Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025

Sixth Semester

Civil Engineering

CE3602 – Structural Analysis II

Regulations - 2021

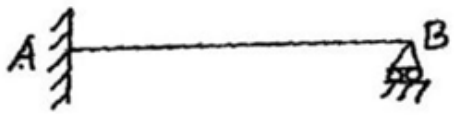
Duration : 3 Hrs *Maximum: 100 Marks*

*PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)*

Q.No	*Questions*	*BLT*	*CO*	*Marks*
1.	Mismatch between static indeterminacy and kinematic indeterminacy.	L1	1	2
2.	Extend the method of consistent deformation for the analysis of a propped cantilever.	L2	1	2
3.	Recall Muller Breslau's principle.	L1	2	2
4.	What is the absolute maximum bending moment due to a moving UDL longer than the span of a simply supported beam?	L1	2	2
5.	Solve with the aid of a sketch, the normal thrust and radial shear in an arch rib.	L3	3	2
6.	Under what conditions will the bending moment in an arch be zero throughout.	L1	3	2
7.	List out the main functions of stiffening girders in suspension bridges.	L1	4	2
8.	Compose the expression for determining the tension in the cable.	L2	4	2
9.	Write assumptions of portal method.	L1	5	2
10.	Classify the Limitations of Cantilever method.	L2	5	2

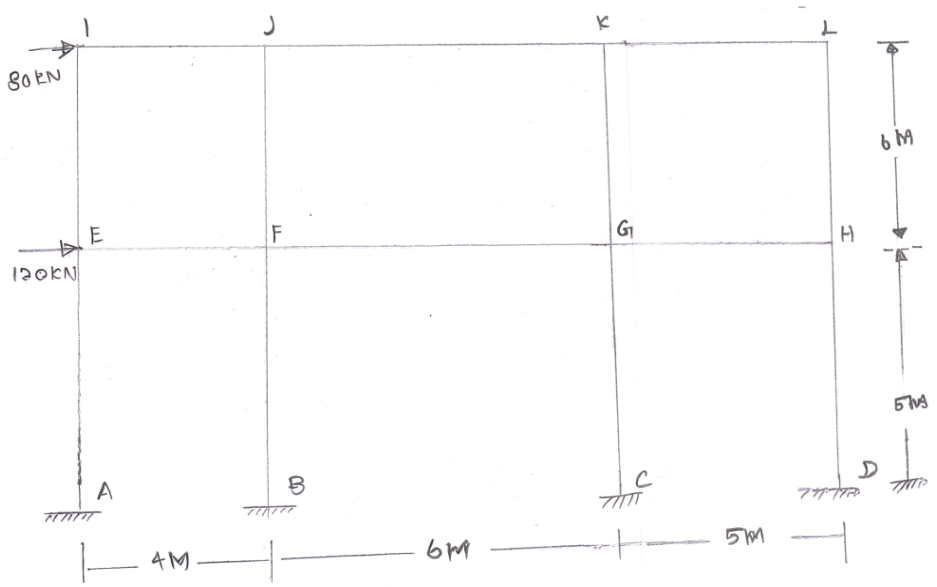
*PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)*

Q.No		*Questions*	*BLT*	*CO*	*Marks*
11.	a	A simply supported beam has a span of 20 m. Uniformly distributed load of 40 kN/m and 8 m long crosses the girder from left to right. Construct the influence line diagram for shear force and bending moment at this section.	L3	1	16
		Or			
	b	A single rolling load of 100 kN moves on a girder of span 20m. (a) Construct the influence lines for (i) shear force and (ii) bending moment for a section 5 m from the left support. (b) Construct the influence lines for points at which the maximum shears and maximum bending moment develop. Determine these values.	L3	1	16
12.	a	Using Muller Breslau's principle, draw the influence line diagram for the reaction at B for the propped cantilever AB of span 20 m as shown in figure. Compute the ordinates at interval of 2.5 m.	L3	2	16



Or

	b	Construct influence line for shearing force at 4 m from the propped end of a propped cantilever of span 7 m. Calculate the ordinates at every 1 m.	L3	2	16
13.	a	A Uniformly distributed load of 6 kN/m covers the left half span of a three hinged symmetrical parabolic arch of span 24m and central rise 4m. Determine the horizontal thrust and also the bending moment, shear force and normal thrust at the loaded quarter span.	L4	3	16
		Or			
	b	A symmetrical three hinged parabolic arch of span 40m and rise 10m carries a uniformly distributed load 30 kN/m over the left half of the span. Calculate the reactions at the supports. Calculate the bending moment, radial shear and normal thrust at 15m from left support.	L4	3	16
14.	a	A three hinged stiffing girder of a suspension bridge of span 120 m is subjected to two-point loads of 90 kN magnitude each placed at 30 m and 50 m respectively from the left support. Supports are at same level. Determine the bending moment and shear force at a section 30 m from each end of the girder. Also determine the maximum tension tension in the cable which has a central dip of 12 m.	L4	4	16
		Or			
	b	A cable of span 100m has its ends at heights 8 m and 15 m above the lowest point of the cable. It carries a UDL of 10 kN/m per horizontal run of the span. Determine the horizontal and vertical reactions at the supports. What is the length of the cable?	L4	4	16
15.	a	Using Portal method, analyze the frame shown in figure for shear force, bending moment and axial force in all members. Area of each column is same, i.e. unity.	L4	5	16



Or

b	Using the Cantilever method, analyze the frame shown in figure for shear force, bending moment and axial force in all members. Area of each column is same, i.e. unity.	L4	5	16