Code No: R05220106 **R05** **Set No. 2**

II B.Tech II Semester Examinations,December 2010
STRUCTURAL ANALYSIS-I
Civil Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Find the forces in the members of the frame shown in Figure 1. All the members have the same area and are made of same material. [16]

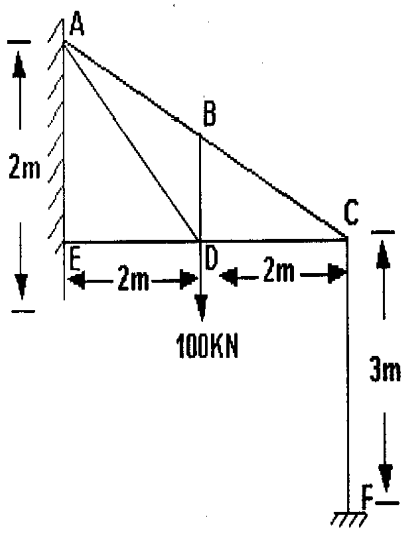

Figure 1

2. Develop the slope-deflection equations for analyzing continuous beams and portal frames. Illustrate their application. [16]

3. Draw the bending moment diagram and locate the point of inflections for the propped cantilever beam shown in Figure 2. [16]

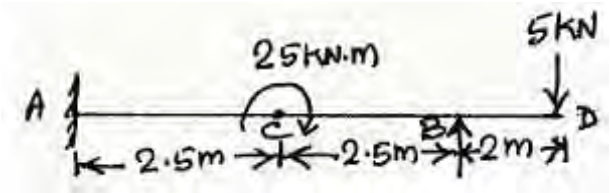

Figure 2

4. A beam CABD is simply supported at A and B and has overhangs on both the supports. Overhang CA=2m, span AB=10m and overhang BD=2.5m. Draw the influence lines for B.M at A,B and at the centre of AB. [16]

5. Define Strain energy. Derive an expression for strain energy due to bending moment. [16]

6. A system of wheel loads crosses a girder of 21.60m span, which is simply supported at its ends. The loads and their distances are as follows.

Wheel load (kN) :	100	200	200	150
Distance between centre (metres) :	1.80	2.70	2.40	2.10

Determine:

(a) the maximum B.M at quarter span

(b) the maximum B.M in the girder. [8+8]

7. A continuous beam of constant moment of inertia is loaded as shown in Figure 3. Find the support moments and reactions using Clapeyron's theorem of three moments. Also sketch the BMD and SFD. [16]

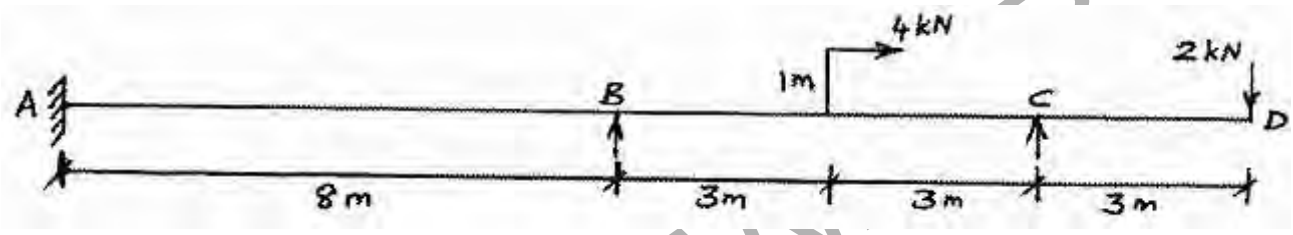

Figure 3

8. A fixed beam AB is subjected to a uniformly distributed load of 5kN/m. Support. A is rigid. But support B rotates by 0.0001 radian for every 1kN-m of moment. If EI = 20 x 10^3 kN-m^2, find the end moments. Draw also the bending moment and shear force diagrams for the beam. [16]

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Code No: R05220106 **R05** **Set No. 4**

II B.Tech II Semester Examinations,December 2010
STRUCTURAL ANALYSIS-I
Civil Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. Define Strain energy. Derive an expression for strain energy due to bending moment. [16]

