

PAUTA P3 EXAMEN

OTOÑO 2009

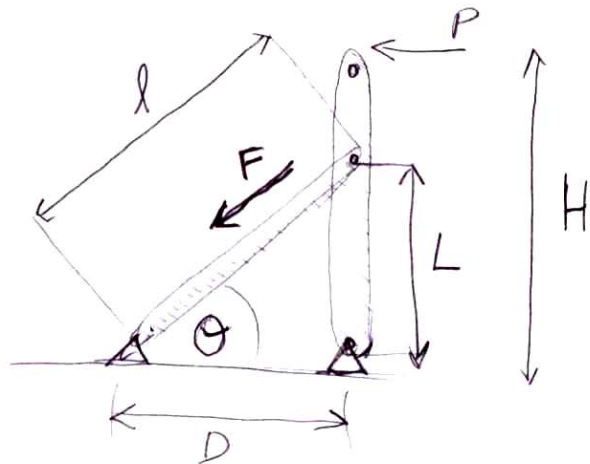
$$P_{crit} = \frac{\pi^2 EI}{(kL)^2}$$



$$\Rightarrow k=1$$

$$P_{adm} = \frac{P_{crit}}{FS} = \frac{P_{crit}}{2}$$

$$\Rightarrow P_{adm} = \frac{\pi^2 EI}{2L^2}$$

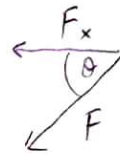


$$\Rightarrow l = \sqrt{D^2 + L^2}$$

$$\cos \theta = \frac{D}{l} = \frac{D}{\sqrt{D^2 + L^2}}$$

$$\sum M = 0 \Rightarrow HP = F_x L$$

$$\Rightarrow F_x = \frac{HP}{L}$$



$$F \cos \theta = F_x$$

$$\Rightarrow F = \frac{F_x}{\cos \theta} = \frac{HP}{L \cos \theta} = \frac{HP \sqrt{D^2 + L^2}}{LD}$$

$$F = P_{adm} \Rightarrow \frac{HP \sqrt{D^2 + L^2}}{LD} = \frac{\pi^2 EI}{2(L^2 + D^2)}$$

$\Rightarrow$

$$P = \frac{\pi^2 EI LD}{2H (L^2 + D^2)^{3/2}}$$