SRM VALLIAMMAI ENGINEERING COLLEGE

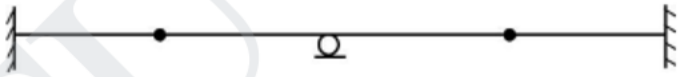
SRM Nagar, Kattankulathur – 603 203.

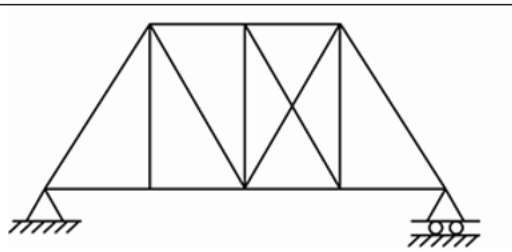
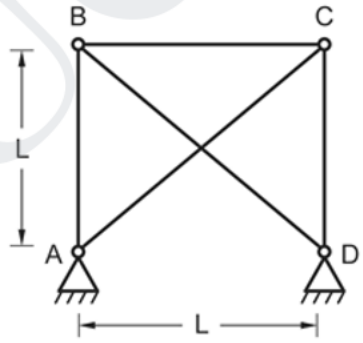
DEPARTMENT OFCIVIL ENGINEERING

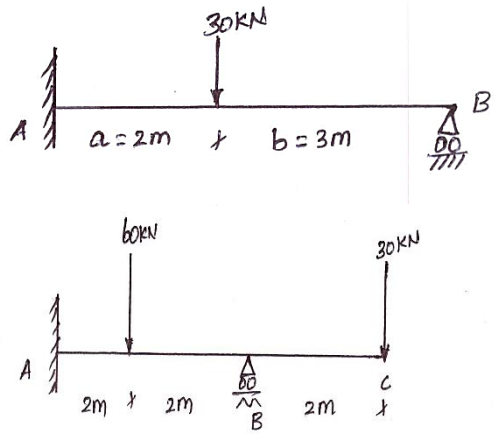
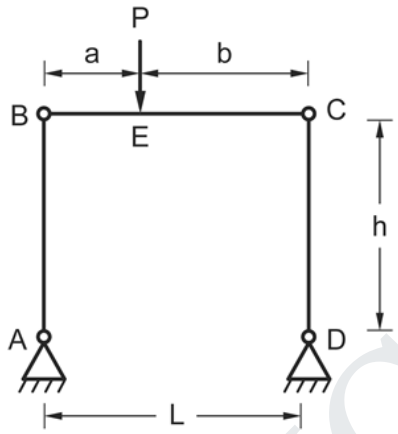
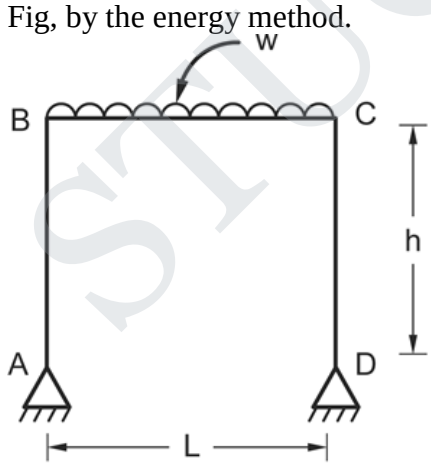
QUESTION BANK

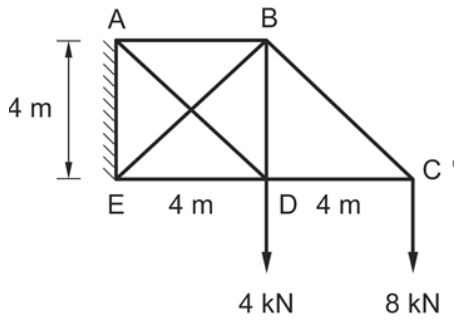
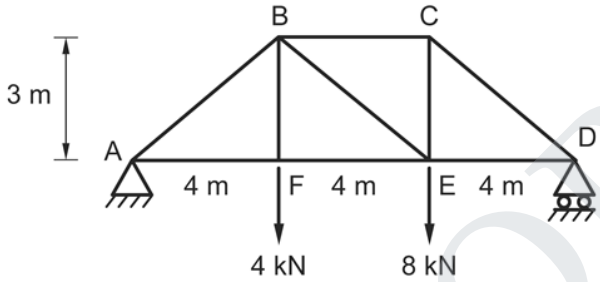
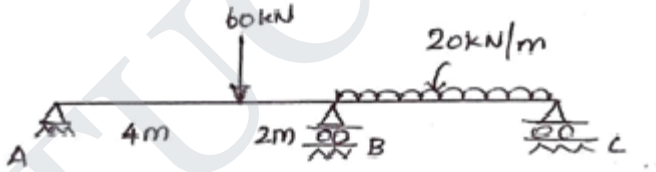
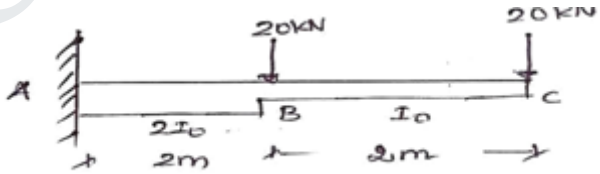
SUBJECT : STRUCTURAL ANALYSIS -1

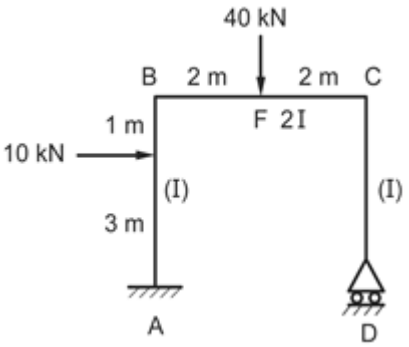
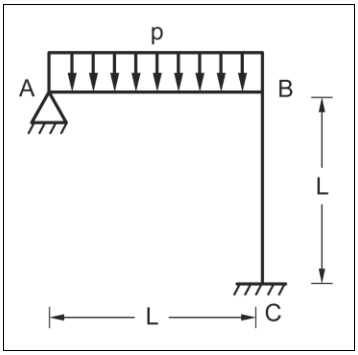
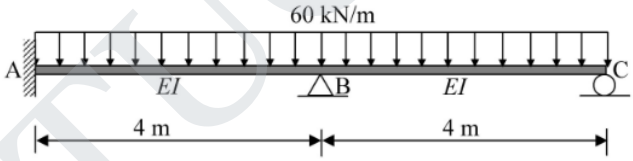
SEM / YEAR : V/ III

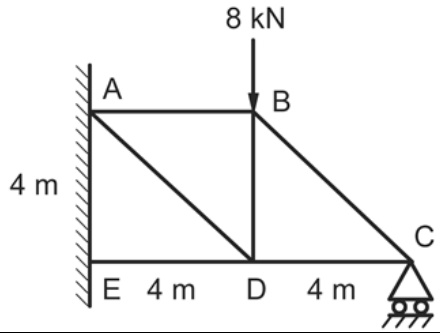
UNIT I STRAIN ENERGY METHOD			
Determination of Static and Kinematic Indeterminacies – Analysis of continuous beams, plane frames and indeterminate plane trusses by strain energy method (up to two degree of redundancy).			
PART A			
Q.No.	**Questions**	**BT Level**	**Competence**
1.	What is equilibrium condition	BT-1	Remembering
2.	Name any four methods used for computation of deflections in structures	BT-1	Remembering
3.	What are all type of frames	BT-1	Remembering
4.	What are the assumptions made in the structural analysis?	BT-1	Remembering
5.	List out the general methods of analysis in structural analysis.	BT-1	Remembering
6.	What is meant by perfect frame?	BT-2	Understanding
7.	Write short notes on internal static in determinacy of pin jointed frames.	BT-2	Understanding
8.	Define redundant force	BT-2	Understanding
9.	Differentiate external and internal indeterminacy of structures	BT-2	Understanding
10.	Define static indeterminacy of a structure.	BT-2	Understanding
11.	To find degree of indeterminacy of structures as given below 	BT-3	Applying
12.	To find degree of indeterminacy of structures as given below 	BT-3	Applying
13.	Define strain energy	BT-3	Applying
14.	Calculate the static indeterminacy of given pin jointed frame	BT-4	Analyzing

