B.Tech III Year I Semester (R13) Supplementary Examinations June 2016

STRUCTURAL ANALYSIS - II

(Civil Engineering)

Time: 3 hours Max. Marks: 70

PART - A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) State Eddy's theorem.

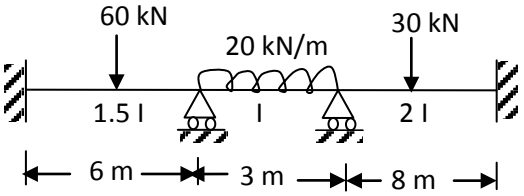
(b) Explain rib shortening.

(c) Write the assumptions in slope deflection method.

(d) Define carry over moment and distribution factor.

(e) Write Advantages of Kani's method.

(f) Calculate the rotation factors for the beam shown in figure below.



(g) Write concepts in flexibility method.

(h) Define stiffness and write the basic equation of stiffness method.

(i) Define plastic Hinge and plastic moment capacity.

(j) Define collapse load and load factor.

PART - B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT - I

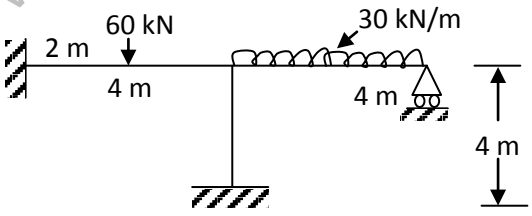
2 A three-hinged circular arch hinged at the springing and crown point has a span of 40 m and a central rise of 8 m. It carries a uniformly distributed load of 20 kN/m over the left-half of the span together with a concentrated load of 100 kN at the right quarter span point. Find the reactions at the supports, normal thrust and shear at a section 10 m from left support.

OR

3 A three hinged parabolic arch of 20 m span and 4 m central rise carries a point load of 4 kN at 4 m horizontally from the left hand hinge. Calculate the normal thrust and shear force at the section under the load. Also, calculate the maximum B.M positive and negative.

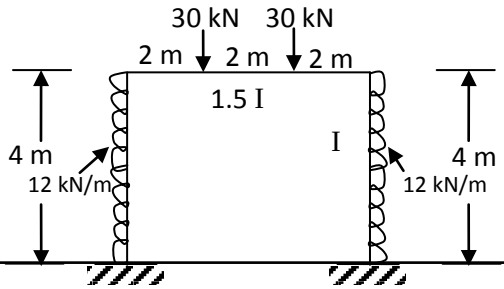
UNIT - II

4 Analyze the frame shown in figure by slope deflection method. Draw BMD flexural rigidity is same for all members.



OR

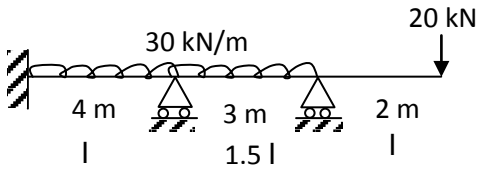
5 Analyze the portal frame shown in figure using moment distribution method.



Code: 13A01505 **R13**

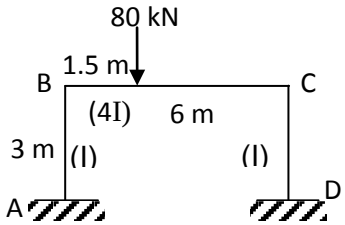
UNIT - III

6 Analyze the continuous beam shown in figure using Kani's method.



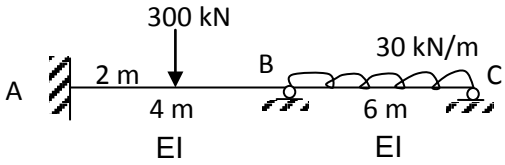
OR

7 Analyze the frame shown in figure using Kani's method.



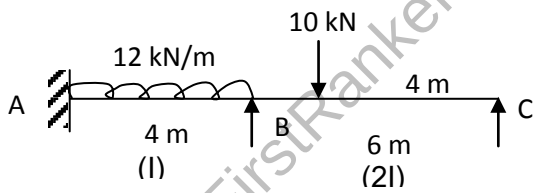
UNIT - IV

8 Analyze the continuous beam shown in figure by the flexibility method. Draw SFD and BMD.



OR

9 Analyze the continuous beam shown in figure by Stiffness method. Draw BMD.



UNIT - V

10 Write the assumptions for evaluating fully plastic moment. And also derive fully plastic moment Mp and shape factor S in general.

OR

11 Derive the shape factors for:

(a) Triangular section.

(b) Hollow circular section.

*****