

{3.1절}

3.22 $T_{BC} = 2.5 \text{ kN}$

S; 점에 관한 모멘트, 위치벡터와 힘벡터의 벡터곱

A; ① 위치벡터 $\mathbf{r}_{AB} = (6 \text{ m}) \mathbf{i}$

② 힘벡터

$(d_{BC})_x = -6 \text{ m}, \quad (d_{BC})_y = 2.4 \text{ m}, \quad (d_{BC})_z = -4 \text{ m}$

$d_{BC} = \sqrt{(-6 \text{ m})^2 + (2.4 \text{ m})^2 + (-4 \text{ m})^2} = 7.60 \text{ m}$

$\lambda_{BC} = \frac{1}{7.6} (-6 \mathbf{i} + 2.4 \mathbf{j} - 4 \mathbf{k})$

$\mathbf{T}_{BC} = T_{BC} \lambda_{BC}$

$= (2.5 \text{ kN}) \frac{1}{7.6} (-6 \mathbf{i} + 2.4 \mathbf{j} - 4 \mathbf{k})$

$= -1.974 \mathbf{i} + 0.789 \mathbf{j} - 1.316 \mathbf{k} \quad (\text{kN})$

③ 벡터곱

$\mathbf{M}_A = \mathbf{r}_{AB} \times \mathbf{T}_{BC}$

$= [(6 \text{ m}) \mathbf{i}] \times [-1.9737 \mathbf{i} + 0.7895 \mathbf{j} - 1.3158 \mathbf{k}]$

$= -(6)(-1.3158) \mathbf{j} + [(6)(0.7895)] \mathbf{k} \quad (\text{kN}\cdot\text{m})$

$= 7.89 \mathbf{j} + 4.74 \mathbf{k} \quad (\text{kN}\cdot\text{m})$

R; (과정의 타당성 검토)

T; (결과의 의미 검토)

M; 자유물체도(F.B.D.)