			
15.	Calculate degree of indeterminacy of propped cantilever beam.	BT-4	Analyzing
16.	Determine the free end slope of a cantilever due to applied moment M at free end using energy principle.	BT-4	Analyzing
17.	Explain a pin-jointed frame with a sketch	BT-5	Evaluating
18.	Explain about principle of least work	BT-5	Evaluating
19.	Differentiate determinate and indeterminate of structure	BT-6	Creating
20.	Differentiate static and kinematic indeterminacy of structure	BT-6	Creating
21.	A cantilever is subjected to a single concentrated load P at the middle of the span. Calculate the static indeterminacy of the beam	BT-4	Analyzing
22.	Define Compatibility Condition	BT-2	Understanding
23.	Calculate degree of indeterminacy of the following. Fixed support at both end and hinge at mid span.	BT-3	Applying
24.	Compare the force and displacement methods of analysis.	BT-5	Evaluating
25.	Generate the expression for strain energy due to bending and shear force	BT-6	Creating
	PART B		
1.	Derive the expression for Statically indeterminate structure by energy method.	BT-1	Remembering
2.	Determine the force in various members of the pin-jointed frame as shown in Fig. If the member BC is short by an amount of δ. All members of the frame have same axial rigidity as AE. 	BT-1	Remembering
3.	Estimate the reaction components as is shown in figure. i) Propped cantilever beam ii) Overhanging beam	BT-2	Understanding

			
4.	Determine the horizontal reaction of the portal frame shown in Fig, by the energy method. 	BT-1	Remembering
5.	Determine the horizontal reaction of the portal frame shown in Fig, by the energy method. 	BT-1	Remembering
6.	Find the forces in the members of the truss shown in Fig.. The axial rigidities are same for all the members.	BT-3	Applying

			
7.	Determine the reaction components in the continuous beam ABC loaded with uniformly distributed load w kN/m. EI is constant throughout by using strain energy method.	BT-4	Analyzing
8.	Find the forces in the members of the truss shown in Fig.. The axial rigidities are same for all the members. Consider the member FC as redundant. 	BT-5	Evaluating
9.	Determine the reaction components in the continuous beam in figure. Span BC is 5m length EI is constant throughout by using strain energy method. 	BT-1	Remembering
10.	Determine the deflection and rotation at the free end of the cantilever beam shown in figure. Use unit load method. Given $E=2x10^5$ and $I=12x10^6$ mm^4. 	BT-2	Understanding
11.	Analyse the frame ABCD shown in Fig, by Strain energy method.	BT-4	Analyzing

			
12.	Determine the deflection of the free end of cantilever of length L subjected to a point load 'W' at the free end.	BT-2	Understanding
13.	Analyse the portal frame shown in figure by strain energy method. 	BT-4	Analyzing
14.	Determine the reaction components in the continuous beam in figure. EI is constant throughout by using energy method. 	BT-1	Remembering
PART C			
1.	List the force methods and explain in detail about any methods with an example.	BT-1	Remembering
2.	Write in detail about the Equilibrium, Compatibility and Force displacement Relationships with an example.	BT-1	Remembering
3.	Find the forces in the members of the truss shown in Fig.. The axial rigidities are same for all the members	BT-3	Applying

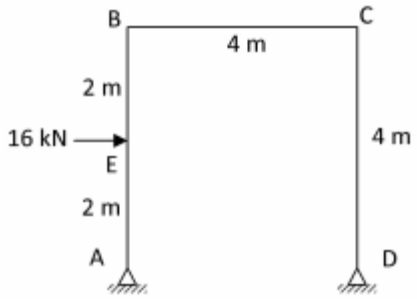
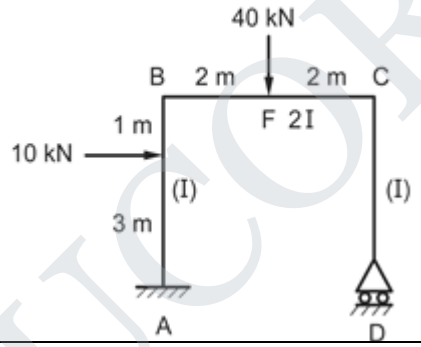
			
4.	Find the slope and deflections of a propped cantilever beam with point load at midspan using strain energy method.	BT-6	Creating

UNIT II SLOPE DEFLECTION METHOD

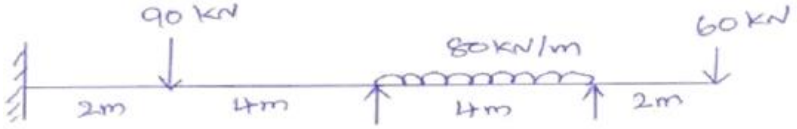
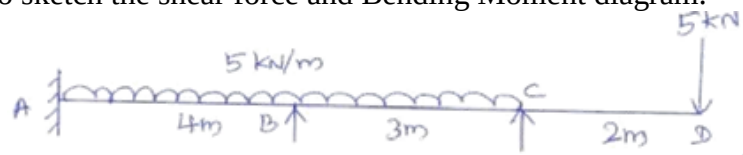
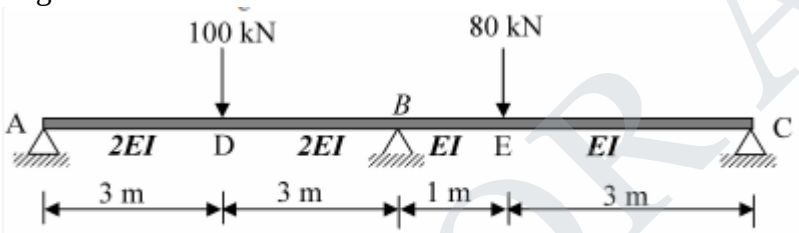
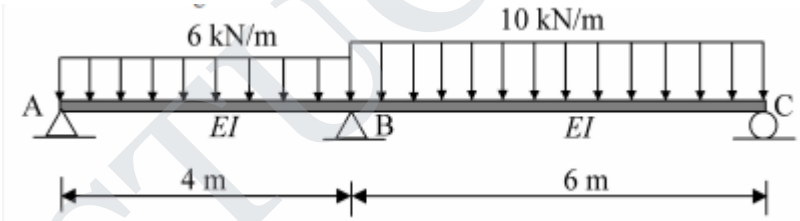
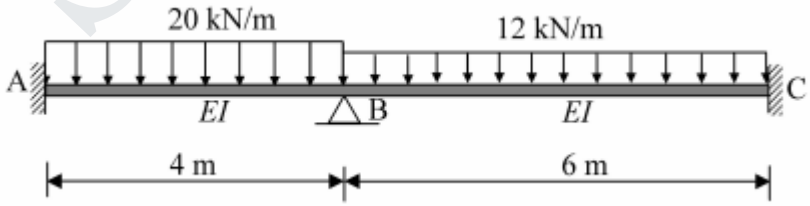
Slope deflection equations – Equilibrium conditions - Analysis of continuous beams and rigid frames – Rigid frames with inclined members - Support settlements- symmetric frames with symmetric and skew-symmetric loadings.

