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## 7<sup>th</sup> PHYSICAL SCIENCE

### TERM 1.

#### I CHOOSE THE CORRECT ANSWER

##### 1 MEASUREMENT

1. Which of the following is a derived quantity?  
a) mass b) time c) area d) length
2. Which of the following is correct?  
a) 1L = 1cc b) 1L = 10 cc c) 1L = 100 cc d) 1L = 1000 cc
3. SI unit of density is  
a) kg/m<sup>2</sup> b) kg/m<sup>3</sup> c) kg/m d) g/m<sup>3</sup>
4. Two spheres have 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
5. Light year is the unit of  
a) distance b) time c) density d) Both length and time

##### 2.FORCE AND PRESSURE

6. A particle is moving in a circular path of radius r. The displacement after half a circle would be  
a. Zero b. R c. 2 r d. r / 2
7. Which of the following figures represent uniform motion of a moving object correctly?

8. 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
- at rest
  - moving with no acceleration
  - in accelerated motion
  - moving with uniform velocity
9. From the given v-t graph it can be inferred that an object is
- in uniform motion
  - at rest
  - in non - uniform motion
  - moving with uniform accelerations
10. How can we increase the stability of an object?
- Lowering the centre of gravity
  - Raising the centre of gravity
  - Increasing the height of the object
  - Shortening the base of the object

### 3.MATTER AROUND US

11. Which one of the following is an example for a metal?
- Iron
  - Oxygen
  - Helium
  - Water
12. Oxygen, hydrogen, and sulphur are examples for
- metals
  - non-metals
  - metalloids
  - inert gases
13. Which of the following is a short and scientific way of representing one molecule of an element or compound?
- Mathematical formula
  - Chemical formula
  - Mathematical symbol
  - Chemical symbol
14. The metal which is liquid at room temperature is
- Chlorine
  - Sulphur
  - Mercury
  - Silver
15. An element which is always lustrous, malleable and ductile is.

- a. non-metal b. metal c. metalloid d. Gas

#### 4.ATOMIC STRUCTURE

16. The basic unit of matter is \_\_\_\_\_  
a. element b. Atom c. molecule d. electron
17. The sub-atomic particle which revolves around the nucleus is \_\_\_\_\_  
a. atom b. Neutron c. electron d. proton
18. \_\_\_\_\_ is positively charged.  
a. Proton b. Electron c. Molecule d. Neutron
19. The atomic number of an atom is the \_\_\_\_\_  
a. number of neutrons b. number of protons  
c. total number of protons and neutrons d. number of atoms
20. Nucleons comprises of \_\_\_\_\_  
a. protons and electrons  
b. neutrons and electrons  
c. protons and neutrons  
d. neutrons and positron

#### II. Fill in the blanks.

##### 1. MEASUREMENT

1. Volume of irregularly shaped objects are measured using the law of \_\_\_\_\_.
2. One cubic metre is equal to \_\_\_\_\_ cubic centimetre.
3. Density of mercury \_\_\_\_\_.
4. One astronomical unit is equal to \_\_\_\_\_.
5. The area of a leaf can be measured using a \_\_\_\_\_

##### 2. FORCE AND PRESSURE

6. The shortest distance between two places is \_\_\_\_\_.
7. The rate of change of velocity is \_\_\_\_\_.
8. If the velocity of an object increases with Respect to time, then the object is said to be In \_\_\_\_\_ acceleration.

9. The slope of the speed–time graph gives \_\_\_\_\_.
10. In \_\_\_\_\_ equilibrium, the centre of Gravity remains at the same height when it is displaced.

### 3. MATTER AROUND US

11. The smallest particle of matter that can exist by itself is \_\_\_\_\_
12. A compound containing one atom of carbon \_\_\_\_\_ and two atoms of oxygen is \_\_\_\_\_
- 13 \_\_\_\_\_ is the only non-metal which conducts electricity.
14. Elements are made up of \_\_\_\_\_ kinds of atoms.
- 15-----of some elements are derived from Latin or Greek names of the elements.
16. There are \_\_\_\_\_ number of known elements.
17. Elements are the \_\_\_\_\_ form of pure substances.
18. The first letter of an element is always written in \_\_\_\_\_ letter.
19. Molecule containing more than three atoms are known as \_\_\_\_\_
20. \_\_\_\_\_ is the most abundant gas in the atmosphere.

