Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 20517

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2023.

Fifth Semester

Civil Engineering

CE 3502 – STRUCTURAL ANALYSIS I

(Regulations 2021)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the different methods of analysis of truss?

2. Write the generalized formula for finding the deflection at the joint of the truss.

3. Give the slope deflection equation for the beam with end span is pin supported.

4. State the conditions when sway occurs in frames.

5. Define carry over factor.

6. Define distribution factor.

7. Write the generalized formula for flexibility method.

8. State the steps to be done to get the solution by flexibility method.

9. Write the generalized formula for stiffness method.

10. What is meant by degree of kinematic indeterminancy?
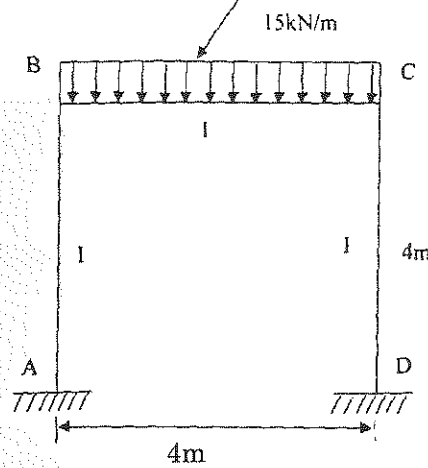
PART B — (5 × 13 = 65 marks)

11. (a) Find the forces in the members AB, AG and BG by method of joints.
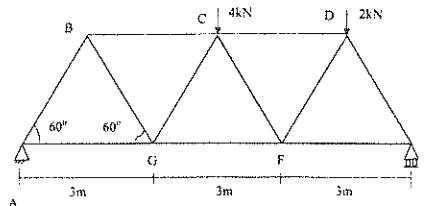
Or

    (b) Find the forces in the members CD and CF and FD shown in question 11.(a) by method of tension coefficient.

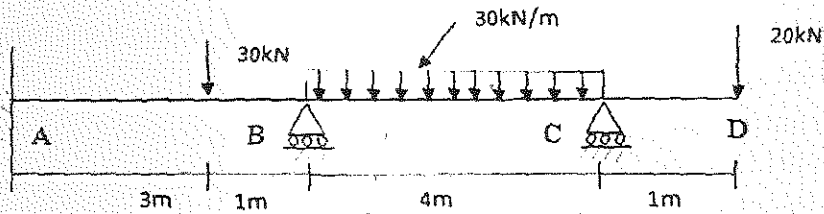12. (a) Analysis the frame shown in figure given by slope deflection method and draw bending moment diagram.

Or

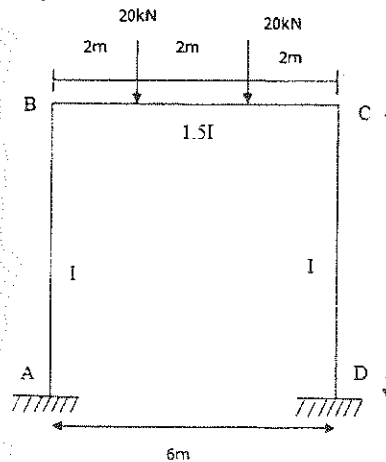(b) Analyse the continuous beam ABC shown in figure given below by slope deflection method. Take EI constant.
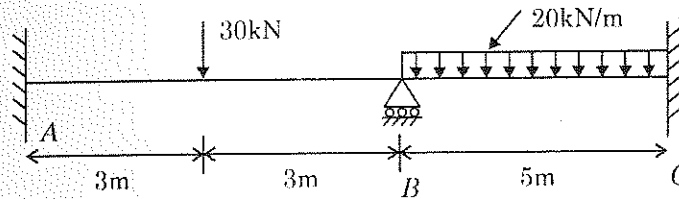
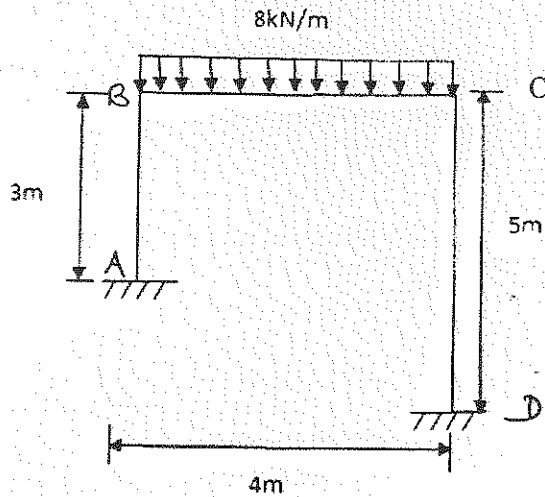13. (a) Analyse the beam by moment distribution method.
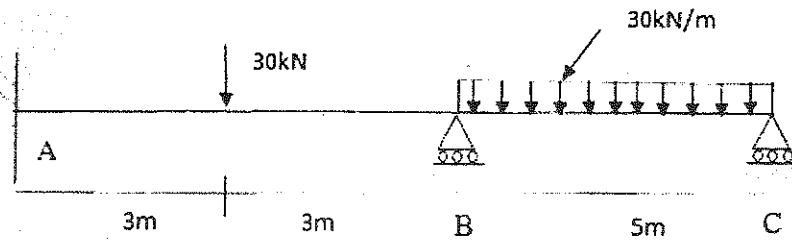