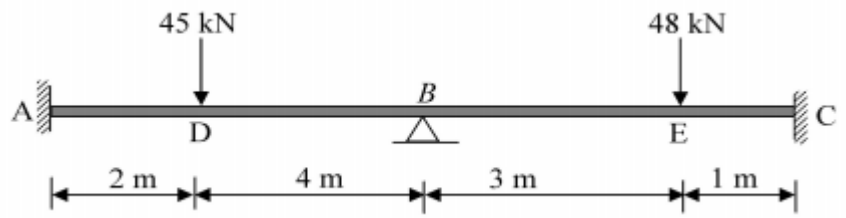
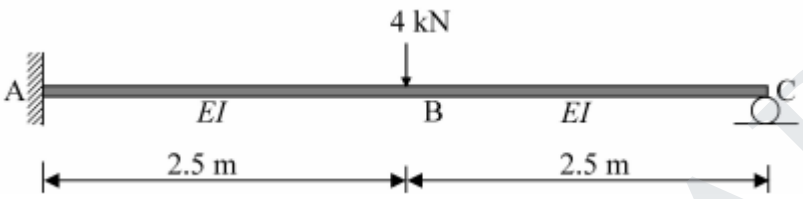
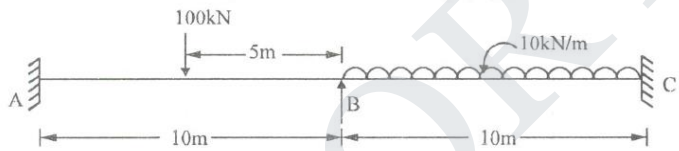
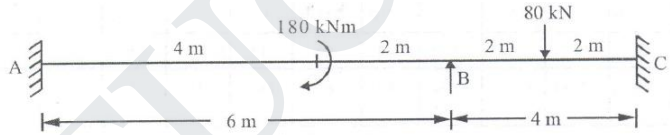
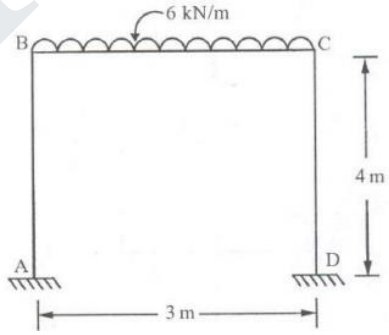
Part - A

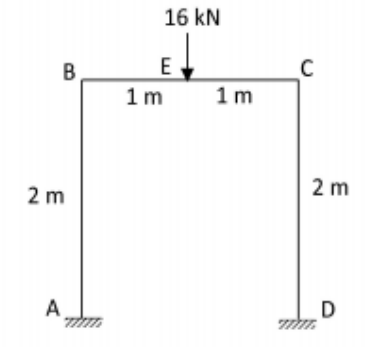
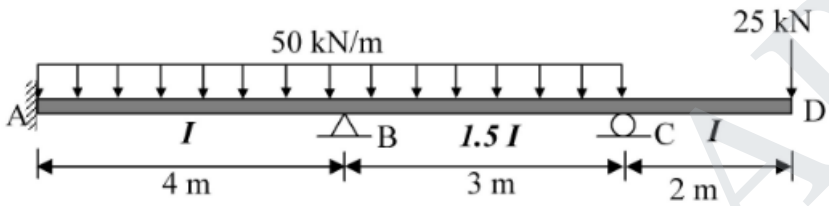
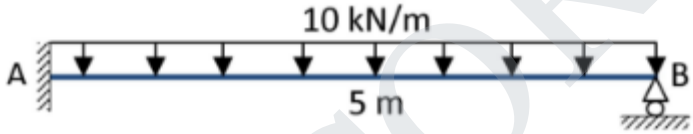
Q. No.	Questions	BT Level	Competence
1	What are the different support conditions?	BT-1	Remembering
2	State the limitations of Slope deflection method.	BT-2	Understanding
3	Why is slope deflection method called as displacement method?	BT-2	Understanding
4	Write the slope deflection equation for the fixed beam with right half of the span loaded with udl of intensity 'w' per meter run.	BT-4	Analyzing
5	Who introduced Slope deflection method of analysis?	BT-1	Remembering
6	Write the fixed end moment for a udl distributed for the full span.	BT-2	Understanding
7	Write the fixed end moment for a point load located at mid span.	BT-2	Understanding
8	What are the assumptions made in slope-deflection method?	BT-6	Creating
9	What is the limitation of slope-deflection equations applied in structural analysis?	BT-1	Remembering
10	Explain the use of slope deflection method.	BT-5	Evaluating
11	Write down the general slope deflection equations and state what each term represents.	BT-5	Evaluating
12	How many slope deflection equations are available for a two span continuous beam?	BT-2	Understanding
13	Write down the slope deflection equation for a beam AB fixed at A and B subjected to a settlement δ at B.	BT-2	Understanding
14	What are the quantities in terms of which the unknown moments are expressed in slope deflection method?	BT-1	Remembering
15	Mention the reasons due to which sway may occur in portal frames.	BT-6	Creating
16	What are the conditions at which side sway don't occour?	BT-2	Understanding
17	What are the sign conventions used in slope deflection method?	BT-4	Analyzing

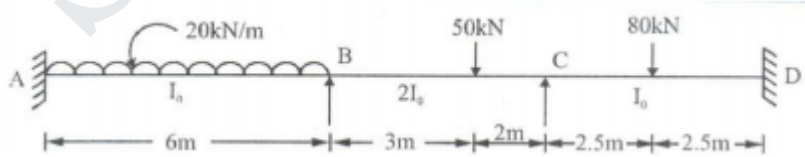
18	Write the shear condition for the following frame. 	BT-3	Applying
19	Explain the principle involved in the slope deflection method of analysis.	BT-3	Applying
20	A rectangular portal will have horizontal sway only when it is subjected to----------or----------.	BT-3	Applying
21.	Find the unknowns and equilibrium conditions of the continuous beam ABC with A, B and C are simply supported joints	BT-5	Evaluating
22.	Write the equation for sway correction for the portal frame shown in fig. 	BT-4	Analyzing
23.	How do account for sway in slope deflection method for portal frames?	BT-3	Applying
24.	A rigid frame is having totally 10 joints including support joints. Out of slope deflection and moment distribution methods, which method would you prefer for analysis? Why?	BT-6	Creating
25.	Write the fixed end moment for a fixed beam with triangular loading with intensity zero at the supports.	BT-2	Understanding

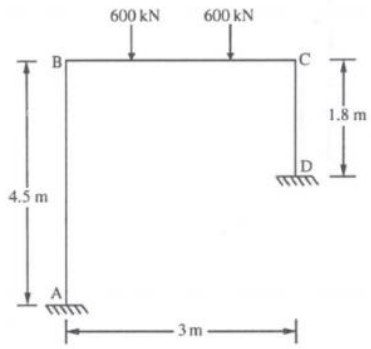
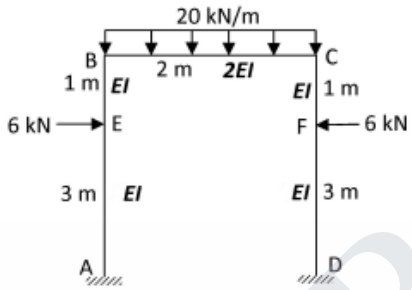
Part – B			
Q. No.	**Questions**	**BT Level**	**Competence**
1	A continuous beam ABC consist of span AB=3m and BC=4m, the ends A and C being fixed. AB and BC carry uniformly distributed loads of intensity 4kN/m and 5kN/m respectively. The beam is of uniform section throughout. What are its support moments? Draw the bending moment diagram for the beam	BT - 1	Remembering

