Code No: RT31012 **R13** SET - 1

III B. Tech I Semester Supplementary Examinations, May-2018

STRUCTURAL ANALYSIS – II

(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1 a) State Eddy's theorem. [3M]

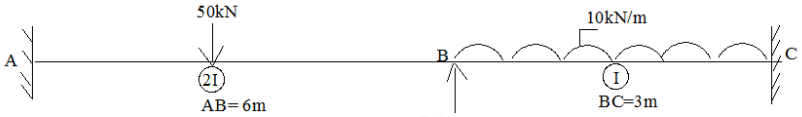
b) Write the basic assumptions of analysis in Cantilever method when lateral loads applied on the structure. [4M]

c) Write an expression to find maximum tension , horizontal and vertical reactions of three hinged stiffened girder in suspension bridge. [4M]

d) Define rotational stiffness factor and carryover factor in moment distribution method. [4M]

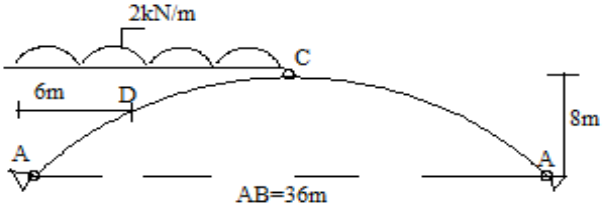
e) Differentiate between stiffness and flexibility matrix method of analysis. [3M]

f) Determine support moments at A and C by Kani's method for the following fig. [4M]



PART -B

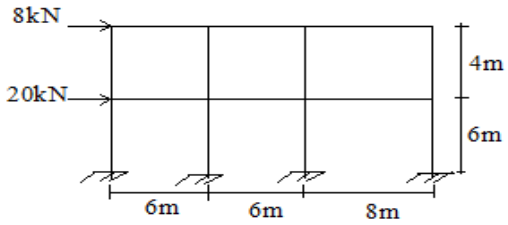
2 a) Determine the horizontal thrust and draw bending moment diagram, shear force diagram and find normal thrust at point 'D' of three hinged parabolic arch ACB as shown in fig.: [12M]



b) Differentiate between three hinged and two hinged arches. [4M]

3 a) What are the limitations in Cantilever method of approximate analysis? [4M]

b) Analyze the two storey rigid moment resisting frame shown in fig. by Cantilever method. Draw the BMD and SFD. Assume uniform flexural rigidity of beams and columns. [12M]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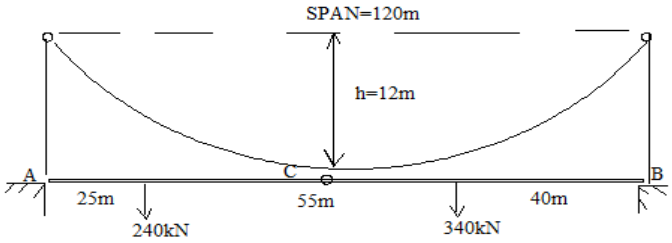
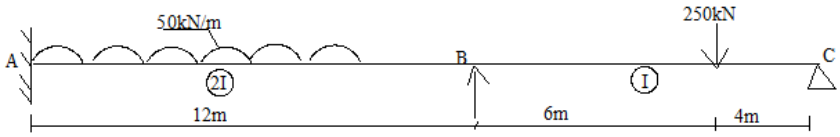
4 a) A three hinged stiffened girder (ACB) of suspension bridge span 120m subjected to two point loads 240kN and 340kN as shown in fig. Find Bending moment at 40m from left end. Assume supporting cable has central dip 12m. Find the maximum tension in the cable and draw bending moment diagram for the girder. [8M]



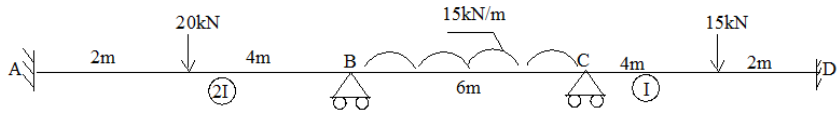
b) A two hinged stiffened girder span 100m and central dip 10m is subjected to two point loads 200kN and 400kN at 20m and 80m from left support respectively. Find the Shear force and Bending moment at 25m from left end. Also find the maximum tension in the cable. [8M]

5 a) Analyze the continuous beam shown in fig. by moment distribution method. Assume E=2x10^5 MPa and I=10^{8}mm^4. [10M]

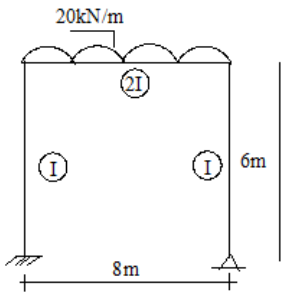


b) Write about stiffness and carry over factors of moment distribution method. [6M]

6 a) Analyze the continuous beam shown in fig. by Kani's method. Assume E=2x10^5 MPa and I=10^{8}mm^4. [8M]



b) Analyze the frame shown in fig. by Kani's method [8M]



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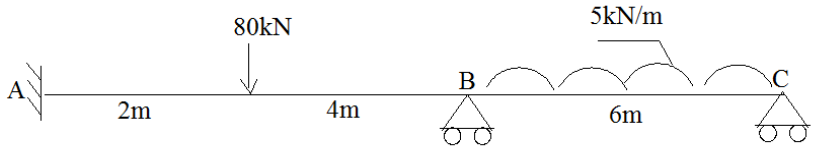
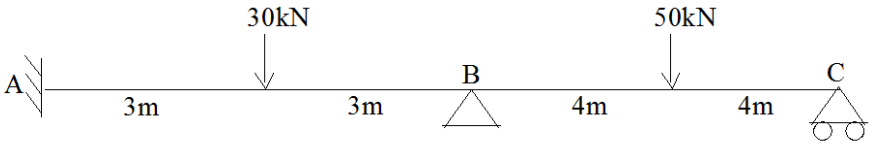
7 a) Analyze the continuous beam shown in fig. by Flexibility method. Assume down ward settlement at B and C are 10mm and 5mm respectively. And uniform flexural rigidity of beam AB and BC= EI=$18x10^{11}$ N-mm^2. [8M]



b) Analyze the continuous beam shown in fig. by Stiffness method. Assume uniform flexural rigidity of beam AB and BC= EI=$12x10^{11}$ N-mm^2. [8M]



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