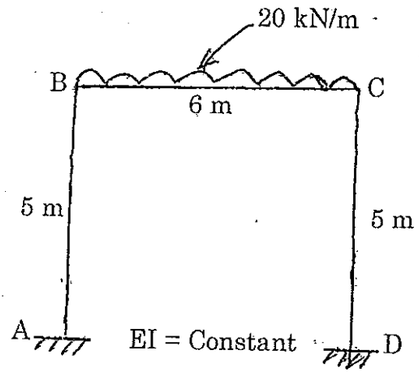
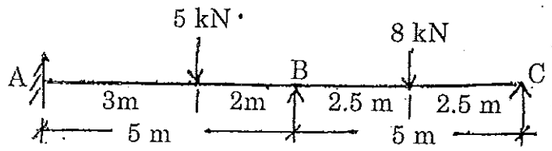
b) Analyze the portal frame ABCD shown in Fig. Q 15(b) by stiffness method.



PART – C **(1×15=15 Marks)**

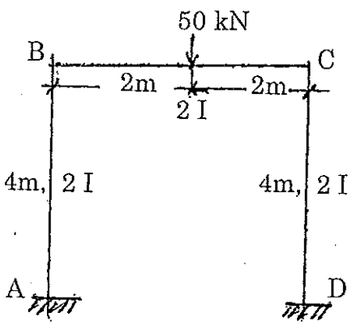
16. a) Analyze the continuous beam ABC shown in Fig. Q 16(a) by moment distribution method and also draw the bending moment diagram. Take EI = constant.



EI = Const.

(OR)

b) Analyze the portal frame ABCD shown in Fig. Q 16(b) by stiffness matrix method and also draw the bending moment diagram.



Reg. No. :

Question Paper Code : 90131

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019
Fifth Semester
Civil Engineering
CE 8502 – STRUCTURAL ANALYSIS – I
(Regulations 2017)

Time : Three Hours Maximum : 100 Marks

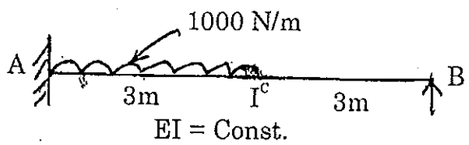
Answer ALL questions

PART – A **(10×2=20 Marks)**

1. Differentiate statically determinate structures and indeterminate structures.
2. State Castigliano's first theorem.
3. Mention any two assumptions made in slope deflection method.
4. How many slope deflection equations are available for a two span continuous beam ?
5. Define distribution factor.
6. What are the situations where the sway will occur in portal frames ?
7. Write the general expression for the degree of redundancy of the pin-jointed plane frames.
8. What are the assumptions made in the unit load method ?
9. Define kinematic redundancy.
10. Define Force-Transformation Matrix.

PART – B **(5×13=65 Marks)**

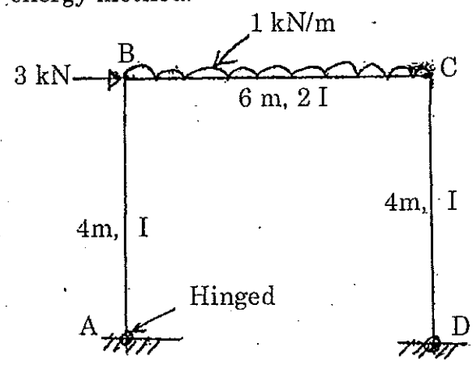
11. a) Analyse the propped cantilever beam AB loaded as shown in Fig. Q 11 (a) by strain energy method and also drawn the bending moment diagram.



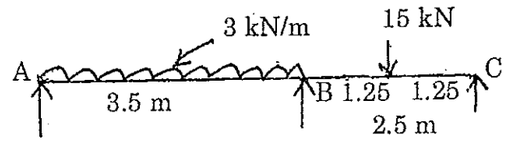
EI = Const.

(OR)

b) Analyse the portal frame with hinged base shown in Fig. Q11(b) by strain energy method.



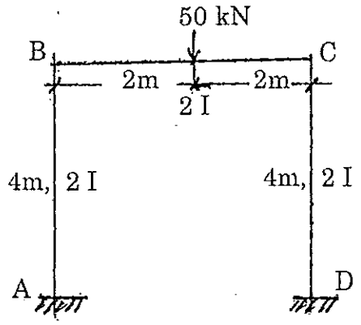
12. a) Analyze the continuous beam ABC shown in Fig. Q 12(a) by slope-deflection method. Take EI = constant.



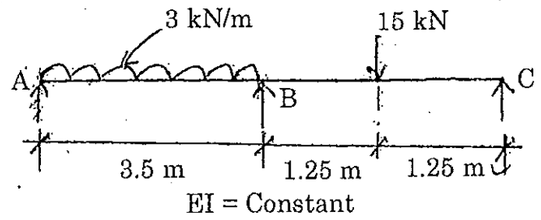
EI = Const.

(OR)

b) Analyze the portal frame ABCD shown in Fig. Q 12(b) by slope-deflection method. Take EI = constant.



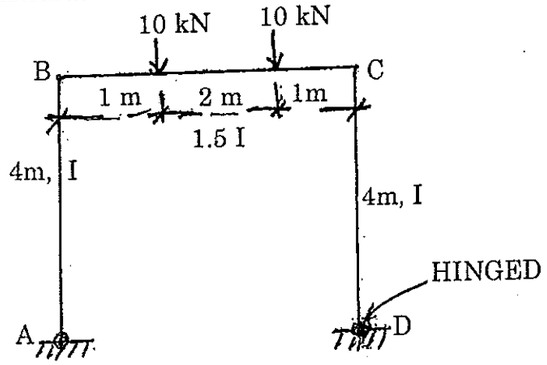
13. a) Analyze the continuous beam ABC shown in Fig. Q 13(a) by moment distribution method. Take EI = constant.



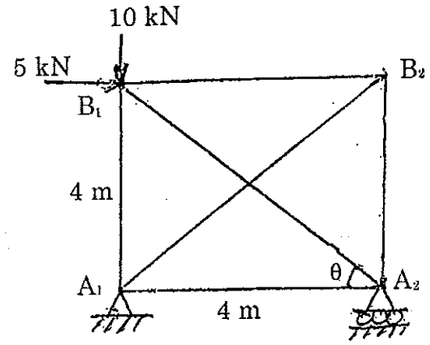
EI = Constant

(OR)

b) Analyze the portal frame ABCD shown in Fig. Q 13(b) by moment distribution method.

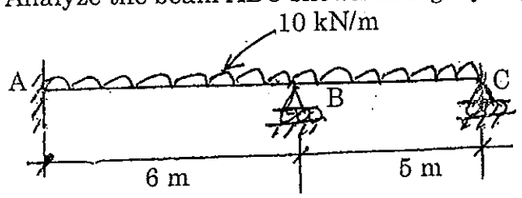


14. a) Analyze the pin-jointed plane frame shown in Fig. Q 14(a) by flexibility matrix method. The flexibility for the member is constant.



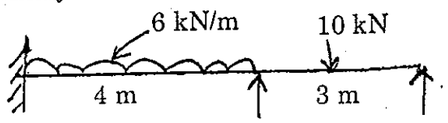
(OR)

b) Analyze the beam ABC shown in Fig. Q 14(b) by flexibility matrix method.



EI = Constant

15. a) Analyze the beam ABC shown in Fig. Q 15 (a) by stiffness method.



EI = Constant

(OR)