

SELECTION

7

SCIENCE

ANBU NILAYAM

MADURAI - 625001

SELECTION

SEVENTH STANDARD

7

TERM - I

SCIENCE

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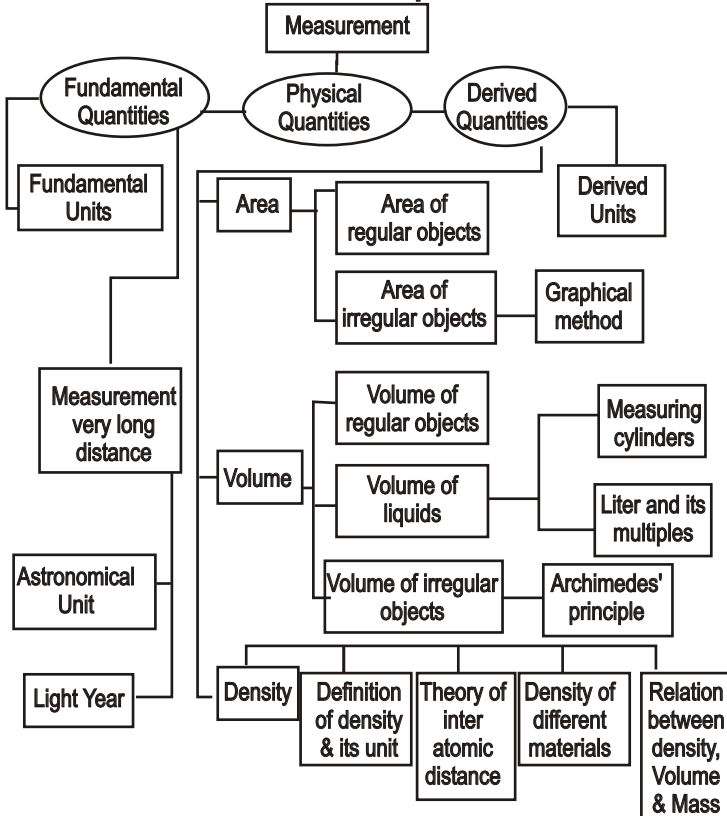
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SELECTION ⑦ SCIENCE SEVENTH STANDARD TERM - I 5 in 1

Unit - 1. Measurement

Mindmap



Evaluation**I. Choose the appropriate answer :****1. Which of the following is a derived unit ?**

- a) mass b) time
c) area d) length

Ans : c) area**2. Which of the following is correct ?**

- a) 1L = 1cc b) 1L = 10cc
c) 1L = 100cc d) 1L = 1000cc

Ans : d) 1L = 1000cc**3. SI unit of density is**

- a) kg/m^2 b) kg/m^3
c) kg/m d) g/m^3

Ans : b) kg/m^3 **4. Two spheres have equal mass and volume in the ratio 2:1.****The ratio of their density is**

- a) 1:2 b) 2:1
c) 4:1 d) 1:4

Ans : b) 2:1**5. Light year is the unit of**

- a) Distance b) time
c) density d) both length and time

Ans : a) Distance**II. Fill in the blanks :**

1. Volume of irregularly shaped objects are measured using the law of **Ans : Archimedes**

2. One cubic metre is equal to **Ans : 100**

3. Density of mercury is **Ans : 13600kg/m^3**

4. One astronomical unit is equal to

Ans : $1.496 \times 10^{11}\text{m}$

5. The area of a leaf can be measured using a

Ans : graphical method**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.

Ans : False . The region covered by the boundary of the plane figure is called its area.

2. Volume of liquids can be found using measuring containers.

Ans : True

3. Water is denser than kerosene.

Ans : True

4. A ball of iron floats in mercury.

Ans : True

5. A substance which contains less number of molecules per unit volume is said to be denser.

Ans : False . A substance which contains more number of molecules per unit volume is said to be denser.

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

1)

Column - I	Column - II
i. Area	(a) light year
ii. Distance	(b) m^3
iii. Density	(c) m^2
iv. Volume	(d) kg
v. Mass	(e) kg/m^3

Ans :

Column - I	Column - II
i. Area	(c) m^2
ii. Distance	(a) light year
iii. Density	(e) kg/m^3
iv. Volume	(b) m^3
v. Mass	(d) kg

2)

Column - I	Column - II
i. Area	(a) g/cm^3
ii. Length	(b) measuring jar
iii. Density	(c) amount of a substance
iv. Volume	(d) rope
v. Mass	(e) plane figures

Ans :

Column - I	Column - II
i. Area	(e) plane figures
ii. Length	(d) rope
iii. Density	(a) g/cm^3
iv. Volume	(b) measuring jar
v. Mass	(c) amount of a substance

V. Arrange the following in correct sequences.

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

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

2. Copper, Aluminium, Gold, Iron**Ans : Aluminium, Iron, Copper, Gold****VI. Use the analogy to fill in the blank:**

1. Area : m^2 :: Volume : **Ans : m^3**
 2. Liquid : Litre :: Solid : **Ans : Cubic metre**
 3. Water : kerosene :: : Aluminium **Ans : Iron**

VII. Assertion and reason type questions.**1. Assertion :** Volume of a stone is found using a measuring cylinder.**Reason :** Stone is an irregularly shaped object.

Mark the correct choice as

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

Ans : a) 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.

Mark the correct choice as

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

Ans : b) If both assertion and reason are true, but reason is not the correct explanation of assertion.**3. Assertion :** Iron balls sinks in water.**Reason :** Water is denser than iron.

Mark the correct choice as

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

Ans : c. Assertion is true but reason is false.

VIII. Give very short answer :**1. Name some of the derived quantities.**

Area, volume, speed, density.

2. Give the value of one light year. $9.46 \times 10^{15} \text{ m}$ **3. Write down the formula used to find the volume of a cylinder.** $\pi r^2 h$ **4. Give the formula to find the density of objects.**

$$\text{Density (D)} = \frac{\text{Mass (M)}}{\text{Volume (V)}}$$

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

Water

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

Astronomical unit, Light year

7. What is the density of gold ? $19,300 \text{ kg/m}^3$ **IX. Give short answer :****1. What are derived quantities ?**

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

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

Volume of liquid	Capacity of container
The volume of any liquid is equal to the space that it fills.	The maximum volume of liquid that a container can hold is known as the 'capacity of container'.

3. Define the density of objects.

Density of a substance is defined as the mass of the substance contained in unit volume (1 m^3).

$$\text{Density (D)} = \frac{\text{Mass (M)}}{\text{Volume (V)}}$$

4. What is one light year?

One light year is defined as the distance travelled by light in vacuum 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.

$$1 \text{ AU} = 1.496 \times 10^{11} \text{ m.}$$

X. Answer in detail.

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

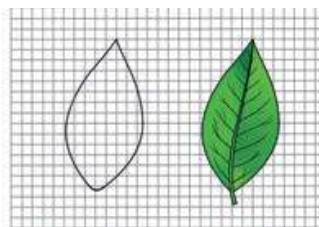
To find the area of an irregular shaped plane figure by the graphical method :

★ First take the irregularly shaped leaf.

★ Place the leaf on a graph sheet and draw the outline of the leaf with a pencil (Figure).

★ Remove the leaf.

★ You can see the outline of the leaf on the graph sheet.



Area of an irregularly shaped plane figure

i. Now, count the number of whole squares enclosed within the outline of the leaf. Take it to be M.

ii. Then, count the number of squares that are more than half. Take it as N.

iii. Next, count the number of squares which are half of a whole squares. Note it to be P.

iv. Finally, count the number of squares that are less than half. Let it be Q.

$$\text{v. } M = \underline{52} ; \quad N = \underline{12}$$

$$P = \underline{6} ; \quad Q = \underline{12}$$

Now, the approximate area of the leaf can be calculated using the following formula :

Approximate area of the leaf = $M + (3/4) N + (1/2) P + (1/4) Q$ square cm.

$$\begin{aligned}\text{Area of the leaf} &= 52 + \left(\frac{3}{4}\right) \times 12 + \left(\frac{1}{2}\right) \times 6 + \left(\frac{1}{4}\right) \times 12 \\ &= 52 + 9 + 3 + 3\end{aligned}$$

$$\text{Area of the leaf} = 67 \text{ sq.cm}$$

$$\text{Area of the leaf} = \underline{67 \text{ sq.cm}}$$

This formula can be used to calculate the area of any irregularly shaped plane figures.

