



R22 Regulation

Subject code: 4E5AC

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech V Semester Regular Examinations, December 2024

STRUCTURAL ANALYSIS-I

(CIVIL ENGINEERING)

Maximum Marks: 60

Date: 31.12.2024

Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 10 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		CO	Bloom Tx
All the following questions carry equal marks (10X1M=10 Marks)			
1.a)	Name any four methods used for computations of deflection of structures?	1	1
b)	Differentiate between Kinematic indeterminacy and static indeterminacy.	1	6
c)	Define Perfect, Imperfect and Redundant Frames.	2	1
d)	Explain the differences between pin jointed frame and rigid jointed frame.	2	2
e)	Explain Eddy's theorem and how it is useful for analysis of arches.	3	3
f)	List out different types of arches.	3	1
g)	State the limitations of slope deflection method?	4	2
h)	Write the DF formula of moment distribution method?	4	1
i)	What are the uses of influence line diagrams?	5	1
j)	What is meant by absolute shear force diagram?	5	3
Part-B			
Answer All the following questions. (5X10M=50Marks)		CO	Bloom Tx
2	Analyse the propped cantilever shown in figure, Take $E=2 \times 10^5 \text{ N/mm}^2$, $I=16 \times 10^7 \text{ mm}^4$ and calculate the prop value at support B.	1	2
OR			
3	A fixed beam AB span 10 metre carries point load 180kN and 160kN at a distance 3m and 6m from left end respectively. If the left support sinks by 15mm, find the fixed end moments and reactions at the supports. Take $EI = 6000 \text{ kNm}^2$. (10M)	1	3
4	Using method of joints analyse the truss shown in figure. (10M)	2	6

10	A single moving load of 10KN moves on girder of span 200m a. Construct the influence lines for shear force and bending moment for a section 50m from the left support. (5M) b. Construct the influence lines for points at which the maximum shears and maximum bending moment also determine these maximum values. (5M)	5	1
	OR		
11	a. Explain in detail about the necessity of Influence lines and elaborate its applications. (5M) b. Explain in detail about the practical considerations in Muller Breslau's Principle. (5M)	5	2 1

