Name of the Student:_____
Max. Marks : 14 Marks **Time : 14 Minutes**

Mark Schemes

Q1.

(a) Hydrogen bonding **(1)**
between H_2O and NH_3 **(1)**

2

(b) (i) $NH_3 + H_2O \rightleftharpoons NH_4^+ + OH^-$ **(1)**

(ii) Ammonia is weak base **(1)**
NOT partially ionised

Equilibrium to left or incomplete reaction **(1)**

3

(c) A proton donor **(1)**

1

(d) *Buffer solution*: A solution which resists change in pH **(1)**
when small amounts of acid or base added or on dilution **(1)**

Reagent: NH_4Cl **(1)**
Allow a correct strong acid

3

(e) (i) $K_a = [H^+] [A^-] / [HA]$ **(1)**
$= [H^+] [0.125 \times 4]$ **(1)** $/ 1.00$
$[H^+] = 1.70 \times 10^{-5} / 0.125 \times 4 = 3.40 \times 10^{-5}$ **(1)**

$pH = -\log_{10} [H^+] = 4.47$ **(1)**
Allow pH conseq to $[H^+]$ if 2 place decimals given

(ii) $H^+ + CH_3COO^- \rightarrow CH_3COOH$ **(1)**

5

[14]

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