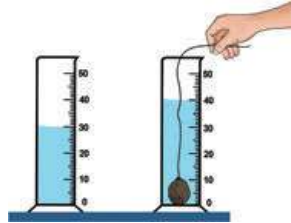
2. How will you determine the density of a stone using a measuring jar ?

★ Take a measuring cylinder and pour some water into it (Do not fill the cylinder completely).

★ Note down the volume of water from the readings of the measuring cylinder.

★ Take it as V_1 .

★ Now take a small stone and tie it with a thread.



Volume of an irregularly shaped object

★ Immerse the stone inside the water by holding the thread.

★ This has to be done such that the stone does not touch the walls of the measuring cylinder (Figure).

★ Now, the level of water has raised. Note down the volume of water and take it to be V_2 .

★ The volume of the stone is equal to the raise in the volume of water.

$$V_1 = 30\text{ml} ; V_2 = 40\text{ ml}$$

$$\begin{aligned}\text{Volume of stone} &= V_2 - V_1 \\ &= 40 - 30 = 10\text{ml}\end{aligned}$$

$$\text{Volume of stone} = 10\text{ml}$$

$$\text{Mass of stone} = 20\text{gm}$$

$$\text{Density of stone} = \frac{20}{10} = 2\text{gm /cm}^3$$

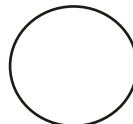
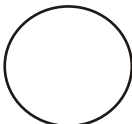
XI. Questions based on Higher Order Thinking skills :

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

Sphere A

Sphere B

Sphere C



Sphere A and B are made of the same material. Sphere

C is made of a different material. Spheres A and C have equal radii. The radius of sphere B is half that of A. Density of A is double that of C. Now answer the following questions :

- Find the ratio of masses of spheres A and B.
- Find the ratio of volumes of spheres A and B.
- Find the ratio of masses of spheres A and C.

Sphere A	Sphere B	Sphere C
Mass = M_1	Mass = M_2	Mass = M_3
Radius = R_1	Radius = $R_2 = R_1(1/2)$	Radius = $R_3 = R_1$
Density = $2D_1$	Density = D_1	Density = $D_3 = D_1$
Volume = V_1	Volume = $V_1 = V_2$	Volume = $V_1 = V_2 = V_3$

i) Ratio of masses of sphere A and B

$$M_1 = D_1 V_1 \quad M_2 = D_1 V_2$$

$$M_1 = 2D_1 V_1 \quad M_2 = D_1 V_1 [V_2 = V_1]$$

$$\text{Ratio of masses} = 2 : 1$$

ii) The ratio of volumes of spheres A and B.

$$V_1 = \frac{M_1}{2D_1} \quad V_2 = \frac{M_2}{D_2}$$

$$V_1 = \frac{M_1}{2D_1} \quad V_2 = \frac{M_2}{D_1}$$

$$2V_1 = \frac{M_1}{D_1} \quad V_2 = \frac{M_1}{D_1}$$

$$V_1 : V_2$$

$$\text{Ratio of their volumes} = 2 : 1$$

iii) Ratio of masses of spheres A and C

$$M_1 = D_1 V_1$$

$$M_3 = D_3 V_3 = D_1 V_1$$

$$M_1 : M_3$$

$$1 : 1$$

$$\text{Ratio of masses of spheres A and C is} = 1 : 1$$

XII. Numerical problems :

1. A circular disc has a radius 10cm. Find the area of the disc in m². (Use $\pi = 3.14$)

Solution :

$$r_1 = 10\text{cm}$$

$$\text{Area of a circular disc} = \pi r^2$$

$$= \frac{22}{7} \times 10 \times 10$$

$$\text{Area of the disc} = 314.3 \text{ m}^2$$

2. The dimension of a school playground is 800m x 500m. Find the area of the ground.

Solution :

$$\begin{aligned} \text{Area of a school playground} &= \text{length} \times \text{breadth} \\ &= 800 \times 500 \end{aligned}$$

$$\text{Area of the ground} = 400000 \text{ m}^2$$

3. Two spheres of same size are made from copper and iron respectively. Find the ratio between their masses.

Density of copper 8,900 kg/m³ and iron 7,800 kg/m³.

Solution :

$$\text{Mass of copper} = M_1$$

$$\text{Density of copper} = D_1 = 8900 \text{ kg/m}^3$$

$$\text{Volume of copper} = V_1$$

$$\text{Mass of iron} = M_2$$

$$\text{Density of iron} = D_2 = 7800 \text{ kg/m}^3$$

$$\text{Volume of iron} = V_2$$

$$\boxed{V_1 = V_2 = V}$$

$$M_1 = D_1 \times V_1$$

$$= D_1 \times V$$

$$M_1 = 8900 \times V$$

$$M_2 = D_2 \times V_2$$

$$M_2 = 7800 \times V$$

$$M_1 = M_2$$

$$8900 V = 7800 V$$

$$\begin{array}{ccc} M_1 & 8900V & 1.14 \\ = & & = \end{array}$$

$$\begin{array}{ccc} M_2 & 7800V & 1 \end{array}$$

$$M_1 : M_2 = 1.14 : 1 \quad \text{Ratio of their masses} = \boxed{1.14 : 1}$$

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

Solution :

$$\text{Mass (M)} = 250\text{g}$$

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

$$\text{Density of liquid (D)} = ?$$

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

$$= \frac{250}{1000} = \frac{1}{4} = 0.25$$

$$D = 0.25\text{g/cc}$$

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

Solution :

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

$$= \frac{4}{3} \times \frac{22}{7} \times 1 \times 1 \times 1 \quad \boxed{r = 1\text{ cm}}$$

$$= \frac{88}{21}$$

$$\text{Volume of a silver sphere} = 4.2\text{cm}^3$$

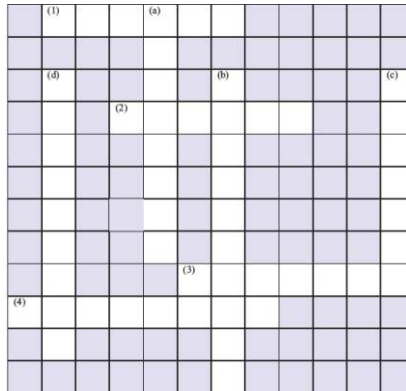
$$\text{Mass of a sphere, M} = 33\text{g}$$

$$\text{Density of silver, D} = ?$$

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

$$= \frac{33}{4.2} = 7.86$$

$$\text{Density of silver, } \boxed{D = 7.86\text{g/cc}}$$

XII. Cross word Puzzle :**CLUES - ACROSS**

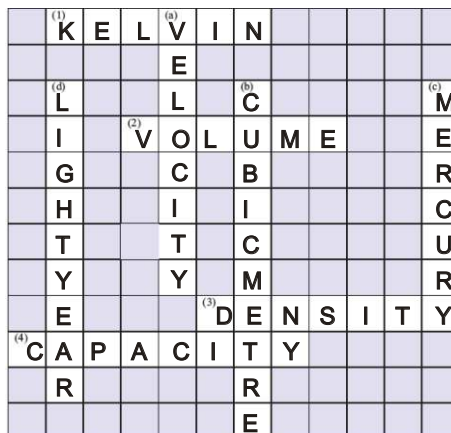
1. SI unit of temperature
2. A derived quantity
3. Mass per unit volume
4. Maximum volume of liquid a container can hold

CLUES - DOWN

- a. A derived quantity
- b. SI Unit of volume
- c. A liquid denser than iron
- d. A unit of length used to measure very long distances

Ans : [1. Kelvin ; 2. Volume ; 3. Density ; 4. Capacity]

[a. Velocity ; b. Cubic metre; c. Mercury; d. Lightyear]



Activity : 1**Solution :**

$$M = 52 \quad N = 12 \quad P = 6 \quad Q = 12$$

$$\begin{aligned} \text{Area of leaf} &= M + \left(\frac{3}{4}\right)N + \left(\frac{1}{2}\right)P + \left(\frac{1}{4}\right)Q \\ &= 52 + \left(\frac{3}{4}\right) \times 12 + \left(\frac{1}{2}\right) \times 6 + \left(\frac{1}{4}\right) \times 12 \\ &= 52 + 9 + 3 + 3 = 67 \end{aligned}$$

$$\text{Area of leaf} = 67 \text{ sq.cm}$$

Activity : 2

Draw the following regularly shaped figures on a graph sheet and find their area by the graphical method. Also, find their area using appropriate formula. Compare the results obtained in two methods by tabulating them.

a) A rectangle whose length is 12cm and breadth is 4cm.

b) A square whose side is 6cm.

c) A circle whose radius is 7cm.

d) A triangle whose base is 6cm and height is 8cm.

