INDIAN SCHOOL AL WADI AL KABIR		
Class: VIII	DEPARTMENT: SCIENCE 2025-26	DATE: 07-12-2025
TEXTBOOK Q & A	TOPIC: THE AMAZING WORLD OF SOLUTES, SOLVENTS AND SOLUTIONS	NOTE: A4 FILE FORMAT
NAME OF THE STUDENT:	CLASS & SEC:	ROLL NO.

1. State whether the statements given below are True [T] or False [F]. Correct the false statement(s).

(i) Oxygen gas is more soluble in hot water rather than in cold water.

(ii) A mixture of sand and water is a solution.

(iii) The amount of space occupied by any object is called its mass.

(iv) An unsaturated solution has more solute dissolved than a saturated solution.

(v) The mixture of different gases in the atmosphere is also a solution.

ANS.

(i) False.

Correction: Oxygen is more soluble in cold water and becomes less soluble as the temperature increases.

(ii) False.

Correction: Sand and water do not form a uniform mixture; they form a heterogeneous mixture, not a solution.

(iii) False.

Correction: The amount of space occupied by an object is called its volume.

(iv) False.

Correction: A saturated solution has more solute dissolved than an unsaturated solution.

(v) True.

2. Fill in the blanks.

(i) The volume of a solid can be measured by the method of displacement, where the solid is _____ in water and the _____ in water level is measured.

(ii) The maximum amount of _____ dissolved in _____ at a particular temperature is called solubility at that temperature.

(iii) Generally, the density _____ with increase in temperature.

(iv) The solution in which glucose has completely dissolved in water, and no more glucose can be dissolve at a given temperature, is called a _____ solution of glucose.

ANS.
(i) immersed, rise
(ii) solute, solvent
(iii) decreases
(iv) saturated

3. You pour oil into a glass containing some water. The oil floats on top. What does this tell you?

(i) Oil is denser than water

(ii) Water is denser than oil

(iii) Oil and water have the same density

(iv) Oil dissolves in water

ANS. (ii) Water is denser than oil

4. A stone sculpture weighs 225 g and has a volume of 90 cm³. Calculate its density and predict whether it will float or sink in water.

ANS. Density = Mass / Volume

$$= 225 \div 90$$

$$= 2.5 \text{ g/cm}^3$$

Since the density of stone sculpture is greater than that of water, it will sink in water.

5. Which one of the following is the most appropriate statement, and why are the other statements not appropriate?

(i) A saturated solution can still dissolve more solute at a given temperature.

(ii) An unsaturated solution has dissolved the maximum amount of solute possible at a given temperature.

(iii) No more solute can be dissolved into the saturated solution at that temperature.

(iv) A saturated solution forms only at high temperatures.

ANS. Statement (iii) is the most appropriate.

Statement (i) False — A saturated solution can't dissolve more solute at a given temperature.

Statement (ii) False — An unsaturated solution can still dissolve more solute.

Statement (iv) False — A saturated solution can form at any temperature, not only at high temperatures.

6. You have a bottle with a volume of 2 litres. You pour 500 mL of water into it. How much more water can the bottle hold?

ANS. Total capacity of the bottle = 2 litres = 2000 mL

Volume of water already poured = 500 mL

Volume of water the water bottle can still hold = 2000 mL − 500 mL = 1500 mL

Therefore, the bottle can hold 1500 mL (or 1.5 litres) more water.

7. An object has a mass of 400 g and a volume of 40 cm³. What is its density?

ANS. Density = Mass / Volume

= 400 g ÷ 40 cm³

= 10 g/cm³

8. Analyse Fig. 9.25a and 9.25b. Why does the unpeeled orange float, while the peeled one sinks? Explain.

(a)   (b)
Fig. 9.25

ANS. An unpeeled orange has tiny air pockets that make it less dense than water. These air pockets help the orange to float.

When the orange is peeled, the air pockets are removed, making the orange denser than water, so it sinks.

9. Object A has a mass of 200 g and a volume of 40 cm³. Object B has a mass of 240 g and a volume of 60 cm³. Which object is denser?

ANS. Density of object A = Mass / Volume

= 200 g ÷ 40 cm³

= 5 g/cm³

Density of object B = Mass / Volume

$$= 240 \text{ g} \div 60 \text{ cm}^3$$

$$= 4 \text{ g/cm}^3$$

Object A is denser than object B.

10. Reema has a piece of modelling clay that weighs 120 g. She first moulds it into a compact cube that has a volume of 60 cm³. Later, she flattens it into a thin sheet. Predict what will happen to its density.

ANS. Initially, the density of the clay when it was moulded into a cube:
Volume of the cube = 60 cm^3
Mass of the cube = 120 g
Density = 120 g /60 cm^3= 2 g/cm^3
When the cube is flattened out the Volume does not change only the shape changes so the volume is 60 cm.^{3}
**Weight = 120 g**
Density = 120 g /60 cm^3 = 2 g/cm^3
Hence the density of the clay will not change upon changing its shape.

11. A block of iron has a mass of 600 g and a density of 7.9 g/cm³. What is its volume?

ANS. Density = Mass / Volume
Volume = Mass / Density
$$= 600 \text{ g} \div 7.9 \text{ g/cm}^3$$
$$= 75.95 \text{ cm}^3$$

12. You are provided with an experimental setup as shown in Fig. 9.26a and 9.26b. On keeping the test tube (Fig 9.26b) in a beaker containing hot water (~70°C), the water level in the glass tube rises. How does it affect the density?

(a) (b)
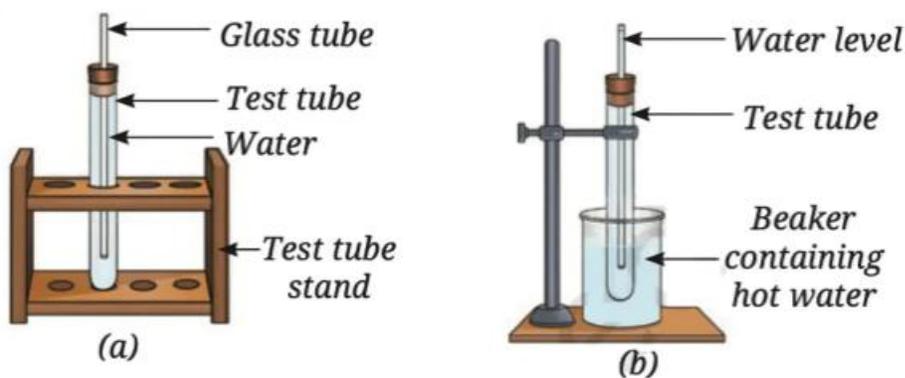
ANS. The density of water in setup (b) will decrease. The experiment shows the effect of temperature on density. When water is heated, its particles move apart, causing it to expand. The rising water level in the glass tube shows expansion. Since the mass remains the same and the volume increases, the density decreases. Hence, heating reduces the density of water due to expansion.

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