

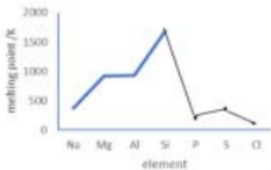
# **9. The Periodic Table: Chemical Periodicity**

## **9.1 Periodicity of physical properties**

### **Paper 2**

Marking Scheme

## Q1.

(d)(i)	large amount of energy required to break bonds in giant covalent structure	1
(d)(ii)	 <p><b>M1</b> all 3 melting points lower than Mg <b>M2</b> show melting point Cl &lt; P &lt; S</p>	2

## Q2.

(a)(i)	element	C (graphite)	Sn	3
	state and appearance	grey shiny solid	silvery solid	
	electrical conductivity	• good/ conductor	good	
	type of bonding	• covalent	metallic	
	type of structure	giant	• giant	

## Q3.

(d)	element	nitrogen	phosphorus	2
	state and appearance	colourless gas	white solid	
	electrical conductivity	• poor	poor	
	type of bonding	• covalent	• covalent	
	type of structure	simple	• simple	

## Q4.

(a)(i)	decreases (from Si to S)	1
(a)(ii)	<b>M1</b> Si giant covalent <b>AND</b> S is simple molecular <b>OR</b> Si giant covalent <b>AND</b> S has IMFs	1
	<b>M2</b> Si involves breaking covalent bonds <b>AND</b> S involves breaking IMFs	1
	<b>M3</b> more energy needed to break covalent bonds than IMFs <b>OR</b> covalent bonds are strong <b>AND</b> IMFs are weak	1

**Q5.**

(b)	 <p>The graph shows the melting point of elements in Period 3. The x-axis represents the atomic number (11 to 17) and the y-axis represents the melting point. The data points are as follows:</p> <table border="1"><thead><tr><th>Atomic Number</th><th>Melting Point (Relative)</th></tr></thead><tbody><tr><td>11</td><td>Low</td></tr><tr><td>12</td><td>Medium-Low</td></tr><tr><td>13</td><td>Medium</td></tr><tr><td>14</td><td>High</td></tr><tr><td>15</td><td>Low</td></tr><tr><td>16</td><td>Medium-Low</td></tr><tr><td>17</td><td>Very Low</td></tr></tbody></table>	Atomic Number	Melting Point (Relative)	11	Low	12	Medium-Low	13	Medium	14	High	15	Low	16	Medium-Low	17	Very Low	<b>2</b>
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