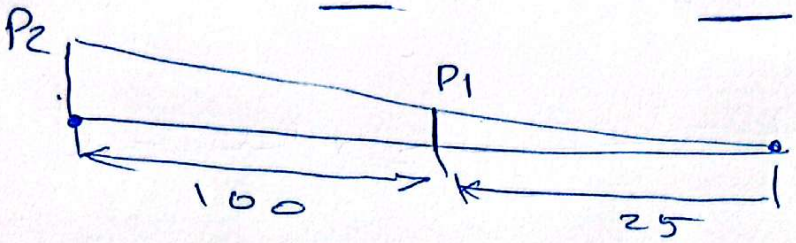
(5) $\tau = \frac{2F}{4A} = \frac{2 \times 5000}{4 \times \pi \times 8^2} = 12,5 \text{ MPa}$

(5) $M_b = 2 \times F \times 100 = 1 \times 10^6 \text{ N.mm}$

$M_b = 2 * P_1 \times 25 + 2 \times P_2 \times 125$

(5)



$\frac{P_2}{125} = \frac{P_1}{25} \Rightarrow P_2 = \frac{125}{25} \times P_1$ أو

$P_1 = \frac{25}{125} P_2$ بالتبديل

$M_b = 2 \times \frac{125}{25} \times P_2 * 25 + 2 * P_2 \times 25$

(5) $260 P_2 \Rightarrow P_2 = \frac{1 \times 10^6}{260}$

$= 166,666$

(5) $\sigma_2 = \frac{P_2}{A} = \frac{166,666}{\pi \times 64} = 200 \text{ MPa}$

(5) $\sigma_{eq} = \sqrt{\sigma^2 + 4\tau^2} = \sqrt{(20)^2 + (12,5)^2 \times 4}$

$= 73$

نجد $\sigma_{eq} < \sigma_{all}$

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$$M_t = \frac{1000 P}{\omega_s} \simeq 25 \ N.m$$

(10) (5)

$$d_s = c \times \sqrt[3]{M_t} = 117 \ mm$$

(15)

$$v = \omega . r = \frac{200 \times 117}{2} = 11,700 \ mm/sec$$

$$u = \frac{\omega_1}{\omega_2} = \frac{d_2}{d_1} = 3 \Rightarrow$$

(15)

$$d_2 = 3 \times d_1 = 3 \times 117 = 348 \ mm$$

$$V_1 = V_2 = 11700 \ mm/sec$$

$$\frac{\omega_1}{\omega_2} = 3 \Rightarrow \omega_2 = \frac{\omega_1}{3} = 66 \ \frac{rad}{sec}$$

(40)