1 Diamond and graphite are macromolecules.

Which statement about diamond and graphite is **not** correct?

A They are giant structures with high melting points.

B They are non-conductors of electricity.

C They contain only atoms of a non-metal.

D They have covalent bonds between the atoms.

2 Two statements about diamond are given.

1 Diamond has a giant three-dimensional covalent structure of carbon atoms.

2 Diamond is one of the hardest substances known.

Which is correct?

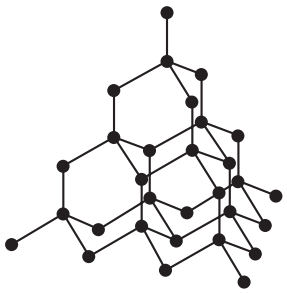
A Both statements are correct and statement 1 explains statement 2.

B Both statements are correct but statement 2 does not explain statement 1.

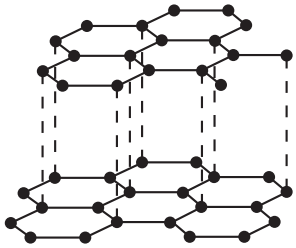
C Statement 1 is correct but statement 2 is incorrect.

D Statement 2 is correct but statement 1 is incorrect.

3 The structures of diamond and graphite are shown.



diamond



graphite

Which statement about diamond and graphite is **not** correct?

A Diamond is used in cutting tools because the strong covalent bonds make it very hard.

B Graphite acts a lubricant because of the weak bonds between the layers.

C Graphite conducts electricity because the electrons between the layers are free to move.

D Graphite has a low melting point because of the weak bonds between the layers.

4 Rescuers are drilling through fallen rock in order to rescue some men trapped in a cave. The drill needs lubricating from time to time.

The following statements were made about the materials used for the drill tip and the lubricant and the reasons for their use.

1 Diamond was used for the drill tip as it does not conduct electricity.

2 Diamond was used for the drill tip as it is very hard.

3 Graphite was used as the lubricant as it conducts electricity.

4 Graphite was used as the lubricant as it is soft and flaky.

Which statements are correct?

A 1 and 3 **B** 1 and 4 **C** 2 and 3 **D** 2 and 4

5 Graphite is a form of carbon.

Why can graphite be used as a lubricant?

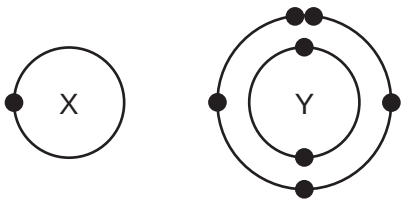
A Graphite contains delocalised electrons which move throughout the structure.

B Graphite contains weak covalent bonds so the atoms move easily.

C Graphite has a low melting point so it easily turns into a liquid.

D Graphite has weak forces of attraction between layers so they can move.

6 The electronic structures of atoms X and Y are shown.



X and Y form a covalent compound.

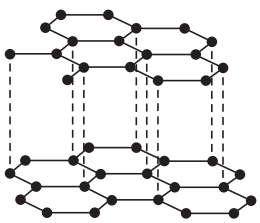
What is its formula?

A XY_5 **B** XY_3 **C** XY **D** X_3Y

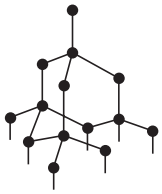
7 Slate has a layered structure and can easily be split into thin sheets.

Which diagram shows a structure most like that of slate?

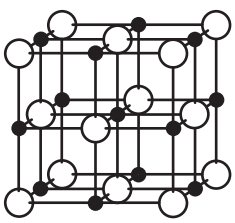
A



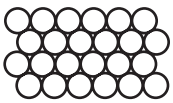
B



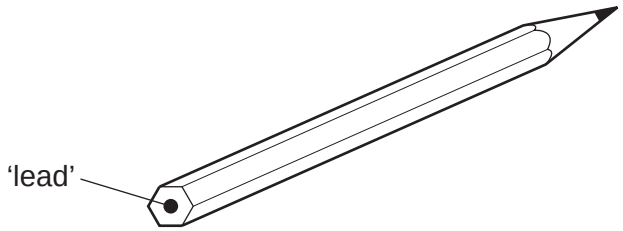
C



D



8 The ‘lead’ in a pencil is made of a mixture of graphite and clay.



When the percentage of graphite is increased, the pencil slides across the paper more easily.

Which statement explains this observation?

A Graphite has a high melting point.

B Graphite is a form of carbon.

C Graphite is a lubricant.

D Graphite is a non-metal.

9 Solid F is an element.
Solid G is a compound.
Neither solid conducts electricity but G conducts electricity when dissolved in water.

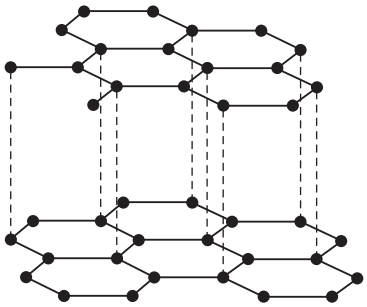
These properties suggest that F is ……1…… and that G is ……2…… with ……3…… bonds.

Which words correctly complete gaps 1, 2 and 3?

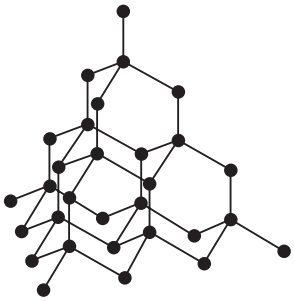
	1	2	3
A	diamond	AgC*l*	covalent
B	diamond	NaC*l*	ionic
C	graphite	AgC*l*	ionic
D	graphite	NaC*l*	covalent

10 The diagrams show the structures of two forms, P and Q, of a solid element.

P



Q



What are suitable uses of P and Q, based on their structures?

	use of solid P	use of solid Q
A	drilling	drilling
B	drilling	lubricating
C	lubricating	drilling
D	lubricating	lubricating

11 Statements 1, 2 and 3 are about diamond and graphite.

1 They are different solid forms of the same element.

2 They each conduct electricity.

3 They have atoms that form four equally strong bonds.

Which statements are correct?

A 1 only **B** 3 only **C** 1 and 3 **D** 2 and 3