2	Examine the given continuous beam and draw its BMD and SFD using slope deflection method. EI=Constant. 	BT-6	Creating
3	Analyse the continuous beam ABCD shown in fig. by slope deflection method and summarize its results .Take EI=Constant. Also sketch the shear force and Bending Moment diagram. 	BT-2	Understanding
4	Analyse the continious beam and draw the bending moment diagram. 	BT-1	Remembering
5	Analyse the continious beam and draw the bending moment diagram. 	BT-1	Remembering
6	Calculate the bending moments at A, B, and C for the two-span continuous beam ABC. EI is constant. 	BT-2	Understanding
7	Calculate the bending moments at A, and C for the two-span continuous beam ABC. EI is constant.	BT-3	Applying

			
8	Calculate the bending moment at B of the beam shown. The vertical settlement at support C is 10 mm. EI = 300 kN-m2 is constant throughout the section. 	BT-3	Applying
9	Calculate the bending moments at A, and C for the two-span continuous beam ABC. EI is constant. 	BT-4	Analyzing
10	Calculate the bending moments at A, and C for the two-span continuous beam ABC. EI is constant. 	BT-2	Understanding
11	Analyse the frame by moment distribution method and draw bending moment diagram 	BT-4	Analyzing
12	Calculate the bending moment at E for the frame shown in figure. EI is same for all the members	BT-5	Evaluating

			
13	Calculate the bending moment at B for the continuous beam ABCD. Young's modulus E is constant for all the sections. 	BT-5	Evaluating
14	Calculate the bending moment of the beam shown. EI = 300 kN-m2 is constant throughout the section. 	BT-6	Creating

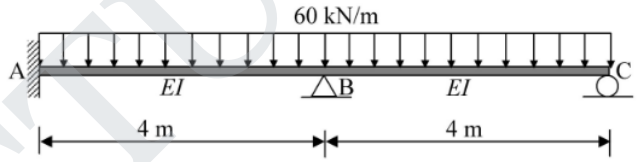
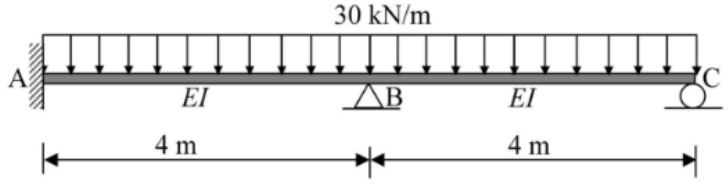
Part - C			
Q. No.	**Questions**	**BT Level**	**Competence**
1	A continuous beam ABCD consists of spans AB, BC, and CD of length 4m each. Both ends of the beam are fixed. The span CD carries a point load of 60 kN at its middle point. Find the moments and reactions at the supports.	BT - 1	Remembering
2	Draw the bending moment diagram for the given beam by slope deflection method 	BT-2	Understanding
3	Analyse the frame by slope deflection method and draw bending moment diagram	BT-4	Analyzing

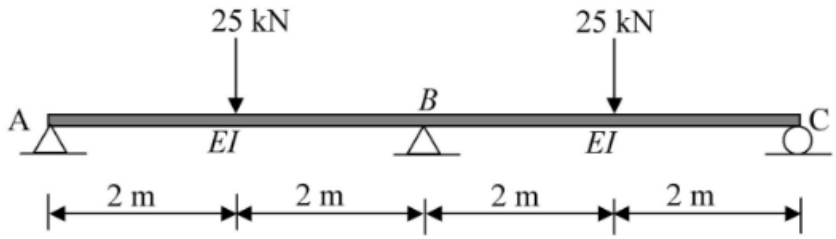
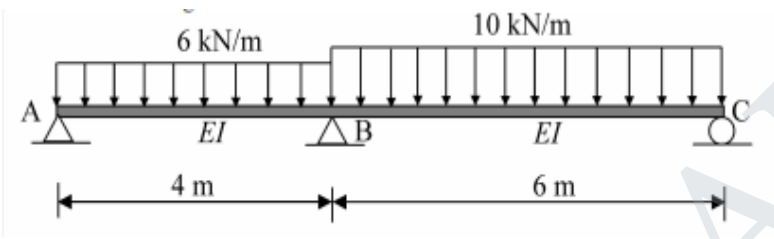
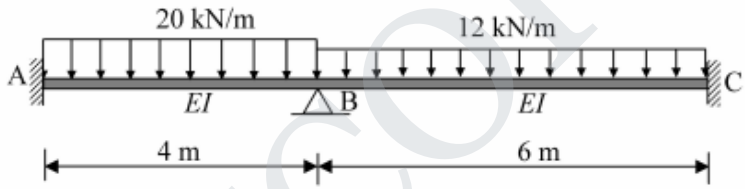
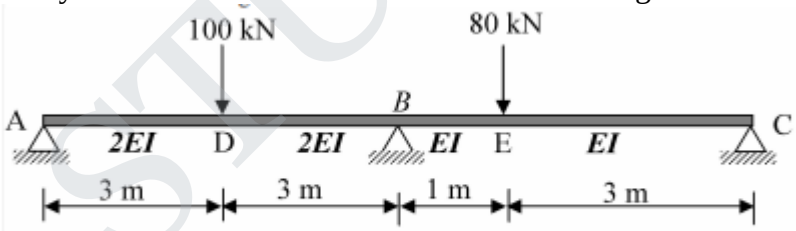
			
4	Analyse the frame by moment distribution method and draw bending moment diagram 	BT-4	Analyzing

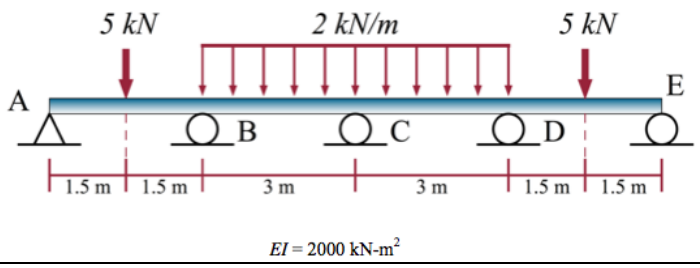
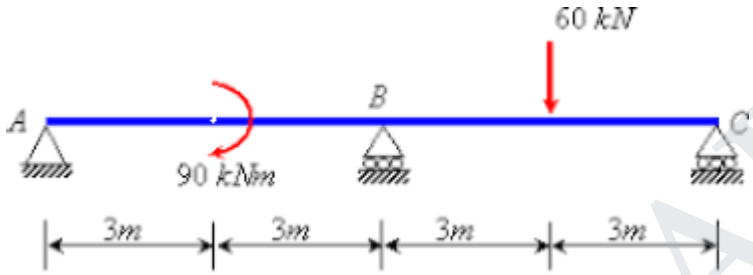
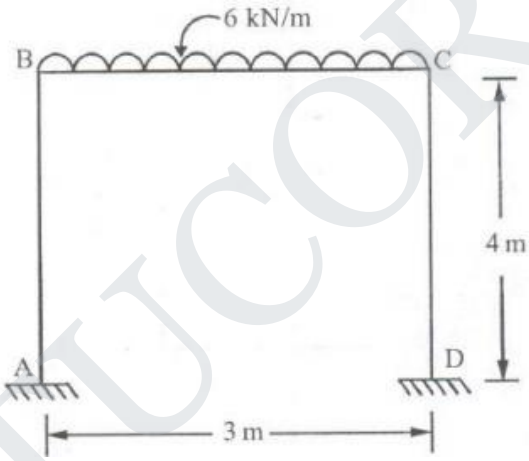
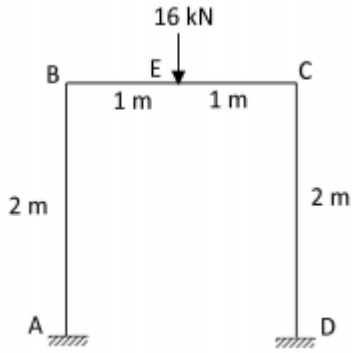
UNIT III: MOMENT DISTRIBUTION METHOD			
Stiffness and carry over factors – Distribution and carryover of moments - Analysis of continuous Beams- Plane rigid frames with and without sway – Support settlement - symmetric frames with symmetric and skew-symmetric loadings.			
Part - A			
Q. No.	**Questions**	**BT Level**	**Competence**
1	Define Stiffness	BT-1	Remembering
2	Explain carry over factor	BT-6	Creating
3	What is carry over moment?	BT-1	Remembering
4	What are the advantages of Continuous beam over simply supported beam?	BT-3	Applying
5	Define: Moment distribution method (Hardy Cross method)	BT-1	Remembering
6	Explain the concepts involved in the Moment distribution method (Hardy Cross method).	BT-3	Applying
7	Define: Distribution factor	BT-1	Remembering
8	Define: Stiffness factor	BT-1	Remembering
9	Define sway.	BT-1	Remembering
10	What is sway correction?	BT-3	Applying

