



R20 Regulation

Subject code: 3P4AE

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech IV Semester Supplementary Examinations, February 2024

STRUCTURAL ANALYSIS- I (CIVIL ENGINEERING)

Maximum Marks: 70

Date: 26.02.2024 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=20Marks)		CO	Bloom Tx
1	Define the term Static Indeterminacy.	CO1	L1
2	Classify types of supports and reactions.	CO1	L2
3	What is meant by perfect frame? How will you determine, whether the given frame is perfect one or not?	CO2	L1
4	Write any four assumptions of a frame.	CO2	L1
5	State the unit load method.	CO3	L1
6	Define linear arch.	CO3	L1
7	Define flexural rigidity.	CO4	L1
8	What are the limitations of slope deflection method.	CO4	L1
9	Sketch the shapes of the influence lines for the support reactions	CO5	L2
10	Sketch the influence line diagram for shear force at any section of a simply supported beam	CO5	L2

Part-B

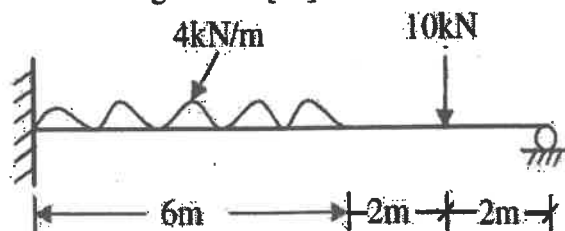
Answer All the following questions.

(5X10M=50Marks)

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|----|--|-----|----|
| 11 | A cantilever of length 'L' carries a concentrated load 'W' at its mid-span. If the free end is supported by a prop, Evaluate the reaction at the prop and also draw the S.F. and B.M. diagrams. [10] | CO1 | L5 |
|----|--|-----|----|

OR

- | | | | |
|----|--|-----|----|
| 12 | A propped cantilever beam is shown in figure. Calculate the prop Reaction and also draw the BM & SF diagrams. [10] | CO1 | L4 |
|----|--|-----|----|



13	A. Determine the forces in the truss by method of sections shown in fig. [10]	CO2	L5
OR			
14	Determine the forces in the truss by method of joints shown in fig. [10]	CO2	L5
15	A three hinged parabolic arch rib of span L and crown rise h carries a UDL of intensity w per unit length on left half of the span. Calculate the horizontal thrust on the abutment. [10]	CO3	L4
OR			
16	State and Derive Castilgliano's first theorem. [10]	CO3	L6
17	Analyze the continuous beam shown in below figure by Moment distribution method and draw bending moment diagram. [10]	CO4	L4

	OR		
18	Analyze the continuous beam shown in below figure by Slope-Deflection method and draw bending moment diagram. [10]	CO4	L4
19	A Four concentrated loads 100KN, 150KN, 125KN and 75KN spaced at 3m c/c moves on a simply supported girder of span 27m from left to right with 75KN load leading. Determine the maximum BM at a point 12m from the right support. Also find the location and magnitude of absolute maximum BM. [10]	CO5	L5
	OR		
20	A uniformly distributed load of 60kN/m and of length 4m transverse across the span of simply supported length of 20m. Compute the maximum bending moment at 5m from left support and absolute bending moment. [10]	CO5	L4