S.No.	Shape	Area using formula	Area using graphical method
1.	Rectangle	48cm^2	48cm^2
2.	Square	36cm^2	36cm^2
3.	Circle	154cm^2	154cm^2
4.	Triangle	24cm^2	24cm^2

$$1. \text{ area of rectangle} = 12 \times 4 = 48\text{cm}^2$$

$$2. \text{ area of square} = 6 \times 6 = 36\text{cm}^2$$

$$3. \text{ area of circle} = \pi r^2 = \frac{22}{7} \times 7 \times 7 = 154\text{cm}^2$$

$$4. \text{ area of triangle} = \frac{1}{2}bh = \frac{1}{2} \times 6 \times 8 = 24\text{cm}^2$$

Activity : 3**Solution :**

$$V_1 = 30\text{ml} \quad V_2 = 40\text{ml}$$

$$V_2 - V_1 = 40 - 30 = 10\text{ml}$$

$$\text{Volume of a stone} = 10\text{ml}$$

Activity : 4

a) Wooden block , b) Iron block

Additional Questions & Answers

I. Choose the best answer :

1. There are fundamental physical quantities in SI Units.

- a) 5 b) 6
c) 7 d) 8

Ans : c) 7

2. SI unit of electric charge

- a) ampere b) volt
c) m/s d) coulomb

Ans : d) Coulomb

3. 1 Ounce = ml

- a) 37 b) 30
c) 20 d) 27

Ans : b) 30

4. The lightness or heaviness of a body is due to

- a) mass b) density
c) volume d) pressure

Ans : b) density

5. Density of water kg/m^3

- a) 800 b) 1500
c) 1000 d) 2700

Ans : c) 1000

II. Fill in the blanks

1. Derived quantities are measure by the units called

.....

Ans : derived units

2. Formula to find area of triangle is

Ans : $\frac{1}{2} \times b \times h$

3. 1 gallon = mL

Ans : 3785

4. SI unit of density is

Ans : kg/m^3

5. Density of castor oil is

Ans : 961 kg/m^3

6. The nearest star to our solar system is

Ans : Proxima centauri

7. The speed of light in vacuum is

Ans : $3 \times 10^8 \text{ m/s}$

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

1. The SI unit of area is m^3

Ans : False . The SI unit of area is m^2

2. Formula to find area of a circle is $\pi r^2 h$.

Ans : False. Formula to find area of a circle is πr^2

3. The volume of a liquid is equal to the volume of space it fills in the container.

Ans : True

4. Cubic cm is commonly known as cc.

Ans : True

5. If the density of a solid is higher than that of a liquid, it sinks in that liquid. **Ans : True**

IV. Match the following

1. Fundamental quantities	-	Fundamental units
i) Temperature	-	mole
ii) Current	-	candela
iii) Amount of substance	-	kelvin
iv) Light intensity	-	ampere

Ans :

1. Fundamental quantities	-	Fundamental units
i) Temperature	-	kelvin
ii) Current	-	ampere
iii) Amount of substance	-	mole
iv) Light intensity	-	candela

2. Match the following.

i) Light year	-	1000cc
ii) Astronomical unit	-	mass / volume
iii) 1 litre	-	$9.46 \times 10^{15} \text{m}$
iv) Density	-	$1.496 \times 10^{11} \text{m}$

Ans :

i) Light year	-	$9.46 \times 10^{15} \text{m}$
ii) Astronomical unit	-	$1.496 \times 10^{11} \text{m}$
iii) 1 litre	-	1000cc
iv) Density	-	mass / volume

V. Short answers :

1. What are fundamental quantities ?

★ A set of physical quantities which cannot be expressed in terms of any other quantities are known as " Fundamental quantities ".

★ eg. Length, Mass, Time

2. Define - area.

★ The area of a figure is the region covered by the boundary of the figure.

★ Its SI unit is square metre or m^2 .

3. What is volume ?

★ The amount of space occupied by a three dimensional object is known as its volume.

★ The SI unit of volume is cubic metre or m^3

Calculate :**1. Find the volume of****i) a cube whose side is 5cm.****ii) a cylinder whose radius is 5cm and height is 7cm.****Solution :**

$$\begin{aligned}\text{i) Volume of a cube} &= \text{side} \times \text{side} \times \text{side} \\ &= 5\text{cm} \times 5\text{cm} \times 5\text{cm} \\ &= 125\text{cm}^3\end{aligned}$$

$$\text{ii) Volume of a cylinder} = \pi r^2 h$$

$$= \frac{22}{7} \times 5 \times 5 \times 7$$

$$\text{Volume of a cylinder} = 550\text{cm}^3$$

2. A box is made up of iron and it has a volume of 150cm^3 .**Find its mass. (Density of Iron is 7.8 g/cm^3)****Solution :**

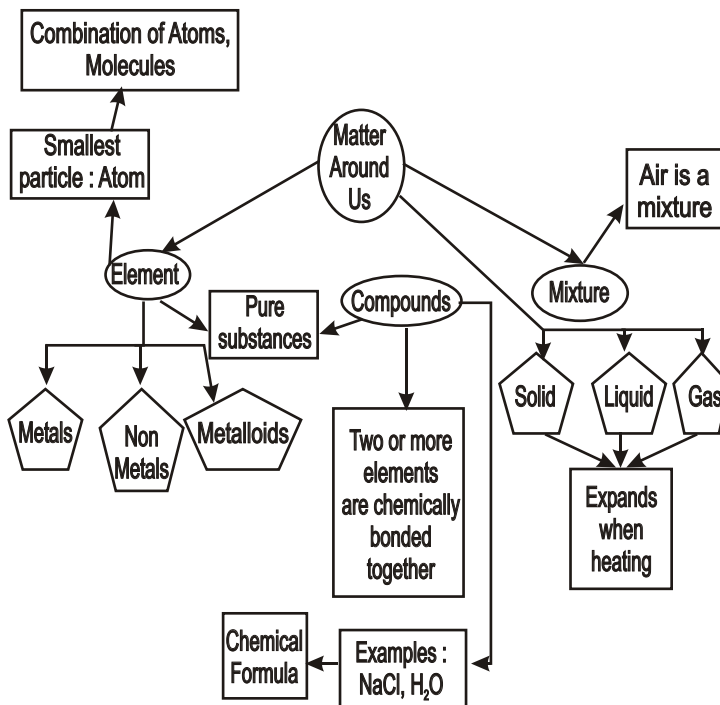
$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$

$$\begin{aligned}\text{Mass} &= \text{Volume} \times \text{Density} \\ &= 150 \times 7.8\end{aligned}$$

$$\text{Mass} = 1170 \text{ g}$$

Unit - 3 Matter Around Us

Mindmap



Evaluation

I. Choose the appropriate answer.

1. Which of the following is an example of a metal ?

- a) iron b) Oxygen
c) Helium d) Water

Ans : a) Iron

2. Oxygen, hydrogen, and sulphur are examples of which of the following ?

- a) Metals b) Non- metals
c) Metalloids d) Inert gases

Ans : b) Non - metals

3. Which of the following is a short and scientific way of representing one molecule of an element or compound ?

- a) Mathematical formula b) Chemical formula
c) Mathematical symbol d) Chemical symbol