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   Distance between
   centre (metres) : 1.80 2.70 2.40 2.10
   Determine:
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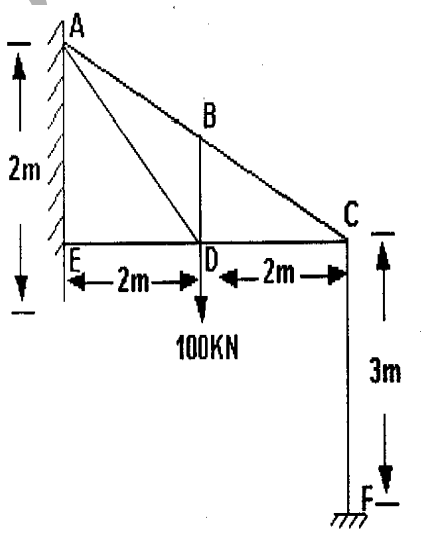

Figure 1

4. Develop the slope-deflection equations for analyzing continuous beams and portal frames. Illustrate their application. [16]

5. A continuous beam of constant moment of inertia is loaded as shown in Figure 2. Find the support moments and reactions using Clapeyron's theorem of three moments. Also sketch the BMD and SFD. [16]

Code No: R05220106 **R05** **Set No. 4**

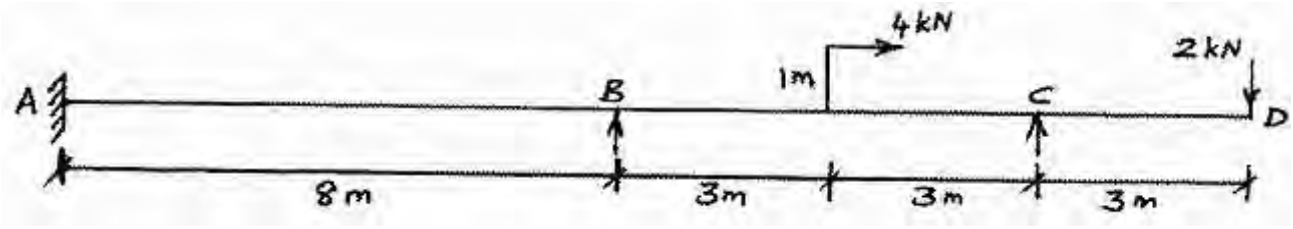

Figure 2

6. Draw the bending moment diagram and locate the point of inflections for the propped cantilever beam shown in Figure 3. [16]

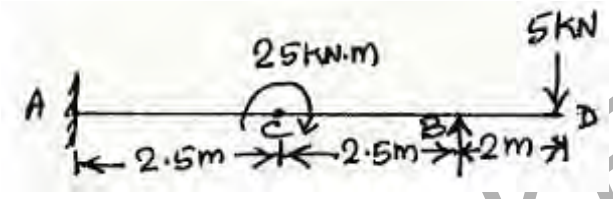

Figure 3

7. A fixed beam AB is subjected to a uniformly distributed load of 5kN/m. Support. A is rigid. But support B rotates by 0.0001 radian for every 1kN-m of moment. If EI = 20 x 10^3 kN-m^2, find the end moments. Draw also the bending moment and shear force diagrams for the beam. [16]

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Code No: R05220106 **R05** **Set No. 1**

II B.Tech II Semester Examinations,December 2010
STRUCTURAL ANALYSIS-I
Civil Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

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2. Develop the slope-deflection equations for analyzing continuous beams and portal frames. Illustrate their application. [16]

3. A continuous beam of constant moment of inertia is loaded as shown in Figure 1. Find the support moments and reactions using Clapeyron's theorem of three moments. Also sketch the BMD and SFD. [16]

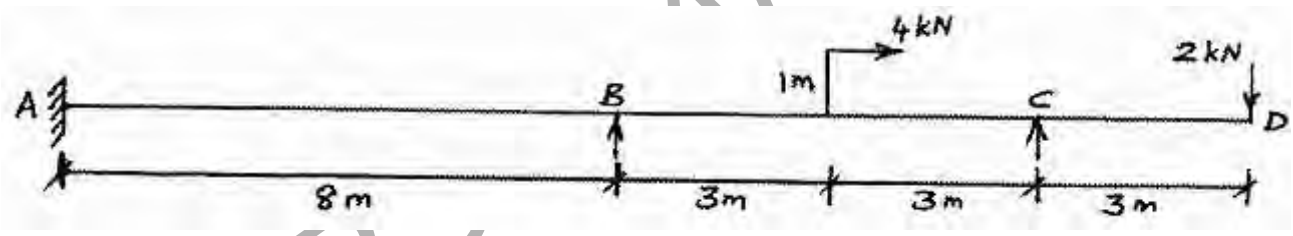

Figure 1

4. Draw the bending moment diagram and locate the point of inflections for the propped cantilever beam shown in Figure 2. [16]

