Code No: P18CET13

HALL TICKET NUMBER

PACE INSTITUTE OF TECHNOLOGY & SCIENCES::ONGOLE
(AUTONOMOUS)
III B.TECH I SEMESTER END REGULAR EXAMINATIONS, DEC/JAN – 2022/23
STRUCTURAL ANALYSIS - II
(CE Branch)

Time: 3 hours   Max. Marks: 60

Note: Question Paper consists of Two parts (Part-A and Part-B)

PART-A

Answer all the questions in Part-A (5X2=10M)

| Q.No.		Questions	Marks	CO	KL
1.	a)	Under what conditions will the bending moment in an arch be zero throughout?	[2M]	1	1
	b)	Distinguish between three hinged and two hinged stiffening girders.	[2M]	2	2
	c)	What do you mean by laterals loads on building frames using portal method?	[2M]	3	1
	d)	What is the difference between absolute and relative stiffness?	[2M]	4	2
	e)	What are the limitations of Kani's method?	[2M]	5	1

PART-B
Answer One Question from each UNIT (5X10=50M)

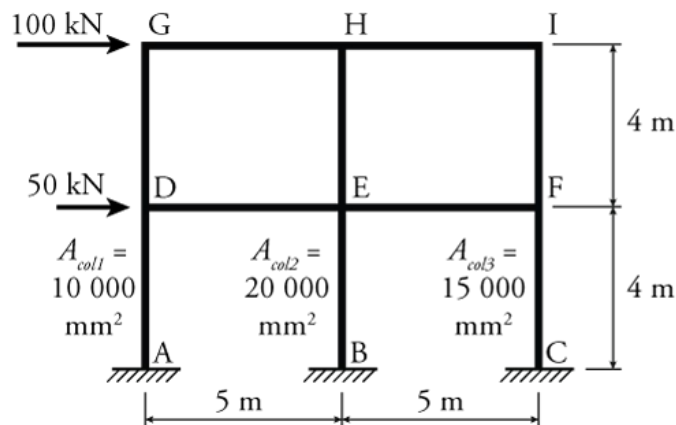| Q.No.		Questions	Marks	CO	KL
		UNIT-I			
2.		A three hinged circular arch of span 16 m and rise 4 m is subjected to two-point loads of 100 kN and 80 kN at left and right quarter span points respectively. Find the reaction at the supports. Find also BM, radial shear and normal thrust at 6m from the left support.	[10M]	1	L3
		OR			
3.		A two hinged parabolic arch of span 20 m and rise 4 m carries a udl of 30 kN/m on the left half of the span. Find the reactions at the supports and the position and amount of maximum bending moment.	[10M]	1	L3
		UNIT-II			
4.		A suspension bridge has a span 50 m with a 15 m wide runway. It is subjected to a load of 30 kN/m including self-weight. The bridge is supported by a pair of cables having a central dip of 4 m. find the cross-sectional area of the cable necessary if the maximum permissible stress in the cable materials is not to exceed 600 MPa.	[10M]	2	L3
		OR			
5.		A suspension bridge cable of span 80 m and central dip 8 m is suspended from the same level at two towers. The bridge cable is stiffened by a three hinged stiffening girder which carries a single concentrated load of 20 kN at a point of 30 m from one end. Calculate the reactions and shear force at 40 m from the left support.	[10M]	2	L3
		UNIT-III			

| 6.	Use the portal method, analyze the building frame subjected to lateral load as shown in figure. Draw the BMD.	[10M]	3	L4

10.5 KN

5 m

7.5 KN

3 m

4 m   4 m
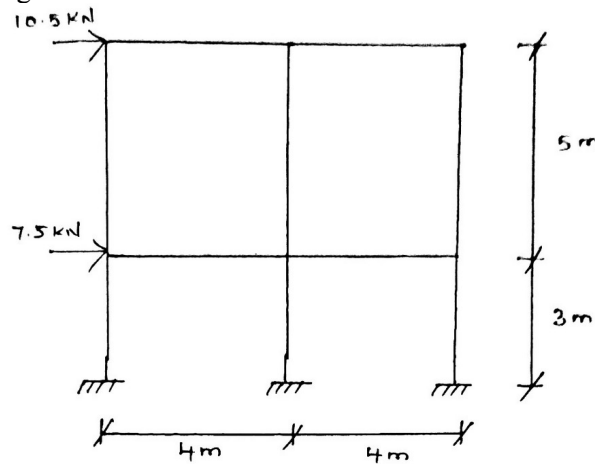
OR

7.	Analyze the building frame shown in figure for horizontal loads using cantilever method.	[10M]	3	L4

100 kN   G   H   I

4 m

50 kN   D   E   F

A_{col1} = 10 000 mm^2 A_{col2} = 20 000 mm^2 A_{col3} = 15 000 mm^2 4 m

A   B   C

5 m   5 m

UNIT-IV

8.	Analyze the continuous beam shown in figure by moment distribution method and draw bending moment diagram.	[10M]	4	L4

2KN/m   5KN   8KN

A   B   C   D

6m   3m   2m   2.5m   2.5m

I   2I   I
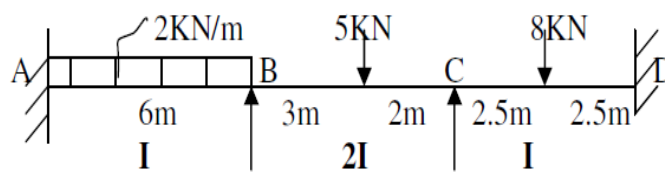
OR

9.		Analyze the frame shown in figure by moment distribution method and draw bending moment diagram.	[10M]	4	L4

		UNIT-V			
10.		Analyze the continuous beam loaded as shown in figure by Kani's method.	[10M]	5	L4

		OR			
11.		Analyze the continuous beam loaded as shown in figure by Kani's method.	[10M]	5	L4

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