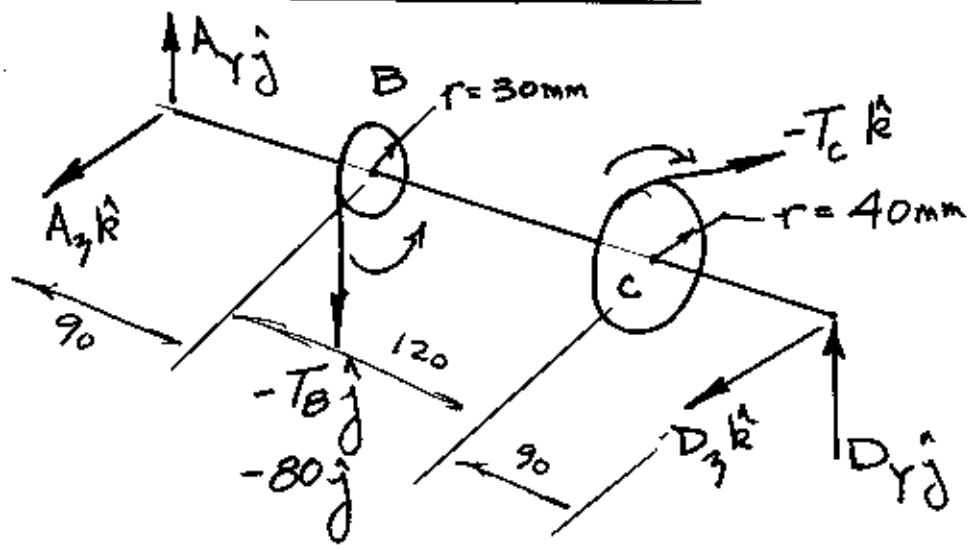
MECH 234 + 235

PROB. 4.91



$$\Sigma F_x = 0$$

$$\Sigma F_y = 0 = A_y + D_y - 80^N$$

$$\Sigma F_z = 0 = A_z + D_z - T_c$$

$$\Sigma M_A = 0 = (80^N \times 30mm)+\hat{i} \quad (T_c \times 40mm)-\hat{i}$$

$$(90\hat{i}) \times (-80\hat{j}) + (210\hat{i}) \times (-T_c\hat{k})$$

$$+ (300\hat{i}) \times (D_y\hat{j} + D_z\hat{k})$$

$$= 2400\hat{i} - 40T_c\hat{i} - 7200\hat{k} + 210T_c\hat{j} + 300D_y\hat{k} - 300D_z\hat{j}$$

EQUATE COEFFICIENTS

$\hat{i}$ $\quad 2400 - 40T_c = 0 \quad\quad T_c = 60^N$

$\hat{j}$ $\quad 210T_c - 300D_z = 0$

$\quad 210(60^N) = 300D_z \quad\quad D_z = 42^N$

$\hat{k}$ $\quad -7200 + 300D_y = 0 \quad\quad D_y = 24^N$

} SUB. ABOVE.

$$\Sigma F_y = 0 = A_y + D_y - 80 \quad\quad A_y = 56^N$$

$$\Sigma F_z = 0 = A_z + D_z - T_c$$

$$A_z = -42 + 60 \quad\quad A_z = 18^N$$