

(Structure and bonding in carbon (diamond, graphite, graphene, fullerenes, nanotubes))

Q1. (2018)

Explain why graphite conducts electricity.

Answer in terms of the structure and bonding in graphite.

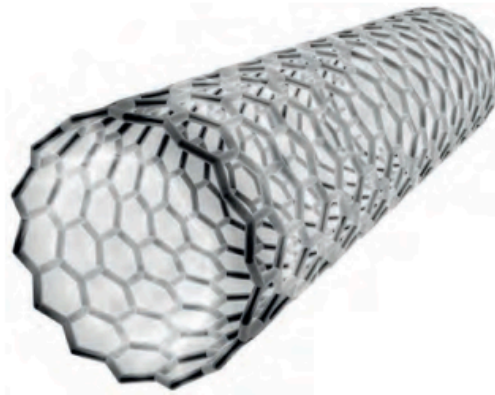
[3 marks]

Q2. (2019)

This question is about materials and their properties.

Figure 3 shows a carbon nanotube.

Figure 3



The structure and bonding in a carbon nanotube are similar to graphene.

Carbon nanotubes are used in electronics because they conduct electricity.

Explain why carbon nanotubes conduct electricity.

[2 marks]

Q3. (2021)

This question is about carbon and its compounds.

Fullerenes are molecules of carbon atoms.

The first fullerene to be discovered was Buckminsterfullerene (C_{60}).

What shape is a Buckminsterfullerene molecule?

[1 mark]

Q4. (2021)

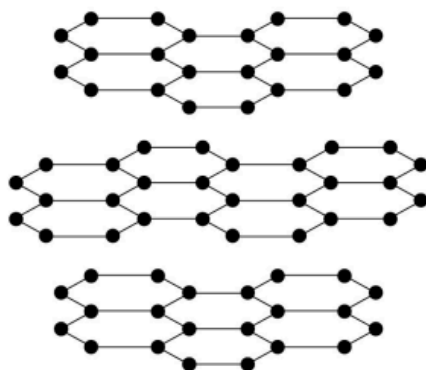
Give **one** use of a fullerene.

[1 mark]

Q5. (2021)

Figure 3 represents the structure of graphite.

Figure 3



Explain why graphite is:

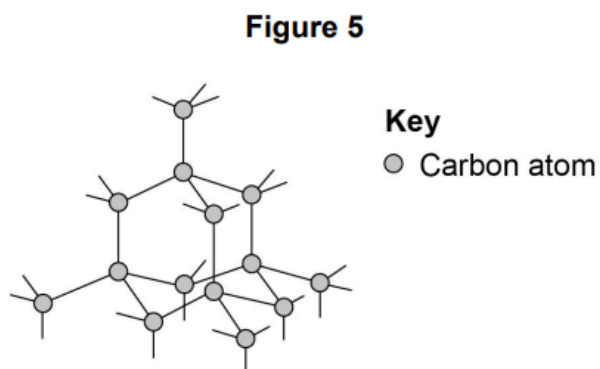
- a good electrical conductor
- soft and slippery.

You should answer in terms of structure and bonding.

[6 marks]

This question is about different forms of carbon.

Figure 5 represents the structure of diamond.



Describe the structure and bonding of diamond.

[3 marks]

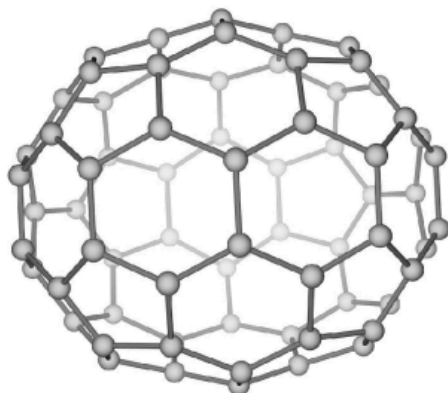
Explain why diamond has a very high melting point.

[3 marks]

Q8. (2022)

Figure 6 represents the molecule C_{70}

Figure 6



What is the name of this type of molecule?

[1 mark]

Tick (✓) **one** box.

Fullerene

☐

Graphene

☐

Nanotube

☐

Polymer

☐

Q9. (2022)

Molecules such as C_{70} can be used in medicine to move drugs around the body.

Suggest **one** reason why the C_{70} molecule is suitable for this use.

[1 mark]
