Code: 13A01505 **R13**

B.Tech III Year I Semester (R13) Supplementary Examinations June 2017

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) What do you mean by normal thrust and radial shear in arches?

(c) Differentiate single bay and single storey portal frames.

(d) State the reasons for side sway in portal frames.

(e) What is rotation factor in Kani's method?

(f) Write the advantages of Kani's method.

(g) Explain the relation between flexibility and stiffness matrices.

(h) Write the flexibility and stiffness coefficients for flexural displacement.

(i) State plastic hinge and plastic moment capacity.

(j) Draw the stress diagrams at various loading stages for a typical beam subjected to gradually increasing load.

PART - B

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

UNIT - I

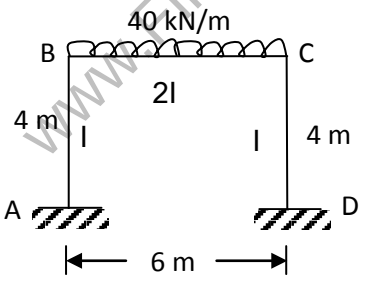
2 A 3-hinged circular arch has a span of 40 m and a central rise of 8 m. It carries a u.d.l of 20 kN/m over the left-half of the span together with a concentrated load of 100 kN at the right quarter span point. Find the reactions at the supports, normal thrust and shear at a section 10 m from left support.

OR

3 A 3-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. Draw BMD.

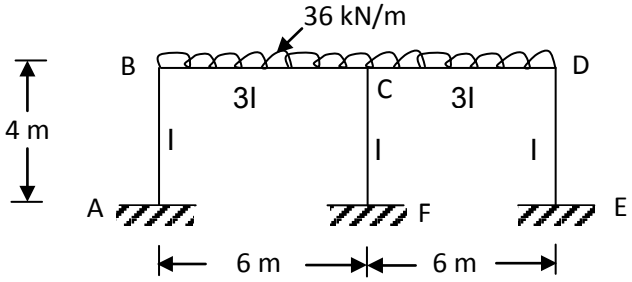
UNIT - II

4 Analyze the frame shown in figure by slope deflection method and draw BMD.



OR

5 Analyze the rigid jointed frame shown in figure by moment distribution method and draw BMD.



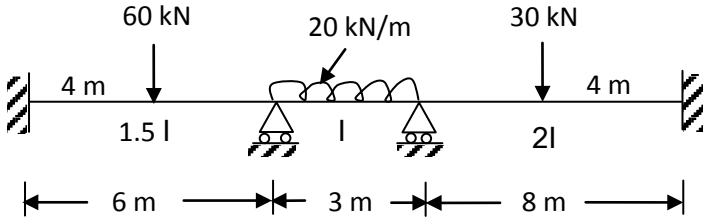
Contd. in page 2

Code: 13A01505

R13

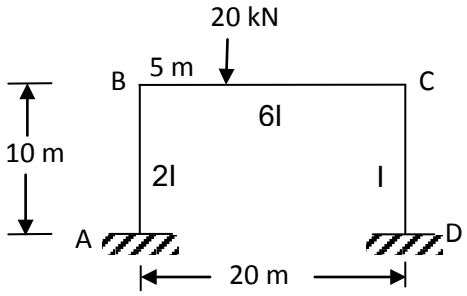
UNIT - III

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



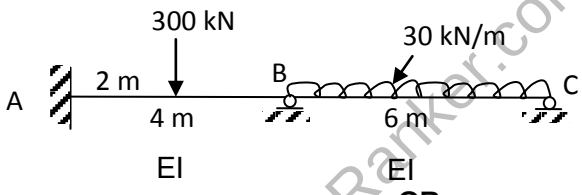
OR

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



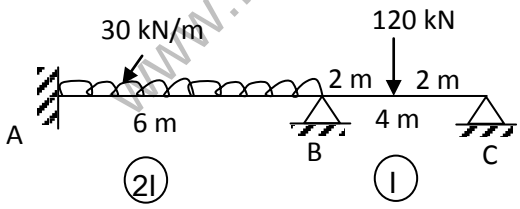
UNIT - IV

8 Analyze the continuous beam shown in figure by the flexibility method. Draw the shearforce and bending moment diagram.



OR

9 Analyze the continuous beam shown in figure by Stiffness method. The support B sinks by 5 mm. Draw BMD.



UNIT - V

10 Explain in detail the various stages of bending of rectangular sections. Draw sketches.

OR

11 Explain:

(a) Lower bound theorem.

(b) Upper bound theorem.

*****