Practice Question Set For A-Level
Subject : Chemistry
Paper-2 Topic: Physical

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

Mark Schemes

Q1.

(a) Repeating pattern/trends (of physical or chemical properties/reactions)
Allow named property
Penalise groups
1

(b) Bromine/Br
Not Br_2
Accept Kr or Krypton
1

(c) Potassium /K
*If Na or Rb lose **M1** but allow access to **M2** and **M3***
If other incorrect elements 0/3
1

Smallest number of protons/smallest nuclear charge
1

Similar shielding / same number of shells (as other elements in period 4)
Allow same shielding
1

(d) Amphoteric
1

(e) $As_2O_3 + 6\ Zn + 12\ HNO_3 \rightarrow 2\ AsH_3 + 6\ Zn(NO_3)_2 + 3\ H_2O$
Accept multiples
1

[7]

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Q2.

(a) Moles SO_2 eqbm (=6.08/64.1 = 0.0949) so moles O_2 eqbm = 0.0474

1

Mass of oxygen (= 0.0474 × 32(.0)) = 1.52 g

Allow 0.0475

*Allow **M1** × 32*

1

(b) **M1**: Mole fraction SO_3 = 0.15
Mole fraction SO_2 = 0.57
Mole fraction O_2 = 0.28

*Accept fractions for **M1***

1

M2 $K_p = \frac{(pSO_2)^2 \times (pO_2)}{(pSO_3)^2}$ $\left(= \frac{(\lambda SO_2)^2 P^2 \times (\lambda O_2) P}{(\lambda SO_3)^2 P^2} \right)$

Do not accept [ ]

λ = mole fraction

1

M3 $P = \frac{K_p \times (\lambda SO_3)^2}{(\lambda SO_2)^2 \times (\lambda O_2)}$ or $\frac{K_p \times (0.15)^2}{(0.57)^2 \times (0.28)}$

***M3** is for rearrangement with or without numbers*

*If incorrect rearrangement allow correct **M1** and **M2** only*

1

M4 P = 1.91×10^5 (Pa) Allow range 1.88×10^5 to 1.94×10^5

1

(c) **M1** Kp is higher at higher temperature or converse

1

M2 At higher temperature more dissociation occurs / more products are formed / equilibrium shifts to the right/forward direction

***M2**: Allow converse arguments*

M2** dependent on **M1

1

(d) $(\sqrt{3.94 \times 10^4}$ Pa) = 198.5

1

$Pa^{1/2}$ or $Pa^{0.5}$

Allow 198 – 198.5 (answer is 198.49)

*If $\sqrt{7.62 \times 10^5} = 873$ then lose **M1** but allow **M2***

1

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