TRƯỜNG ĐH SƯ PHẠM KỸ THUẬT TP.HCM
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BỘ MÔN KẾT CẤU CÔNG TRÌNH

Đáp án môn: CƠ HỌC KẾT CẤU
Mã môn học: STME240517 Học kỳ 1–2017-2018
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Câu 1: (2 điểm)

a)

$$\lambda_x = \cos\theta_x = \frac{x_F - x_N}{L} = \frac{x_F - x_N}{\sqrt{(x_F - x_N)^2 + (y_F - y_N)^2}}$$

$$\lambda_y = \cos\theta_y = \frac{y_F - y_N}{L} = \frac{y_F - y_N}{\sqrt{(x_F - x_N)^2 + (y_F - y_N)^2}}$$

$$\mathbf{T} = \begin{bmatrix} \lambda_x & \lambda_y & 0 & 0 \\ 0 & 0 & \lambda_x & \lambda_y \end{bmatrix} \qquad (14\text{–}9)$$

From the above derivation, **T** transforms the four global x, y displacements **D** into the two local x' displacements **d**. Hence, **T** is referred to as the ***displacement transformation matrix***.

$$\mathbf{T}^T = \begin{bmatrix} \lambda_x & 0 \\ \lambda_y & 0 \\ 0 & \lambda_x \\ 0 & \lambda_y \end{bmatrix} \qquad (14\text{–}12)$$

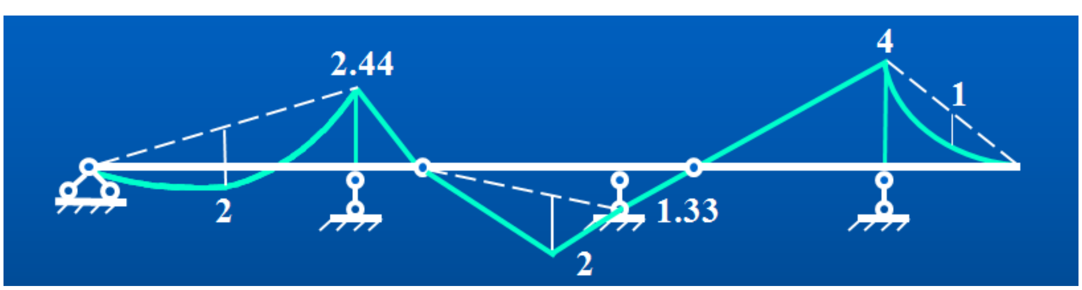
In this case $\mathbf{T}^T$ transforms the two local (x') forces **q** acting at the ends of the member into the four global (x, y) force components **Q**. By comparison, this ***force transformation matrix*** is the transpose of the displacement transformation matrix, Eq. 14–9.

b) Geometrically stable

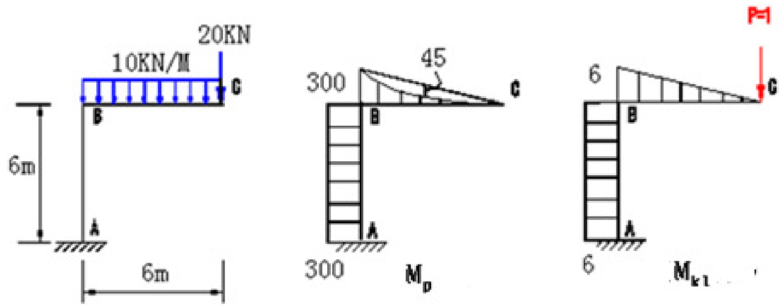
Câu 2: (2 điểm)

$N_a = N_b = P/8\sin\alpha$

Câu 3: (2 điểm)



<u>Câu 4:</u> (2 điểm)



$$\Delta_{CV}=\int_l \frac{\overline{M}_K M_P}{EI}ds=\frac{1}{EI}[(\frac{6\times6}{2})\times(\frac{2\times300}{3})-(\frac{2}{3}\times6\times45)\times(\frac{6}{2})+(6\times6)\times(300)]=\frac{13860}{EI}=0.0924m(\downarrow)$$

<u>Câu 5:</u> (2 điểm)