R18 Regulation *Subject code:2P5AA*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A' Grade)

B.Tech V Semester Regular/Supplementary Examinations, December 2021

Structural Analysis - II

(Civil Engineering)

Maximum Marks: 70 *Date:30.12.2021* 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

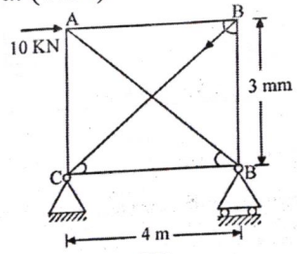
All the following questions carry equal marks (10x2M=20 Marks)

1 State Castigliano's Second Theorem.
2 List the types of arches.
3 Define Distribution Factor.
4 What is sway?
5 List the reasons for side sway in portal frame.
6 Write a short notes on sinking of supports?
7 Define stiffness and flexibility.
8 State degree of kinematic indeterminacy.
9 State Muller Breslau's principle.
10 Define ILD.

Part-B

Answer All the following questions. (5X10M=50Marks)

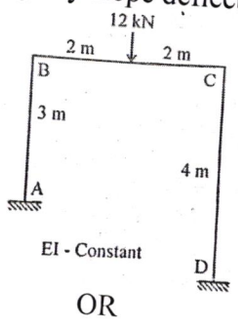
11 Find the force in the member BC of the frame loaded as shown in fig. All the members have the same cross-sectional area. (10M)



OR

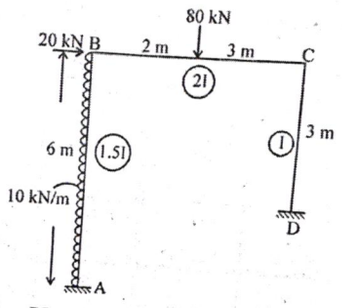
12 A parabolic two hinged arch has a span of 60 m and a rise of 12 m. A concentrated load of 8 KN acts at 15 m from the left hinge. The second moment of area carries as the second of the slope of the rib axis. Calculate the horizontal thrust and the reactions at the hinge. (10M)

13 Analyze the portal frame shown in fig. by slope deflection method. (10M)

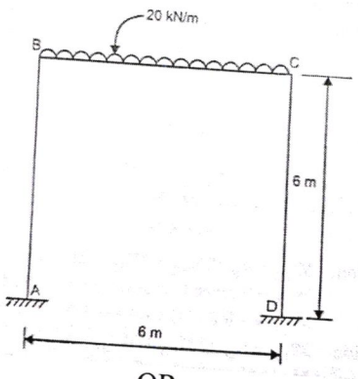


OR

14 Analyze the given frame by the moment distribution method. Draw the bending moment diagram and shear force diagram. (10M)

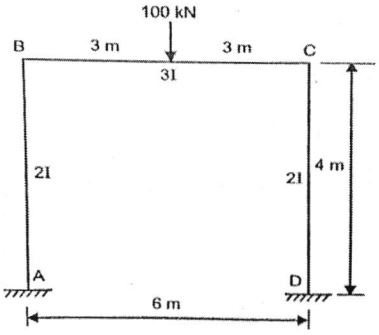


15 Analyze the frame shown in fig. by Kani's method, without using symmetry. (Take EI constant) (10M)

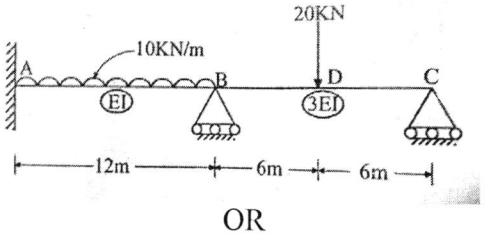


OR

16 Analyse the frame loaded as shown in fig. by Kani's method and sketch the bending moment diagram. (10M)

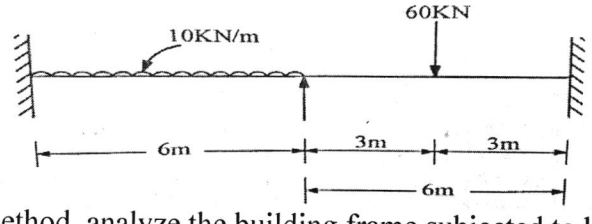


17 Analyse the continuous beam shown in the fig. by flexibility method. The value of EI differs for each span shown clearly. (10M)

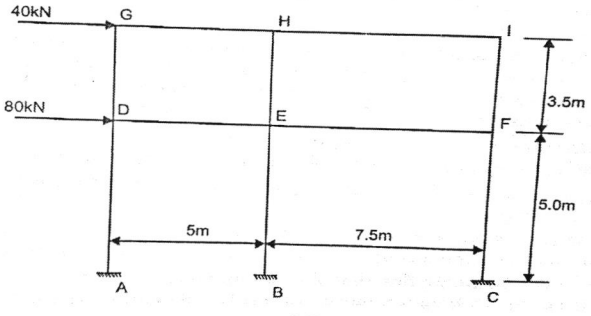


OR

18 Analyse the continuous beam shown in fig. by stiffness method. Draw the bending moment diagram. (10M)



19 Using the cantilever method, analyze the building frame subjected to horizontal forces as shown in fig. Sketch the bending moment diagrams. (10M)



OR

20 Draw the ILD for reaction at B and for the support Moment M_A at A for the propped cantilever in fig. Compute the influence line ordinates at 1.5 m intervals. (10M)