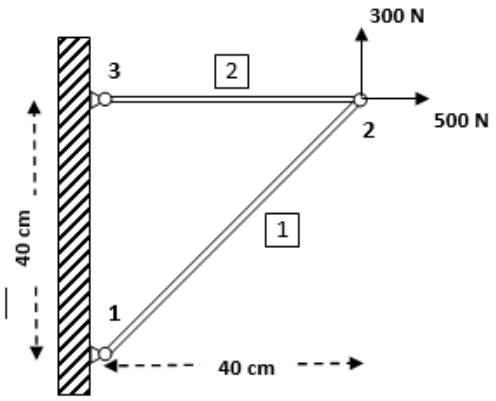
Class – 3: Plane truss problems: Element stiffness matrix in local and global coordinate system, Assembly of element stiffness matrices, Application of boundary conditions, solution for joint displacements, Reaction forces, Member forces.

$$k_L^e = \frac{EA}{L}\begin{bmatrix} 1 & -1 \\ -1 & 1 \end{bmatrix} \qquad k_G^e = \frac{EA}{L}\begin{bmatrix} l^2 & lm & -l^2 & -lm \\ lm & m^2 & -lm & -m^2 \\ -l^2 & -lm & l^2 & lm \\ -lm & -m^2 & lm & m^2 \end{bmatrix}$$



$E = 2 \times 10$ N/cm^2

$A_1 = A_2 = 1.5$ cm^2

Fig 1