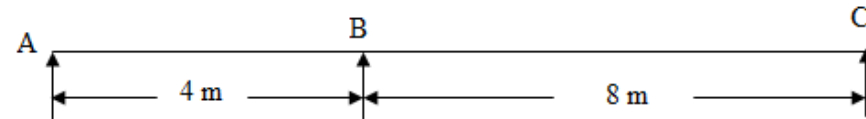
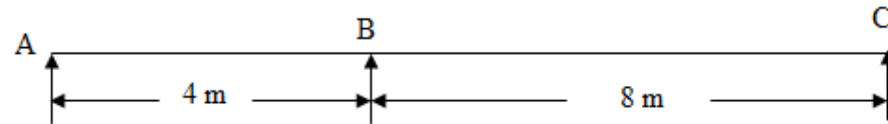


[4]

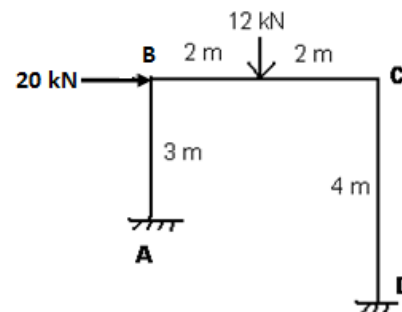
- ii. Draw the ILD for shear force at a section which is at a distance of 3 m from right support in a following continuous beam and calculate ordinates at 1 m interval. **8**



- OR iii. Draw the ILD for bending moment at support “B” in a following continuous beam and calculate ordinate at 1 m interval. **8**



- Q.6 i. Define Plastic Moment and Plastic Hinges. **2**
 ii. A mild steel I-section 200 mm wide and 250 mm deep has a mean flange thickness of 20 mm and a web thickness of 10 mm. Calculate the Shape Factor. **8**
 OR iii. Determine the collapse load for the frame shown in the diagram, M_p is the same for all members. **8**



Total No. of Questions: 6

Total No. of Printed Pages:4

Enrollment No.....



Faculty of Engineering
 End Sem (Even) Examination May-2019
 CE3CO11 Structural Analysis-II

Programme: B.Tech.

Branch/Specialisation: CE

Duration: 3 Hrs.

Maximum Marks: 60

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

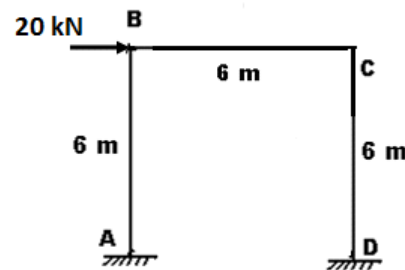
- Q.1 i. Rotation factor in Kani's method is equal to **1**
 (a) Distribution factor
 (b) Half of Distribution factor
 (c) Negative half of Distribution factor
 (d) Zero
- ii. The carry-over factor in prismatic member whose far end is hinged is- **1**
 (a) 0 (b) $\frac{1}{2}$ (c) $\frac{3}{4}$ (d) 1
- iii. The degree of freedom of a fixed support in plane structure is **1**
 (a) 1 (b) 2 (c) 3 (d) 0
- iv. The diagonal elements of flexibility matrix are **1**
 (a) Always positive
 (b) Always negative
 (c) May be positive or negative
 (d) None of these
- v. The cantilever method is used to analyse the high-rise structure when **1**
 it is subjected to
 (a) Horizontal & Vertical loads
 (b) Horizontal loads only
 (c) Vertical loads only
 (d) None of these
- vi. In Portal method, Shear taken by interior columns is **1**
 (a) Twice the shear taken by exterior column
 (b) Half of the shear taken by exterior column
 (c) Equal to the shear taken by exterior column
 (d) None of these

P.T.O.

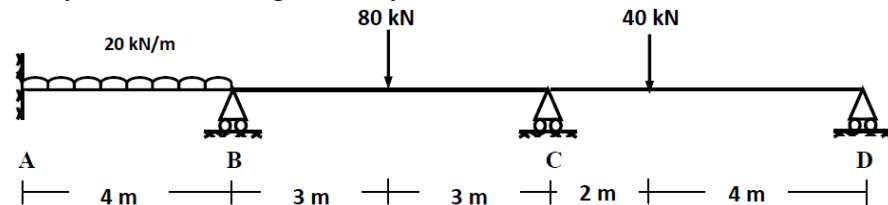
[2]

- vii. The shape of ILD for BM at a section in Simply Supported Beam is 1
 (a) Triangular with maximum ordinate at the centre of span
 (b) Parabolic with maximum ordinate at the centre of span
 (c) Triangular with maximum ordinate at the section
 (d) Parabolic with maximum ordinate at the section
- viii. Muller Breslau Principle is used to draw the ILD of 1
 (a) Determinate structure only
 (b) Indeterminate structure only
 (c) Determinate & Indeterminate structure both
 (d) None of these
- ix. The shape factor of diamond section is 1
 (a) 1 (b) 1.5 (c) 2 (d) 2.34
- x. Effects of shear force and axial force on plastic moment capacity of a 1
 structure are respectively to
 (a) Increase and decrease (b) Increase and increase
 (c) Decrease and increase (d) Decrease and decrease

- Q.2 i. State the advantages of Kani's Method over Moment Distribution 2
 method.
- ii. Analyze the frame as shown in Fig-1 by moment distribution method 8
 and draw BMD.