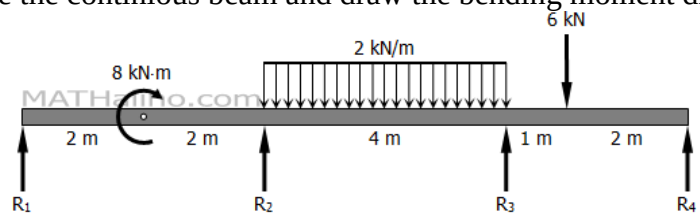
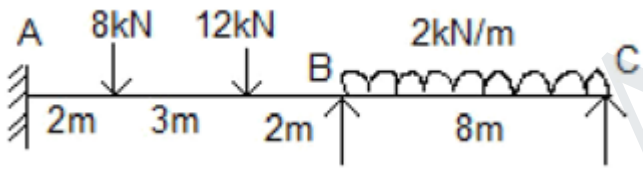
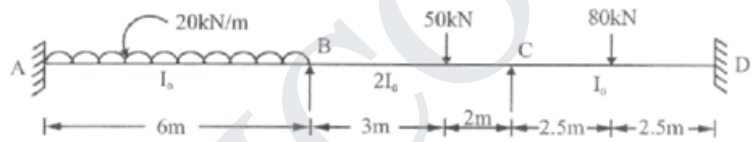
11	What do you understand by constant strength beam?	BT-2	Understanding
12	Mention any three reasons due to which sway may occur in portal frames.	BT-5	Evaluating
13	In a member AB, if moment of -10kNm is applied at A, What is the moment carried over to B?	BT-3	Applying
14	What is the sum of distribution factors at a joint?	BT-2	Understanding
15	Write the distribution factor for a given beam?	BT-4	Analyzing
16	A rigid frame is having totally 10 joints including support joints. Out of slope-deflection and moment distribution methods, which method would you prefer for analysis? Why?	BT-2	Understanding
17	State how the redundancy of a rigid frame is calculated	BT-4	Analyzing
18	Give the relative stiffness when the far end is (a) Simply supported and (b) Fixed.	BT-2	Understanding
19	What is the difference between absolute and relative stiffness?	BT-5	Evaluating
20	Explain Naylor simplification	BT-5	Evaluating
21	In a member AB, if a moment of –10 KNm is applied at A, what is the moment carried over to B?	BT-1	Remembering
22	What are symmetric and anti-symmetric quantities in structural behaviour?	BT-1	Remembering
23	What are the situations where in sway will occur in portal frames?	BT-1	Remembering
24	Explain Flexural Rigidity of Beams.	BT-5	Evaluating
25	What is the sum of distribution factors at a joint?	BT-1	Remembering

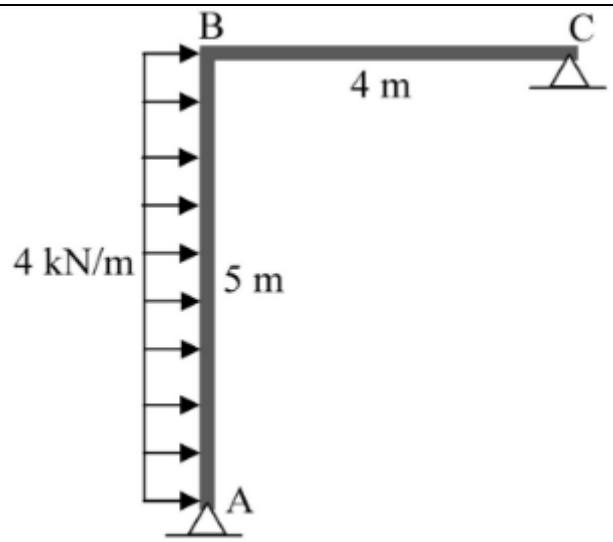
PART – B

Q. No.	Questions	BT Level	Competence
1	Calculate the moment at B for the two-span continuous beam ABC. EI is constant. 	BT-1	Remembering
2	Calculate the mid-span moment for span AB and BC of the continuous beam ABC given below. EI is constant. 	BT-1	Remembering
3	Calculate the moment at B for the two-span continuous beam ABC. EI is constant. (Moment distribution method)	BT-1	Remembering

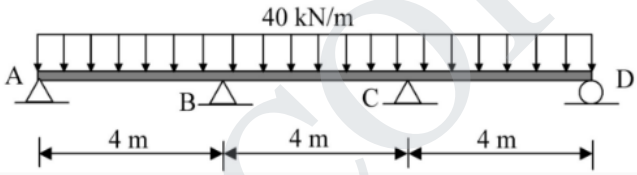
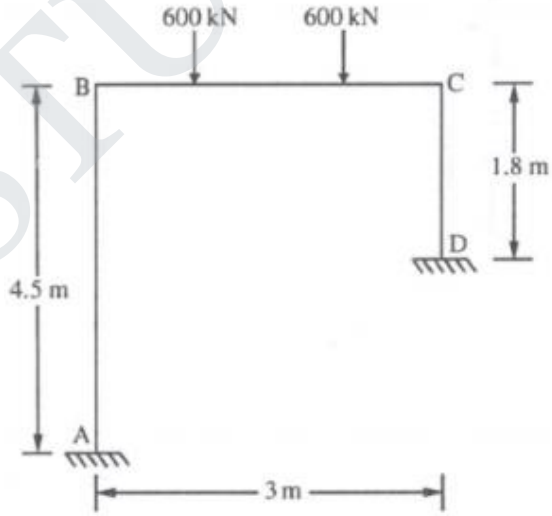
			
4	Analyse the continious beam and draw the bending moment diagram. (Moment distribution method) 	BT-6	Creating
5	Calculate the bending moments at A, B, and C for the two-span continuous beam ABC. EI is constant.(Moment distribution method) 	BT-5	Evaluating
6	Analyse the continious beam and draw the bending moment diagram. 	BT-3	Applying
7	Analyse the continious beam and draw the bending moment diagram.	BT-2	Understanding

			
8	Analyse the continious beam and draw the bending moment diagram. 	BT-2	Understanding
9	Analyse the frame by moment distribution method and draw bending moment diagram 	BT-3	Applying
10	Calculate the bending moment at E for the frame shown in figure. EI is same for all the members 	BT-3	Applying

11	Analyse the continious beam and draw the bending moment diagram. 	BT-4	Analyzing
12	Analyse the continious beam and draw the bending moment diagram. 	BT-4	Analyzing
13	Draw the bending moment diagram for the given beam by moment distribution method 	BT-5	Evaluating
14	Calculate the bending moment for the segment given below. take EI = constant	BT-1	Remembering

