

B. E. Civil Engineering (Part Time) 1st Year 2nd Exam 2017.

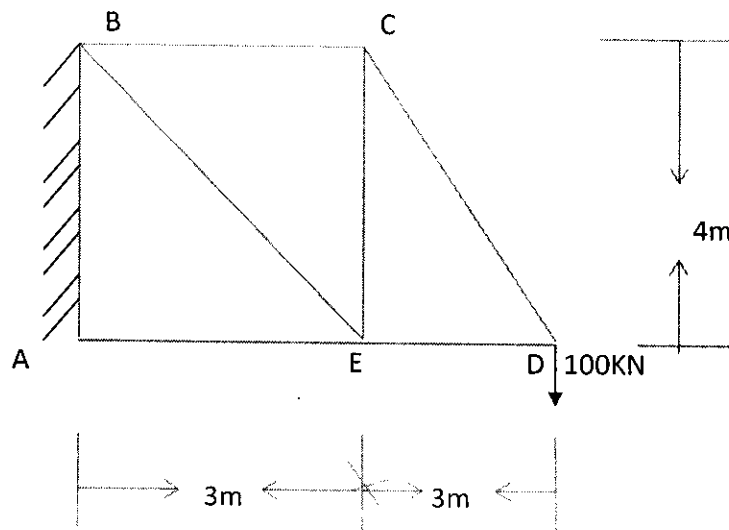
Sub: Structural Mechanics-II.

Times : Three hours

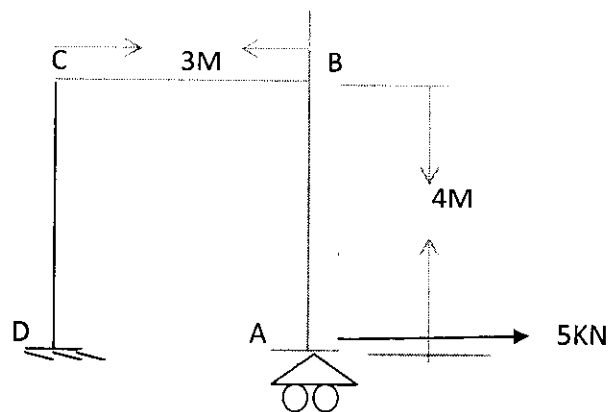
Answer any five questions.(20×5=1000)

Full Marks : 100

1. Determine the vertical downward deflection at point D A of the truss as shown in figure. The cross sectional area of all $BC=CD=2500\text{mm}^2$ and $AE=ED=3000\text{mm}^2$. $BE=CE=5000\text{mm}^2$. Take $E=2\times 10^5\text{N/mm}^2$.

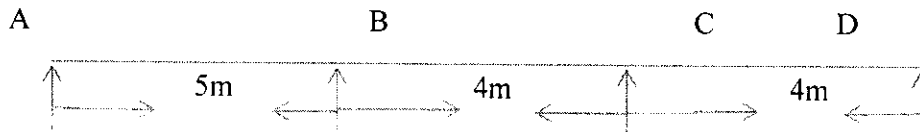


2. A) Determine the Horizontal deflection of Point A in the frame as shown in Figure. Take $E=2\times 10^5\text{N/mm}^2$. $I=30\times 10^6$. [15+5=20.]

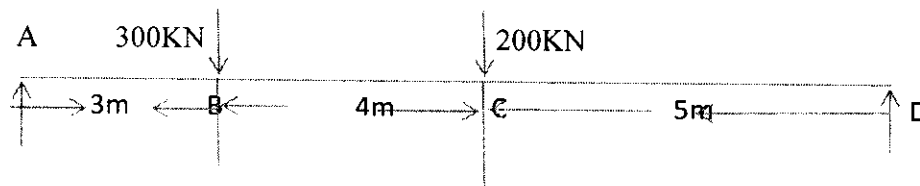


B) Established the equation of Total strain energy $U = \int \frac{M^2}{2EI} dx$.

3. Draw the SFD & BMD of the continuous beam as shown in figure. Use Three moments equations. $AB=30\text{KN/m}$, $BC=20\text{KN/m}$, $CD=30\text{KN/m}$.



4. State & explain the Castigliano's 1st principle. [10+10=20]
 A simple supported beam of Span L , carries a concentrated load P at a distance a from the left end side support. Using castigliano's theorem determines the deflection under the load. Assume EI is constant.
5. State & explain the claypeyrons three moments theorem.[10+10=20]
 What do you mean by conjugate beam? Write the assumptions of conjugate beam.
6. Find the slope & deflection of the continuous beam as shown in figure. Assume any other data if required. Apply conjugate beam method. $AB= I$, $BC=1.5I$, $CD=2I$



7. State & explain the Moment area theorem. Find the deflection at point c using moment area theorem. Take $EI=8000\text{Kn m}^2$

