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Total No. of Pages : 04

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

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY.
2. Attempt any FOUR questions from SECTION-B.
3. Attempt any TWO questions from SECTION-C.

SECTION-A (10 × 2 = 20 Marks)

1. (a) Determine the static indeterminacy for the beam shown in Fig. 1.

Fig. 1

(b) Determine the kinematic indeterminacy of Fig. 2. Members are axially rigid.

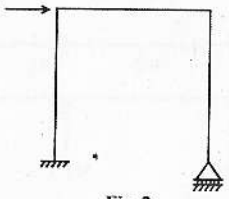

Fig. 2

(c) What is law of reciprocal deflection?

(d) What is the effect of rotation of support in fixed beams?

(e) Under what conditions there is sway in rigid frames?

(f) Explain carry-over factor.

(g) What is rotation contribution factor?

(h) What is the main difference in portal and cantilever method?

(i) What is tension coefficient?

(j) What is Muller-Breslau principle?

SECTION-B (4 × 5 = 20 Marks)

2. Using the displacement method, determine the support moment and reactions for the beam given in Fig. 3, the reaction R_b treating it as a redundant.

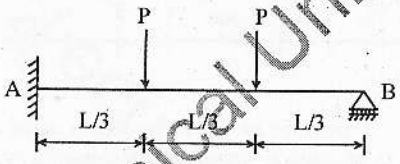

Fig. 3

3. Using the theorem of three moments, find the support moments and reactions for the continuous beam given in Fig. 4. *EI* constant.

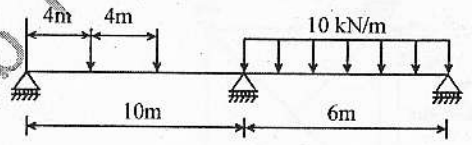

Fig. 4

4. Using the slope-deflection method, determine the support moments and reactions for the beam shown in Fig. 5. *EI* constant.

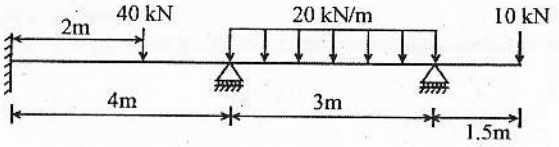

Fig. 5

5. Analyze the fixed beam shown in Fig. 6 using moment area method.

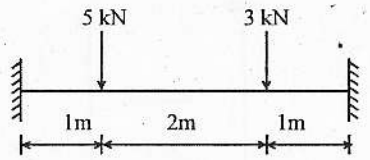

Fig. 6

6. Using the displacement method, determine the support moment and reactions for the beam shown in Fig. 7 support B settles by 0.03 m. Take E = 200 GPa, $I = 2\times 10^{-3}$ m^4.

Fig. 7

SECTION-C **(2 × 10 = 20 Marks)**

7. Using the moment distribution method, draw the BMD of the frame shown in Fig. 8. *EI* constant.

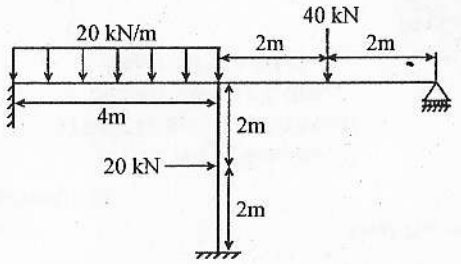

Fig. 8

8. Using the force method, determine the member forces in truss shown in Fig.9. EA constant.

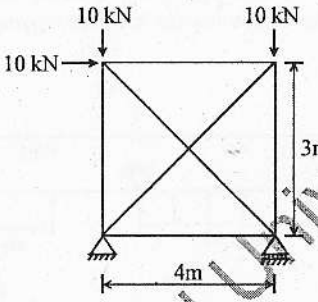

Fig. 9

9. Compute the influence line ordinates, at intervals of 2.5 m for the reaction R_A for the beam shown in Fig. 10. *EI* constant.

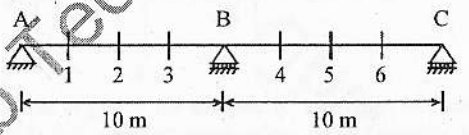

Fig. 10

[A-12]