Practice Question Set For A-Level
Subject : Chemistry
Paper-1 Topic: Physical 1_Equilibrium Constant Kp For Homogeneous Systems

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Name of the Student:_____
Max. Marks : 21 Marks **Time : 21 Minutes**

Mark Schemes

Q1.

A

[1]

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Q2.

(a) (i) *Moles of PCl_3*: 0.345 – 0.166 = 0.179 **(1)**

Moles of Cl_2: 0.268 – 0.166 = 0.102 **(1)**

3 sig figs

(ii) 0.447 **(1)**

allow 2 sig figs
conseq on (i)

3

(b) *Mole fraction of PCl_3*: 0.179/0.447 **(1)** = 0.4(00)

Partial pressure of PCl_3: pp = mol f^{n} × total P **(1)**
= 0.400 × 225 = 90 **(1)** kPa **(1)**

3

(c) (i) $K_p = \frac{P_{PCl_5}}{P_{PCl_3} \times P_{Cl_2}}$ **(1)**

ignore brackets except [ ]
must show P

(ii) $K_p = \frac{83.6}{90.1 \times 51.3}$ **(1)** = 1.8**(1)** × 10^{-2} **(1)** Kpa^{-1} **(1)** (or 1.81 × 10^{-5} Pa^{-1})

If 83.6 and 51.3 wrong way round, AE – 1,
answer = 6.81 × 10^{-3}

If K_p × in (i) allow max 2 for substitution of numbers and conseq units

4

(d) (i) increased **(1)**

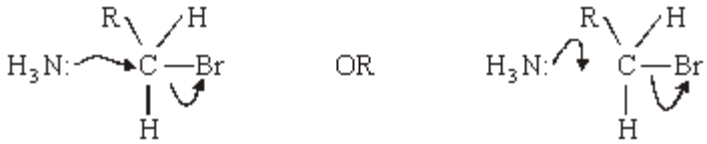
(ii) increased **(1)**

2

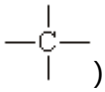
[12]

Organic points

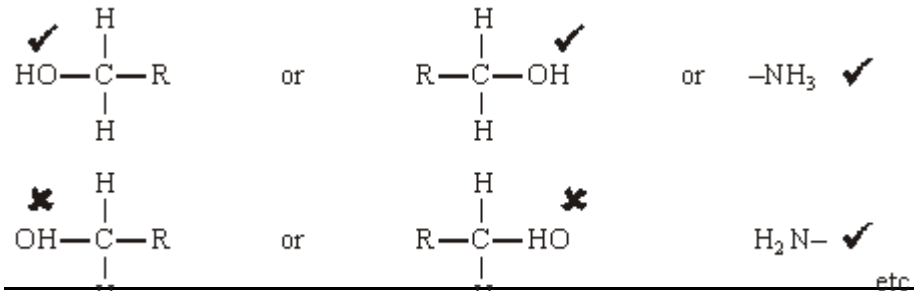
(1) Curly arrows: must show movement of a pair of electrons,
i.e. from bond to atom or from lp to atom / space
e.g.



(2) Structures

penalise sticks (i.e. ) once per paper

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Penalise once per paper

allow CH_3– or $-CH_3$ or  or CH_3
or H_3C–

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Q3.

C

[1]

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Q4.

B

[1]

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Q5.

C

[1]

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Q6.

D

[1]

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Q7.

B

[1]

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Q29.

D

[1]

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Q30.

B

[1]

Downloaded from www.merit-minds.com

Q31.

D

[1]

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