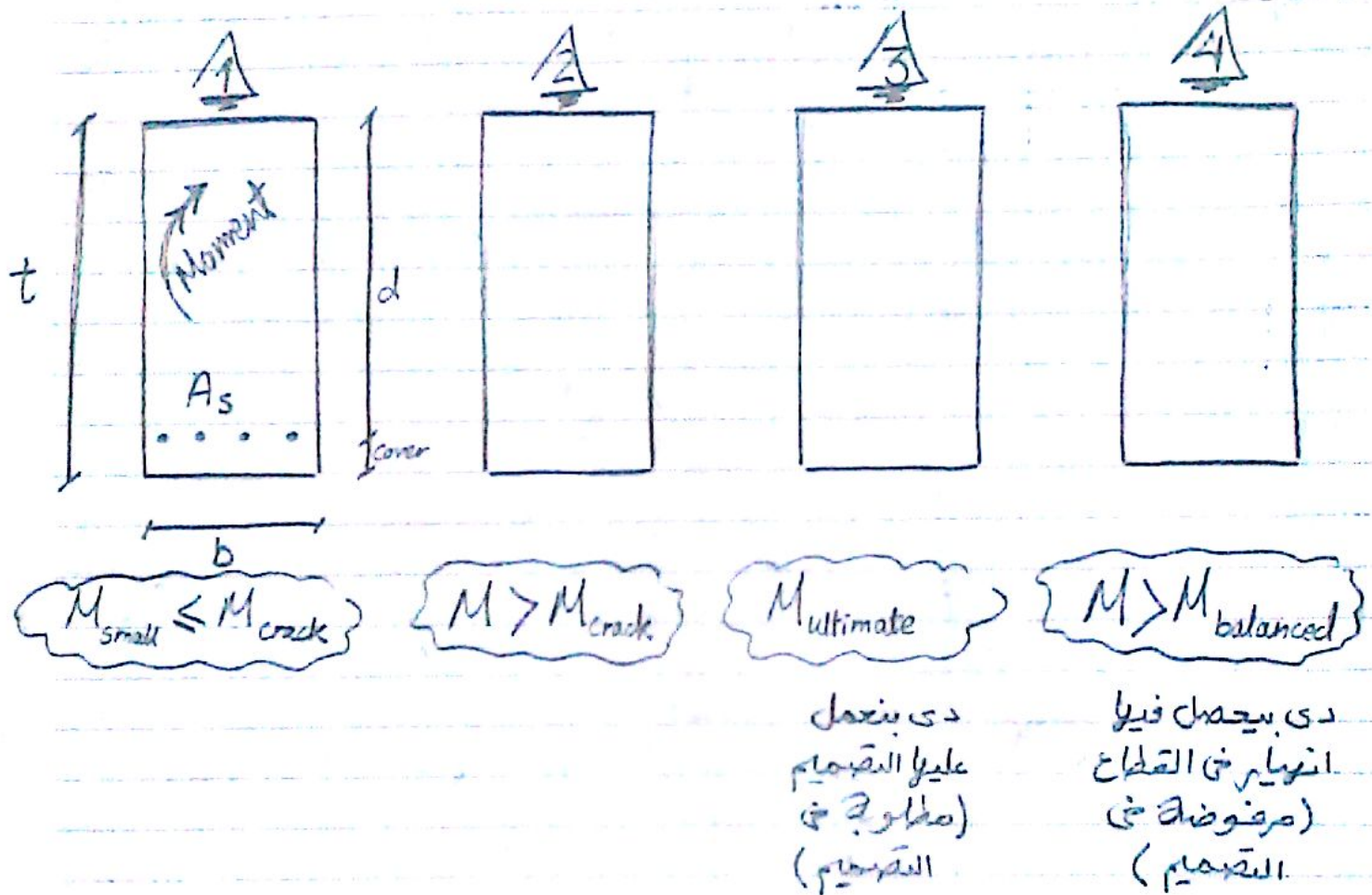


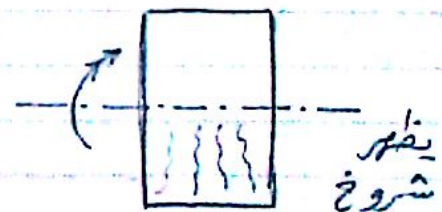
Behaviour & Design * of R.C beam sections *

A_s : Area of steel



$$\left. \begin{aligned} f_{cu} &= 250 \text{ Kg/cm}^2 \\ &= 300 \text{ Kg/cm}^2 \end{aligned} \right\} \text{اجهاد الضغط}$$

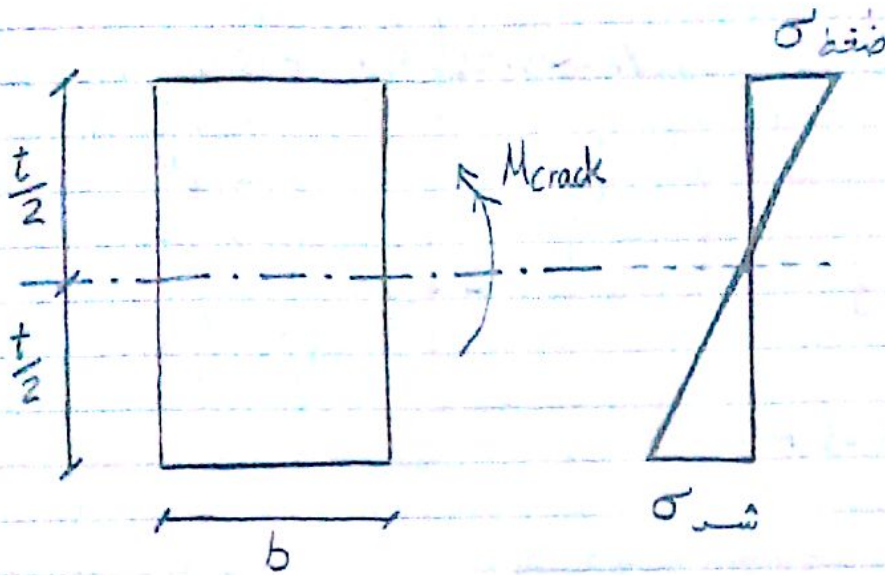
$$f_t = \frac{300}{10} = 30 \text{ Kg/cm}^2 \quad \text{اجهاد الشد}$$



