TE-Sem-Ⅴ-Civil-CBSGS

Q.P.Code: 016641

(3 Hours)   [Total Marks: 80]

N. B.: 1. Question number 1 is compulsory.
2. Attempt any three from remaining questions.
3. Figures to the right indicate full marks.

1. (a) To find degree of static and kinematic indeterminacy of structures as shown in figure 1.   [6]
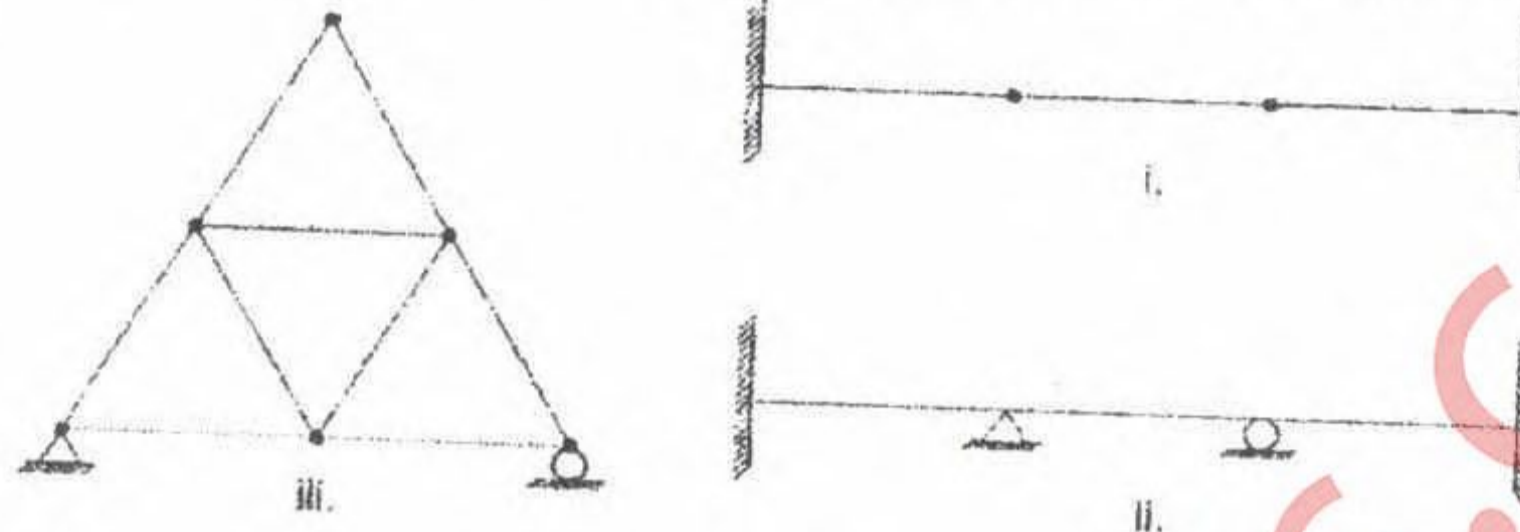

