

Question 4 (Answer: **B**)

- Both are giant covalent, so both have very high melting points.
- A layered structure with weak forces *between* layers lets them slide – that is the lubricant.
- A rigid three-dimensional network of strong bonds in every direction is the cutting tool.

Question 8 (Answer: **B**)

- In graphite each carbon is bonded to three others, forming flat hexagonal layers.
- In diamond each carbon is bonded to four others, forming a rigid tetrahedral network.
- Graphite's fourth outer electron is delocalised, which is why only graphite conducts.

Question 8 (Answer: **D**)

- Diamond and graphite are both giant covalent forms of carbon, so both have very high melting points.
- Diamond's rigid three-dimensional network makes it extremely hard – right for the drill tip.
- Graphite's layers slide over one another, which is what makes it a lubricant.

Question 7 (Answer: **C**)

- Silicon(IV) oxide is giant *covalent*, so it contains no ions at all.
- Every bond in it is a single covalent bond, that is one shared pair of electrons.
- It has no free electrons, so it cannot conduct electricity.

Question 6 (Answer: **B**)

- Silicon(IV) oxide is a giant covalent lattice.
- Each silicon is bonded to four oxygens, and each oxygen to two silicons.
- It has no delocalised electrons and no ions, so it does not conduct.