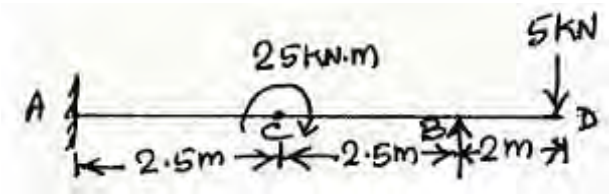

Figure 2

5. A fixed beam AB is subjected to a uniformly distributed load of 5kN/m. Support. A is rigid. But support B rotates by 0.0001 radian for every 1kN-m of moment. If EI = 20 x 10^3 kN-m^2, find the end moments. Draw also the bending moment and shear force diagrams for the beam. [16]

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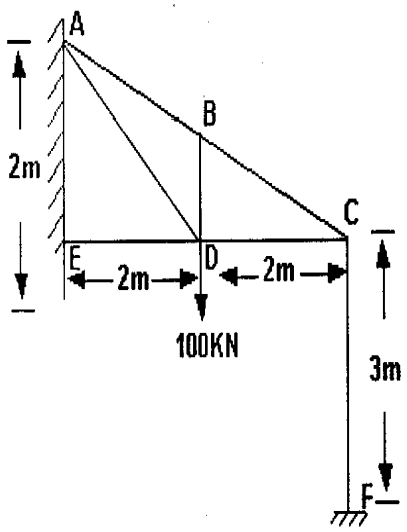

Figure 3

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Code No: R05220106 **R05** **Set No. 3**

II B.Tech II Semester Examinations,December 2010
STRUCTURAL ANALYSIS-I
Civil Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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   Wheel load (kN) : 100 200 200 150
   Distance between
   centre (metres) : 1.80 2.70 2.40 2.10
   Determine:
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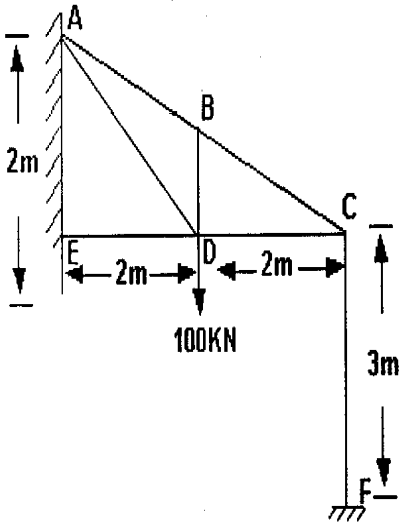
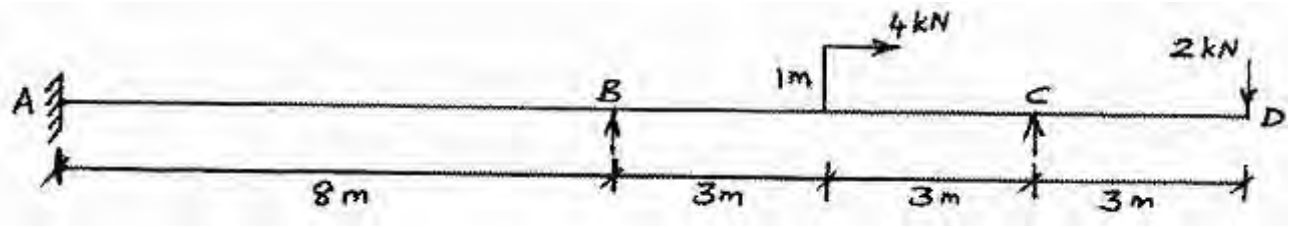


Figure 1

3. A continuous beam of constant moment of inertia is loaded as shown in Figure 2. Find the support moments and reactions using Clapeyron's theorem of three moments. Also sketch the BMD and SFD. [16]



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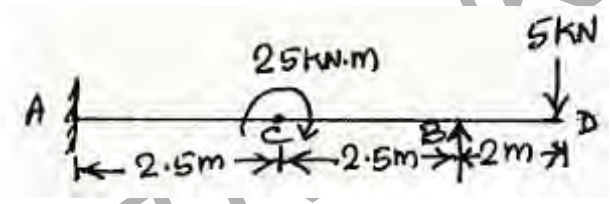

Figure 3

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