

Time : 3 Hours

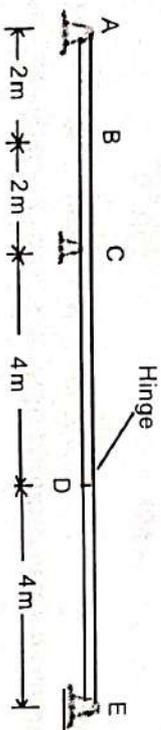
Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

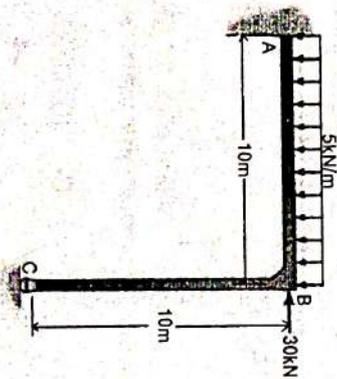
Note : Attempt four questions selecting one question each from Section A, B, C and D. Section E is compulsory.

SECTION - A

1. (a) Define Muller-Breslau principle. (3)
- (b) Find the influence line diagram reaction at A as shown in beam. Take EI constant throughout the beam. (7)

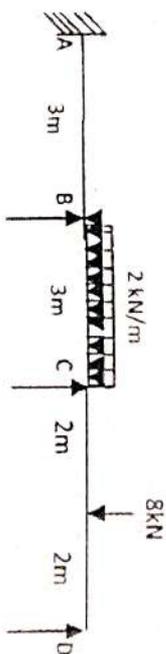


2. Determine reactions at supports using Force method. Take EI as a constant. (10)

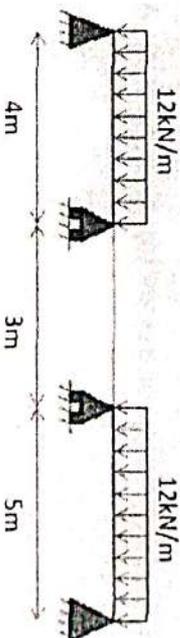


SECTION - B

3. Analyse the beam shown in figure. Calculate the support moments using slope deflection method. (10)

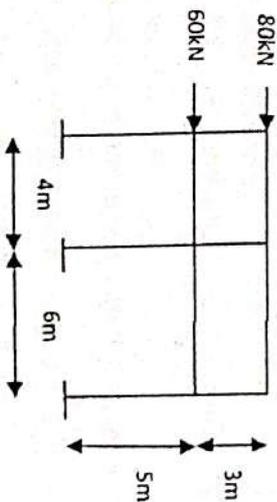


4. Determine the moments at B and C, then draw the moment diagram for the beam. Assume the supports at B and C are rollers and A and D are pins. EI is constant. (10)



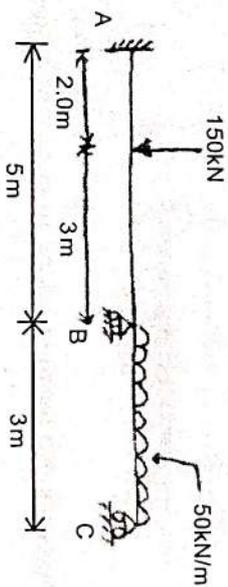
SECTION - C

5. Explain the cantilever method for analyzing a building frame subjected to horizontal forces. (10)
6. Using the approximate method analyse the building frame subjected to horizontal forces as shown in figure. Also draw BMD. (10)

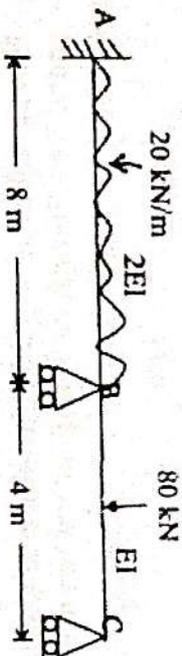


SECTION - D

7. Analyse the continuous beam ABC shown in figure by stiffness matrix method. Take EI as a constant. (10)



8. Analyse the continuous beam ABC shown in figure by flexibility matrix method. Take EI as a constant. (10)



SECTION - E (Compulsory)

9. (i) What are the uses of influence line diagram?
 (ii) What is a carryover factor and distributor factor in a moment distribution method?
 (iii) Distinguish between stiffness matrix method and flexibility matrix method.
 (iv) Define sway. What are the situations where sway will occur in portal frame?
 (v) What are the advantages and disadvantages of Indeterminate structure?

- (vi) How will you define Relative stiffness?
 (vii) Define Static and kinematic indeterminacy.
 (viii) How does the approximate methods useful in preliminary design and analysis?
 (ix) What are the limitations in Cantilever method of approximate analysis?
 (x) State Castigliano's first and second theorems. (10×2=20)