Figure 1

(b) For the frame as shown in figure 2, calculate the horizontal deflection of roller support 'D' due   [8]
to change in temperature as indicated. Take depth for each member as 500 mm and
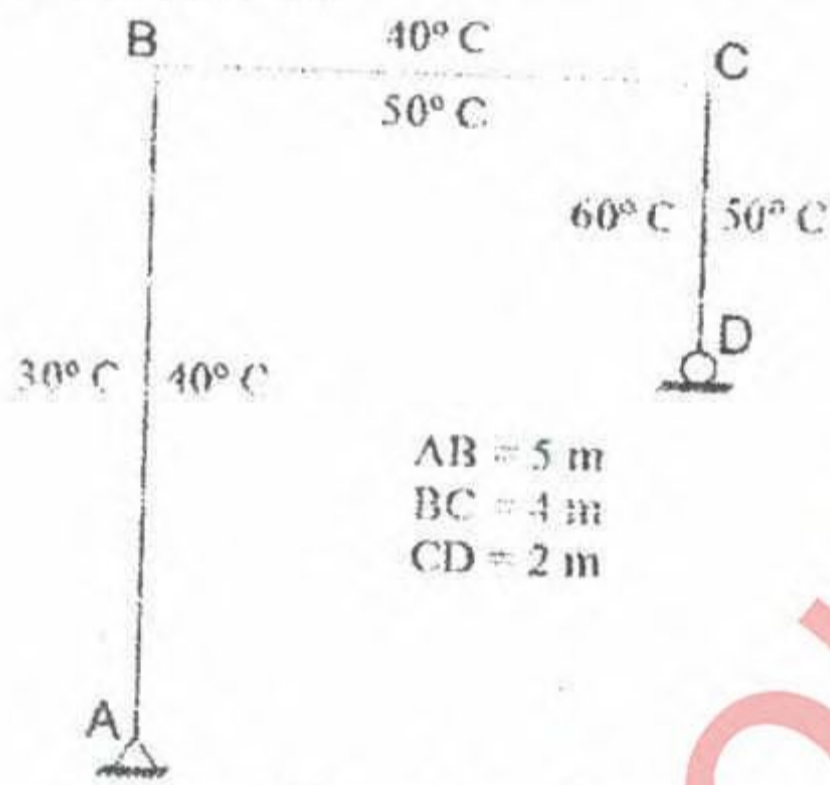$\alpha_t = 12 \times 10^{-6}/°C$.
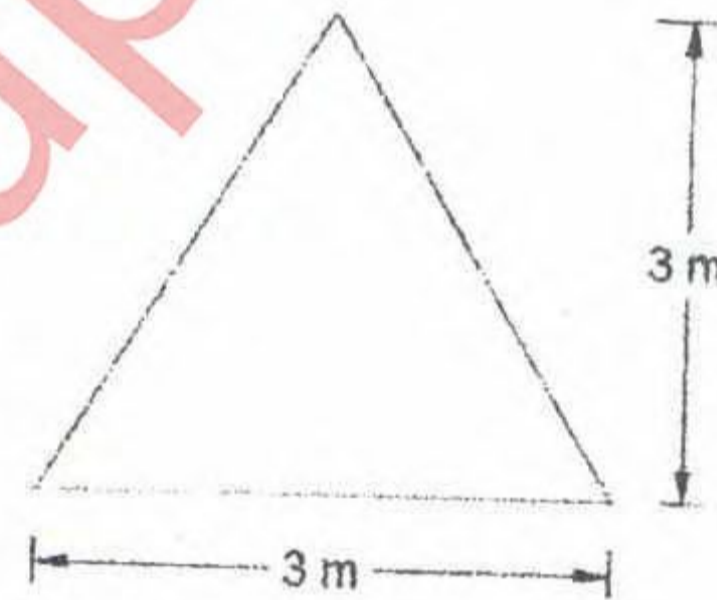

Figure 2

AB = 5 m
BC = 4 m
CD = 2 m

Figure 3

(c) Determine the shape factor for triangle section as shown in figure 3.   [6]

OR

Differentiate between Determinate and Indeterminate Structure.

2. (a) A two hinged parabolic arch of span 40 meter and rise 8 m carries uniformly distributed load   [10]
of 25 kN/m on Left half span. Find the reaction at supports and draw BMD.

