3.2 Oxides, Group 1 & Group 17

Question Paper

Course	DP IB Chemistry
Section	3. Periodicity
Topic	3.2 Oxides, Group 1 & Group 17
Difficulty	Easy

Time allowed: 20

Score: /10

Percentage: /100

Question 1

What happens to the pH of water when magnesium oxide is dissolved into it?

A. The pH increases, because MgO is acidic

B. The pH decreases, because MgO is basic

C. The pH increases, because MgO is basic

D. Nothing happens because MgO is neutral

[1 mark]

Question 2

The Group II metals have higher melting points than the Group I metals.

Which factors result in Group II metals having higher melting points?

1
Group II metals have higher first ionisation energy than the corresponding group I metal
2
there are smaller interatomic distances in the metallic lattices of the Group II metals
3
more electrons are available from each Group II metal atom for metallic bonding in the lattice

A. 1 only

B. 1 and 2 only

C. 2 and 3 only

D. 1, 2 and 3

[1 mark]

Question 3

What happens when iodine is bubbled through aqueous potassium bromide?

A. Iodine is oxidised to iodide ions

B. Potassium bromide is reduced to bromine

C. Bromide ions are oxidised to bromine

D. No reaction occurs

[1 mark]

Question 4

The halogens exist as diatomic molecules, X_2.

Descending down Group 17 from chlorine to iodine the boiling points of the elements increase.

Which statement explains this trend?

A. The permanent dipole in the X_2 molecule increases as the group is descended

B. The X-X bond strength increases as the group is descended

C. The electronegativity of X decreases as the group is descended

D. The number of electrons in each X_2 molecule increases as the group is descended

[1 mark]

Question 5

How do the strengths of the forces between molecules, and the bonds within molecules, vary going down Group 17 from chlorine to bromine to iodine?

	strength of London dispersion forces	strength of covalent bonds
A	increase	increase
B	decrease	increase
C	increase	decrease
D	decrease	decrease

[1 mark]

Question 6

Most non-metallic oxides can be described as

A. Ionic and alkaline

B. Covalent and alkaline

C. Covalent and acidic

D. Ionic and acidic

[1 mark]

Question 7

Which of the options below correctly contains a basic, acidic and amphoteric oxide?

A. K_2O, SrO, Al_2O_3

B. BeO, Al_2O_3, Br_2O

C. Al_2O_3, SiO_2, P_4O_{10}

D. P_4O_{10}, SO_3, F_2O

[1 mark]

Question 8

Which pair of elements reacts most readily?

A. Li + Br_2

B. Li + Cl_2

C. K + Br_2

D. K + Cl_2

[1 mark]

Question 9

Chlorine is a greenish-yellow gas, bromine is a dark red liquid, and iodine is a dark grey solid.

Which property most directly causes these differences in volatility?

A. The halogen–halogen bond energy

B. The number of neutrons in the nucleus of the halogen atom

C. The number of outer electrons in the halogen atom

D. The number of electrons in the halogen molecule

[1 mark]

Question 10

Which property increases down group 1 from lithium to caesium?

A. Chemical reactivity

B. First ionisation energy

C. Melting point

D. Electronegativity

[1 mark]