الجزء العلوى من الخرسانة يتحمل الضغط والجزء السفلى يتحمل شد ...
في حالة زاد الشد عن تحمل اجزاء الشد يبدأ بحصول شروخ في الخرسانة
من الا سفل

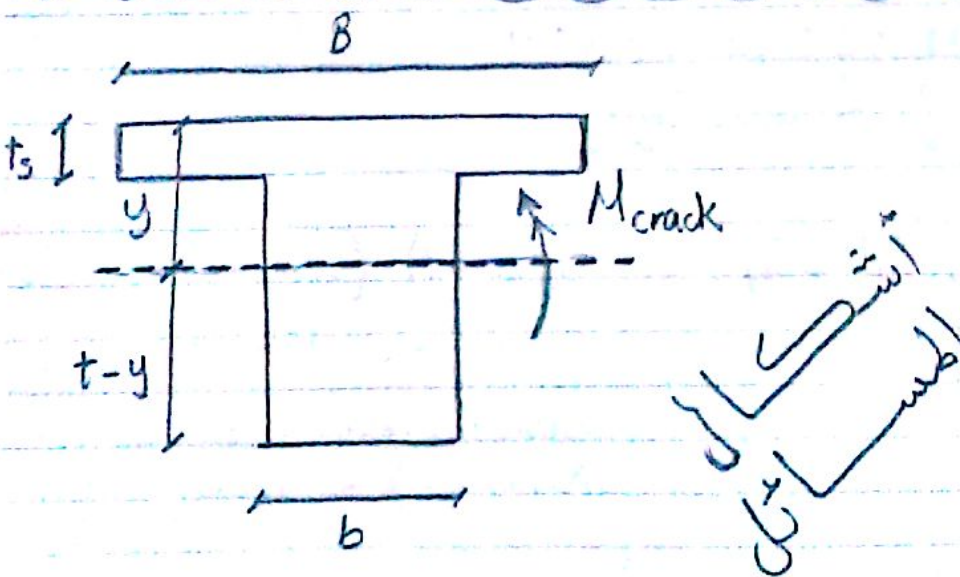
Date :

NO :



$$\sigma_{\pm} = \frac{M \cdot y}{I}$$

$y = \frac{t}{2}$, $I = \frac{bt^3}{12}$, Moment = M_{crack} at σ_t at $f_t = 30 \text{ kg/cm}^2$



y' y

Date :

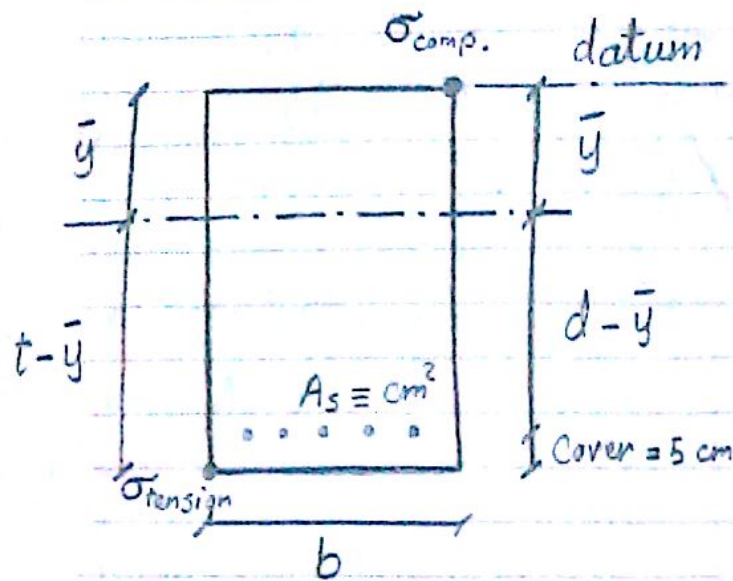
NO :

$$f_t = 0,75 (f_{cu})^{2/3}$$

n → modular ratio

$$\frac{E_s}{E_c} = n \quad n \approx 10$$

$$E = \frac{\text{Stress}}{\text{strain}}$$



$$\sigma_{tension} = \frac{M_{cr} * (t - \bar{y})}{I_v}$$

$$\therefore \sigma_{ten.} = 0,75 (f_{cu})^{2/3} \quad \checkmark$$

$$\therefore \bar{y} = \frac{(b * t) (\frac{t}{2}) + A_s * (t - \text{cover}) * (n - 1)}{b * t + A_s * (n - 1)} = \checkmark$$

$$\therefore (t - \bar{y}) = \checkmark \quad \underbrace{b * t}_{\text{مساحة قاعدة}} + \underbrace{A_s * (n - 1)}_{\text{مساحة حديد}}$$

$$\therefore I_v = \underbrace{\frac{b t^3}{12} + (b * t) \left(\frac{t}{2} - \bar{y} \right)^2}_{\text{قوسية}} + \underbrace{A_s (n - 1) (d - \bar{y})^2}_{\text{مساحة حديد}}$$

Inertia *
نفيك اهمالها من المعادلة

$$\therefore M_{cr} = \checkmark \quad \#$$

Date :

NO :