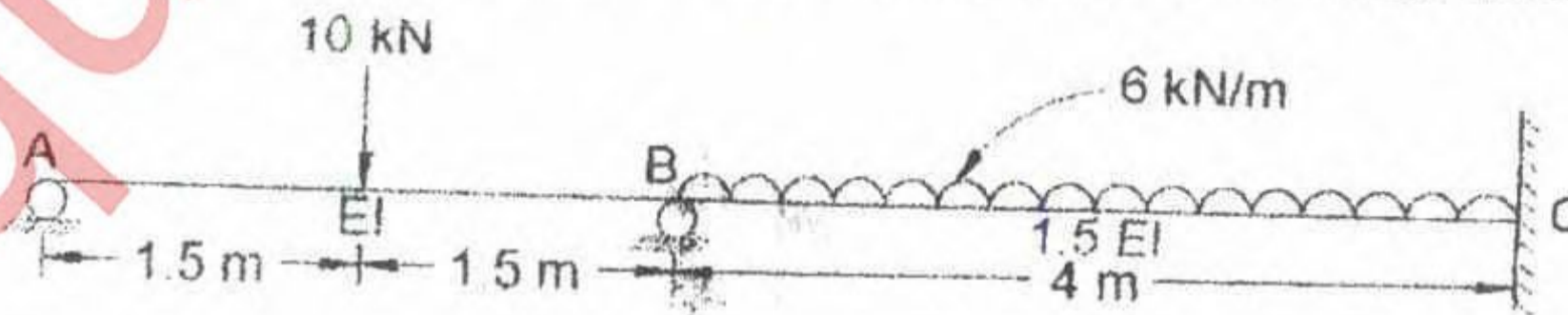(b) Analyse the beam as shown in figure 4 by three moment theorem and draw BMD.   [10]

Figure 4

TURN OVER

3. (a) A portal frame ABCD as shown in figure 5. Develop **Flexibility** matrix for respective co-ordinates. *Point D Show 3 co-ords*. [5]