Ans: b) Chemical formula

4. The metals which is a liquid at room temperature

- a) Chlorine b) Sulphur
c) Mercury d) Silver

Ans : c) Mercury

5. An element which is always lustrous, malleable and ductile

- a) non-metal b) metal
c) metalloid d) gas

Ans : b) metal

II. Fill in the blanks.

1. The smallest particle of matter that can exist by itself
..... **Ans : atom**

2. A compound containing one atom of carbon and two atoms of oxygen is **Ans : Carbon - di - oxide**

3..... is the only non-metal conducts electricity.
Ans : Graphite

4. Elements are made up of kinds of atoms.
Ans : same

5. of some elements are derived from Latin or Greek names of the elements. **Ans : Symbols**

6. There are number of known elements.
Ans : 118

7. Elements are the form of pure substances .
Ans : simplest

8. The first letter of an element always written in letter
Ans : Capital

9. Molecule containing more than three atoms are known as
..... **Ans : Poly atomic molecules**

10. is the most abundant gas in the atmosphere.
Ans : Nitrogen

III. Fill in the Blanks.

1. Mercury: liquid at room temperature::

Oxygen: **Ans : Gas at room temperature**

2. Non metal conducting electricity: ::

Metal conducting electricity: Copper **Ans : Graphite**

3. Elements: combine to form compounds::

Compounds: **Ans : Combine to form mixtures**

4. Atoms: fundamental particle of an element::

..... : fundamental particles of a compound.
Ans : Molecules

IV. True or False. If False, give the correct statement.

1. Two different elements may have similar atoms.

Ans : False . Two different elements have different atoms.

2. Compounds and elements are pure substance.

Ans : True

3. Atoms cannot exist alone; they can only exist as groups called molecules.

Ans : False. Atoms can exist alone.

4. NaCl represents one molecule of sodium chloride.

Ans : True

5. Argon is mono atomic gas.

Ans : True

V. Answer in brief.

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

a. Sodium chloride

b. Potassium hydroxide

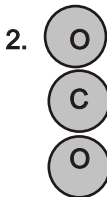
c. Carbon-di-oxide

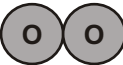
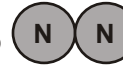
d. Calcium oxide

e. Sulphur dioxide

S.No	Compounds	Chemical Formula	Name of the elements
a	Sodiumchloride	NaCl	Sodium, Chlorine
b	Potassium hydroxide	KOH	Potassium, Hydrogen, oxygen
c	Calcium oxide	CaO	Calcium, oxygen
d	Sulphur dioxide	SO ₂	Sulphur, oxygen

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



Molecules of element	Molecules of compound
1)  3) 	2)  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 molecule of an element or a compound.

The chemical formula tells us the types of atoms and the number of each type of atom in one molecule of substance.

4. Define the following terms with an example of each:

- a. Element b. Compound c. Metal
d. Non-metal e. Metalloid

a) Element :

Matter in its simplest form is called an element.

It cannot be broken down.

ex : Iron ore

b) Compound :

Two or more elements are chemically bonded together is called compound .

ex : water is a compound

c) Metal :

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

ex : Iron

d) Non- metal:

Non- metals are generally dull and soft.

ex : Carbon

e) Metalloids :

Metalloids exhibit the properties of both metals and non metals.

Ex : Silicon.

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

Aluminum, carbon, chlorine, mercury, hydrogen and helium

Solids	Liquids	Gas
Aluminium, Carbon	Mercury	Chlorine, Hydrogen, Helium

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

Sodium, Bismuth, Silver, Nitrogen, Silicon, carbon, chlorine, Iron, copper

Metals	Non metals	Metalloids
Sodium, Silver, Iron, Copper	Nitrogen, Carbon, Chlorine	Bismuth, Silicon

7. Classify the following as elements and compounds

Elements	Compounds
iodine and lithium	Water, common salt, sugar, carbon dioxide

8. Write the chemical formula for the following elements

a. Hydrogen b. Nitrogen c. Ozone d. Sulphur

a) Hydrogen - H_2

b) Nitrogen - N_2

c) Ozone - O_3

d) Sulphur - S_8

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

Matter in its simplest form is called elements. It cannot be broken down.

Elements are made up of atoms.

Examples : Iron, Silver

10. Define molecule.

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.

Example : Water, Salt.

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

Name of the Elements	Latin Word	Symbols
Gold	Aurum	Au
Copper	Cuprum	Cu

13. What is atomicity of elements?

Atomicity : In chemistry atomicity is used to imply the total number of atoms present in one molecule 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.**

S.No	Metals	Non- Metals
1.	Metals are lustrous. They have a shiny shiny surface.	Non metals are non lustrous. They have non - shiny surface.
2.	Metals are generally hard.	Non- metals are generally soft.
3.	Most metals are bendable	Non-metals are non bendable.
4.	Most metals can be bent, beaten into sheets and they can drawn into wires.	Non-metals are non ductile
5.	Most metals are good conductors of electricity	Non-metals are bad conductors of electricity
6.	Most metals are good conductors of heat	Non-metals are bad conductors of heat.
7.	Most metals are making ringing sound when struck. Hence, they are used to make objects like bells.	Non-metals does not make any sound when they struck.

2. Explain the characteristics of compounds**Properties of Compounds :**

- ★ 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 elements. Give appropriate examples.

★ Chemical symbols usually consist of one or two letters . Ex : Carbon - C

★ The symbols of most elements correspond to the first letter (which is capitalized) of their English name. For example, the symbol for oxygen is "O" and that for hydrogen is "H".

★ When there is more than one element that begins with the same letter, their symbols take two letters. ***The first letter is capitalised while the second letter has a lower case.*** For example, the names of both hydrogen and helium begin with H. So, hydrogen is represented by the symbol H and Helium by He.

★ The symbols for some elements are derived from their Latin names. For example, the symbol for gold is Au after its Latin name Aurum. Similarly, the symbols for copper is Cu after its Latin name Cuprum.

4. Differentiate between elements and compounds.

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	Compounds 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.

1) A compound is formed only when the constituent elements combine in a fixed proportion.

2) The properties of a compound are different from those of its constituent elements.

3) A compound cannot be broken down by physical methods.

4) A compound can be separated into its constituent elements by chemical methods only.

5) Compounds exhibit properties entirely different from the properties of their constituent elements.

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

S.No	Metals	Non - metals
1.	Metals are generally hard and shiny elements.	Non - metals are generally dull and soft.
2.	All metals, except mercury are solids at room temperature.	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 - metal that is liquid at room temperature.
3.	Metals are malleable, can be bent or beaten into sheets.	Non- metals are non bendable.
4.	Metals are good conductors of heat and electricity	Non - metals are poor conductors of heat and electricity.
5.	Examples for metals : Copper, Iron, Gold	Examples for non- metals : Carbon, Sulphur, Iodine.

7. Write down the properties of metalloids.

- ★ Metalloids exhibit the properties of both metals and non-metals.
- ★ Metalloids are solids at room temperature.
- ★ In metalloids, Silicon and Germanium are semi conductors.
- ★ Metalloids mixed with metals can form alloys.

VII. Rewrite the sentence in correct form

1. Elements contains two or more kinds of atoms and compounds contains only one kinds of atoms.

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

VIII. Higher Order Thinking questions :

1. Lists the metals, non-metals and metalloids which you used in your house, schools.

Compare their properties.

	Metals	Non metals	Metalloids
Used in house	Aluminium	Iodine	Autimony
Used in schools	Iron	Chlorine	Silicon
Properties	Hard and shiny	Dull and soft	Shiny
	Conducts electricity	Non conductors of electricity	Semi conductors
	Conducts heat	Non conductors of heat	Conducts heat

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

a. Formulate a hypothesis based on the information provided.

b. Briefly state how you would test the hypothesis stated in (a).

a) Hypothesis :

★ The matter begun 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.

3. 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 begun to expand when heated. The volume increases due to the greater distance between the particles. But the size of the particles remains in same size.

