

رقم الكود:

الاسم:

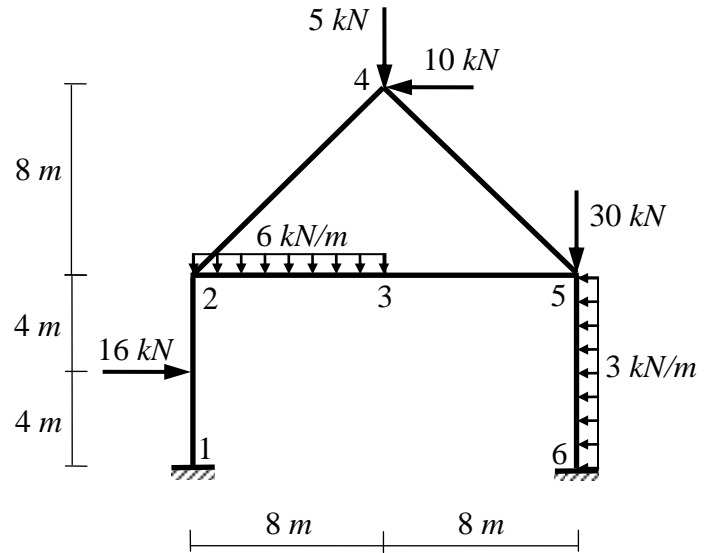
**Question (1): (10 Marks)**

The matrix equilibrium equation of the shown frame is:

$$\{F\} = [K] \{\Delta\} + \{F^f\}$$

Write

- the nodal forces vector  $\{F\}$
- the nodal displacements vector  $\{\Delta\}$
- the fixed end solution  $\{F^f\}$



**Solution:**

$$\{F\} = \begin{Bmatrix} \phantom{0} \\ \phantom{0} \\ \phantom{0} \\ \phantom{0} \\ \phantom{0} \\ \phantom{0} \end{Bmatrix} \quad \{\Delta\} = \begin{Bmatrix} \phantom{0} \\ \phantom{0} \\ \phantom{0} \\ \phantom{0} \\ \phantom{0} \\ \phantom{0} \end{Bmatrix} \quad \{F^f\} = \begin{Bmatrix} \phantom{0} \\ \phantom{0} \\ \phantom{0} \\ \phantom{0} \\ \phantom{0} \\ \phantom{0} \end{Bmatrix}$$