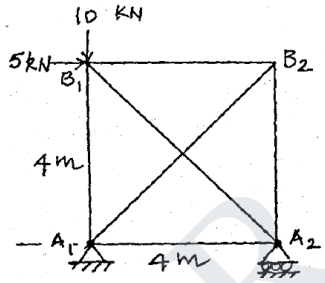
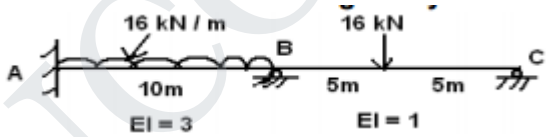
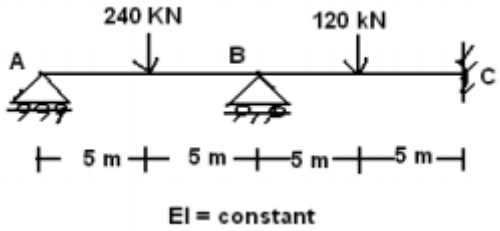
PART – C

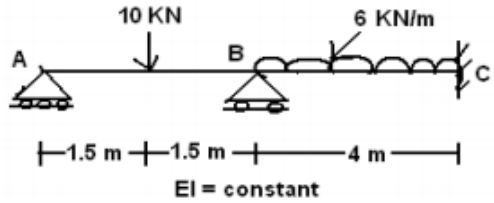
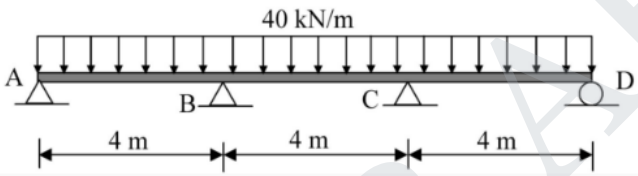
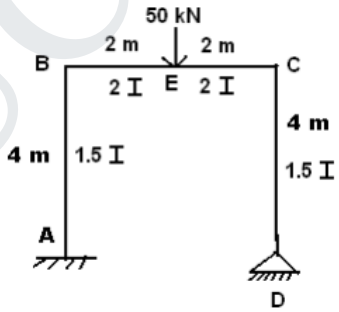
Q. No.	Questions	BT Level	Competence
1	Draw the bending moment diagram for the given beam by moment distribution method 	BT-1	Remembering
2	Analyse the frame by moment distribution method and draw bending moment diagram 	BT-6	Creating
3	Analyse the portal frame ABCD by moment distribution method. BC is loaded with central point load of 50 kN at centre. AB=	BT-6	Creating

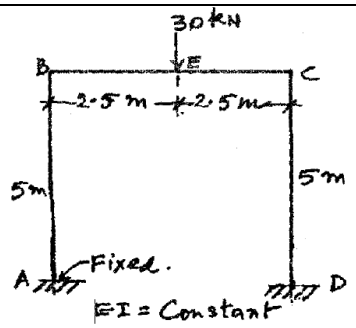
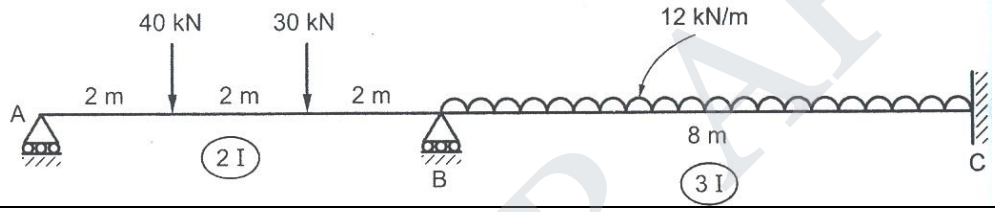
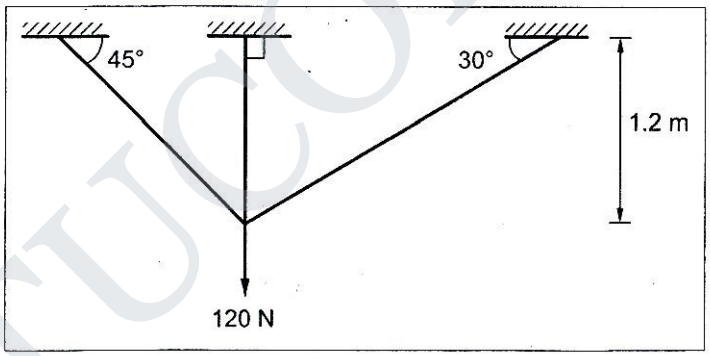
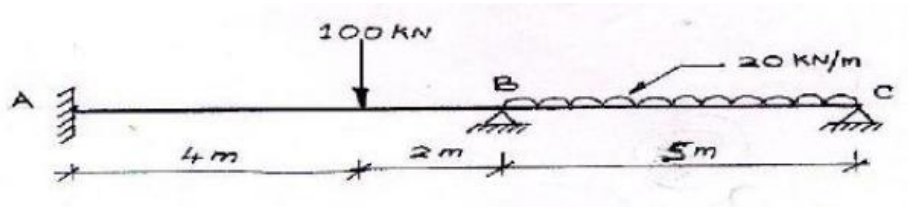
	BC=CD=5m in length.		
4	A Continuous beam ABCD fixed at A and D and continuous over supports B and C. The span AB=5m carries a central concentrated load of 10kN. The span BC=4m carries a uniformly distributed load of 4 kN/m over the entire span of BC. The span CD=6m carries a non-central concentrated load of 8 kN acting at a distance of 2m from the end D. Analyse the beam and draw bending moment diagram using moment distribution method and tabulate the results	BT-3	Applying

UNIT IV : FLEXIBILITY METHOD			
Primary structures - Compatibility conditions – Formation flexibility matrices - Analysis of indeterminate pin- jointed plane frames, continuous beams and rigid jointed plane frames by direct flexibility approach.			
Q.No	**PART-A**	**BT Level**	**Competence**
1.	What are the conditions to be satisfied for determinate structures and how are indeterminate structures identified?	BT1	Remember
2.	Write down the equation for the degree of static indeterminacy of the pin jointed Plane frames, explain the notations used.	BT5	Evaluate
3.	Give the mathematical expression for the degree of static indeterminacy of rigid jointed plane frames.	BT2	Understand
4.	What are the properties which characterize if the structure response by means of force-displacement relationship?	BT5	Evaluate
5.	List the classical methods of structural analysis.	BT1	Remember
6.	What is meant by flexibility?	BT2	Understand
7.	In flexibility method unknown quantities are ----------and final equations are----------	BT3	Application
8.	Define indeterminate structures.	BT1	Remember
9.	What is a primary structure?	BT2	Understand
10.	What are equilibrium equations?	BT2	Understand
11.	What are the different methods of analysis of indeterminate structures?	BT4	Analyze
12.	Differentiate Stiffness method from flexibility method.	BT1	Remember
13.	What are the basic requirements of structural analysis?	BT3	Application
14.	Write the equation for degree of indeterminacy of 2D trusses.	BT6	Create
15.	What is meant by compatibility condition?	BT1	Remember
16.	Write the element Flexibility matrix for a beam member and truss member.	BT6	Create
17.	Define flexibility coefficient.	BT3	Application
18.	Choose the correct answer. The flexibility method is best suited when the static indeterminacy is --------the kinematic indeterminacy. (a) Less than (b) Equal to (C) Greater than .	BT4	Analyze
19.	List the variables in the force method.	BT1	Remember
20.	Define External and Internal indeterminacy.	BT4	Analyze