Or

(b) Analyse the frame by moment distribution method.

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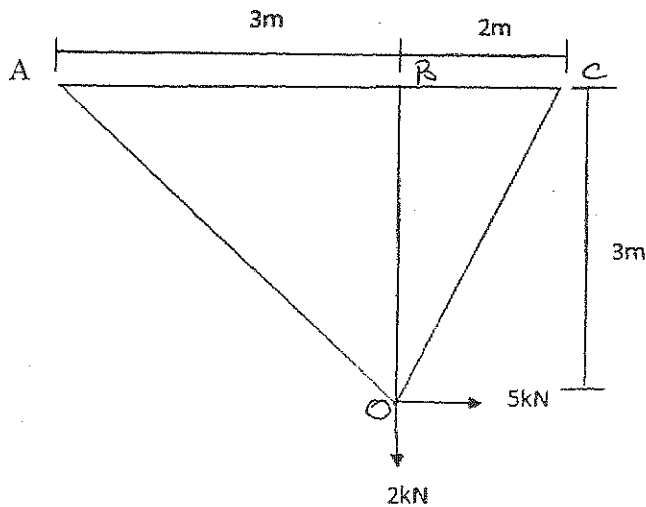14. (a) Determine the support reactions on the frame by flexibility method.

8kN/m

3m

5m

4m

Or

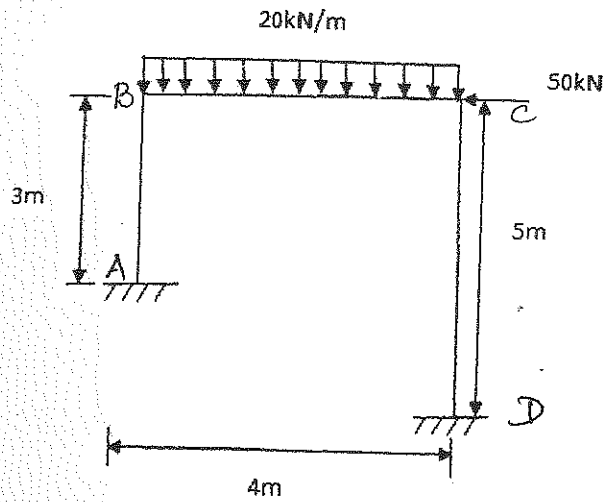(b) Analyze the continuous beam shown in figure by flexibility method.

30kN/m

30kN

A

3m   3m   B   5m   C

15. (a) Analyse the truss by stiffness method.

3m   2m

A   B   C

3m

5kN

2kN

Or

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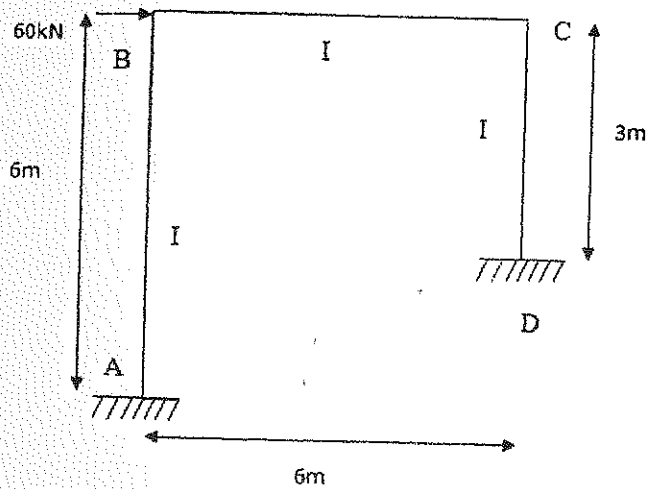
(b) Analyse the frame by stiffness method.

16. (a) Analyze the frame shown in figure by moment distribution method.

Or

(b) Analyse the continuous beam ABC shown in figure given below, if support B sinks by 10 mm by flexibility matrix method. Take $EI = 6000 \, kNm^2$.

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