

SHANTILAL SHAH ENGINEERING COLLEGE, BHAVNAGAR
APPLIED MECHANICS DEPARTMENT

B.E. (Civil Engineering) Semester – 5th

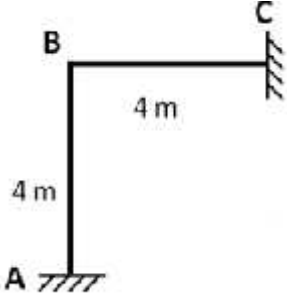
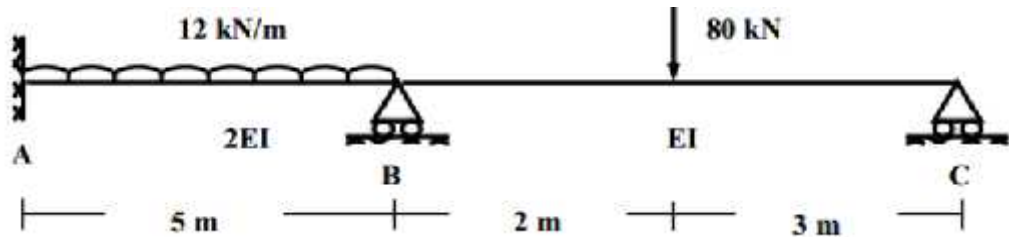
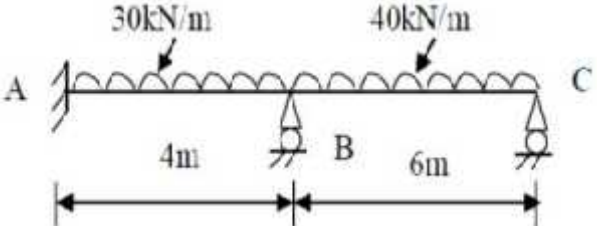
Subject Code: 3150614

**Name of Subject: Structural Analysis II
 (Professional Elective-I)**

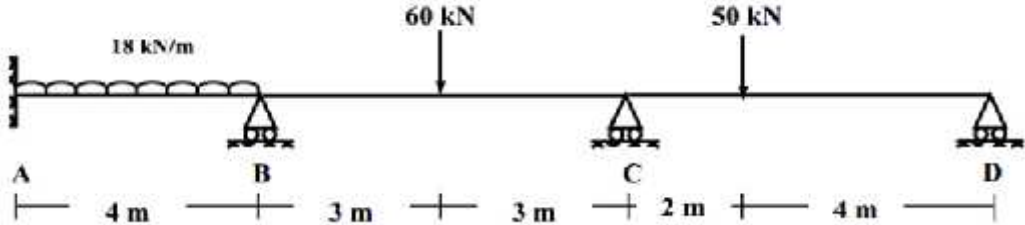
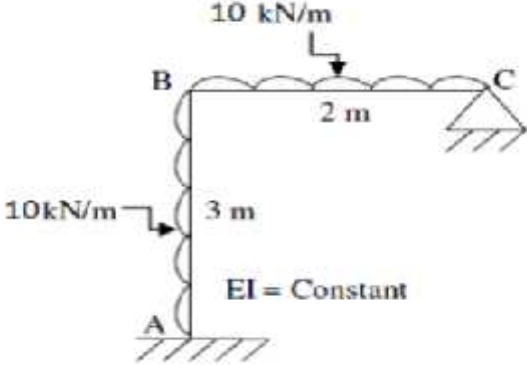
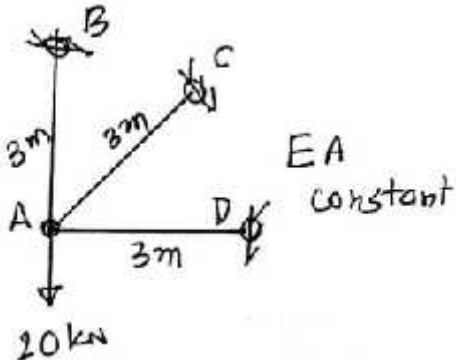
Date: 30/09/2022

