OR

The three hinged stiffening girder of a suspension bridge of 100m span is subjected to two point loads of 10kN each placed at 20m and 40m respectively from the left hand hinge. Determine the B.M and S.F in the girder at section 30m from each end. Also determine the maximum tension in the cable which has a central dip of 10m.

UNIT - V

5. A system of four loads 80, 160, 160 and 120kN crosses a simply supported beam of 25m span with 120kN load leading. The loads are equally spaced at 1m. Determine the value of

   i) maximum bending moment at a section 10m from left support and

   ii) absolute maximum shear force and bending moment in the beam.

OR

Two wheel loads of 16 and 18KN at a distance apart of 2m, cross a beam of 10m span. Draw the influence line for bending moment and shear force for a point 4m from the left abutment, and find the maximum bending moment and shear force at that point.

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Roll No .....

CE - 505

B.E. V Semester

Examination, December 2013

Theory of Structure - I

Time : Three Hours

Maximum Marks : 70

Note: 1. Attempt all questions.
2. All questions carry equal marks.
3. Assume missing data, if any, suitably.

Unit - I

1. State and explain Castigliano's first and second theorems. Determine the forces in the members of the redundant pin-jointed frame as shown in Figure-1. AE is constant for all members.

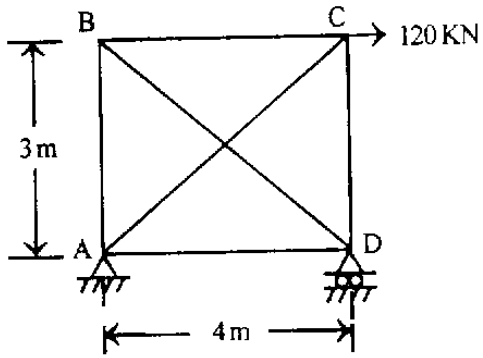

Figure -1

OR

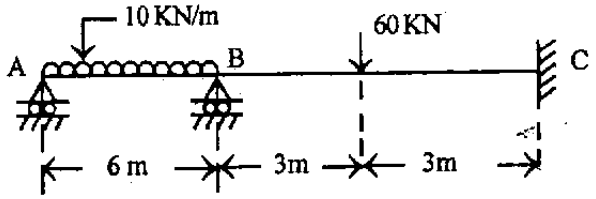

Figure-2

Unit - I

2. Analyze a continuous beam ABC as shown in Figure-3. Draw BMD use three moment equation method.

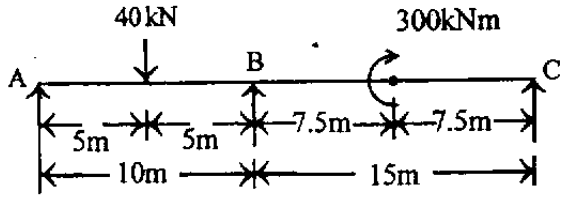

Figure-3

OR

A portal frame ABCD fixed at ends A and D carries uniformly distributed load as shown in Figure-4. Draw BMD and Sketch the deflected shape of the beam. EI is constant use moment distribution method.

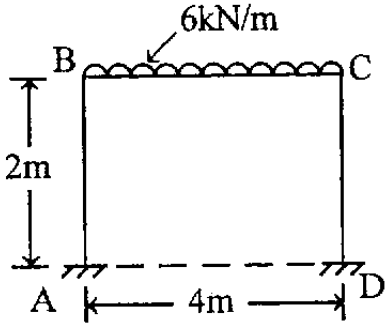

Figure-4

Unit - III

3. A portal frame ABCD fixed at end A and hinged at end D. The frame is loaded as shown in Figure-5. EI is constant for all members. Analyze frame by using slope-deflection method.

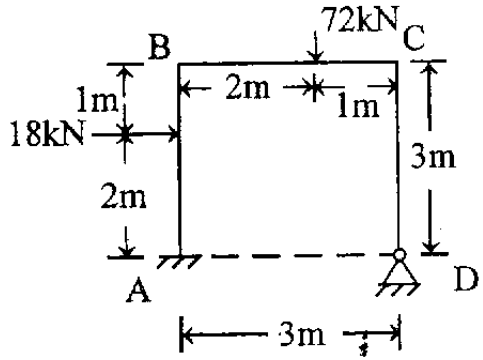

Figure-5

A beam AB of span L is fixed at A and B, and carries a point load W at a distance 'a' from A and 'b' from B. Calculate support moments. Use column Analogy method. EI is constant.

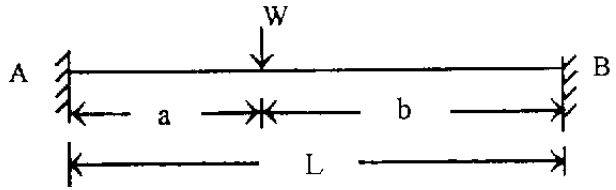

Figure-6

Unit - IV

4. A symmetrical three-hinged parabolic arch has span 20m and rise 4m. It carries a concentrated load of 40kN at a point 4m horizontally from the left support and uniformly distributed load of 16kN/M over the right half of the span. Find the horizontal thrust.