21.	Briefly mention the two types of matrix methods of analysis of indeterminate structures.	BT1	Remember
22.	Define a primary structure.	BT1	Remember
23.	What is meant by generalized coordinates?	BT1	Remember
24.	Explain the compatibility condition used in the flexibility method?	BT4	Analyze
25.	What is the displacement transformation matrix?	BT1	Remember

Q.No	PART - B	BT Level	Competence
1.	Analyse the pin-jointed plane frame shown in Fig below by flexibility matrix method. The flexibility for each member is 0.0025 mm/KN. 	BT4	Analyze
2.	Analyse the continuous beam ABC shown in Fig below by flexibility matrix method and draw the bending moment diagram. R_B and R_C are redundant 	BT4	Analyze
3.	Generate the flexibility matrix of beam ABC as shown in figure, below by flexibility matrix method and sketch the bending moment diagram 	BT5	Evaluate
4.	A two span continuous beam ABCD is fixed at A and hinged at support B and C. span of AB =Span of BC =9m. Arrange the flexibility influence co-efficient matrix assuming vertical reaction at B and C as redundant.	BT3	Application
5.	Calculate the deflection and moments of continuous beam shown in Fig below	BT1	Remember

	using force method.  		
6.	A cantilever is subjected to a single concentrated load P at the middle of the span. Calculate the deflection at the free end using flexibility matrix method. EI is uniform throughout.	BT1	Remember
7.	Analyze the continuous beam ABCD shown in Fig below by flexibility matrix method and draw the bending moment diagram. M_B and M_C are redundant  	BT1	Remember
8.	A portal frame ABCD with supports A and D are fixed at same level carries a uniformly distributed load of 80kN/m on the span AB. Span AB=BC=CD=9m. EI is constant throughout. Analyze the frame by stiffness matrix method.	BT1	Remember
9.	Solve the portal frame ABCD shown in Fig below by flexibility matrix method and sketch the bending moment diagram.  	BT2	Understand
10.	Solve the portal frame ABCD shown in Fig below by flexibility matrix method and sketch the bending moment diagram.	BT3	Application

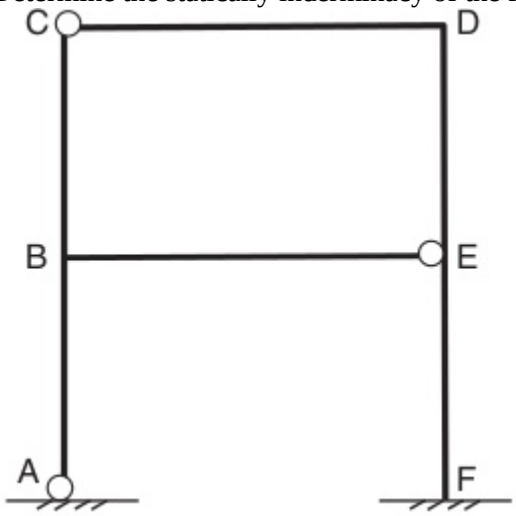
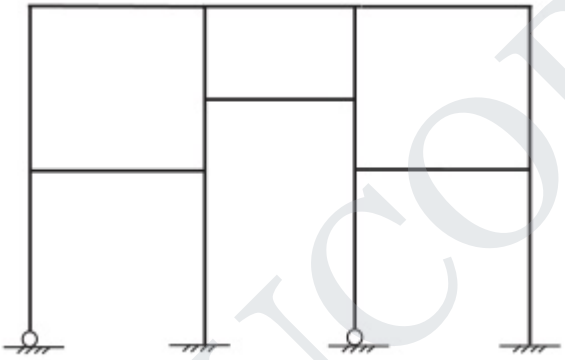
			
11.	A portal frame ABCD with supports A and D are fixed at same level carries a concentrated load of 100kN at centre of the span AB. Span AB=BC=CD=10 m. EI is constant throughout. Analyze the frame by stiffness matrix method.	BT4	Analyze
12.	Examine the moment of the continuous beam shown in Fig below by flexibility method. 	BT1	Remember
13.	Estimate the forces in all the members of the pin-jointed frames shown in Fig below by flexibility method, AE = constant. 	BT2	Understand
14.	A cantilever beam is subjected to an udl of'w'kN/m throughout the entire span. Calculate the deflection at the free end using flexibility matrix method. EI is uniform throughout.	BT2	Understand
Q.No	**PART - C**	**BT Level**	**Competence**
1.	Analyze the continuous beam shown in figure using stiffness matrix method. EI is constant. 	BT1	Remember

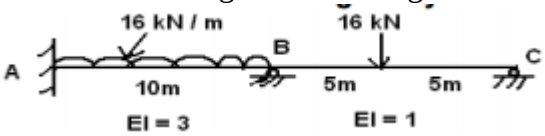
2.	A cantilever of length 15m is subjected to a single concentrated load of 15kN at the middle of the span. Find the deflection at the free end using flexibility matrix method. EI is uniform throughout.	BT2	Understand
3.	A two span continuous beam ABC is fixed at A and hinged at support B and C. Span AB=BC=9m. Set up flexibility influence coefficient matrix assuming vertical reaction at B and C as redundant.	BT2	Understand
4.	A portal frame ABCD with supports A and D are fixed at same level carries a uniformly distributed load of 50kN/m on the span AB. Span AB=CD=6m and Span BC=4m. EI is constant throughout. Analyze the frame by flexibility matrix method.	BT1	Remember

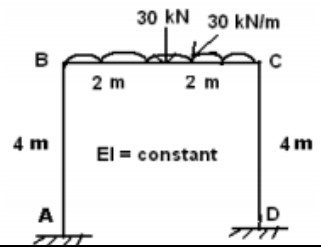
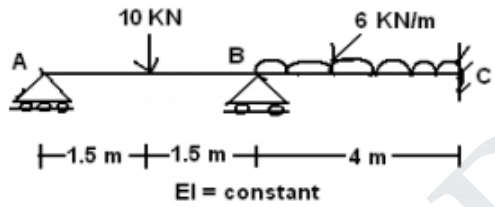
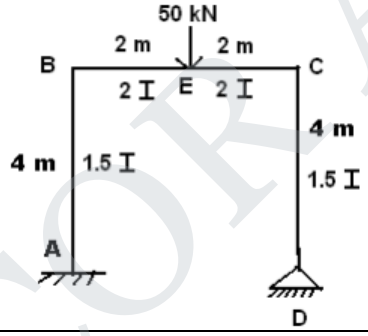
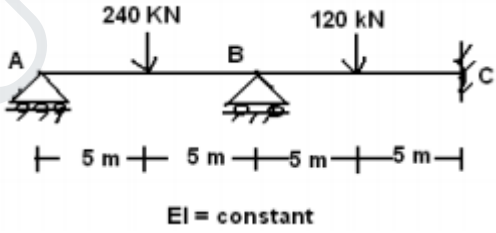
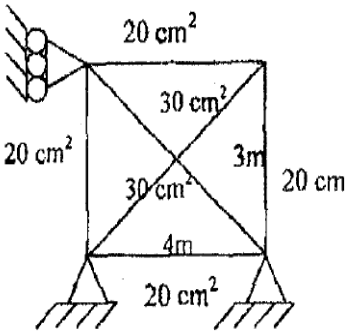
UNIT V: STIFFNESS MATRIX METHOD

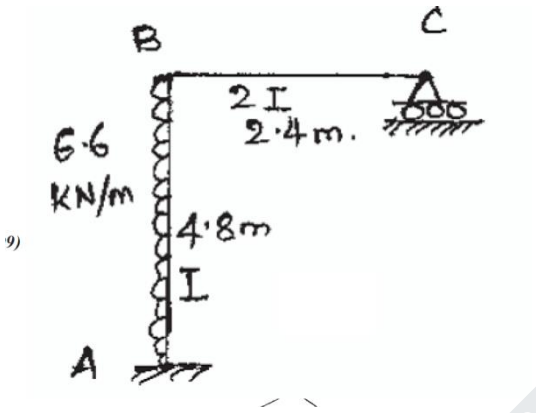
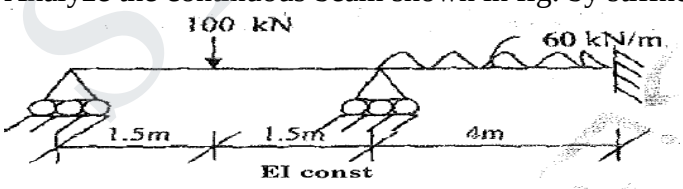
Restrained structure –Formation of stiffness matrices - equilibrium condition - Analysis of Continuous Beams, Pin-jointed plane frames and rigid frames by direct stiffness method.