### 4. ATOMIC STRUCTURE

21. The smaller particles found in the atom are called \_\_\_\_\_.
22. The nucleus has \_\_\_\_\_ and \_\_\_\_\_ .
23. The \_\_\_\_\_ revolve around the nucleus.
24. If the valency of carbon is 4 and that of hydrogen is 1, then the molecular formula of methane is \_\_\_\_\_
25. There are two electrons in the outermost orbit of the magnesium atom. Hence, the valency of magnesium is \_\_\_\_\_

### III. State true or false. If false, correct the statement.

#### 1. MEASUREMENT

1. The region covered by the boundary of a plane figure is called its volume.
2. Volume of liquids can be found using measuring containers.
3. Water is denser than kerosene.

4. A ball of iron floats in mercury.
5. A substance which contains less number of molecules per unit volume is said to be denser.

### 3. MATTER AROUND US

6. Two different elements may have similar atoms.
7. Compounds and elements are pure substances.
8. Atoms cannot exist alone. They can only exist as groups called molecules.
9. NaCl represents one molecule of sodium chloride.
- 10.

Argon is mono atomic gas.

### 4. ATOMIC STRUCTURE

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

#### IV. Match the following items

##### 1. MEASUREMENT

**a.**

- |             |                        |
|-------------|------------------------|
| 1. Area     | a. light year          |
| 2. Distance | b. m <sup>3</sup> .    |
| 3. Density  | c. m <sup>2</sup> .    |
| 4. Volume   | d. kg.                 |
| 5. Mass     | e. kg / m <sup>3</sup> |

**b.**

- |            |                          |
|------------|--------------------------|
| 6. Area    | a. g / cm <sup>3</sup> . |
| 7. Length  | b. measuring jar.        |
| 8. Density | c. amount of a substance |
| 9. Volume  | d. rope.                 |
| 10. Mass   | e. plane figures         |

##### 2. FORCE AND PRESSURE

11. displacement - Knot
12. Light travelling - Through vacuum - Geometric centre
13. Speed of ship - Metre
14. Centre of gravity of Geometrical shaped Objects. - Larger base Area
15. Stability - Uniform velocity

#### 4.ATOMIC STRUCTURE

16. Valency - Fe
17. Neutral particle - Proton
18. Iron - Electrons in the outermost orbit
19. Hydrogen - Neutron
20. Positively charged Particle - Monovalent

**V. Consider the following statements and choose the correct option.**

#### 1 MEASUREMENT

1. Assertion: Volume of a stone is found using a measuring cylinder.  
Reason: Stone is an irregularly shaped object.
2. Assertion: Wood floats in water.  
Reason: Water is a transparent liquid
3. Assertion: Iron ball sinks in water.  
Reason: Water is denser than iron.

#### 3.MATTER AROUND US

4. Assertion: Oxygen is a compound.  
Reason: Oxygen cannot be broken down into anything simpler.
5. Assertion: Hydrogen is an element.  
Reason: Hydrogen cannot be broken down into anything simpler.
6. Assertion: Air is a compound.  
Reason: Air consists of carbon dioxide.

7. Assertion: Air is a mixture of elements only.

Reason: Only nitrogen, oxygen and neon gases exist in air.

8. Assertion: Mercury is solid in room

temperature.

Reason: Mercury is a non-metal.

a. Both assertion and reason are true and reason is the correct explanation of assertion.

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

c. Assertion is true but reason is false.

d. Assertion is false but REASON is true

#### 4. ATOMIC STRUCTURE

9. Assertion: An atom is electrically neutral. Reason: Atoms have equal number of Protons and electrons.

10. Assertion: The mass of an atom is the mass Of its nucleus. Reason: The nucleus is at the centre.

11. 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.

