Name of the Student:_____
Max. Marks : 25 Marks **Time : 25 Minutes**

Mark Schemes

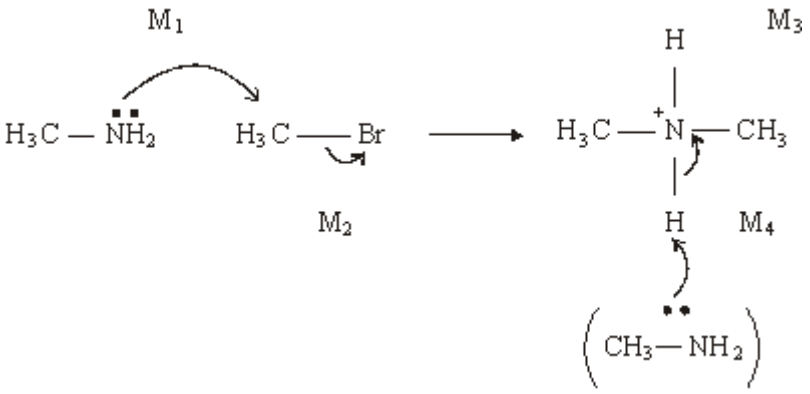
Q1.

(a) dimethylamine

1

(b) nucleophilic substitution

1



4

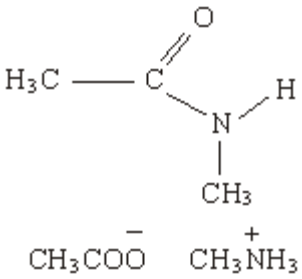
(c) quaternary ammonium salt

1

(cationic) surfactant / bactericide / detergent / fabric softener or conditioner/hair conditioner

1

(d)



(allow CH_3COOH or $CH_3COO^-\ NH_4^+$)

2

[10]

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Q2.

(a) propyl methanoate;

$HCOOC_3H_7 + OH^- \rightarrow HCOO^- + C_3H_7OH$

1

OR

$HCOOC_3H_7 + NaOH \rightarrow HCOONa + C_3H_7OH$;

1

(b) order wrt A = 1;

1

order wrt NaOH = 1;

1

Initial rate in Exp 4 = 2.4×10^{-3};

1

(c) (i) r(ate) = k[A]

OR

r(ate) = k[A][NaOH]^0;

(penalise missing [ ] but mark on)
(penalise missing [ ] once per paper)
(if wrong order, allow only units mark conseq on their rate eqs)
(penalise k_a or k_w etc)

1

(ii) $k = \frac{9.0 \times 10^{-3}}{0.02}$;

1

= 0.45;

1

s^{-1};

1

(iii) (large) excess of OH^- or $[OH^-]$ is large/high;

1

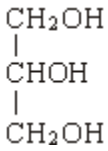
$[OH^-]$ is (effectively) constant

OR

[A] is the limiting factor *(Q of L mark)*

1

(d) (i)



1

propan(e)-1,2,3-triol

OR

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1,2,3-propan(e)triol

OR

Glycerol;

1

(ii) $CH_3(CH_2)_{16}COONa$ or $C_{17}H_{35}COONa$ or $C_{18}H_{35}O_2Na$;
(ignore 3 in front of formula but not if indicating trimer)

1

(not just anion and penalise Na shown as covalently bonded) soap - allow with detergent but not detergent alone;

1

[15]

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