

16 The atomic radii and ionic radii for three elements in Period 3 are shown.

	atomic radius / nm	ionic radius / nm
element X	0.118	0.053
element Y	0.099	0.180
element Z	0.160	0.072

Using this data, which statement is correct?

- A** Element X has lower electrical conductivity than element Y.
- B** Element Y has a higher melting point than element X.
- C** Element Y and element Z react to form an ionic compound.
- D** Element Z forms ionic compounds by gaining electrons.

18 Which oxide has a simple structure rather than a giant structure?

- A** MgO **B** Al₂O₃ **C** SiO₂ **D** P₄O₁₀

17 Sodium and sulfur react together to form sodium sulfide, Na₂S.

How do the atomic radius and ionic radius of sodium compare with those of sulfur?

	atomic radius	ionic radius
A	sulfur is greater	sodium is greater
B	sulfur is greater	sulfur is greater
C	sodium is greater	sodium is greater
D	sodium is greater	sulfur is greater

18 Compound X is an oxide of a Period 3 element.

Compound X is a white solid at 25 °C. It reacts with water to form an acidic solution.

What is compound X?

- A** aluminium oxide
- B** silicon dioxide
- C** sulfur dioxide
- D** phosphorus(V) oxide

- 23** Element E is in Period 3. It forms a chloride which reacts with a small amount of water to produce a white precipitate and steamy fumes. This precipitate is soluble in NaOH(aq) and in HCl(aq) .

What is element E?

- A** magnesium
- B** aluminium
- C** silicon
- D** phosphorus

- 16** A student investigated the chloride of a Period 3 element. This is what the student wrote down as their observations.

The compound was a white crystalline solid. It dissolved easily in water to give a solution of pH 12. When placed in a test-tube and heated in a roaring Bunsen flame, the compound melted after several minutes' heating.

What can be deduced from these observations?

- A** At least one of the recorded observations is **not** correct.
- B** The compound was magnesium chloride, MgCl_2 .
- C** The compound was phosphorus pentachloride, PCl_5 .
- D** The compound was sodium chloride, NaCl .

- 17 Which graph shows the relative melting points of the elements Mg, Al, Si and P plotted against their relative electronegativities?

