Unit 4: States of matter

Subunit 4.2: Bonding and structure

Topical Question No: 1

12 The electrical conductivities of two compounds, Y and Z, are shown in the table.

	Υ	Z
conductivity of the compound in the liquid state	good	does not conduct
conductivity of the mixture obtained by adding the compound to water	good	good

What could compounds Y and Z be?

	Y	Z	
Α	Al_2O_3	SiCl ₄	
В	NaF	Al_2O_3	
С	NaF	SiCl ₄	
D	SiCl ₄	Al_2O_3	

Topical Question No: 2

- **6** Which pair of elements has chemical bonds of the same type between their atoms in the solid state?
 - A aluminium and phosphorus
 - **B** chlorine and argon
 - C magnesium and silicon
 - **D** sulfur and chlorine

Topical Question No: 3

14 What is the order of increasing melting point of the four chlorides shown?

HC1

 $MgCl_2$

 PCl_5

 CCl_4

	lowest melting point			highest melting point
Α	CC1 ₄	HC1	PCl ₅	MgCl ₂
В	HC1	CC1 ₄	PCl ₅	MgCl ₂
С	HC1	PCl_5	CC1 ₄	MgCl ₂
D	MaC1 ₂	PC1s	CC14	HC1

16 Which description of the bonding and acid/base nature of aluminium oxide is correct?

	bonding	acid/base nature	
Α	covalent	amphoteric	
В	covalent	basic	
С	ionic	amphoteric	
D	ionic	basic	

Topical Question No: 5

2 Substances X, Y and Z are all solids. Some of their physical properties are given in the table.

substance	Х	Υ	Z
melting point/°C	772	114	1610
boiling point/°C	1407	183	2205
electrical conductivity of the liquid state	conducts	does not conduct	does not conduct

What type of lattice could each substance have?

	X	Υ	Z
Α	giant molecular	simple molecular	ionic
В	ionic	giant molecular	simple molecular
С	ionic	simple molecular	giant molecular
D	simple molecular	ionic	giant molecular

Answer Key

- 1. Error
- 2. Error
- 3. Error
- 4. Error
- 5. Error