



R20 Regulation
TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous, Accredited by NAAC with 'A' Grade)
B.Tech V Semester Regular Examinations, January 2023
STRUCTURAL ANALYSIS-II
(Civil Engineering)

Subject code: 3P5AB

Maximum Marks: 70

Date: 09.01.2023 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 How does the temperature affect the two hinged arches?
- 2 State the castigliano's second theorem.
- 3 What are the assumptions made in slope deflection method?
- 4 Define stiffness factor.
- 5 What is difference between sway and non-sway frames?
- 6 What are the limitations of Kani's method?
- 7 Differentiate the flexibility and stiffness method.
- 8 Define the degree of static and kinematic indeterminacy.
- 9 State Muller Breslau's principle.
- 10 Write the assumptions of portal method.

Part-B

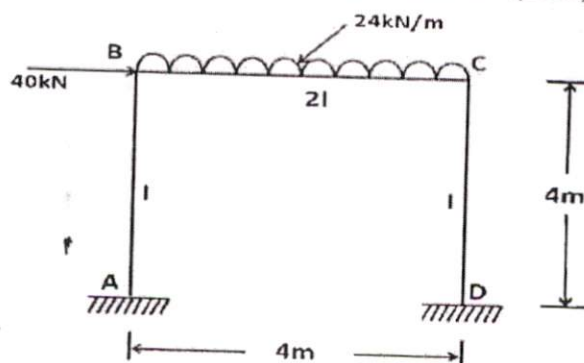
Answer All the following questions.

(5X10M=50Marks)

- 11 Explain the step-by-step procedure for analyzing two hinged parabolic arch with standard notations. Explain the concept of temperature change. (10M)

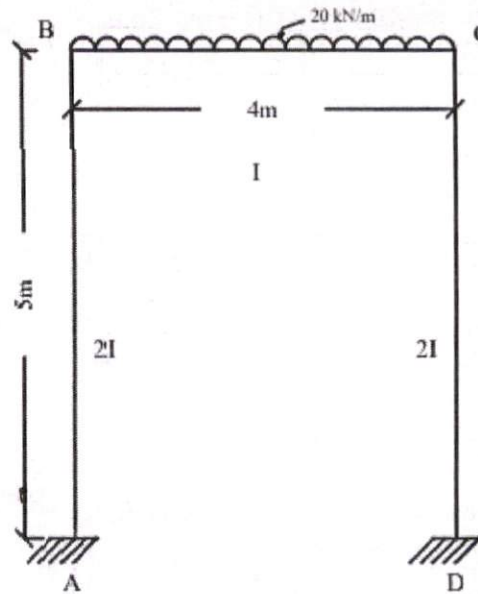
OR

- 12 A parabolic two hinged arch has a span of 80 m and a rise of 10 m. A uniformly distributed load of 2.5 kN/m covers half of the span. Find out the horizontal thrust at the hinges and radial shear at this section. (10M)
- 13 Draw BMD, Elastic curve and SFD by slope deflection Method. (10M)

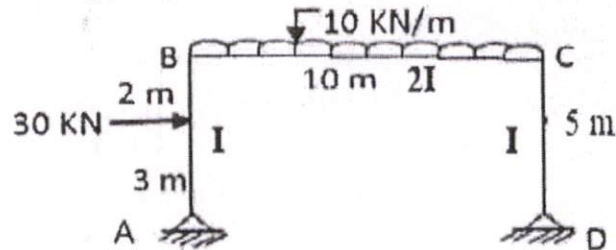


OR

- 14 Analyze the Non-sway frame by using Moment distribution method and draw BMD. (10M)

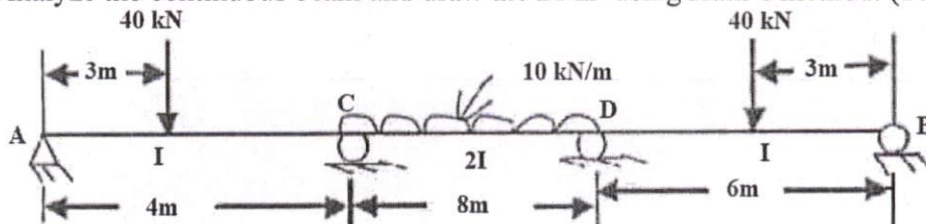


- 15 Analyze the frame shown in figure by Kani's method. Draw BMD. (10M)

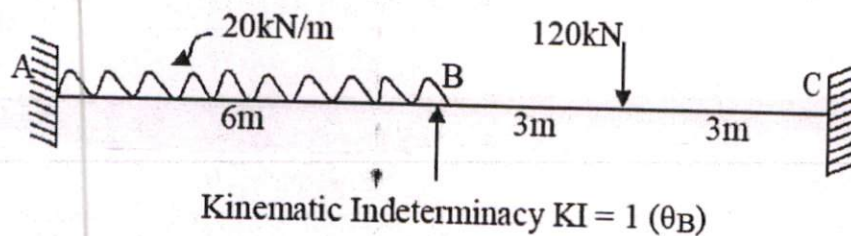


OR

- 16 Analyze the continuous beam and draw the BMD using Kani's method. (10M)

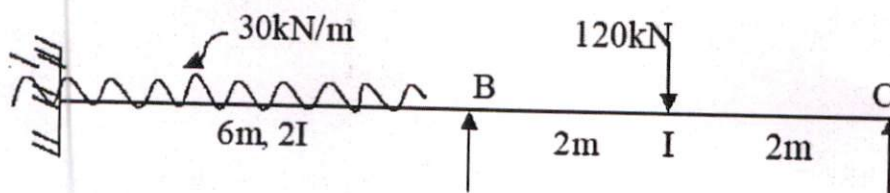


- 17 Analyse the continuous beam by Stiffness matrix method. Sketch the BMD. (10M)



OR

- 18 Analyse the continuous beam by flexibility method, support B sinks by 5 mm. Sketch the BMD and EC, given $EI = 15 \times 10^3 \text{ kN-m}^2$. (10M)



- 19
- Write a short note on cantilever method. (4M)
 - What are the assumptions of cantilever method? (2M)
 - Explain cantilever method of tall-framed structures under lateral loading. (4M)

OR

- 20 Analyse the frame in Portal method. (10M)