Assignment No: 05

Matrix Methods (Stiffness)

#	Questions
1.	Differentiate between stiffness and flexibility.
2.	Write assumptions made in matrix method of structural analysis.
3.	Give characteristics of stiffness and flexibility matrix. Also prove the product of Stiffness and Flexibility is unity.
4.	<p>I. Formulate Displacement Matrix for a propped cantilever beam of span 4 m subjected to a central point load of 40 kN</p> <p>II. Write only the Stiffness matrix [S] for the portal frame shown in Figure below (Take AE and EI = Constant).</p> <div style="text-align: center;">  </div>
5.	<p>Analyse the beam as shown in Figure using stiffness method and draw SFD and BMD.</p> <div style="text-align: center;">  </div>
6.	<p>Find the matrices: [AD], [ADL], [S] and [D] with usual notations for the beam shown in figure below using Stiffness method.</p> <div style="text-align: center;">  </div>

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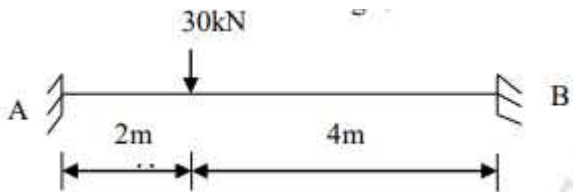
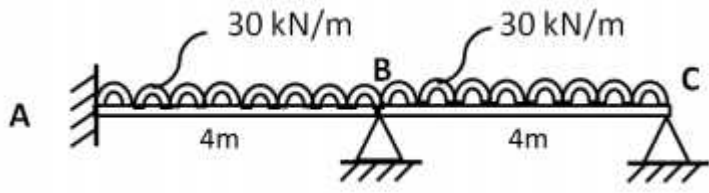
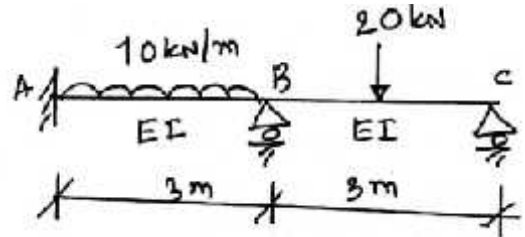
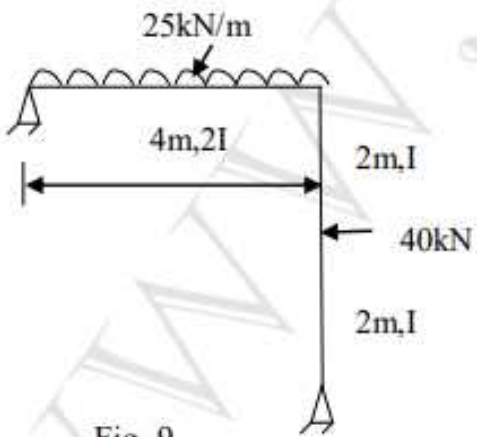
<p>7.</p>	<p>Analyse the beam as shown in Figure using stiffness method and draw SFD and BMD.</p> 
<p>8</p>	<p>Analyse the portal frame as shown in Figure using stiffness method and draw SFD and BMD.</p> 
<p>9</p>	<p>Solve plane truss shown in figure below by stiffness method.</p> 

Name of Faculty: Prof D P Advani

Date of Submission: 22/11/2022

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Matrix Methods (Flexibility)

#	Questions
1.	How Size of Flexibility matrix is decided?
2.	Explain DQ, DQL, F, and Q in flexibility method.
3.	Find out the Flexibility Matrix of beam as shown in fig below using MB & RB as Redundant. <div style="text-align: center;">  </div>
4	Analyse the beam as shown in Figure using Flexibility method and draw SFD and BMD. <div style="text-align: center;">  </div>
5.	Analyse the beam shown in figure below by flexibility matrix method. <div style="text-align: center;">  </div>
6.	Analyse the portal frame as shown in Figure using Flexibility method and draw BMD. <div style="text-align: center;">  </div>

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