

(c) A reaction scheme is shown in Fig. 7.2.

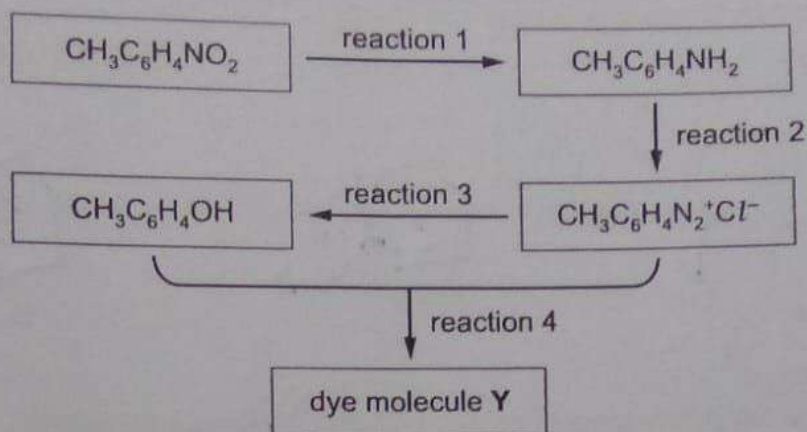


Fig. 7.2

(i) Describe the reagents and conditions to produce $\text{CH}_3\text{C}_6\text{H}_4\text{N}_2^+\text{Cl}^-$ from $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$ in reaction 2.

reagents HNO_2 / T between 0°C and 10°C .

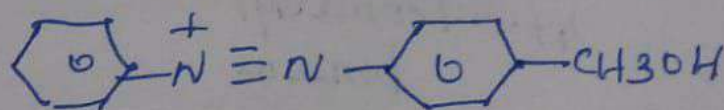
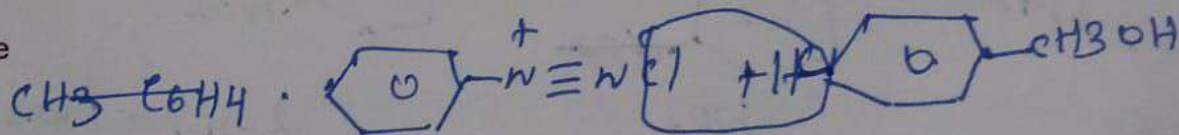
conditions warm / T $> 10^\circ\text{C}$ and H_2O [1]

(ii) Describe how $\text{CH}_3\text{C}_6\text{H}_4\text{OH}$ can be produced from $\text{CH}_3\text{C}_6\text{H}_4\text{N}_2^+\text{Cl}^-$ in reaction 3.

..... warm / T $> 10^\circ\text{C}$ and H_2O . [1]

(iii) Draw the structure of the dye molecule Y formed when $\text{CH}_3\text{C}_6\text{H}_4\text{N}_2^+\text{Cl}^-$ and $\text{CH}_3\text{C}_6\text{H}_4\text{OH}$ react together in reaction 4. Describe the conditions for this reaction.

structure



conditions T between 0° and 10°C and NaOH(aq) [2]

[Total: 15]