

Government College of Engineering, Aurangabad

(An autonomous Institute of Government of Maharashtra)

T.E. (Civil) Old

End Semester Examination November/December 2016

AM301: THEORY OF STRUCTURES-II

Time: Three Hours

15 NOV 2016

Max. Marks: 60

"Verify the course code and check whether you have got the correct question paper"

N.B:

1. a) Q.1 is compulsory.  
b) Solve any Two questions from Q.2, Q.3 and Q.4, and  
c) Solve any Two questions from Q.5, Q.6 and Q.7
2. Assume suitable data if necessary and state it clearly
3. Use of non-programmable calculator is allowed

Q.1 State and explain Any Six of the following

- i) Static and kinematic indeterminacy of a structure
- ii) Shape factor of a section
- iii) Castigliano's first theorem
- iv) Slope deflection equation of a member
- v) Beam moment in arches
- vi) Distribution theorem
- vii) Rotational contribution factor
- viii) Reciprocal deflection theorem

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Q.2 a) Derive the expression of plastic modulus of rectangular and circular cross sections.

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b) Explain the assumptions of theory of plasticity

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Q.3 Analyse the beam shown in Fig.1 using Castigliano's theorem/force method. Draw SFD, BMD and sketch elastic deflection curve.

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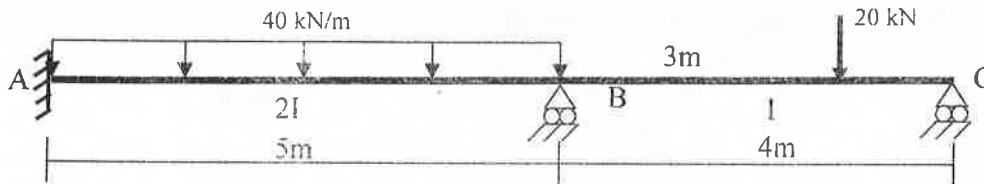


Fig. 1.

Q.4 Analyse the frame as shown in Fig. 2 using Moment Distribution Method. Draw SFD and BMD.

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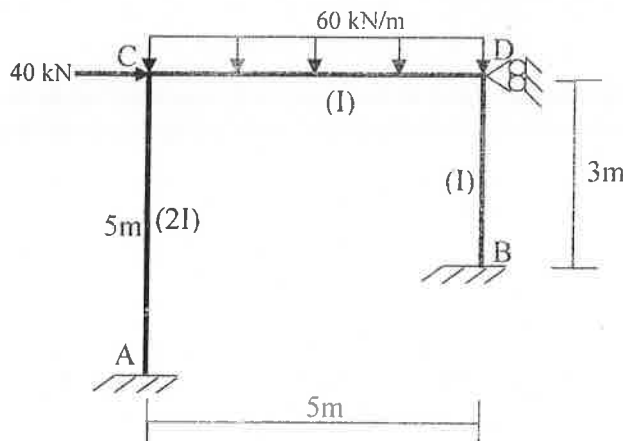


Fig. 2.

Q.5 Analyse the frame as shown in Fig. 3 using Slope Deflection Method. Draw SFD, BMD and sketch elastic deflection curve.

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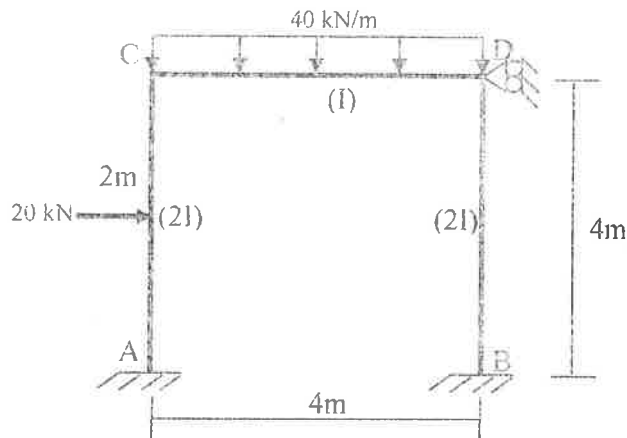


Fig. 3

Q.6 Two hinged arch with supports at same level carries udl over entire span. Derive the expression of horizontal thrust and draw BMD for the following cases,  
a) Semicircular and b) Parabolic arch

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Q.7 a) Analyse the pin jointed truss as shown in Fig. 4. Assume members with constant axial rigidity.

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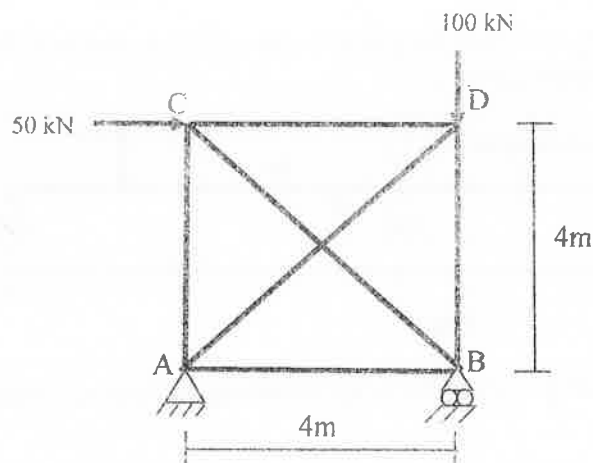


Fig. 4

b) A propped cantilever AB of 3 m span, is fixed at A and simply supported at B. It carries udl over 2 m starting from fixed end. Analyse the beam using slope deflection method.

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