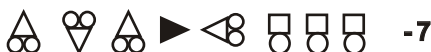
★ During heating or expansion, the mass of matter does not change.

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



5. In the diagram above, 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



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.

1st Statement	2nd Statement
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

Answer :

1. C) The 1st statement is false while the 2nd statement is true.

2. A) Both statements are true and the 2nd statement is a correct explanation of the 1st statement.

3. C) The 1st statement is false while the 2nd statement is true.

4. A) Both statements are true and the 2nd statement is a correct explanation of the 1st statement.

5. D) Both statements are false.

ACTIVITY 1 :

Complete the following table by writing compounds of its constituents.

Compound	Constituent Elements
Water	Hydrogen, Oxygen
Salt (Sodium chloride)	Sodium, Chlorine
Sodium carbonate	Sodium, Carbon, Oxygen
Baking soda (sodium bicarbonate)	Sodium, Hydrogen, Carbon, Oxygen
Sugar	Carbon, Hydrogen, Oxygen
Calcium oxide	Calcium, Oxygen
Calcium hydroxide	Calcium, Hydrogen, Oxygen
Sodium hydroxide	Sodium, Hydrogen, Oxygen
Potassium hydroxide	Potassium, Hydrogen, Oxygen

ACTIVITY 2 :

Complete the following table by counting the number of different elements in a compounds and give appropriate name.

Formula	No. of different elements	Name of Elements
H ₂ O	2	Hydrogen, Oxygen
NaCl	2	Sodium, Chlorine
C ₆ H ₁₂ O ₆	3	Carbon, Hydrogen, Oxygen
NaOH	3	Sodium, Oxygen, Hydrogen

ACTIVITY : 3

Write down the symbols of the following elements.

Elements	Symbol	Elements	Symbol
Gold	Au	Aluminium	Al
Silver	Ag	Calcium	Ca
Copper	Cu	Phosphorus	P
Iron	Fe	Magnesium	Mg
Nitrogen	N	Potassium	K
Oxygen	O	Sodium	Na

ACTIVITY : 4

Write down atomicity of the following elements and compounds.

Elements	Atomicity
Cl	1
Na	1
K	1
Ca	1
Compounds	
H ₂ O	3
NaCl	2

Additional Questions & Answers

I. Choose the best answers.

1. The graphite refill used in pencil is made up of element called

- a) oxygen b) Iron
c) silver d) carbon

Ans: d) carbon

2. An is the basic unit of a matter.

- a) atom b) molecule
c) element d) mixture

Ans : a) atom

3. The most abundant type of atom in the universe is the atom.

- a) oxygen b) hydrogen
c) nitrogen d) carbon

Ans : b) hydrogen

4. The molecular formula for water is

- a) HO b) HO₂
c) H₂O d) H₃O

Ans : c) H₂O

5. The is the first scientist used the term element.

a) Lavoisier b) Mosley

c) Robert Boyle d) Robert Hook **Ans : c) Robert Boyle**

II. Fill in the blanks,

1. Even with the best of optical we cannot see atoms. **Ans : microscope**

2. Nearly of the atoms in the universe are hydrogen atoms. **Ans : 74%**

3. A is made up of two or more atoms chemically combined. **Ans : molecule**

4. is used as medicine for treating diarrhea. **Ans : Bismuth**

5. In 118 known elements elements occur naturally. **Ans : 94**

6. supports fire. **Ans : Oxygen**

7. is used as a fire extinguisher. **Ans : Water**

8. is used as common salt in our food. **Ans : Sodium chloride**

9. is the life giving element in the air. **Ans : Oxygen**

10. Nearly 99% of the mass of our human body consists of just chemical elements. **Ans : 6**

III. True or False. If false, give the correct statement.

1. A compound can be broken down by physical methods. **Ans : False.** A compound cannot be broken down by physical methods.

2. Dalton was the first scientist to use the symbols for elements in a very specific sense. **Ans : True**

3. Each molecule of water has two hydrogen atoms combined with one oxygen atom. **Ans : True**

4. During heating or expansion, the mass of matter changes. **Ans : False.** During heating or expansion, the mass of matter does not change.

5. On melting the solid changes to its liquid state. **Ans : True**

IV. Match the following.

1. i) monoatomic molecule	-	a) sulphur
ii) diatomic molecule	-	b) ozone
iii) triatomic molecule	-	c) inert gases
iv) polyatomic molecule	-	d) hydrogen

Ans :

i) monoatomic molecule	-	c) inert gases
ii) diatomic molecule	-	d) hydrogen
iii) triatomic molecule	-	b) ozone
iv) polyatomic molecule	-	a) sulphur

2. Match the following.

i) Magnesium and phosphorus	-	manure
ii) Sulphur	-	mobile phones
iii) Gallium	-	computer chips
iv) Silicon	-	crackers

Ans :

i) Magnesium and phosphorus	-	crackers
ii) Sulphur	-	manure
iii) Gallium	-	mobile phones
iv) Silicon	-	computer chips

V. Short answers.**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. How do hot-air balloons float?

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

★ The expansion causes the density of the air inside the balloon to decrease.

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

★ This difference in density allows the hot-air balloon to float.

4. What elements are there in human body ?

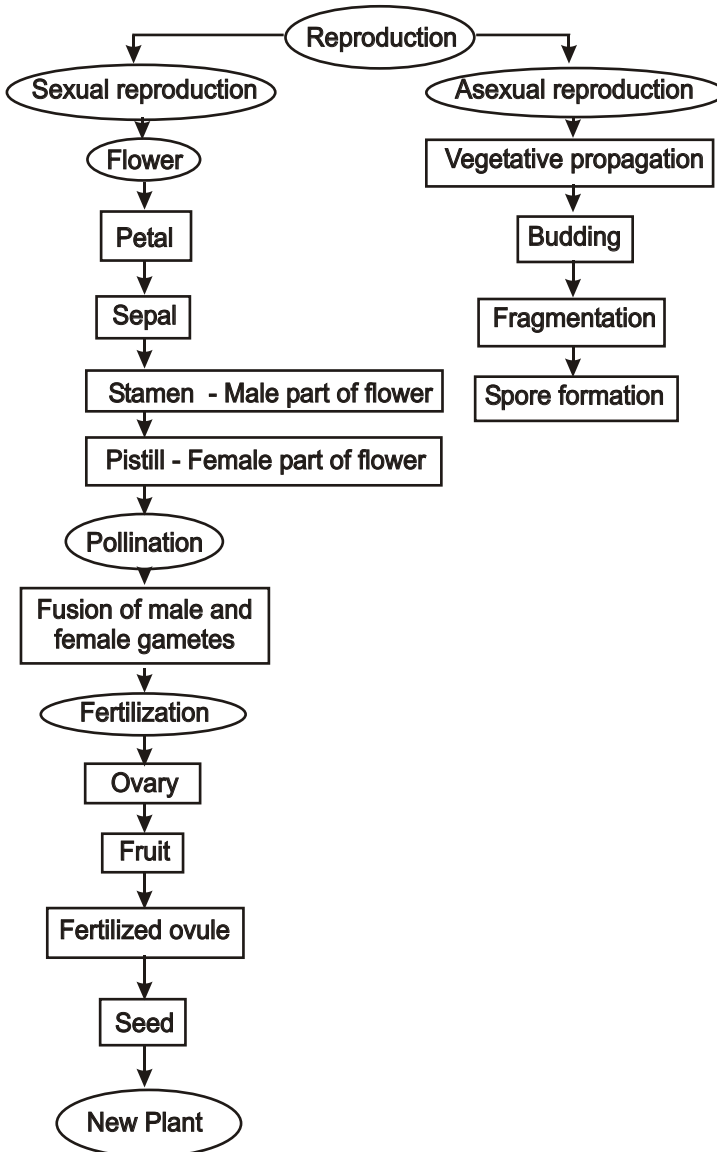
Oxygen, Carbon, Hydrogen, Nitrogen, Calcium and Phosphorus.

5. What elements are there in air ?

Nitrogen, Oxygen, Argon, Carbondioxide, Neon, Helium, Methane.