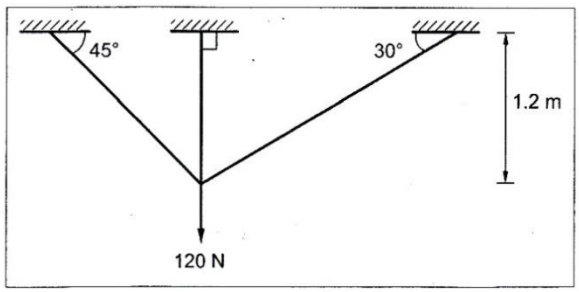
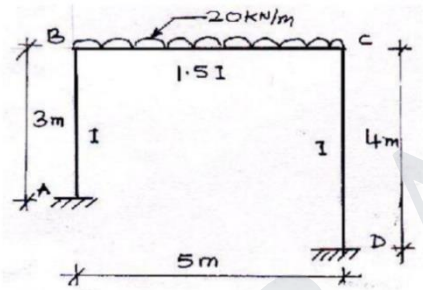
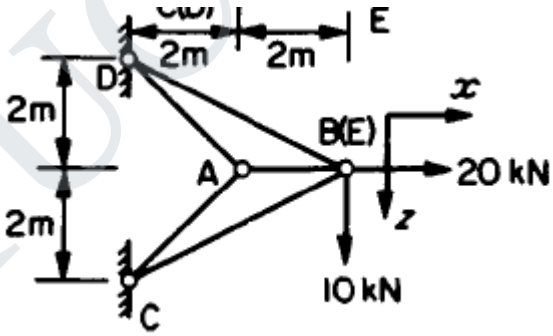
Q.No	PART-A	BT Level	Competence
1.	Define degree of freedom of the structure with an example.	BT1	Remember
2.	Explain the global stiffness matrices.	BT4	Analyze
3.	What are the basic unknowns in stiffness matrix method?	BT1	Remember
4.	What is transformation matrix?	BT3	Application
5.	Define Local and Global coordinates.	BT1	Remember
6.	Define Stiffness coefficient kij.	BT2	Understand
7.	Write down the rotation matrix for 2D beam element.	BT1	Remember
8.	Which property of a structure determines the size of its stiffness matrix?	BT5	Evaluate
9.	Explain the terms stiffness matrix and flexibility matrix. Show that these are inverse of each other.	BT6	Create
10.	What is meant by relative stiffness of a member?	BT5	Evaluate
11.	Create the stiffness matrix for a 2D beam element	BT3	Application
12.	Explain the steps involved in stiffness matrix method of analysis.	BT2	Understand
13.	Write a note on element stiffness matrix.	BT4	Analyze
14.	Is it possible to develop the flexibility matrix for an unstable structure?	BT1	Remember
15.	Differentiate between flexibility and stiffness.	BT2	Understand
16.	Explain about the properties of stiffness matrix.	BT1	Remember
17.	How are the basic equations of stiffness matrix obtained?	BT6	Create
18.	Explain about generalized coordinates.	BT3	Application
19.	Explain the equilibrium condition used in the stiffness method.	BT4	Analyze
20.	Derive the stiffness matrix of a typical pin-jointed two-dimensional frame element.	BT2	Understand
21.	Properties of stiffness Matrix	BT2	Understand

22.	Types of Boundary Condition	BT3	Application
23.	Explain formation of load Vector	BT4	Analyze
24.	Determine the statically inderminacy of the frame . 	BT4	Analyze
25.	Determine the statically inderminacy of the frame . 	BT5	Evaluate

Q.No	PART-B	BT Level	Competence
1.	Analyse the continuous beam ABC shown in Fig below By stiffness method and also sketch the bending moments diagram. 	BT4	Analyze
2.	Analyse the portal frame ABCD shown in Fig below by stiffness method and also sketch the bending moment diagram.	BT1	Remember

			
3.	Examine the continuous beam ABC shown in Fig below by stiffness method and also draw the shear force diagram. 	BT1	Remember
4.	Analyze the portal frame ABCD shown in Fig below by stiffness method and also estimate the bending moment. 	BT2	Understand
5.	Compute the final forces of continuous beam shown in Fig below using displacement method. 	BT5	Evaluate
6.	Analyse the truss shown in Fig below using displacement method. 	BT4	Analyze

7.	Solve the portal frame shown in Fig below by matrix stiffness method and sketch the SFD and BMD. Given El is constant. 	BT3	Application
8.	A two span continuous beam ABC is fixed at A and simply supported over the supports B and C. AB=6m and BC = 4m. Moment of inertia is constant throughout. A uniformly distributed load of 2 Ton/m acts over AB and a single concentrated load of 6 tons acts on BC. EstimateBMby stiffness matrix method.	BT2	Understand
9.	A portal frame ABCD with A and D are fixed at same level carries a uniformly distributed load of 2 tons /meters. EI is constant throughout. Assess the final forces by stiffness matrix method. Take Span AB=BC=CD=6m.	BT6	Create
10.	A continuous beam ABC is fixed at A and simply supported over the supports B and C. AB = 11m and BC = 9m. Moment of inertia is constant throughout. A single concentrated central load of 12 tons acts on AB and a uniformly distributed load of 10Tons/m acts over BC,examine the final forces by stiffness matrix method and draw BMD.	BT1	Remember
11.	A continuous beam ABCB is simply supported over the supports A, B, C and D. AB = 10m , BC = 8m and CD=10m. Moment of inertia is constant throughout. A single concentrated central load of 12 tons acts on AB and a uniformly distributed load of 10Tons/m acts over BC,examine the final forces by stiffness matrix method and draw BMD.	BT1	Remember
12.	Analyze the continuous beam shown in fig. by stiffness matrix method 	BT4	Analyze
13.	A portal frame ABCD with A and D are fixed at same level Span AB carries a uniformly distributed load of 20kN /meters. EI is constant throughout. Assess the final forces by stiffness matrix method. Span	BT6	Create
14.	Estimate the forces in all the members of the pin-jointed frames shown in Fig below by Stiffness matrix method, AE = constant.	BT2	Understand

			
Q.No	**PART-C**	**BT Level**	**Competence**
1.	Solve the portal frame ABCD shown in Fig below by stiffness matrix method . 	BT3	Application
2.	A portal frame ABCD with A and D are fixed at same level span AB=6m carries a uniformly distributed load of 20kN /meters. Span BC = CD=5m carries uniformly distributed load of 5kN/m EI is constant throughout. Assess the final forces by stiffness matrix method.	BT6	Create
3.	Estimate the forces in all the members of the pin-jointed frame as shown in Fig below by Stiffness matrix method, AE is constant for all members. 	BT2	Understand
4.	A three span continuous beam ABCD is fixed at A and D and hinged at support B and C. Span AB=BC=CD=5m carries uniformly distributed load of 8kN/m throughout the beam. Analyze by Stiffness Matrix method	BT4	Analyze