(b) A portal frame ABCD is loaded and supported as shown in figure 5. Use **Flexibility method** for analysis, draw BMD and deflected shape of the frame. [15]
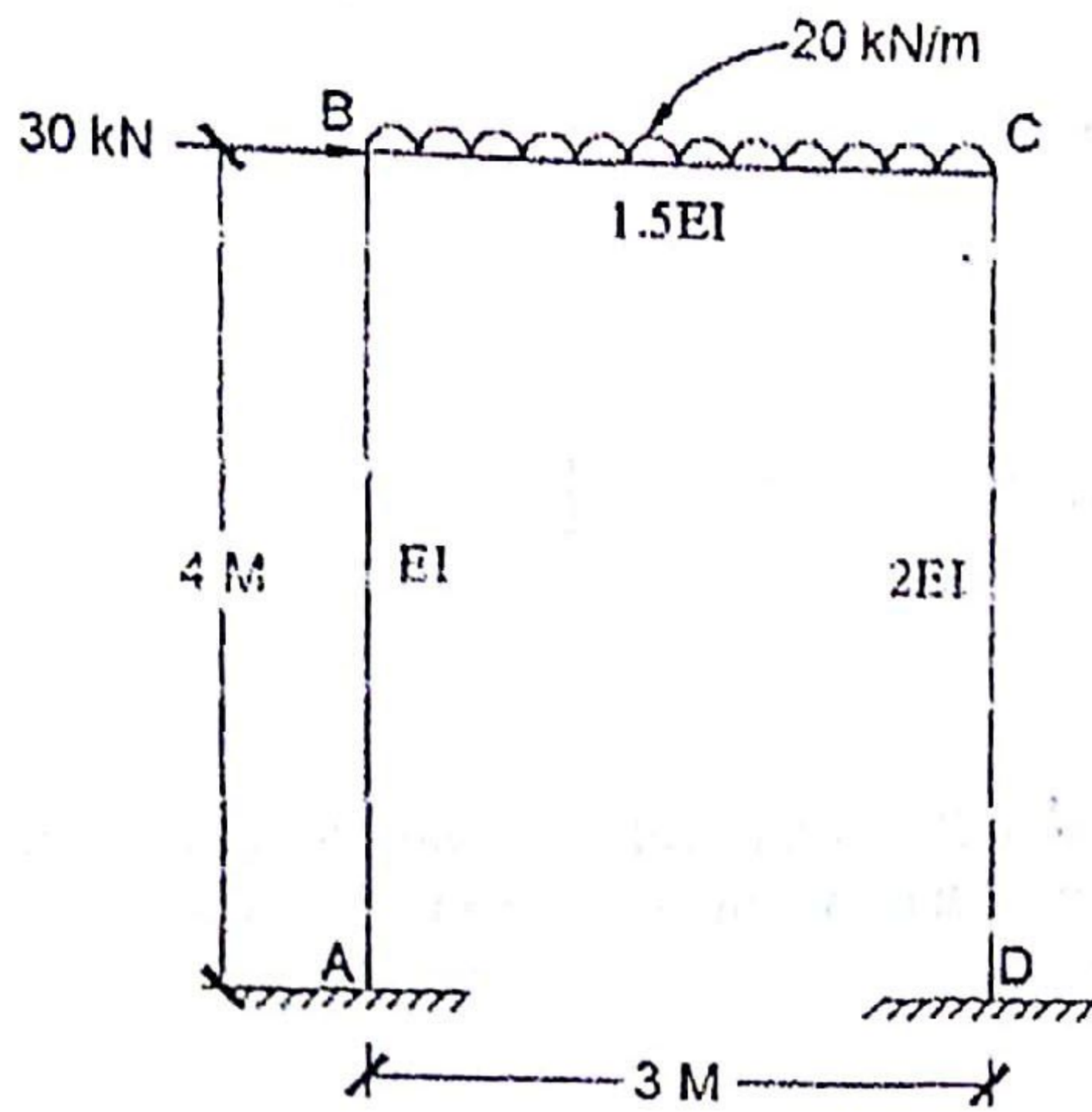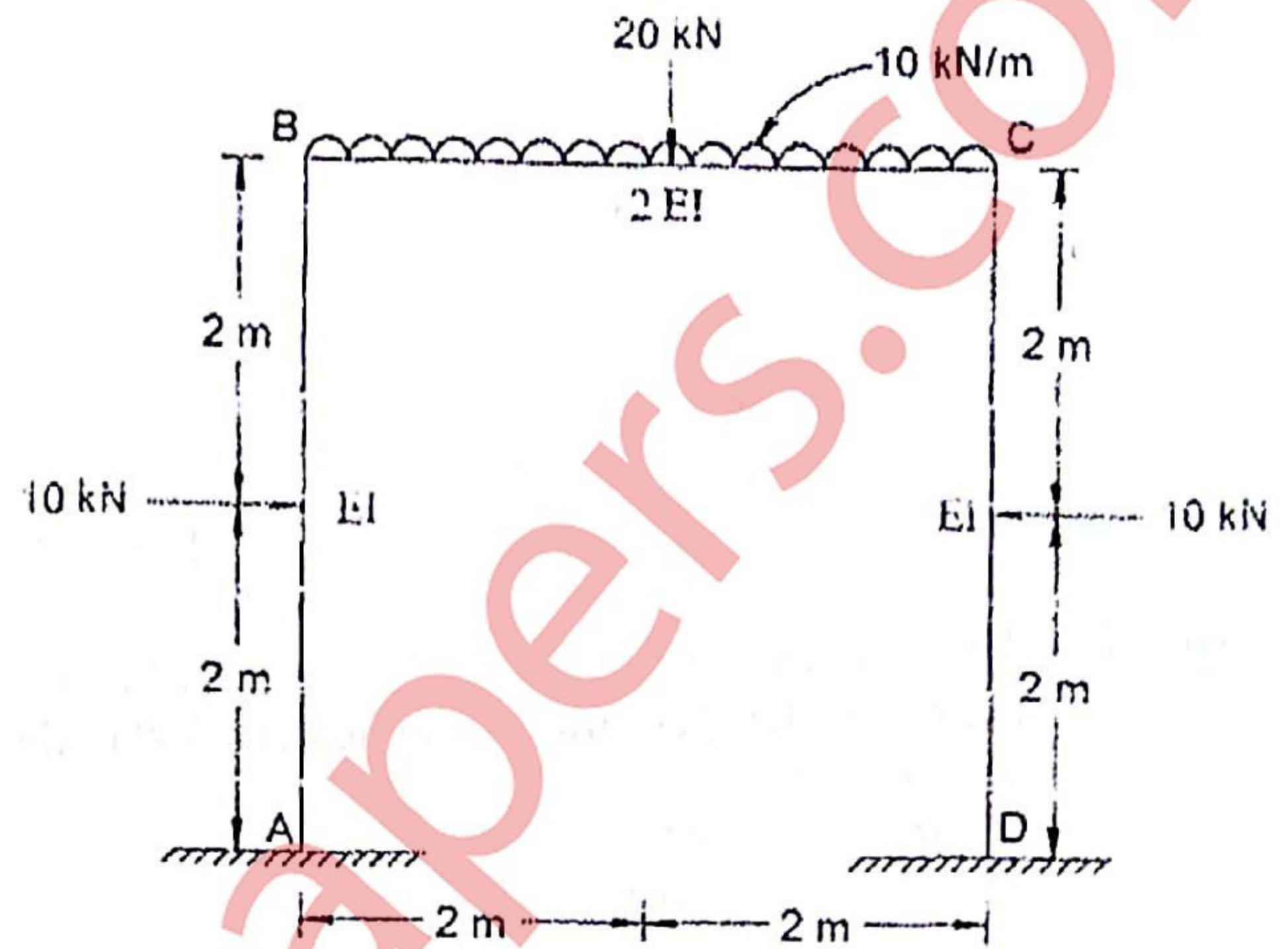