**VI. Arrange the following in correct sequence.**

#### 1 MEASUREMENT

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

2. Copper, Aluminium, Gold, Iron

**VII. Use the analogy to fill in the blank**

#### 1 MEASUREMENT

1. Area : m<sup>2</sup>

:: Volume : \_\_\_\_\_

2. Liquid : Litre :: Solid : \_\_\_\_\_

3. Water : Kerosene :: \_\_\_\_\_ : Aluminium

## 2. FORCE AND PRESSURE

4. Velocity : metre / second :: Acceleration :

\_\_\_\_\_ .

5.Length of scale : metre :: Speed of aeroplane : \_\_\_\_\_ .

6.. Displacement / Time : Velocity :: Speed / Time : \_\_\_\_\_ .

## 3. MATTER AROUND US7.

7.Mercury : Liquid at room temperature ::

:: Oxygen: \_\_\_\_\_

8. Non-metal conducting electricity :

\_\_\_\_\_ :: Metal conducting

electricity : Copper

9. Elements : Combine to form compounds ::

Compounds : . \_\_\_\_\_

10. Atoms : Fundamental particle of an element ::

\_\_\_\_\_ : Fundamental particles of a compound.

## 4.ATOMIC STRUCTURE

11 Sun : Nucleus :: Planets : \_\_\_\_\_.

12. Atomic number : \_\_\_\_\_ ::

Mass number : Number of protons and neutrons.

13. K: Potassium :: C : \_\_\_\_\_.

## VIII Answer very briefly.

### 1 MEASUREMENT

1.Name some of the derived quantities.

2.Give the value of one light year.

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

4.Give the formula to find the density of Objects.

5.Name the liquid in which iron ball sinks.

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

7.What is the density of gold?



## 2.FORCE AND PRESSURE

8. Asher says all objects having uniform speed need not have uniform velocity.  
Give reason.
9. Saphira moves at a constant speed in the same direction. Rephrase the same sentence in fewer words using concepts related to motion.
10. Correct your friend who says that  
acceleration gives the idea of how fast the position changes.

## 4.ATOMIC STRUCTURE

11. Define – Atom.
12. Name the sub-atomic particles.
13. What is atomic number?
14. What are the characteristics of proton?
15. Why neutrons are called neutral particles?

### IX. Answer briefly.

#### 1 MEASUREMENT

1. What are derived quantities?
2. Distinguish between the volume of liquid and capacity of a container.
3. Define the density of objects.
4. What is one light year?
5. Define - Astronomical unit.

#### 2.FORCE AND PRESSURE

6. 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.
7. Distinguish between speed and velocity.
8. What do you mean by constant acceleration?
9. What is centre of gravity ?

#### 3.MATTER AROUND US

10. Write the chemical formula and name the elements present in the following

- compounds.
- a. Sodium chloride b. Potassium hydroxide c. Carbon dioxide  
d. Calcium oxide e. Sulphur dioxide
11. Classify the following molecules as the molecules of element or compound.  
I) O O ii) O C O iii) N N IV) Na Cl
12. What do you understand by chemical formula of a compound? What is its significance?
13. Define the following terms with an example for each.  
a. Element b. Compound c. Metal d. Non-metal e. Metalloid
14. Write the symbols for the following elements and classify them as solid, liquid and gas.  
Aluminum, Carbon, Chlorine, Mercury, Hydrogen and Helium
15. Classify the following as metals, non-metals and metalloids.  
Sodium, Bismuth, Silver, Nitrogen, Silicon, Carbon, Chlorine, Iron, Copper
16. Classify the following as elements and compounds.  
Water, Common salt, Sugar, Carbon dioxide, Iodine and Lithium
17. Write the chemical formula for the following elements.  
a. Hydrogen b. Nitrogen c. Ozone d. Sulphur.
18. What are elements? What are they made of? Give two examples.
19. Define molecule.
20. What are compounds? Give two examples.
21. Give an example for the elements derived from their Latin names.
22. What is atomicity of elements?
23. Calculate the atomicity of H<sub>2</sub>SO<sub>4</sub>.