Unit - 5 Reproduction And Modification in Plants

Mindmap



Evaluation**I. Choose the appropriate answer.****1. Vegetative propagation by leaves takes place in**

- a) Bryophyllum b) Fungi
c) Virus d) Bacteria

Ans : a) Bryophyllum**2. Asexual reproduction in yeast is**

- a) Spore formation b) Fragmentation
c) Pollination d) Budding

Ans : d) Budding**3. Reproductive part of a plant is**

- a) Root b) Stem
c) Leaf d) Flower

Ans: d) Flower**4. Pollinators are**

- a) Wind b) Water
c) Insect d) All the above

Ans : d) All the above**5. Climbing roots are seen in**

- a) Betel b) Black pepper
c) Both of them d) None of them

Ans : c) Both of them**II. Fill in the Blanks.****1. The male reproductive part of a flower is****Ans : Androecium****2. is the basal swollen part of the Gynoecium.****Ans : Ovary****3. After fertilization the ovule becomes****Ans : seed****4. Breathing roots are seen in plants.****Ans : Avicennia****5. Onion and Garlic are example of****Ans : Bulb****III. True (or) False, write the correct answer for the false statement.****1. A complete flower has four whorls.****Ans : True****2. The transfer of pollen to the stigma is known as pollination.****Ans : True****3. Conical shaped root is carrot.****Ans : True****4. Ginger is an underground root.****Ans : False. Ginger is an underground stem.****5. Leaves of Aloe vera are fleshy and store water.****Ans : True**

IV. Match the following:

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

Ans :

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

V. Very short answer.**1. Write two types of reproduction in plants.****Two types of reproduction in plants :**

1. Sexual Reproduction - Eg : Hibiscus
2. Asexual Reproduction - Eg: Potato

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

1. Androecium - Male Reproductive organ
2. Gynoecium - Female Reproductive organ

3. Define – pollination.

Pollination : The process by which pollen grains reach stigma is called as pollination.

4. What are the agents of pollination?

Agents of pollination : Wind, Water, Insects, Birds and animals.

5. Give example for**a. Corm b. Tuber**

- a) Corm - Ex : Colocasia
- b) Tuber - Ex : Potato

6. What is tendril?

In Climbers, the leaf of plant is modified into elongated structure to help the plants to climb efficiently.

Eg : Pisum sativum (Peas)

7. What are thorns?

Leaves are reduced to spines, known as thorns.

Eg: Opuntia

VI. Short answer.**1. Differentiate bisexual flower from unisexual flower?**

S.No	Bisexual flower	Unisexual flower
1.	Complete flower	Incomplete flower
2.	Four whorls - Calyx, corolla, stamen and pistil are present.	Any of the four whorls is missing

2. What is cross pollination?

Pollen grains are transferred from the 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 a brief account on pollination.**

Pollination : The process by which pollen grains reach stigma 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.

Self pollination

Cross pollination

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

i. 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.

★ Rhizome have buds.

★ If give rise to new stem and leaves.

★ **E.g: Ginger and Turmeric.**

ii. Corm: This underground stem is round in shape and flat at the top and bottom.

★ It is a condensed form of rhizome and bears one or more buds in the axils of scale leaves.

★ Daughter plants arise from their buds.

★ **E.g: Colocasia.**

iii. Tuber: It is an enlarged, spherical 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.

★ **E.g. Potato.**

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

★ **The bulb has two types of leaves.**

1. Fleshy Leaves

2. 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 nodes and internodes with scale leaves at the node.
- ★ It has buds 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 place? 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.

Reasoning – After fertilization the ovary becomes fruit and ovule becomes seed.

- a. Assertion is correct, Reasoning is incorrect.
- b. Assertion is incorrect, Reasoning is correct.
- c. Assertion is correct, Reasoning is correct.
- d. Assertion is incorrect, Reasoning is incorrect.

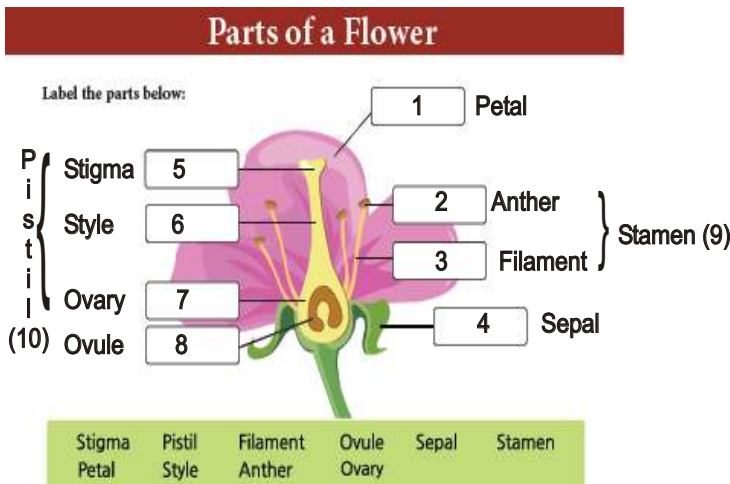
Ans : c) Assertion is correct, Reasoning is correct.

2. Assertion – The example of conical root is carrot.

Reasoning – It is an adventitious root modification.

- a. Assertion is incorrect, Reasoning is correct.
- b. Assertion is incorrect, Reasoning is incorrect.
- c. Assertion is correct, Reasoning is correct.
- d. Assertion is correct, Reasoning is incorrect.

Ans : d) Assertion is correct, Reasoning is incorrect.

X. Picture Based question.**i. Observe the picture and draw the labels.****ii. Identify the four plants shown in the following Name the different modification in each of them.**

Name	Modification
1. Garlic	
2. Turnip	
3. Rose plant	
4. Maize	

Ans:

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

ACTIVITY : 1**Aim:** To raise a new generation of plant from watermelon and potato.**Materials required:** Two pots with soil, potato, watermelon seeds and water.

Procedure:

- ★ Fill both pots with soil mixed with compost or manure.
- ★ Take young potato.
- ★ Ensure that it is not dried up and the skin still looks fresh.
- ★ Bury a potato in one part.
- ★ Sow watermelon seeds in another pot.
- ★ Pour water regularly and maintain the plant.

Observation:

- ★ After few days, we can see single plant arising from a buried potato.
- ★ Plants arise from the pot sowed with watermelon seeds.
- ★ Each seed produces a plant

Inference:

- ★ Watermelon plants were produced from seeds.
- ★ Potato plant is not from seed, but from the stem tuber (vegetative part).
- ★ Seed is not only the source for new generation, even vegetative part of a plant can also be used to produce a new plant.

ACTIVITY : 2

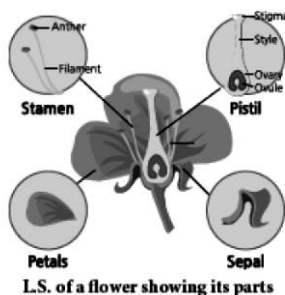
Aim : To Dissect and display the parts of a flower.

Materials needed: Flower, Needle, A4 paper.

Procedure :

- ★ Take a flower.
- ★ Dissect longitudinally and find parts inside the flower.
- ★ Identify the male reproductive part, androecium (stamen, filament and pollen sac).
- ★ And the female reproductive part, gynoecium (ovary, style and stigma)

Result : Make a drawing of the parts and arrangement in you notebook.

Diagram :

ACTIVITY : 3

Using the information from the above complete the following table :

Sl. No	Name of the flower	Complete/ incomplete	Unisexual bisexual	/ If unisexual male or female
1.	Hibiscus	Complete	Bisexual	-
2.	Pumpkin	Incomplete	Unisexual	Female
3.	Rose	Complete	Bisexual	-
4.	Coconut	Complete	Bisexual	-
5.	Jasmine	Complete	Bisexual	-

ACTIVITY : 4 - Project**Make a flower album**

- ★ Press the collected flowers between pages of newspaper or book.
- ★ Place two thick sheets and keep a heavy object, such as brick, on the top to apply pressure.
- ★ Turn the sides every two to three days.
- ★ Allow flowers to dry completely.
- ★ Collect the dried flowers and paste them in an album.
- ★ Now, your flower album ready.

