your video now.

Additional Questions

I. Fill it:

1. Name the software which is used to beautify edit photos Photoshop.
2. The output we get from any application is commonly referred as file.
3. Folder is a storage space that contains multiple files.
4. Paint app used to draw and edit pictures.

II. Match it:

1. Beautify photos - Photoshop
2. Virtual reality in 3D - Real image
3. LINUX - Operating system