CHAPTER-1

PHYSICAL QUANTITIES AND MEASUREMENT

Sub-Topic Name:

Measurement, Volume, Area, Density, Speed.

Very short answer Type Questions

1. Write true or false for each statement

(a) The S.I. unit of volume is litre.

(b) A measuring beaker of capacity 200 ml can measure only the volume 200 ml of a liquid.

(c) cm^2 is a smaller unit of area than m^2.

(d) Equal volumes of two different substances have equal masses.

(e) The S.I. unit of density is g cm^{-3}

(f) 1 g cm-3 = 1000 kg m^{-3}.

(g) The density of water is maximum at 4°C.

(h) The speed 5 ms-1 is less than 25 km h^{-1}.

(i) The S.I. unit of speed is ms^{-1}.

2. Fill in the blanks

(a) l m^3 = ……. cm^3

(b) The volume of an irregular solid is determined by the method of …….. of liquid.

(c) Volume of a cube = …….

(d) The area of an irregular lamina is measured by using a ……

(e) Mass = ……. × volume.

(f) The S.I. unit of …… is kg m^{-3}.

(g) 1 g cm^{-3} = ……. kg m^{-3}.

(h) 36 km h^{-1} = …… ms^{-1}.

(i) Distance travelled d = ……. × time t.

Select the correct alternative

(a) One litre is equal to:

1. 1 cm^{-3}
2. 1 m^3

3. 10-3 cm^3

4. 10-3 m^3

(b) A metallic piece displaces water of volume 15 ml. The volume of piece is :

1. 15 cm^3
2. 15 m^3
3. 15×10^3 cm^3
4. 15×10^3 cm^3

(c) A piece of paper of dimensions 1.5 m x 20 cm has area : 1. 30 m2 2. 300 cm2 3. 0.3 m2 4. 3000 m3

(d) The correct relation is :

1. $d = M \times V$
2. $M = d \times Y$
3. $V = d \times M$
4. $d = M + V$

(e) The density of alcohol is 0.8 g cm-3. In S.I. unit, it will be :

1. 0.8 kg m^{-3}
2. 0.0008 kg m^{-3}
3. 800 kg m^{-3}
4. 8 x 103 kg m^{-3}

(f) The density of aluminum is 2.7 g cm^{-3} and of brass is 8.4 g cm^{-3}. For the same mass, the volume of:

1. both will be same
2. aluminum will be less than that of brass
3. aluminum will be more than that of brass
4. nothing can be said.

(g) A block of wood of density 0.8 g cm-3 has a volume of 60 cm3. The mass of block will be :

1. 60.8 g
2. 75 g
3. 48 g
4. 0.013 g

(h) The correct relation for speed is

1. Speed = distance x time
2. speed = distance / time
3. speed = time / distance
4. speed = 1 / distance x time

(i) A boy travels a distance 150 m in 1 minute. His speed is

1. 150 m s^{-1}
2. 2.5 m s^{-1}
3. 25 m s^{-1}
4. 9 m s^{-1}

Measurement

1. Define the term measurement.
2. Define the term length. what is its SI unit?
3. Define the term mass. what is its SI unit?
4. Define the term time. what is its SI unit?
5. Define the term temperature. what is its SI unit?

Volume

Short Answer Type Questions

1. Define the term volume of an object.
2. State and define the S.I. unit of volume.
3. State two smaller units of volume. How are they related to the S.I. unit?
4. How will you determine the volume of a cuboid ? Write the formula you will use.
5. Name two devices which are used to measure the volume of an object. Draw their neat diagrams.
6. Find out the relation between m^3 and cm^3 ?

Long Answer Type Questions

1. How can you determine the volume of an irregular solid (say a piece of brass) ? Describe in steps with neat diagrams
2. You are required to take out 200 ml of milk from a bucket full of milk. How will you do it ?

Area

Short Answer Type Questions

1. Define the term area of an object.
2. What is the S.I. unit of area ?

Long Answer Type Questions

1. Describe the method in steps to find the area of an irregular lamina using a graph paper.

Density

Short Answer Type Questions

1. Define the term density of a substance
2. State the Answer: S.I. and C.G.S. units of density. How are they related ?
3. 'The density of brass is 8.4 g cm'3'. What do you mean by the statement ?
4. Arrange the following substances in order of their increasing density: (a) iron (b) cork (c) brass (d) water (e) mercury
5. How does the density of water changes when : (a) it is heated from 0°C to 4°C, (b) it is heated from 4°C to 10°C ?
6. Write the density of water at 4°C.
7. What is barometer?

Long Answer Type Questions

1. How to determine the density of regular solid ?
2. How to determine the density of irregular solid ?
3. How to determine the density of a liquid?

Speed

1. Explain the meaning of the term speed.
2. Write the S.I. unit of speed
3. A car travels with a speed 12 ms^{-1}while a scooter travels with a speed 36 km h^{-1}. Which of the two travels faster?
4. Find out the relation between m/s and km/h ?

Numerical

1. The length, breadth and height of a water tank are 5 m, 2.5 m and 1.25 m respectively. Calculate the capacity of the water tank in (a) m^3 (b) litre.
2. A solid silver piece is immersed in water contained in a measuring cylinder. The level of water rises from 50 ml to 62 ml. Find the volume of silver piece.
3. Find the volume of a liquid present in a dish of dimensions 10 cm x 10 cm x 5 cm.
4. A rectangular field is of length 60 m and breadth 35 m. Find the area of the field.
5. A piece of brass of volume 30 cm3 has a mass of 252 g. Find the density of brass in (i) g cm^{-3}, (ii) kg m^{-3}.
6. The mass of an iron ball is 312 g. The density of iron is 7.8 g cm^{-3} the ball. Find the volume of the ball ?
7. A cork has a volume 25 cm^3. The density of cork is 0.25 g cm33 . Find the volume of . Find the mass of cork
8. The mass of 5 litre of water is 5 kg. Find the density of water in g cm-3
9. A cubical tank of side 1 m is filled with 800 kg of a liquid. Find: (i) the volume of tank, (ii) the density of liquid in kg m^{-3}.
10. A block of iron has dimensions 2 m × 0.5 m × 0.25 m. The density of iron is 7.8 g cm^{-3} Find the mass of block.
11. The mass of a lead piece is 115 g. When it is immersed into a measuring cylinder, the water level rises from 20 ml mark to 30 ml mark. Find: (i) the volume of the lead piece, (ii) the density of the lead in kg m-3
12. A car travels a distance of 15 km in 20 minute. Find the speed of the car in (i) km/h (ii)m/s
13. How long a train will take to travel a distance of 200 km with a speed of 60 km/h?
14. A boy travels with a speed of 10 m for 30 minute. How much distance does he travel?
15. Express 36 km/h in m/s.

Level-2

1)A block of wood of density 0.8gmcm−3 has a volume of 60cm3. The mass of

block is

2) What is the S.I unit of volume and density? State other two smaller units of volume?

3) Convert 72 km/h to m/s.

4) Also convert 225 m/s to km/hr

5) Numerical : A girl runs with a speed of 40m/s for 20 minutes.Find the distance travelled by her in km.

6) What is general density of water?

7) A car 'A' travels 60m in 1.5 hr and car 'P' travels 60 m in 1.8 hr. Find the speeds of car A and car P respectively and state their difference.

8) A rectangular park is of length 30m and breadth 5 km . Find the area of the rectangular park.

9) By what apparatus can we measure volume. Name any two.

10) Give reason : Iron floats in Mercury