SL & HL Questions on Metallic bonding

1. Explain why graphite, an allotrope of the non-metal carbon, is a good conductor of electricity whereas diamond which is also an allotrope of carbon is a very poor conductor of electricity.

2. i. Define the term *malleable*.

ii. Explain why gold conducts electricity and is a malleable metal.

3. Explain why the melting points of the alkali metals decrease as the atomic number of the metal increases.

Alkali metal	Melting point / °C
Lithium	180.5
Sodium	97.8
Potassium	63.5
Rubidium	39.3
Caesium	28.5

4. Tin, Sn, and lead, Pb, are both in group 14. Both are metals. Suggest one reason why lead, which has a higher atomic number than tin, has a higher melting point.

5. The precise melting point of an alloy depends upon its exact composition. Stainless steel contains between 5 and 13% chromium. Suggest one reason why the melting point of stainless steel (1510 °C) is very similar to the melting point of steel (1425 - 1540 °C).

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