

III B. Tech I Semester Supplementary Examinations, Dec/Jan– 2022-23
STRUCTURAL ANALYSIS – II
 (Civil Engineering)

Time: 3 hours

Max. Marks: 70

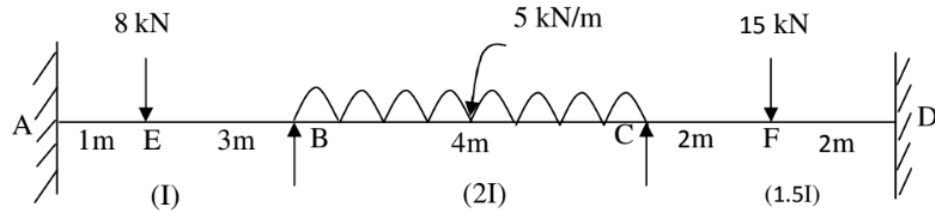
- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
 2. Answer **ALL** the question in **Part-A**
 3. Answer any **FOUR** Questions from **Part-B**
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PART –A (14 Marks)

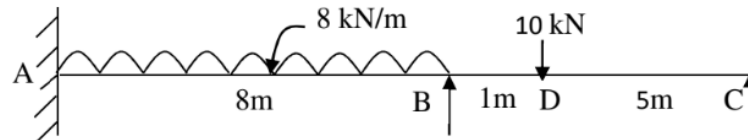
1. a) What is the difference in behavior and analysis of three hinged and two hinged arches? [2M]
- b) What are the important characteristics of a cable? [2M]
- c) List down the advantages and disadvantages of Portal method. [2M]
- d) Define absolute stiffness [3M]
- e) Define rotation factor [3M]
- f) List the properties of stiffness matrix [2M]

PART –B (56 Marks)

2. A three hinged parabolic arch rib has a span of 30m and a rise 6m to the central pin at the crown. The rib carries load of intensity 5kN/m uniformly distributed horizontally on the left 4m. Calculate the (i) maximum and minimum bending moments, (ii) horizontal thrust, (iii) Normal thrust and radial shear at a section 10m from A. [14M]
3. Analyse a portal frame of two storied, two bay of 4m bay length each and height 4m. A horizontal force of 100kN is applied at top storey and 200kN is applied at lower storey. Use portal frame method [14M]
4. a) A three hinged suspension girder bridge has a span of 200m over the supports at same level. It has a central dip of 20m. The girder carries three-point loads of 10kN, 15kN and 20kN acting at 30m, 90m and 150m respectively from the left end. Draw the B.M.D. [7M]
- b) A suspension cable having supports at the same level, has a span of 25 m and a maximum dip of 2.5 m. The cable is loaded with a UDL of 10 kN/m throughout its length. Determine the maximum tension in the cable. [7M]
5. Analyse a continuous beam shown in Fig. by using moment distribution method. Draw SFD& BMD. [14M]



6. Analyse a continuous beam shown in Fig. by using Kani's method? Draw SFD & BMD. [14M]



7. For a continuous beam AB fixed at A and free at B as shown below, calculate the stiffness and flexibility matrix. Assume uniform flexural rigidity. [14M]

