Practice Question Set For A-Level
Subject : Chemistry
Paper-1 Topic: Inorganic 1

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Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Q1.

This question is about periodicity, the Period 4 elements and their compounds.

(a) State the meaning of the term periodicity.

_____

_____

_____

(1)

(b) Identify the element in Period 4 with the highest electronegativity value.

_____

(1)

(c) Identify the element in Period 4 with the largest atomic radius.

Explain your answer.

Element _____

Explanation _____

_____

_____

_____

(3)

(d) The equations for two reactions of arsenic(III) oxide are shown.

$$As_2O_3 + 6\ HCl \rightarrow 2\ AsCl_3 + 3\ H_2O$$

$$As_2O_3 + 6\ NaOH \rightarrow 2\ Na_3AsO_3 + 3\ H_2O$$

Name the property of arsenic(III) oxide that describes its ability to react in these two ways.

_____

(1)

(e) Complete the equation for the formation of arsenic hydride.

As_2O_3 + Zn + $HNO_3 \rightarrow$ AsH_3 + $Zn(NO_3)_2$ + H_2O

(1)

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(Total 7 marks)

Q2.

This question is about atomic structure.

(a) Write the full electron configuration for each of the following species.

Cl^- _____

Fe^{2+} _____

(2)

(b) Write an equation, including state symbols, to represent the process that occurs when the third ionisation energy of manganese is measured.

_____

_____

(1)

(c) State which of the elements magnesium and aluminium has the lower first ionisation energy.

Explain your answer.

_____

_____

_____

_____

_____

_____

_____

(3)

(d) A sample of nickel was analysed in a time of flight (TOF) mass spectrometer. The sample was ionised by electron impact ionisation. The spectrum produced showed three peaks with abundances as set out in the table.

m/z	Abundance / %
58	61.0
60	29.1
61	9.9

Give the symbol, including mass number, of the ion that would reach the detector first in the sample.

Calculate the relative atomic mass of the nickel in the sample.

Give your answer to one decimal place.

Symbol of ion _____

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Relative atomic mass _____

(3)

(Total 9 marks)

Q3.

Which is the correct classification for the element yttrium (Y)?

A s block ⬭

B p block ⬭

C d block ⬭

D f block ⬭

(Total 1 mark)

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