Code No: R1631013 **R16** SET - 1

**III B. Tech I Semester Supplementary Examinations, May - 2019**

# 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. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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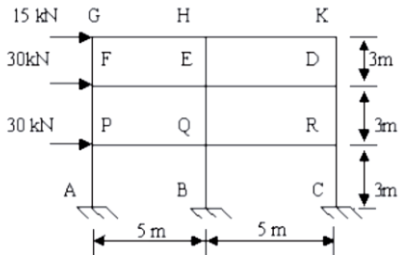
## PART –A

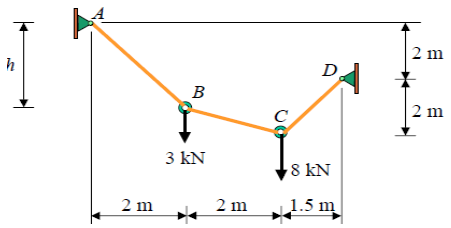
1. a) What is the effect of temperature on three hinged and two hinged arch? [2M]
   b) Why is the moment distribution method called displacement method. [2M]
   c) Mention a few applications of cables. [2M]
   d) What are the assumptions in the Cantilever method of analysis in relation lateral loads? When does this method ismost suitable multi storied structures. [3M]
   e) What are the properties of stiffness matrix? [3M]
   f) Of all, which methods of structural analysis are more accurate and give your justification. [2M]

## PART -B

2. a) State and prove Eddy's theorem? [7M]
   b) A two hinged segmental arch of constant section is of horizontal span 24m and central rise 6m. Calculate the horizontal thrust induced due to a rise in temperature of $30^oC$ if the coefficient of expansion $\alpha = 12 \times 10^{-6}$/ oC and E = 200 kN/mm$^2$. If the rib section is symmetrical and 1m deep. Find the max change in bending stress due to rise in temperature. [7M]
3. a) Explain along with the assumptions, the Portal method for analyzing a building frame subjected to horizontal forces by taking an example [7M]
   b) Analyze the frame shown in figure, for forces in *top storey* by Cantilever method. Assume that all the columns have equal area of cross-section for the purpose of analysis. [7M]




4. a) Determine the tension in each segment of the cable shown in the figure below. Also, what is the dimension *h* ? [7M]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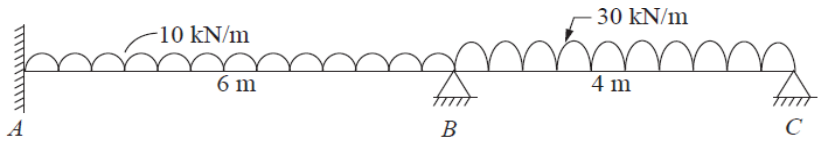
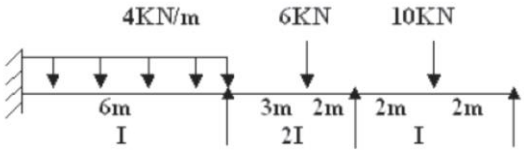
b) A cable ABC of uniform cross section is used to span a distance of 40m. The cable is subjected to uniformly distributed load of 10 kN/m run. The left support 'A' is below the right support 'B' by 2 m and the lowest point on the cable 'C' is located below left support 'A' by 1 m. Evaluate the reactions and the maximum and minimum values of tension in the cable. [7M]

5. a) Analyse the continuous beam shown in Figure by the moment distribution method. Draw the bending moment diagram and shear force diagram. The beam is of uniform section. [7M]



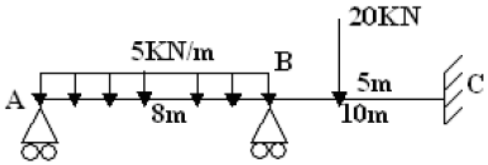

b) Explain the two cycle moment distribution method for maximum negative moments at various joints of a frame with an example [7M]

6. a) Analyse the Continuous beam shown in figure using Kani's method. [7M]

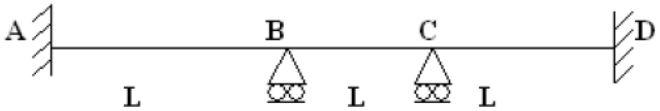



b) Explain the Kani's method for the frames with columns of equal height and subjected to horizontal loads with fixed ends and also hinged ends. [7M]

7. a) Using the force method, analyse the continuous beam shown in figure, treating the bending moments at B&C as redundants. Hence calculate support reactions.EI is constant. [7M]




b) Using the displacement method, analyse the continuous beam shown in figure , if spans AB& BC carry a u.d.l. of p/unit length. Hence calculate bending moments at B& C. EI is constant. [7M]

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