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.

	Y	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
A	Al_2O_3	$SiCl_4$
B	NaF	Al_2O_3
C	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?

CCl_4 HCl $MgCl_2$ PCl_5

	lowest melting point →			highest melting point
A	CCl_4	HCl	PCl_5	$MgCl_2$
B	HCl	CCl_4	PCl_5	$MgCl_2$
C	HCl	PCl_5	CCl_4	$MgCl_2$
D	$MgCl_2$	PCl_5	CCl_4	HCl

Topical Question No: 4

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

	bonding	acid / base nature
A	covalent	amphoteric
B	covalent	basic
C	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	X	Y	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	Y	Z
A	giant molecular	simple molecular	ionic
B	ionic	giant molecular	simple molecular
C	ionic	simple molecular	giant molecular
D	simple molecular	ionic	giant molecular

Answer Key

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