#### 4. ATOMIC STRUCTURE

24. Distinguish isotopes from isobar.
25. What are isotones? Give one example
26. Differentiate mass number from atomic number.
27. 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?

## **X. Answer in detail.**

### **1 MEASUREMENT**

1. Describe the graphical method to find the area of an irregularly shaped plane figure.
2. How will you determine the density of a stone using a measuring jar?

### **2 FORCE AND PRESSURE.**

3. Explain the types of stability with suitable examples.
4. Write about the experiment to find the centre of gravity of the irregularly shaped plate.

### **3.MATTER AROUND US**

5. Differentiate metals and non-metals.
6. Explain the characteristics of compounds
7. Describe the different ways in which we can write the symbols of elements. Give Appropriate examples.
8. Differentiate between elements and compounds.
9. Write any five characteristics of compounds.
10. Compare the properties of metals and nonmetals. Give three examples for each.
11. Write down the properties of metalloids.

### **4.ATOMIC STRUCTURE**

12. Draw the structure of an atom and explain The position of the sub-atomic particles.
13. 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.
14. What are nucleons? Why are they called so? Write the properties of the nucleons.
15. Define valency. What is the valency of the element with atomic number 8? What is the compound format by this element with hydrogen?

## **XI. Numerical problems:**

### **1 MEASUREMENT**

1. A circular disc has a radius 10 cm. Find the area of the disc in  $m^2$   
(Use  $\pi = 3.14$ ).
2. The dimension of a school playground is  $800\text{ m} \times 500\text{ m}$ . Find the area of the ground.
3. Two spheres of same size are made from copper and iron respectively. Find the ratio between their masses (Density of copper is  $8,900\text{ kg/m}^3$  and iron is  $7,800\text{ kg/m}^3$ ).
4. A liquid having a mass of 250 g fills a space of 1000 cc. Find the density of the liquid.
5. A sphere of radius 1cm is made from silver. If the mass of the sphere is 33g, find the density of silver (Take  $\pi = 3.14$ ).

## 2 FORCE AND PRESSURE

6. 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.
7. A car starts from rest and it is travelling with a velocity of 20 m /s in 10 s. What is its acceleration?
8. A bus can accelerate with an acceleration of  $1\text{ m} / \text{s}^2$ . Find THE minimum time for the bus to attain the speed of 100 km / s from 50 km/s

## XII: Questions based on Higher Order

### Thinking Skills:

#### 1.MEASUREMENT

1. There are three spheres A, B, C as shown below. Sphere A and B are made of 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.

- i. Find the ratio of masses of spheres A and B.

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

### 3.MATTER AROUND US

3. List out the metals, non-metals and metalloids which you use in your house, schools. Compare their properties.
4. What changes take place in the movement and arrangement of particles during heating process?
5. In the diagram given below, the circle, square and triangle represent the atoms of different elements

Identify all combinations that represent

- a. molecule of a compound
  - b. molecule of an element consisting of two atoms
  - c. molecule of an element consisting of three atoms
4. Aakash 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. Aakash observed that the latch and the gate are exposed to the sun during day time.
- a. Formulate a hypothesis based on the information provided.
  - b. Briefly state how you would test the hypothesis.

### 4. ATOMIC STRUCTURE

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.
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

**XIII. Rewrite the given sentence in correct form.**

### 3. MATTER AROUND US

- 1.Elements contain two or more kind of atoms And compounds contain only one kind of atom.

### XIV CROSS WORD PUZZLE

## 1.MEASUREMENT

	1			a							
	d					b					c
			2								
						3					
4											

### 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

## 2.FORCE AND PRESSURE

### XV FILL IN THE BOXES

S.NO	First move	Second move	Distance (m)	displacement
1	Move 4 metres east	Move 2metres west	6	2m east
2	Move 4 metres north	Move 2 metres south		
3	Move 2metres east	Move 4metres west		
4	Move 5metres east	Move 5metres west		
5	Move 5metres south	Move 2metres north		
6	Move 10 metres west	Move 3 metres east		