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

III B. Tech I Semester Supplementary Examinations, February-2022

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 **(14 Marks)**

1. a) What is the effect of rib shortening on two hinged arch? [2M]
   b) What are the steps involved in cantilever method? [2M]
   c) Explain suspension cable on roller support with figures. [2M]
   d) What is a portal frame? Distinguish between symmetrical and unsymmetrical portal frame. [3M]
   e) What is Kani's method and what is the terminology used in Kani's method? [3M]
   f) Write the steps involved in Stiffness matrix method. [2M]

PART –B **(56 Marks)**

2. a) A two hinged parabolic arch rib has a span of 10 m has a central rise 2.5 m. It is loaded with uniformly distribute load 2 kN/m over a half of the span from the left support. Determine the end reactions, horizontal thrust, maximum and minimum B.M of the arch. [7M]
   b) What do you understand by an arch? Explain briefly. [7M]
3. a) Explain the cantilever method for analyzing a building frame subjected to horizontal forces. [7M]
   b) What are the different types of substitute frames? [7M]
4. a) What is a general cable theorem? Deduce an expression. [7M]
   b) What are stiffening girders? Discuss their types. [7M]
5. A simply supported beam ABC is continuous over two spans AB and BC of 8 m and 6 m respectively. Span AB is carrying a uniformly distributed load of 3 kN/m and span BC carries point load of 4 kN at midpoint of BC. Find the support moment at B if EI of the beam is constant. Use moment distribution method. [14M]
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6. Using the Kani's method analyze the frame shown in Fig.1. [14M]

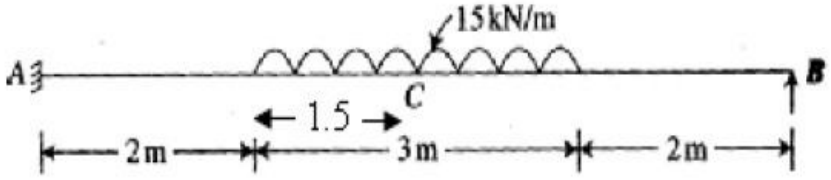

Fig.1

7. a) Write the steps involved in analyzing the flexibility matrix method. [7M]
   b) Using flexibility matrix method, find the end moments at *A* and *B* for the beam shown in Fig.2. [7M]

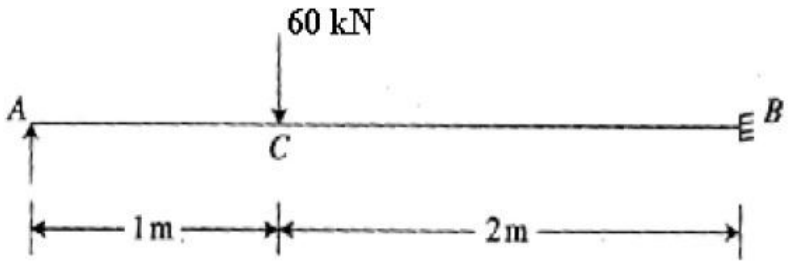

Fig.2

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