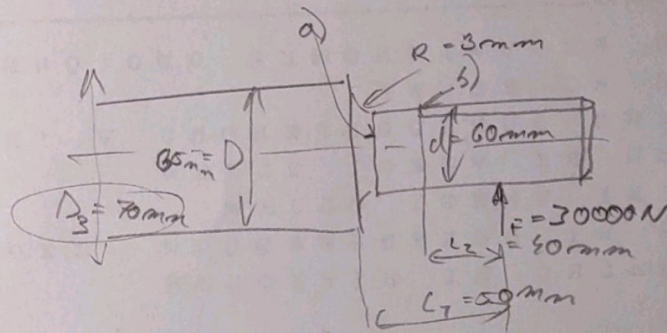


Exam 1/3

MALINEK

Material: 34CrNi7Mo6

 $R_a = 33 \text{ mm}$ 

Safety Factor a)

Don't have torsion

$$a) \quad n = \frac{m \cdot k \cdot \sigma_{TW}}{k_{fb} \cdot \sigma_{nom}}$$

$$\sigma_{nom} = \frac{32 \cdot 17}{\pi \cdot 60^3} = \frac{32 \cdot 30000 \cdot (50-5)}{\pi \cdot 60^3} = 66,5 \text{ MPa}$$

$$k_{fb} = 1 + 0,9(k_t - 1) = 1,774$$

↑ 1,86 maybe

$$\sigma_{TW} = 540 \text{ MPa}$$

$$m = 0,77 \text{ maybe } 0,762 \text{ - hard to say}$$

$$k = 0,735 \quad (R_m = 1000 \text{ MPa})$$

$$n = \frac{0,77 \cdot 0,735 \cdot 540}{1,774 \cdot 66,5} = 2,59 \checkmark$$

$$b) \quad k_{fb} = 2,2$$

$$\sigma_{nom} = \frac{32 \cdot 30000 \cdot 40}{\pi \cdot 60^3} = 56,6 \text{ MPa}$$

$$\sigma_{TW} = 540 \text{ MPa}$$

$$k = 0,735$$

$$m = 0,77 \text{ - from some "bigger" shaft}$$

$$n = \frac{0,77 \cdot 0,735 \cdot 540}{2,2 \cdot 56,6} = 2,45 \checkmark$$