| Roll No | | | | | | | | | | | | |
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# PRESIDENCY UNIVERSITY

## BENGALURU

**Make Up Examinations – December 2025**

**Date:** 26 – 12- 2025 **Time:** 1.00pm to 04.00pm

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|---|---|---|
| **School:** SOE | **Program:** B Tech | |
| **Course Code :** CIV209 | **Course Name:** Analysis of Indeterminate Structures | |
| **Semester**: MK | **Max Marks**: 100 | **Weightage**: 50% |

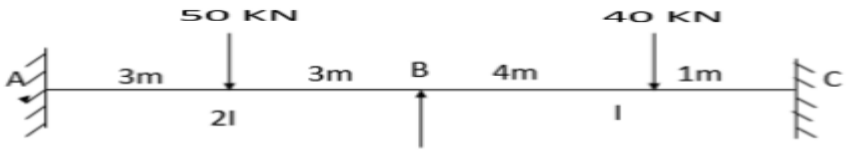
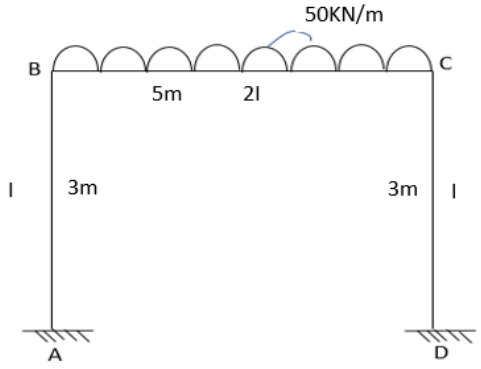
| CO - Levels | CO1 | CO2 | CO3 | CO4 | CO5 |
|---|---|---|---|---|---|
| Marks | 5 | 30 | 45 | 20 | - |

**Instructions:**

*(i) Read all questions carefully and answer accordingly.*
*(ii) Do not write anything on the question paper other than roll number.*
*(iii)Scientific and Non-programmable calculators are permitted*

## Part A

**Answer ALL the Questions. Each question carries 2marks.** **4Q x 5M=20M**

| | | | | |
|---|---|---|---|---|
| 1. | Calculate the Fixed end moments for AB and BC beams loaded as shown in fig.   | 5 Marks | L1 | CO1 |
| 2. | Calculate the Rotation factors for the joint B and C for the given frame:   | 5 Marks | L2 | CO3 |

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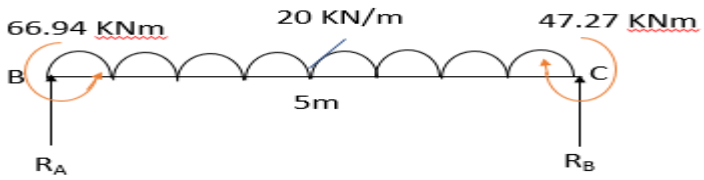
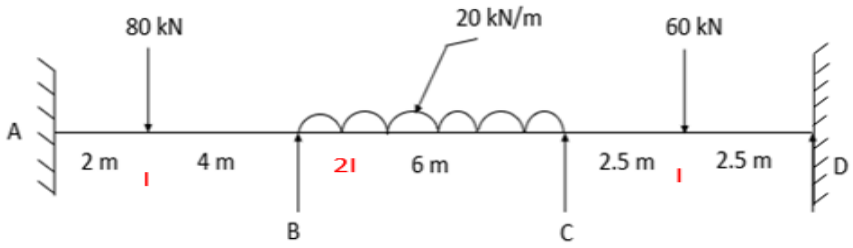
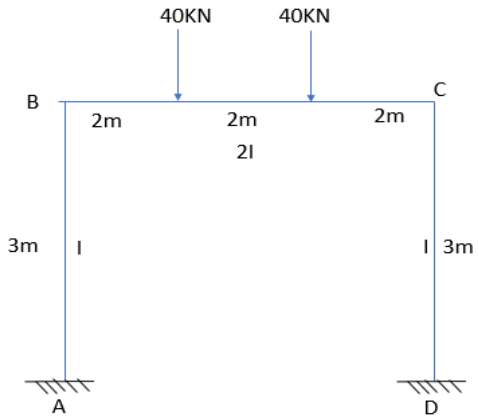
|---|---|---|---|---|
| 3. | Calculate the Maximum Bending moment for the given beam AB:<br>  | 5 Marks | L2 | CO2 |
| 4. | Calculate the Distribution factors at joint B and C for a given continuous beam:<br>  | 5 Marks | L2 | CO2 |

## Part B

**Answer the Questions.** **Total Marks 80M**

| | | | | | |
|---|---|---|---|---|---|
| 11. | a. | The beam BC is supported on elastic columns at rigid joints B and C and restrained at A and D loaded as shown in figure. Analyze the given frame using Moment Distribution method. Determine the Final end moments and show the moments on the frame. (**Max BM and BMD not required**).<br>  | 20 Marks | L3 | CO2 |
| | | **Or** | | | |
| 12. | a. | A room of size 8m X 16m is supported by portal frames. The beam BC is subjected to a udl of 60KN/m over a span of 8m. The beam is supported by elastic columns AB and CD with rigid joints B and C restrained at A and D as shown in figure. Analyze the given frame using Moment Distribution method. Determine the Final end moments for the frame ABCD and the Maximum Bending moment at BC. (**BMD not required**) | 20 Marks | L3 | CO2 |

