

Answers to Option D test yourself questions

- 1 **a** 3.85 dm^3 ; **b** 3.43 dm^3
- 2 **a** 4.82; **b** 4.47; **c** 4.98; **d** 4.76; **e** 4.76; **f** 8.95
- 3 **a** $0.275 \text{ mol dm}^{-3}$; **b** 4.19
- 4 0.650 g (the answer 0.648 g is obtained if more figures are carried through on the calculator)
- 5 **a** $^{115}_{50}\text{Sn}$; **b** $^{220}_{86}\text{Rn}$; **c** $^{63}_{29}\text{Cu}$; **d** $^{225}_{88}\text{Ra}$
- 6 **a** beta; **b** alpha; **c** beta; **d** beta; **e** alpha
- 7 **a** 25 mg; **b** 6.25 mg; **c** 0.0980 mg
- 8 **a** 45 d; **b** $7 \times 10^{11} \text{ y}$
- 9 **a** 800 y; **b** 168 d
- 10 **a** 0.012 min^{-1} ; **b** $8.04 \times 10^{-3} \text{ d}^{-1}$; **c** $3.30 \times 10^{-16} \text{ y}^{-1}$
- 11 **a** 134 minutes (135 minutes if all figures are carried through on the calculator); **b** 200 days; **c** 4.9×10^{15} years
- 12 **a** 29.8%; **b** 16.4%
- 13 Half-life = $1.33 \times 10^6 \text{ s}$ or 15.4 days
Mass left = $0.301 \mu\text{g}$
- 14 **a** Vapour pressure = 17.6 kPa
mole fraction of **A** in vapour = 0.455
mole fraction of **B** in vapour = 0.545
b Vapour pressure = 8.80 kPa
mole fraction of **C** in vapour = 0.682
mole fraction of **D** in vapour = 0.318
c Vapour pressure = 6.17 kPa
mole fraction of **E** in vapour = 0.494
mole fraction of **F** in vapour = 0.506
d Vapour pressure = 13.6 kPa
mole fraction of **G** in vapour = 0.176
mole fraction of **H** in vapour = 0.824
- 15 0.0156 kPa