ACTIVITY : 5

Aim: To study the modification of root.

Materials Required: Sample / charts of raddish, carrot, beet root, sweet potato, stilt roots and pneumatophores.

Procedure: Carefully observe the shape of each specimen.

Observation: Draw the diagram and observe the morphological differences between the samples.

ACTIVITY : 6

Aim: To study the modification of stem

Materials Required: Specimens of Ginger, Potato, Onion, Mint, Bougainvillea, Acacia, Opuntia and locally available specimens.

Procedure: Observe the external morphology of each specimen.

Observation: Draw diagram and bring out the differences and their function in each type of stem modifications.

Additional Questions & Answers

I. Choose the best answer.

1. is made up of many fruits, aggregated together.

- | | |
|------------------|------------------|
| a) Brinjal | b) Lady's finger |
| c) Custard apple | d) Pea |

Ans : c) Custard apple

2. Spirogyra reproduces by

- | | |
|--------------------|------------|
| a) Fragmentation | b) Budding |
| c) Spore formation | d) Fission |

Ans : a) Fragmentation

3. Prop roots are seen

- | | |
|----------------|----------|
| a) Avicennia | b) Mango |
| c) Banyan tree | d) Vanda |

Ans : c) Banyan tree

4. Plants that grown in nitrogen deficient places

- | | |
|------------|------------|
| a) Traps | b) suckers |
| c) Rhizome | d) Stolon |

Ans : a) Traps

II. Fill in the blanks.

1. Fusion of male and female gametes

Ans : fertilization

2. The topmost sticky tip of the style is

Ans : Stigma

3. A group of flowers arranged together is called

Ans : inflorescence

4. The World's largest and heaviest seed is

Ans : double coconut

5. have the smallest seeds in the plant kingdom.

Ans : Orchids

6. A root growing from a stem or leaf is

Ans : adventitious root

7. Vanda is an object.

Ans : epiphyte

8. Sucking roots of cuscuta

Ans : Haustoria

9. In Gloriosa superba, are modified into tendrils.

Ans : Leaf tips

III. Match the following :

1. Nepenthes	Eichhornia
2. Offset	Vallarai
3. Stolon	attract insects
4. Runner	Epiphytic root
5. Velamen	Wild Strawberry

Ans :

1. Nepenthes	attract insects
2. Offset	Eichhornia
3. Stolon	Wild Strawberry
4. Runner	Vallarai
5. Velamen	Epiphytic root

IV. Answer the following :

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

Unfavourable conditions :

Scarcity of wate, high temperature, nutrient deficiency in soil.

Examples : Algae, Fungi, Moss, Ferns

2. What is modifications?

In some plants root, stem and leaves change their shape and structure to perform special functions like storage of food, mechanical support, protection etc. This is called modification.

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.

V. Answer in 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 grain that carries male gametes that reaches female gamete inside the ovary through the style.

★ Male gamete fuses with the female gamete to form zygote.

★ This process is known as **fertilization**.

Post fertilization changes :

★ Calyx sometimes persist with fruit

★ Petals wither / fall off

★ Androecium fall off.

★ Pistil remain and develops into a fruit.

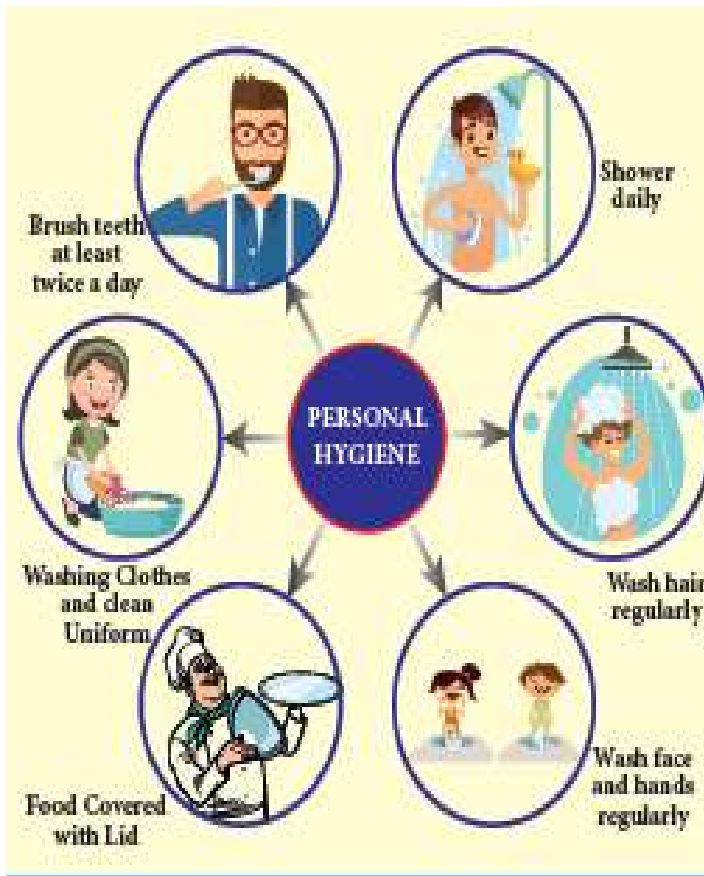
★ Style and stigma fall off

★ Ovary enlarges to store food materials and develops into a fruit.

★ Ovules present inside the ovary develop into seeds.

Find out how these plants reproduce

Sl.No.	Name of the plant	Reproductive part			
		Seed	Stem	Cutting	Layering
1.	Mango	✓			
2.	Potato		✓		
3.	Banana		✓		
4.	Tamarind	✓			
5.	Rose			✓	✓
6.	Mustard ✓				
7.	Coriander	✓			
8.	Moringa				
9.	Pumpkin	✓			
10.	Radish	✓			

Unit - 6 Health and Hygiene**Mindmap****Personal Hygiene****Evaluation**

I. Choose the appropriate answer.

1. Ravi has sound mind and physically fit body. Which refers to

- a) Hygiene b) Health
c) Cleanliness d) wealth

Ans : b) Health

2. Sleep is not only good for body, but it is also good for

- a) Enjoyment b) Relaxation
c) Mind d) Environment

Ans : c) Mind

3. Our living place should be

- a) Open b) Closed
c) Clean d) Unclean / Untidy **Ans : c) Clean**

4. The tobacco chewing causes

- a) Anamia b) Periodontitis
c) Tuberculosis d) Pneumonia **Ans : b) Periodontitis**

5. The first aid is to

- a. To save money b. To prevent scars
c. To prevent the medical care d. To relieve the pain

Ans : d) To relieve the pain.**II. Fill in the Blanks.**

1. A group of people living together in a particular area is called _____

Ans : Community

2. I am green colour box with garbage. Who am I? _____

Ans : Biodegradable dustbin

3. Eyes are considered as _____ to the world.

Ans: Windows

4. The hair follicles produce _____ which keeps the hair smooth.

Ans : Oil

5. Tuberculosis is caused by the bacterium_____.

Ans: Mycobacterium tuberculae**III. True or False – If false give the correct statement.**

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

IV. Match the following :

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

Ans:

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: _____

Ans : Dermis

2. Typhoid : Bacteria ::

Hepatitis : _____

Ans : Virus

3. Tuberculosis : air ::

Cholera : _____

Ans: Water**VI. Choose the correct alternative from the following.****1. Assertion (A) :** Oral hygiene is good.**Reason (R) :** Sound teeth and healthy gums with healthy surrounding tissues.

a) Both A and R are true

b) Both A and R are false

c) A is true but R is false.

d) A is false but R is true.

Ans : a) 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.

a) Both A and R are true

b) Both A and R are false

c) A is true but R is false.

d) A is false but R is true.

Ans : a) Both A and R are true**VII. Very Short Answer.****1. What is hygiene?**

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

2. Write about the right way of protect the eyes?

- ★ Do not rub the eyes .
- ★ Do not work on TV / Computer for a long time.
- ★ Use cold water for cleaning the eyes.
- ★ 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 his eye from irritation?

