Roll No. | | | | | | | | | | | | | Total No. of Pages : 03

Total No. of Questions : 09

B.Tech.(CE) (Sem.–5)

STRUCTURAL ANALYSIS – II

Subject Code : CE-305

Paper ID : [A0614]

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Write briefly :

a) What is method of least work? Describe in brief.

b) What will be the degree of static and kinematic indeterminacy of a beam fixed at both ends?

c) A continuous beam ABC with UDL 'W' throughout its length, no settlement and constant EI. What will be the Clapeyron's three moment equation? Length of AB is L_1 and BC is L_2.

d) Describe in brief the significance of influence line diagram.

e) Define stiffness of a beam.

f) What will be the fixed end moments if a beam of length 5 m, fixed at both ends is subjected to a point load of 5 kN at distance 2 m from left support.

g) Define Muller-Breslau principle.

h) Write down the stability conditions required for a space truss.

i) What is carry over factor and distribution factor?

j) Draw influence line diagram for support reactions at distance 'x' from left end of a simply supported beam of length 'L' when a unit load moves from left end to right end.

SECTION-B

2. Three wires AD, BD and CD having the same cross-sectional area and of the same material support a load W as shown in figure 1. Determine the force in the three wires.

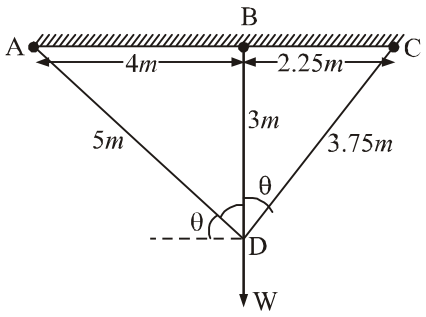


Fig.1

3. A continuous beam ABC consists of spans AB and BC of lengths 3 m and 4 m respectively, the ends A and C being simply supported. If the spans AB and.BC carry UDL of intensity 50 kN/m and 40 kN/m respectively, determine the support moments at A, B and C. Draw S.F and B.M diagrams. The moments of inertia for the spans AB and BC are I and 2I respectively.

4. Analyse the frame as shown in figure 2 using slope deflection method and draw BMD. Assume uniform flexural rigidity.

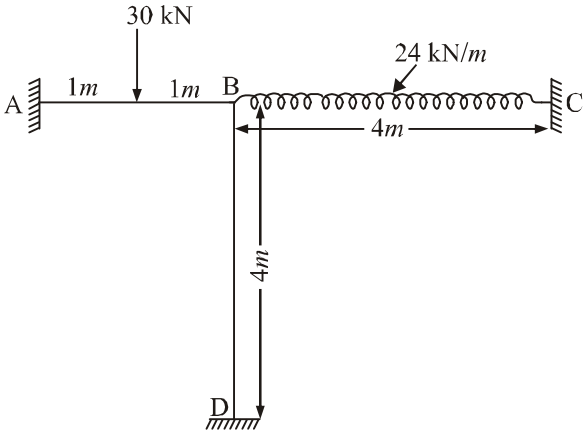


Fig.2

5. Using method of tension coefficients, analyse the cantilever plane truss as shown in figure 3 and find the member forces.

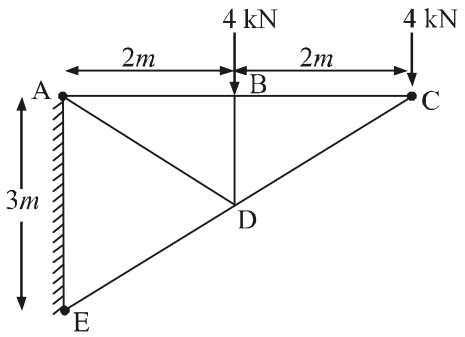


Fig.3

6. Draw the influence line for reaction at B for the proposed cantilever as shown in figure 4. Compute the influence line ordinates at 1.5 m intervals.

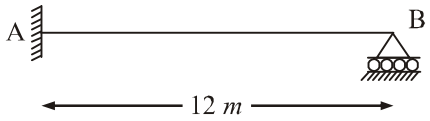


Fig.4

SECTION-C

7. Analyse the rigid jointed frame loaded as shown in figure 5 using portal method.

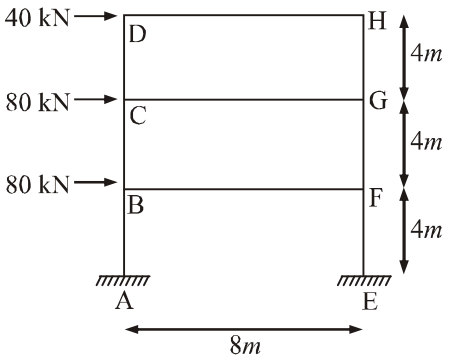
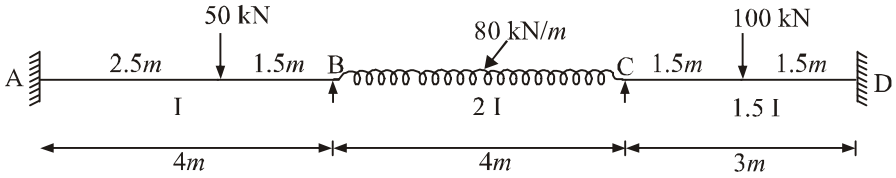


Fig.5

8. Determine the support moments at A, B, C, D for the continuous beam as shown in figure 6, using rotation contribution method.



9. A beam AB of span 4m is fixed at A and B and carries a point load of 5 kN at a distance of 1 m from end A. Calculate the support moments by method of consistent deformation.