FAQs

1. Write the expression for critical depth of neutral axis.

$$\sigma_{cbc} / \frac{\sigma_{st}}{m} = x_c / d\text{-}x_c$$

2. Write the expression for actual depth of neutral axis

$$bx.x/2 + (1.5m\text{-}1) A_{sc} (x\text{-}d^1) = m A_{st}(d\text{-}x)$$

3. Give the expression for moment of resistance for under reinforced rectangular section

$$M = T \times z = A_{st1}\sigma_{st} (d\text{-}x/3) + A_{st2}\sigma_{st} (d\text{-}d^1)$$

4. Give the expression for moment of resistance for over reinforced rectangular section

$$M = C \times z = bx \sigma_{cbc}/2 (d\text{-}x/3) + (1.5m\text{-}1) A_{sc}\sigma_{cbc}{}^1(d\text{-}d^1)$$

5. Moment of resistance of singly reinforced rectangular beam

   To find x_c

$$\sigma_{cbc} / \frac{\sigma_{st}}{m} = x_c / d\text{-}x_c$$

   To find x

$$bx.x/2 + (1.5m\text{-}1) A_{sc} (x\text{-}d^1) = m A_{st}(d\text{-}x)$$

   If $x < x_c$; it is under reinforced section

$$M_r = T \times z = A_{st1}\sigma_{st} (d\text{-}x/3) + A_{st2}\sigma_{st} (d\text{-}d^1)$$

   If $x > x_c$; it is over reinforced section

$$M_r = C \times z = bx \sigma_{cbc}/2 (d\text{-}x/3) + (1.5m\text{-}1) A_{sc}\sigma_{cbc}{}^1(d\text{-}d^1)$$