

GCSE Chemistry B (Twenty First Century Science)
J258/01 Breadth in Chemistry (Foundation Tier)

Question Set 24

1

Diamond and graphite are two forms of carbon.

(a) (i) Fig. 1.1 shows the structure of diamond:

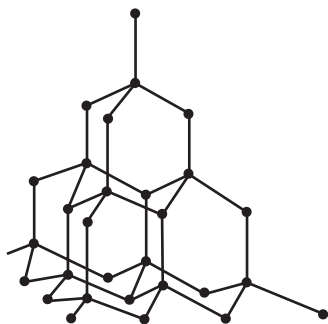


Fig. 1.1

Explain why diamond has a high melting point.

[1]

(ii) Fig. 1.2 shows the structure of graphite.

Graphite also has a high melting point.

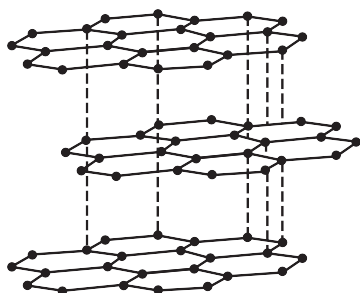


Fig. 1.2

Describe and explain **two** other properties of graphite.

Use the structure shown in Fig. 1.2 to help explain your answers.

[2]

(b) Diamond has a high density.

1.0 g of diamond has a volume of 0.29 cm³.

Calculate the mass of 1.0 cm³ of diamond.

Give your answer to **2** significant figures.

Mass =g [2]

(c) 12 g of diamond produces 44 g of CO₂ when it is burned completely.

(i) Calculate the mass of CO₂ produced when 1.0×10^{-3} g of diamond is burned completely.

Give your answer to **2** significant figures.

Mass of CO₂ =g **[2]**

(ii) Jane makes some statements about graphite and diamond:

- 1 'Complete combustion of 12 g of graphite produces less than 44 g of CO₂.'
- 2 'This is because atoms in graphite are further apart than in diamond.'

Do you agree with Jane's statements?

Explain your answer.

[2]

Total Marks for Question Set 24: 9

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