

# EX 15.3

1. a) (i)  $0.0013 \text{ g/cm}^3$  (iv)  $19.3 \text{ g/cm}^3$   
 (ii)  $0.25 \text{ g/cm}^3$  (v)  $2.7 \text{ g/cm}^3$   
 (iii)  $8.9 \text{ g/cm}^3$  (vi)  $11.5 \text{ g/cm}^3$

- b) (i)  $800 \text{ kgm}^{-3}$  (iv)  $10000 \text{ kgm}^{-3}$   
 (ii)  $7800 \text{ kgm}^{-3}$  (v)  $0.45 \text{ kgm}^{-3}$   
 (iii)  $11400 \text{ kgm}^{-3}$  (vi)  $2500 \text{ kgm}^{-3}$

$$\begin{aligned} \text{Mass} &= \text{Volume} \times \text{density} \\ &= 22 \times 1.4 \times 1.4 \times 3 \times 1000 \text{ kgm}^{-3} \\ &= 18.48 \text{ m}^3 \times 1000 \\ &= 18480 \text{ kg} \end{aligned}$$

$$\begin{aligned} \text{Density} &= \frac{\text{mass}}{\text{volume}} \\ &= \frac{14 \text{ kg}}{15 \text{ l}} \\ &= \frac{14 \times 1000 \text{ g}}{15 \times 1000 \text{ cm}^3} \\ &= 0.9333 \text{ g/cm}^3 \end{aligned}$$

$$\begin{aligned} \text{Volume} &= \frac{\text{mass}}{\text{Density}} \\ &= \frac{150 \text{ g}}{8.6 \text{ g/cm}^3} \\ &= 17.44 \text{ cm}^3 \\ \text{New reading} &= 45 + 17.44 \\ &= 62.44 \text{ cm}^3 \end{aligned}$$

$$\begin{aligned} \text{Density} &= \frac{\text{mass}}{\text{volume}} \\ &= \frac{3.4 \text{ kg}}{\frac{1}{6} \times 2 \times 2.5 \times 3 \text{ m}^3} \\ &= 0.4533 \text{ kgm}^{-3} \end{aligned}$$

$$\begin{aligned} \text{Mass} &= \text{Volume} \times \text{density} \\ &= 22 \times 24.5^2 \times 300 \times 0.48 \\ &= 271656 \text{ g} \\ &= 271.656 \text{ kg} \end{aligned}$$

$$\begin{aligned} \text{Density} &= \frac{\text{mass}}{\text{volume}} \\ &= \frac{22.5 \times 1000}{20 \times 30 \times 50} \\ &= 0.75 \text{ g/cm}^3 \end{aligned}$$

$$\begin{aligned} 8. \text{ Density} &= \frac{\text{mass}}{\text{volume}} = \frac{1.2 \text{ kg}}{1.5 \times 10^{-4} \text{ m}^3} \\ &= 0.8 \text{ g/cm}^3 \\ &= 800 \text{ kgm}^{-3} \end{aligned}$$

$$\begin{aligned} 9. \text{ Mass} &= \text{Volume} \times \text{density} \\ &= 205 \times 7.8 \\ &= 1599 \text{ g} \end{aligned}$$

$$\begin{aligned} 10. \text{ Volume} &= \frac{\text{Mass}}{\text{Density}} = \frac{57.9 \text{ g}}{19.3 \text{ g/cm}^3} \\ &= 3 \text{ cm}^3 \\ &= 3 \div 1000 \text{ m}^3 \\ &= 0.000003 \text{ m}^3 \end{aligned}$$

$$\begin{aligned} 11. \text{ Volume} &= \frac{\text{Mass}}{\text{Density}} = \frac{1.5 \times 1000 \text{ g}}{0.25 \text{ g/cm}^3} \\ &= 6000 \text{ cm}^3 \end{aligned}$$

$$\begin{aligned} 12. \text{ Mass} &= \text{Volume} \times \text{density} \\ &= 6 \times 4 \times 9 \times 1.3 \\ &= 280.8 \text{ kg} \end{aligned}$$

$$\begin{aligned} 13. \text{ Density} &= \frac{\text{Mass}}{\text{Volume}} \\ &= \frac{2 \times 1000 \text{ g}}{\frac{22}{7} \times 8.75^2 \times 10 \text{ cm}^3} \\ &= 0.8312 \text{ g/cm}^3 \end{aligned}$$