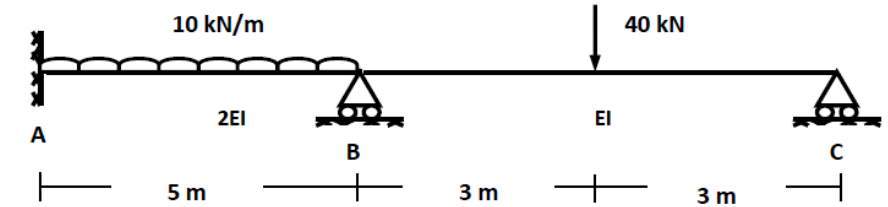


- OR iii. Analyze the following beam by Kani's method and draw BMD. 8

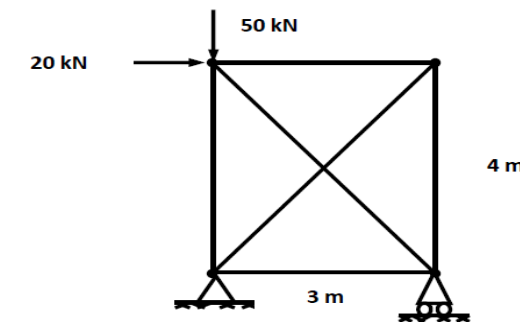


[3]

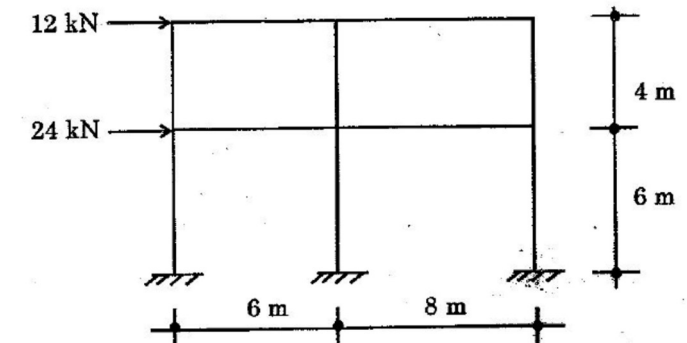
- Q.3 i. Compare flexibility method and stiffness method. 2
 ii. Analyze the beam as shown in Figure by Stiffness matrix method and 8
 draw BMD.



- OR iii. Analyze the truss as shown in Figure below. Use Flexibility matrix 8
 method.



- Q.4 i. Explain the necessity of Approximate Methods. 2
 ii. Analyze the following frame using portal method 8



- OR iii. Write a short note on 8
 (a) Wind Load (b) Earthquake load.

- Q.5 i. Explain the Muller Breasla's principle. 2

P.T.O.

Marking Scheme
CE3CO11 Structural Analysis-II

Q.1	i.	Rotation factor in Kani's method is equal to (c) Negative half of Distribution factor	1
	ii.	The carry-over factor in prismatic member whose far end is hinged is- (a) 0	1
	iii.	The degree of freedom of a fixed support in plane structure is (d) 0	1
	iv.	The diagonal elements of flexibility matrix are (a) Always positive	1
	v.	The cantilever method is used to analyse the high-rise structure when it is subjected to (b) Horizontal loads only	1
	vi.	In Portal method, Shear taken by interior columns is (a) Twice the shear taken by exterior column	1
	vii.	The shape of ILD for BM at a section in Simply Supported Beam is (c) Triangular with maximum ordinate at the section	1
	viii.	Muller Breslau Principle is used to draw the ILD of (c) Determinate & Indeterminate structure both	1
	ix.	The shape factor of diamond section is (c) 2	1
	x.	Effects of shear force and axial force on plastic moment capacity of a structure are respectively to (d) Decrease and decrease	1
Q.2	i.	Advantages of Kani's Method over Moment Distribution method. 1 mark for each advantages (1 mark * 2)	2
	ii.	Determination of Fixed End Moment 1 mark Moment distribution cycle 3 marks Shear equation 2 marks Final end Moment 1 mark BMD 1 mark	8
OR	iii.	Analyze the following beam by Kani's method and draw BMD. Determination of Fixed End Moment 2 marks Kani's cycle 3 marks Final end Moment 1 mark BMD 2 marks	8
Q.3	i.	Compare flexibility method and stiffness method 0.5 mark for each comparison (0.5 mark * 4)	2

	ii.	Analyze the beam by Stiffness matrix method and draw BMD. Determination of Fixed End Moment 2 marks Stiffness Matrix 3 marks Final end Moment 1 mark BMD 2 marks	8
	OR	iii.	Analyze the truss by Flexibility matrix method. 8
		Degree of redundancy 1 mark Released Structure 1 mark Flexibility Matrix 3 marks Determination of redundant 1 mark Final forces in all members 2 marks	
Q.4	i.	Necessity of Approximate Methods.	2
	ii.	Analyze the following frame using portal method Shear in column 1 mark Moments in column 2 marks Moments in beams 2 marks Shear in beams 1 mark Axial force in column 2 marks	8
OR	iii.	(a) Wind Load 4 marks (b) Earthquake load. 4 marks	8
Q.5	i.	Muller Breasla's principle. Definition 1 mark Example 1 mark	2
	ii.	Shape of ILD 2 marks Determination of ordinate at 1 m interval 6 marks	8
OR	iii.	Shape of ILD 2 marks Determination of ordinate at 1 m interval 6 marks	8
Q.6	i.	Define Plastic Moment 1 mark Plastic Hinges. 1 mark	2
	ii.	Calculate the Shape Factor. Determination of Elastic section modulus 3 marks Determination of Plastic section modulus 3 marks Determination of Shape eFactor 2 marks	8
OR	iii.	Determine the collapse load for the frame shown in the diagram No. of mechanism 1 mark Beam mechanism 2 marks Sway mechanism 2 marks Combined mechanism 3 marks	8
