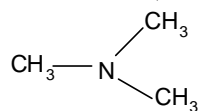
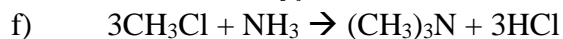
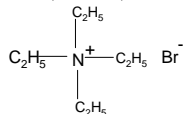
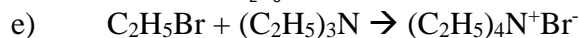
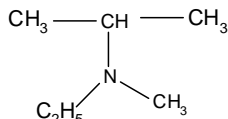
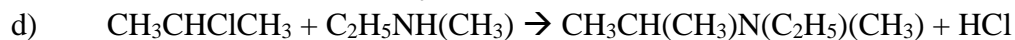
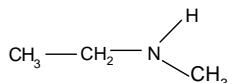
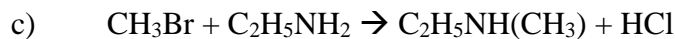
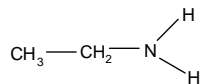
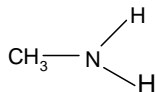
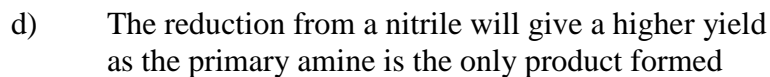
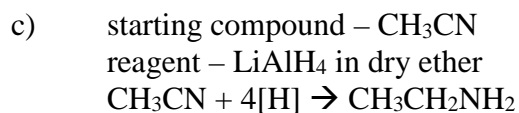
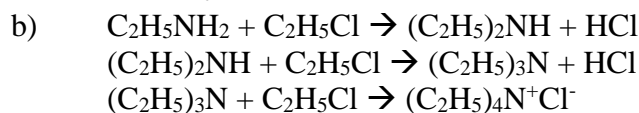
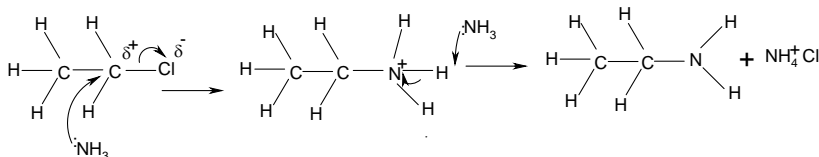


4.7 ANSWERS TO EXERCISES

4.7 Exercise 1



- g) $\text{CH}_3\text{CH}_2\text{CN} + 4[\text{H}] \rightarrow \text{CH}_3\text{CH}_2\text{CH}_2\text{NH}_2$
 $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{NH}_2$
3. a)
- $$\left[\begin{array}{c} \text{C}_{10}\text{H}_{21} \\ | \\ \text{C}_{10}\text{H}_{21} - \text{N}^+ - \text{C}_{10}\text{H}_{21} \\ | \\ \text{C}_{10}\text{H}_{21} \end{array} \right] \text{Cl}^-$$
- b) quaternary ammonium salt
 c) cationic surfactant
4. a) i) $\text{NH}_3(\text{aq}) + \text{H}_2\text{O}(\text{l}) \rightleftharpoons \text{NH}_4^+(\text{aq}) + \text{OH}^-(\text{aq})$
 ii) $\text{C}_2\text{H}_5\text{NH}_2(\text{aq}) + \text{H}_2\text{O}(\text{l}) \rightleftharpoons \text{C}_2\text{H}_5\text{NH}_3^+(\text{aq}) + \text{OH}^-(\text{aq})$
 b) The solution in part (ii) will have a higher pH
 The ethyl group pushes electrons on to the N atom
 This makes the lone pair more available for donation
 c) i) $\text{C}_2\text{H}_5\text{NH}_2 + \text{HCl} \rightarrow \text{C}_2\text{H}_5\text{NH}_3^+\text{Cl}^-$
 ii) $2(\text{CH}_3)_2\text{NH} + \text{H}_2\text{SO}_4 \rightarrow [(\text{CH}_3)_2\text{NH}]_2^+\text{SO}_4^{2-}$
 iii) $(\text{CH}_3)_2\text{NC}_2\text{H}_5 + \text{HCl} \rightarrow [(\text{CH}_3)_2\text{NHC}_2\text{H}_5]^+\text{Cl}^-$