$$CH_3COOC_2H_5 + H_2O \longrightarrow CH_3COOH + C_2H_5OH$$

So, in this reaction,

$$\text{Rate} = k\,[CH_3COOC_2H_5]$$

For chemical reaction,

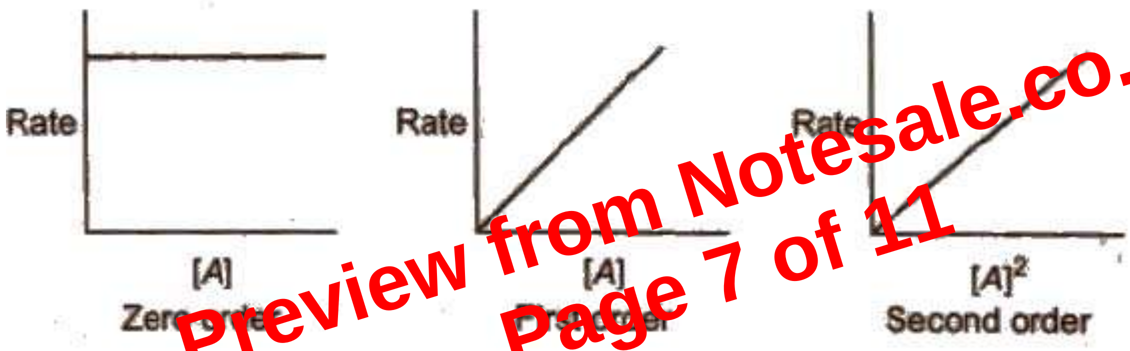
$$\underset{}{C_{12}H_{22}O_{11}} + H_2O \xrightarrow{H^+} \underset{\text{glucose}}{C_6H_{12}O_6} + \underset{\text{fructose}}{C_6H_{12}O_6}$$

$$k = \frac{2.303}{t}\log\left(\frac{r_0 - r_\infty}{r_t - r_\infty}\right)$$

[r_O r_t, and r_∞.. are the polarimetric readings at t = 0, t and ∞, respectively.]

Methods to Determine Order of Reaction

(i) Graphical method



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(ii) Initial rate method In this method, the order of a reaction is determined by varying the concentration of one of the
reactants while others are kept constant.

(iii) Integrated rate law method In this method out different integrated rate equation which gives the most constant value for the rate constant corresponds to a specific order of reaction.

(iv) Half-life period ($t_{1/2}$) method In general half-life period ($t_{1/2}$) of a reaction of nth order is related to initial concentration of the reactant as