

TE | CIVIL | sem V | CBCS

(3 Hours)

[Total Marks: 80]

N.B: (1) Question No. 1 is compulsory.

(2) Attempt any **Three** questions out of remaining five questions.

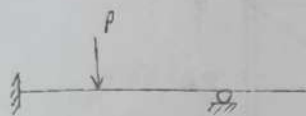
(3) Assume suitable data wherever required and state it clearly.

(4) Illustrate your answers with neat component sketches wherever required.

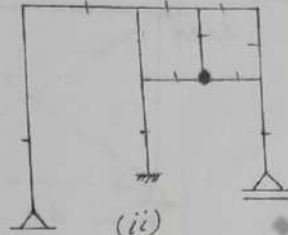
- 9 MAY 2019

1. Attempt any four of the following

(a) Determine degree of static and kinematic indeterminacy of following structures. 20  
06



(i)



(ii)

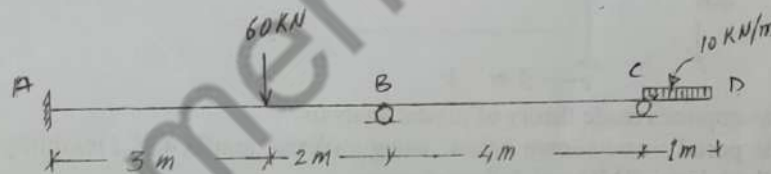


(b) Derive the slope deflection equation for continuous beam subjected to sinking of support. 04

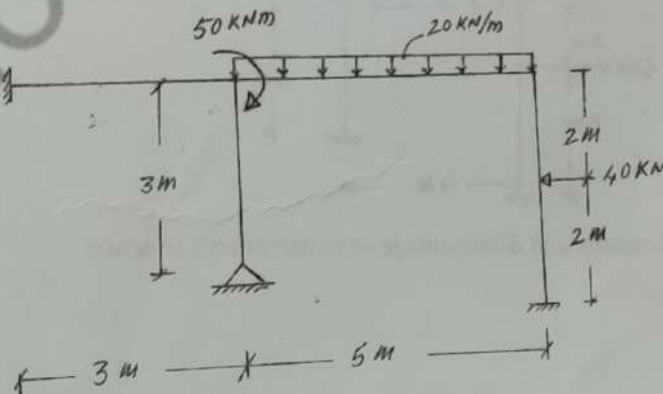
(c) Determine shape factor for isosceles triangular section having base 'b' and height 'h' 07

(d) Explain stiffness factor, carry over moment and distribution factor. 03

2. (a) Draw BMD and SFD for continuous beam shown below using Clapeyrons theorem. 08



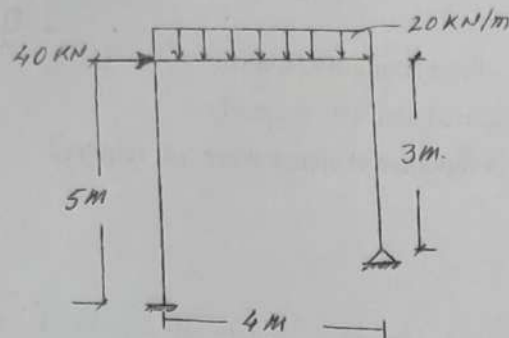
(b) Analyze the frame given below using slope deflection method. Draw BMD 12



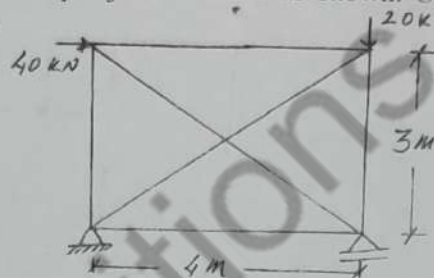
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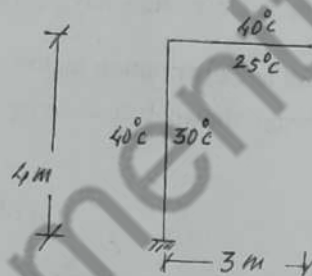
3. Analyse the frame shown, using Moment distribution method or Kani's method 20



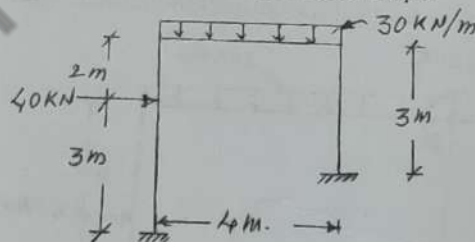
4. (a) Determine forces in each member of pin jointed frame as shown. Use force method.  $A=200 \text{ mm}^2$ ,  $E=200 \text{ GPa}$ . 10



- (b) Work out the vertical deflection of point C due to change in temperature as indicated. Take thickness of each member 400 mm. and  $\alpha_t = 12 \times 10^{-6} / ^\circ \text{C}$  07  
 $E=200 \text{ GPa}$



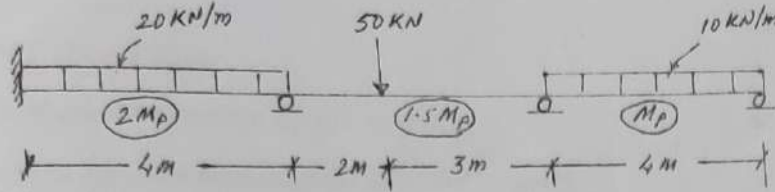
- (c) State the assumptions made theory of plastic analysis. 03
5. (a) Analyse the portal frame shown below, using stiffness matrix OR Flexibility Matrix method. Draw BMD and deflected shape. 16



- (b) State the advantage and disadvantage of indeterminate structure 04
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6. (a) Find plastic moment of resistance for beam shown in figure.

08



- (b) Using the approximate method analyse the building frame subjected to horizontal forces as shown in figure. Also draw BMD.

12

