

Worksheet 10.6

The versatility of carbon

Carbon atoms are amazingly versatile in the ways in which they can bond and form compounds.

- 1** Give **three** ways which carbon atoms show their versatility in structure formation.

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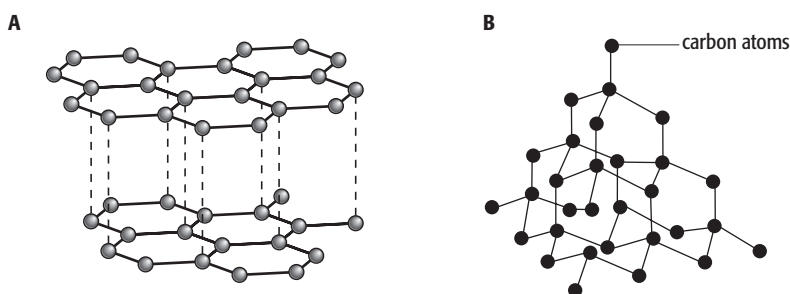
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- 2** What type of bonding do carbon atoms usually take part in? How are the outer electrons of the atoms involved in this type of bonding?

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- 3** Carbon itself is known to exist as two different structural forms. These are known as diamond and graphite. Both diamond and graphite consist of carbon atoms bonded together in three-dimensional structures.



These diagrams show sections of the arrangement of carbon atoms in the two forms. Which form is which?

Structure A:


Structure B:

- 4 a** Diamond is one of the hardest substances known to man and is used on the edges of glass-cutting tools. Explain why the structure of diamond makes it so hard.

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- b** Graphite is soft and slippery and is used to lubricate surfaces. Explain why the structure of graphite makes it soft and slippery.

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- 5** Diamond is an electrical insulator, but graphite conducts electricity. Explain why graphite conducts electricity.

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