

Code: 9A01709

B.Tech IV Year I Semester (R09) Regular & Supplementary Examinations December 2015

ADVANCED STRUCTURAL ANALYSIS

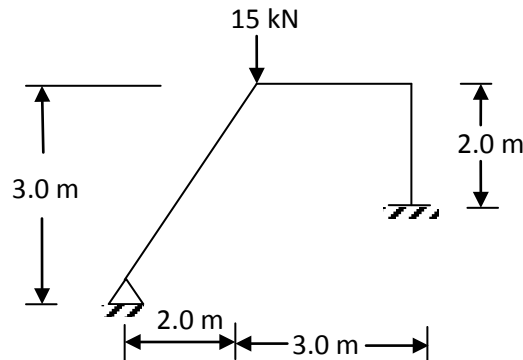
(Civil Engineering)

Time: 3 hours

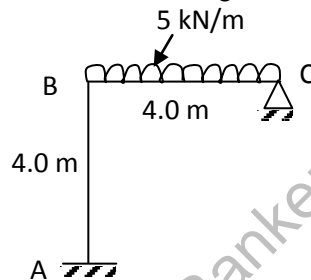
Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 Analyze the portal frame shown below. Assume all the members have same flexural rigidity.

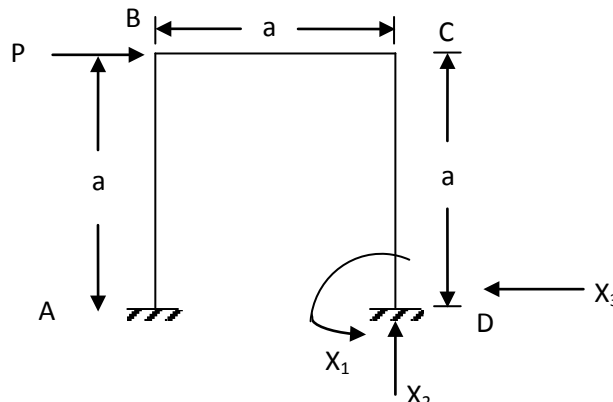


- 2 Analyze the frame shown below using strain energy method.



- 3 A three hinged parabolic arch has a span of 36.0 m with a central rise of 6.0 m. A point load of 8.0 kN moves across from left to right. Calculate the maximum sagging and hogging moments at the section 9.0 m from the left hinge.

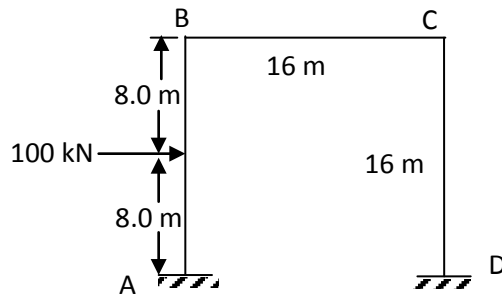
- 4 Set up the structure flexibility matrix and compatibility equation choosing the redundant as 'D' as shown in figure below. Assume EI is unity



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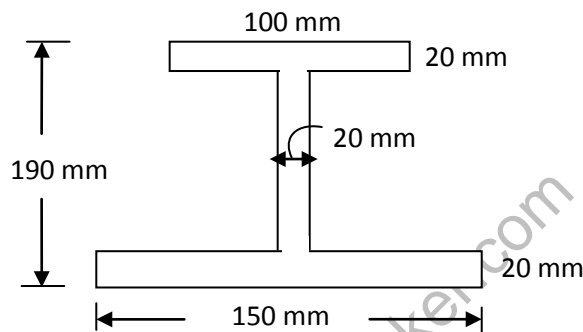
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- 5 Analyze the portal frame shown below by stiffness method. Assume EI is one



- 6 A suspension bridge is of 50 m span with 16 m wide road way. It is subjected to a load of 25 kN/m^2 including dead loads. The bridge is supported by a pair of cables having a central dip of 4.2 m. Find the cross sectional area of the cable if the stress in the is note to exceed 600 N/mm^2 .

- 7 Find the shape factor of the I-section shown below.



- 8 Find the collapse load for the frame below.