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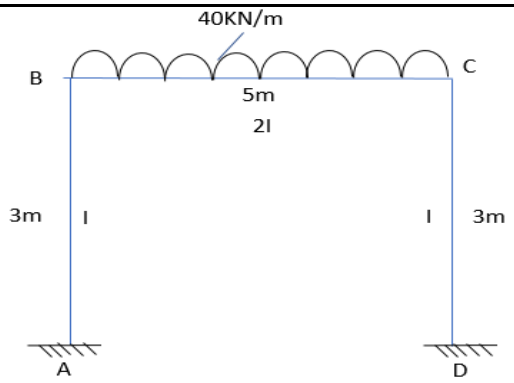
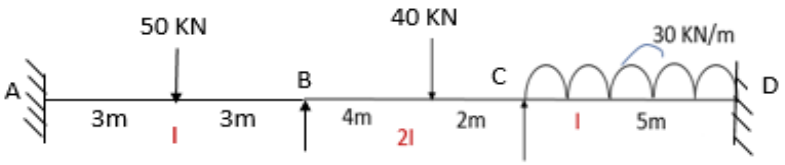
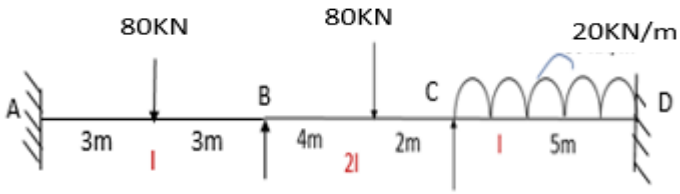
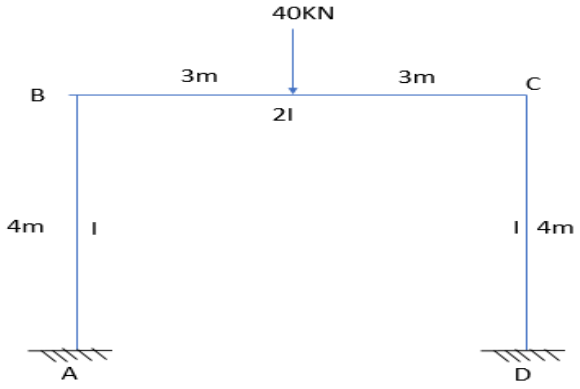
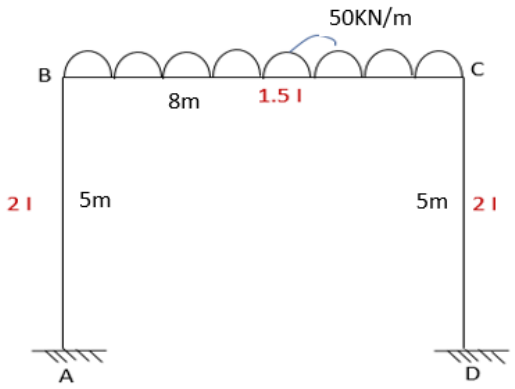
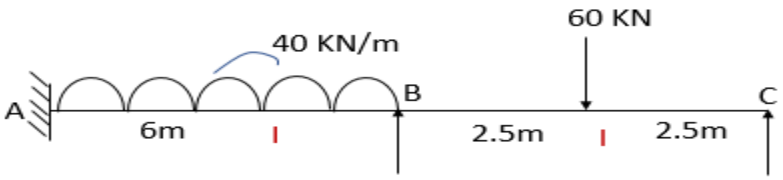
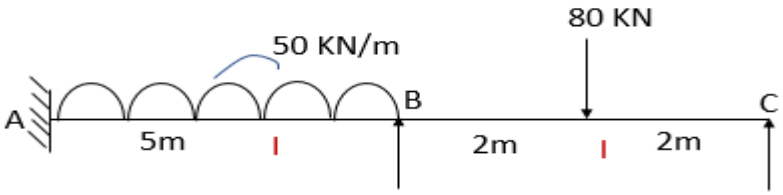
|---|---|---|---|---|---|
| | |  | | | |
| 13. | a. | A continuous beam ABCD is supported at B and C and ends of the continuous beam are constructed along with supporting elements to achieve the fixity. Analyze the given beam using Kani's Method. Draw the BMD for the beam and Calculate the maximum positive bending moment for span AB, BC and CD<br>  | 20 Marks | L3 | CO3 |
| | | **Or** | | | |
| 14. | a. | A continuous beam ABCD is loaded as shown in the figure. Using Kani's method, analyze the given beam and draw the SFD and BMD for the beam. Also Calculate the maximum positive bending moment for span AB, BC and CD.<br>  | **2**0 Marks | L3 | CO3 |
| 15. | a. | Analyze the given portal frame using Kani's method. Draw the BMD for the frame and Calculate the Maximum positive bending moment for the span AB, BC and CD.<br>  | 20 Marks | L3 | CO3 |
| | | **Or** | | | |

| | | | | | |
|---|---|---|---|---|---|
| 16. | a. | Analyze the given portal frame using Kani's method. Calculate the Maximum positive bending moment for the span AB, BC and CD.<br>  <br> | 20 Marks | L3 | CO3 |
| 17. | a. | Analyze the given beam using Stiffness Matrix Method or Flexibility Matrix method. Draw the BMD for the beam and Calculate the Maximum positive Bending moment for the span AB and BC.<br>  <br> | 20 Marks | L3 | CO4 |
| | | **Or** | | | |
| 18. | a. | Analyze the given beam using Stiffness Matrix Method or Flexibility Matrix method. Draw the SFD and BMD for the beam and Calculate the Maximum positive Bending moment for the span AB and BC.<br>  <br> | 20 Marks | L3 | CO4 |