Antibiotic eye drops is used for eye irritation.

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

Ans :1. Cholera, 2. 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 with water" Do you agree with his statement or not? Explain Why?

Yes, I agree with Ravi's statement.

Explanation :

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

VIII. Short Answer.

1. Why the first aid is essential?

The first aid is essential

- ★ To save the life
- ★ To prevent further bleeding and determine the condition of the patient
- ★ To relieve the pain
- ★ To provide a medical care available at the earliest

2. What this picture Explains?

- ★ Do not throw waste and pollute the environment.
- ★ To protect us from diseases, it is essential to maintain environmental hygiene.



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

S. No	Communicable diseases	Non-Communicable diseases
1.	Communicable diseases spread from one person to another.	Non communicable diseases do not spread from person to person.
2.	They are caused by microbes.	They are not caused by microbes.
3.	Eg : Tuberculosis, Chicken pox.	Eg : Cancer, Stomachulcer, Anaemia.

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

- ★ Eat citrus fruits.
- ★ Brush twice a day.
- ★ Floss the teeth to prevent decay.
- ★ Avoid chewing tobacco.
- ★ Eat a well-balanced diet.

5. Name the mode of transmission of communicable disease.

Mode of transmission of communicable diseases are,

- ★ Air
- ★ Water
- ★ Food
- ★ Vectors (Insects and other animals)

6. The hair is thin, spares and lost very often. Suggested 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.

1. Tuberculosis:

- ★ TB is caused by *Mycobacterium tuberculosis* 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

2. Cholera:

★ Cholera is caused by *Vibrio cholera* and spread through the consumption contaminated food or water.

★ The symptoms of Cholera is Vomiting, severe diarrhea and cramps in legs.

Prevention and treatment :

- ★ Good hygienic practices like, washing hands before eating.
- ★ Avoid eating uncovered food from street vendors.
- ★ Drinking boiled water.
- ★ Getting Vaccination against cholera

3. Hepatitis:

★ Hepatitis is one of the 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, (Anorexia), vomiting, eyes and urine in yellow color.

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?

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.

The Situations for first aid,

- ★ To save the life
- ★ To prevent further bleeding and determine the condition of the patient

- ★ To relieve the pain
- ★ To provide a medical care available at the earliest

3. How the disease are transmitted from one person to the other person?

Communicable Diseases :

★ **Communicable diseases** are those that spread from one person to another.

★ Healthy persons must be protected from people with communicable diseases.

★ Diseases spread through contaminated air, water, food or vectors (insects and other animals)

Diseases Caused by Bacteria :

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.

Cholera:

★ Cholera is caused by *Vibrio cholera* and spread through the consumption contaminated food or water.

Typhoid:

★ Typhoid is caused by *Salmonella typhi* and spreads by contaminated food and water.

Disease Caused by Virus :

★ Viral diseases are extremely widespread infections caused by many type of viruses.

★ In this lesson you will learn about some disease caused by viruses like, Hepatitis, Chickenpox and Rabies.

Hepatitis:

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

Chickenpox:

★ This disease 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.

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



ACTIVITY: 1

List out your daily activities in the given table.

S.No	Activities	Number of Times in a Day
1.	Brush teeth	2
2.	Take shower	1
3.	Wash hair	1
4.	Wash hands and feet	6
5.	Wearing Clean clothes / Uniforms	1

ACTIVITY: 2



Observe the picture and write remedial measures :

- ★ Street wastes, Unclosed dustbins, Useless tyres, Drainage leads to increased number of mosquitoes.
- ★ The surroundings should be kept clean.
- ★ Drains should be covered properly.
- ★ The domestic wastes should be segregated and properly disposed off safely in separate dustbins provided by the Government (Green and Blue).
- ★ Used water from houses should not be let out into open drains or open areas.

ACTIVITY : 3

Observe the picture and tick do's and don'ts in the given tables

Sl . No.	Practices	I Do	I Don't do
1.	Do you rub the eyes?		✓
2.	Do you watch TV/work on computer for a long time		✓
3.	Do you use cold water for cleaning your eyes?	✓	
4.	Do you like eating carrot?	✓	
5.	Do you regularly eat fruits like Orange, sweet lemon and lemon?	✓	

In the above checklist what do you understand?

From the above checklist, I understand to take care of my eyes.

ACTIVITY : 4

Visit nearby Primary Health Centre and collect information about the vaccination given to the children of 0-15 years. Meet a doctor or a health worker in the hospital and enquire about the types of vaccines are available there? disease can be prevented by their usage? Collect the list about the age it should be given?

S.No	Age	Vaccine
1.	New born	BCG
2.	15 days	Oral polio
3.	6th week	DPT & Polio
4.	10th week	DPT & Polio
5.	14th week	DPT & Polio
6.	9 - 12 months	Measles
7.	18-24 months	DPT & Polio
8.	15 months - 2 years	MMR Vaccine
9.	2 - 3 years	Typhoid vaccine
10.	4 - 6 years	DT & Polio
11.	10th year	TT & Typhoid
12.	16th year	TT & Typhoid

Additional Questions & Answers

I. Choose the correct answer.

1. **Penicillin notatum** is a

- a) fungus b) virus

c) bacteria d) protozoa **Ans: a) fungus**

2. **Pickout the Non- communicable disease.**

- a) Cholera b) Rheumatism

c) Rabies d) Chicken pox **Ans: b) Rheumatism**

3. **Vaccine for Tuberculosis**

- a) MMR b) BCG

c) DPT d) TT **Ans: b) BCG**

4. **Night blindness** is due to lack of vitamin

- a) B b) C

c) A d) D **Ans : c) A**

II. Fill in the blanks.

1. Colds and flu are diseases.

Ans: communicable

2. Cholera is caused by

Ans : Vibrio cholera

3. Loss of appetite

Ans: Anorexia

4. Extreme fear for water

Ans: Hydrophobia

5. Loss of pigmentation

Ans : Leucoderma

6. discovered penicillin. **Ans : Alexander Fleming**

7. " Queen of Medicines".....

Ans : Penicillin

III. Answer the following :

1. **Tabulate the diseases affecting the teeth and gums, their causative agents and remedial measure.**

Sl. No	Name of the Diseases	Causative Agents	Impacts/ Consequences	Remedial measures
1.	Bleeding gums	Vitamin C deficiency	Bleeding of the gums	Eating citrus fruits
2.	Tooth decay	Bacteria in plaque	Bacteriae produc acids	Brushing and flossing the teeth can prevent decay.
3.	Periodontitis	Tobacco chewing	Severe form of gum disease ruin the bones, gums, and other tissues.	Chewing type of tobacco should be avoided. Eat a well - balanced diet.

2. 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.

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

1. Infection caused by disease-causing microbes.
2. Lack of balanced diet
3. Poor lifestyle and unhealthy habits.
4. Malfunctioning of one or more body parts or organs.

4. What are aim of vaccine ? Give examples.

- ★ A vaccine is a biological preparation that provides active acquired immunity to a particular disease.
- ★ Examples : BCG, Polio, MMR

5. Write a note on - "Dengue".

- ★ Dengue is spread by mosquitoes of *Aedes aegypti* caused by DEN -1, 2 virus belonging to the type - flavivirus.
- ★ It decrease counting of the blood platelets of human blood.
- ★ It has a maximum flight range of 50 - 100 meters in and around the places.

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

S. No	Name of the Disease	Causative Agents	Impacts/Consequences	Remedial measures
1.	Night Blindness	a lack of vitamin A, a disorder of the cells in your	makes it hard to see well at night or in poor light.	Eat foods rich in anti-oxidant, vitamins and minerals.
2.	Conjunctivitis (Pink eye)	Caused by a virus and bacteria	One or both eyes can be affected. Highly contagious; can be spread by contamination and sneezing.	Antibiotic eye drops or ointments, home remedy
3.	Color blindness	genetic condition	Difficulty distinguishing between colours. Inability to see shades or tones of the same colour.	There is no known cure for colour blindness. Contact lenses and glasses with filters.

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