

Total number of printed pages-4

53 (CE 503) STAN

2017

**STRUCTURAL ANALYSIS-II**

Paper : CE 503

Full Marks : 100

Time : Three hours

**The figures in the margin indicate full marks for the questions.**

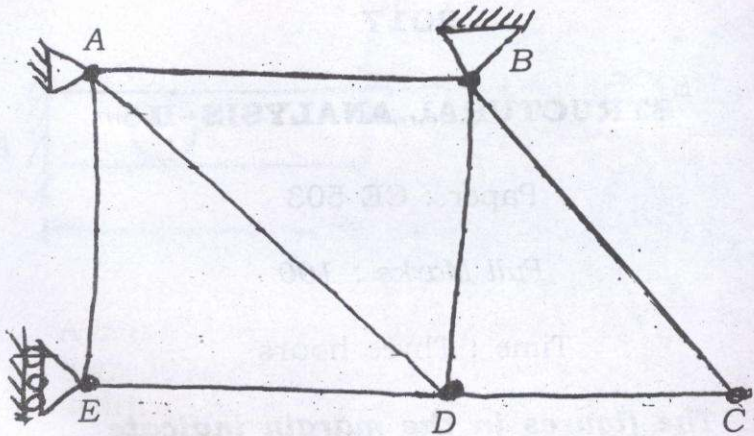
**Answer all questions.**

1. What do you understand by Plane Frame and Space Frame? Derive the expression for degree of internal indeterminacy ( $D_{Si}$ ) for a plane frame and space frame.

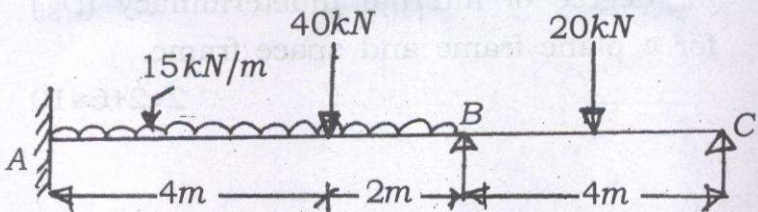
$$2+2+6=10$$

Contd.

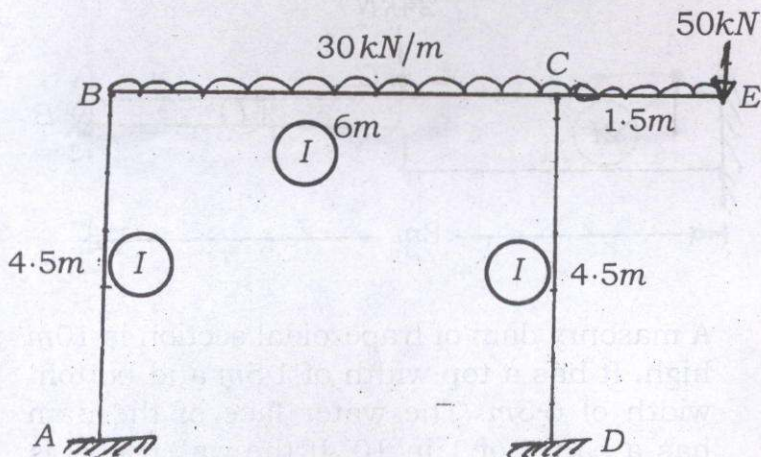
2. Determine the kinematic indeterminacy of the following truss : 10



3. Using Slope Deflection Method, solve the following indeterminate beam and draw the B.M.D. and S.F.D. 10

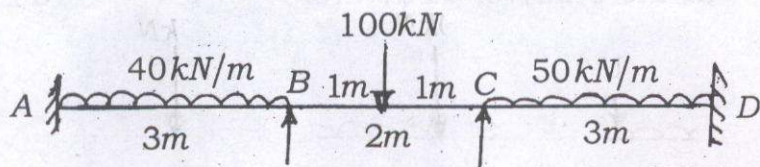


4. Using Moment Distribution Technique analyse the portal frame as shown below and draw its B.M.D. 10+5=15



5. Determine the support moments for the continuous girder shown below if support B sinks by 2.50mm.

Take  $E = 200 \text{ kN/mm}^2$  and  $I = 3.5 \times 10^7 \text{ mm}^4$

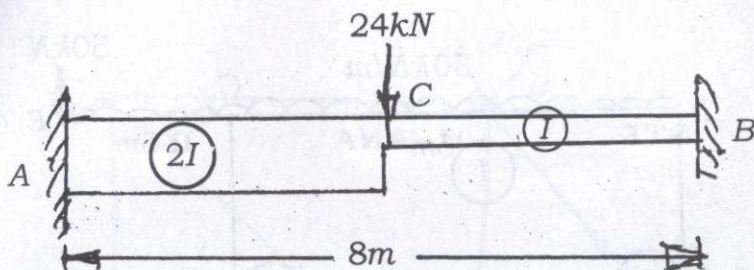


Also draw its B.M.D.

10+5=15



6. Analyse the fixed beam as shown below using Column Analogy method. Also draw its B.M.D. 10+5=15



7. A masonry dam of trapezoidal section is 10m high. It has a top width of 1.5m and bottom width of 6.5m. The water face of the dam has a batter of 1 in 10. If the water level is at the top of the dam, find the maximum and minimum normal stresses at the base. Masonry weighs 22500N/cum and water weighs 9810N/cum. 15
8. Explain the significance of Fatigue and Creep in the study of structure. 10