

B.Tech V Semester Regular Examinations, February 2021

Structural Analysis-II
(Civil Engineering)

Maximum Marks: 70

Date: 17.02.2021 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.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

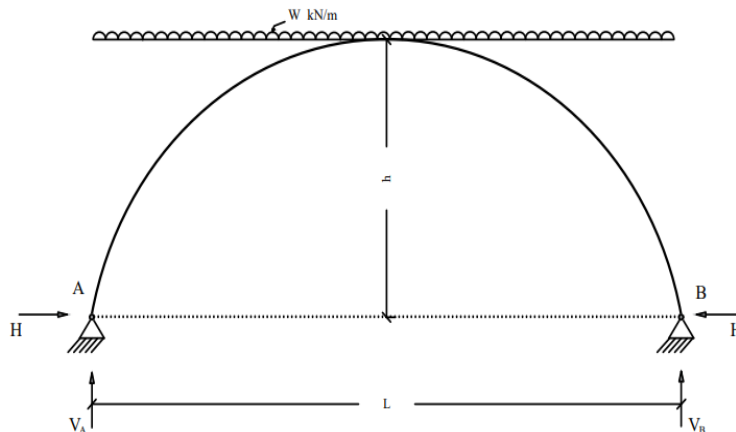
All the following questions carry equal marks (10x2M=20 Marks)

- 1 Define degree of indeterminacy.
- 2 In a parabolic arch with two hinges how will you calculate the slope of the arch at any point?
- 3 How do you account for sway in slope deflection methods for portal frames?
- 4 Define distribution factor.
- 5 Write a short note on Elastic curve
- 6 List the assumptions made in Kani's method.
- 7 Summarize the basic steps involved in flexibility method.
- 8 How are the basic equations of stiffness matrix arrived?
- 9 State the difference between portal method and cantilever method.
- 10 Define ILD.

Part-B

Answer All the following questions. (10M X 5=50Marks)

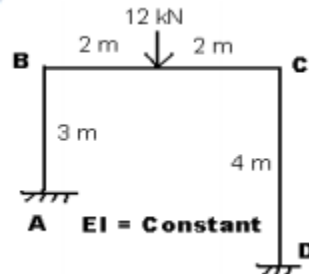
- 11 A parabolic two hinged arch carrying UDL of intensity 'W' Kn/m throughout its span as shown in fig. Find the equation of horizontal thrust. (10M)



OR

- 12 A parabolic two hinged arch has a span of 40 m and a rise of 5 m. A concentrated load 10 kN acts at 15 m from the left support. The second moment of area varies as the secant of the inclination of the arch axis. Calculate the horizontal thrust and reactions at the hinge. Also calculate maximum bending moment at the section.(10M)

- 13 Analyse the portal frame shown in figure by moment distribution method. (10M)



OR

- 14 Analyze the portal frame ABCD shown in figure by slope deflection method and draw the bending moment diagram. Take $EI = \text{constant}$.(10M)

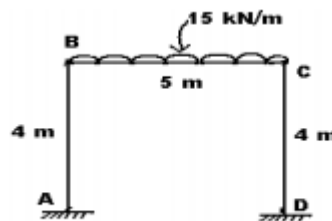
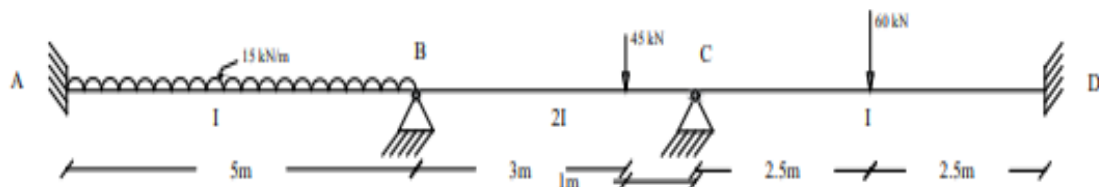


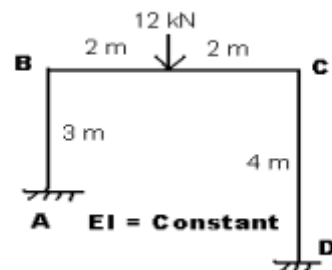
Fig.

- 15 Analyse the three span continuous beam shown in fig. using Kani's method. (10M)

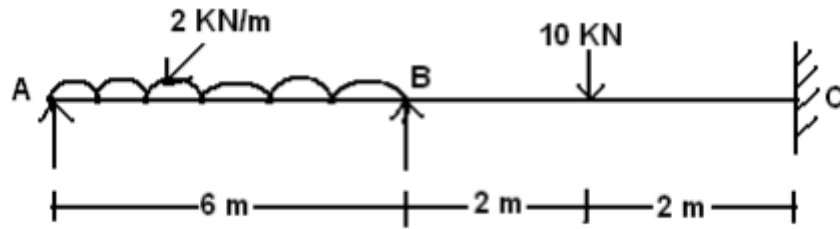


OR

- 16 Analyse the portal frame shown in fig. by Kani's method.(10M)



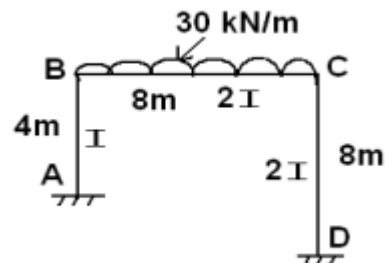
- 17 Analyse the continuous beam ABC shown in figure by stiffness matrix method and sketch the bending moment diagram.(10M)



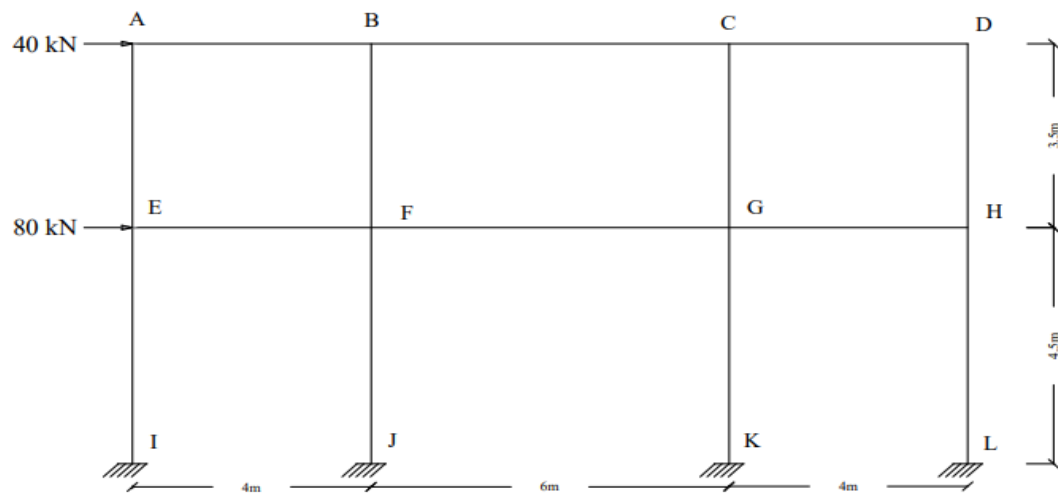
$EI = \text{Constant}$

OR

- 18 Analyse the frame shown in figure by matrix flexibility method. (10M)



- 19 Analyse the Frame by Portal method. (10M)



OR

- 20 Draw the influence line for MB of the continuous beam ABC simply supported at A & C using Muller Breslau's principle. $AB = 3 \text{ m}$, $BC = 4 \text{ m}$. EI is constant. (10M)