Figure 5

Figure 6

4. (a) A portal frame ABCD as shown in figure 5. Develop **Stiffness** matrix for respective co-ordinates. [5]

(b) A portal frame ABCD is loaded and supported as shown in figure 5.Use **Flexibility method or Stiffness method** for analysis, draw BMD and deflected shape of the frame. [15]

5. Using **Slope Deflection Method or Moment Distribution Method**, analyse the frame loaded and supported as shown in figure 6. Also draw BMD and deflected shape of the frame. [20]

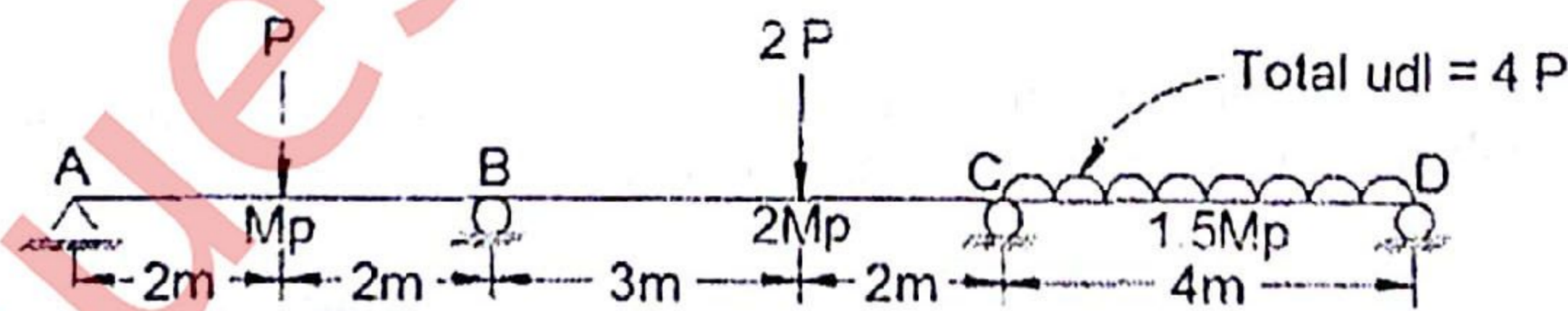6. (a) Find the collapse load 'P' for the continuous beam loaded as shown in figure 7. [8]

Figure 7

TURN OVER

6. (b) Using Force method, Analyse the pin jointed frame loaded & supported as shown in   [12] figure 8. Also find forces in all members. Take AE constant for all members.
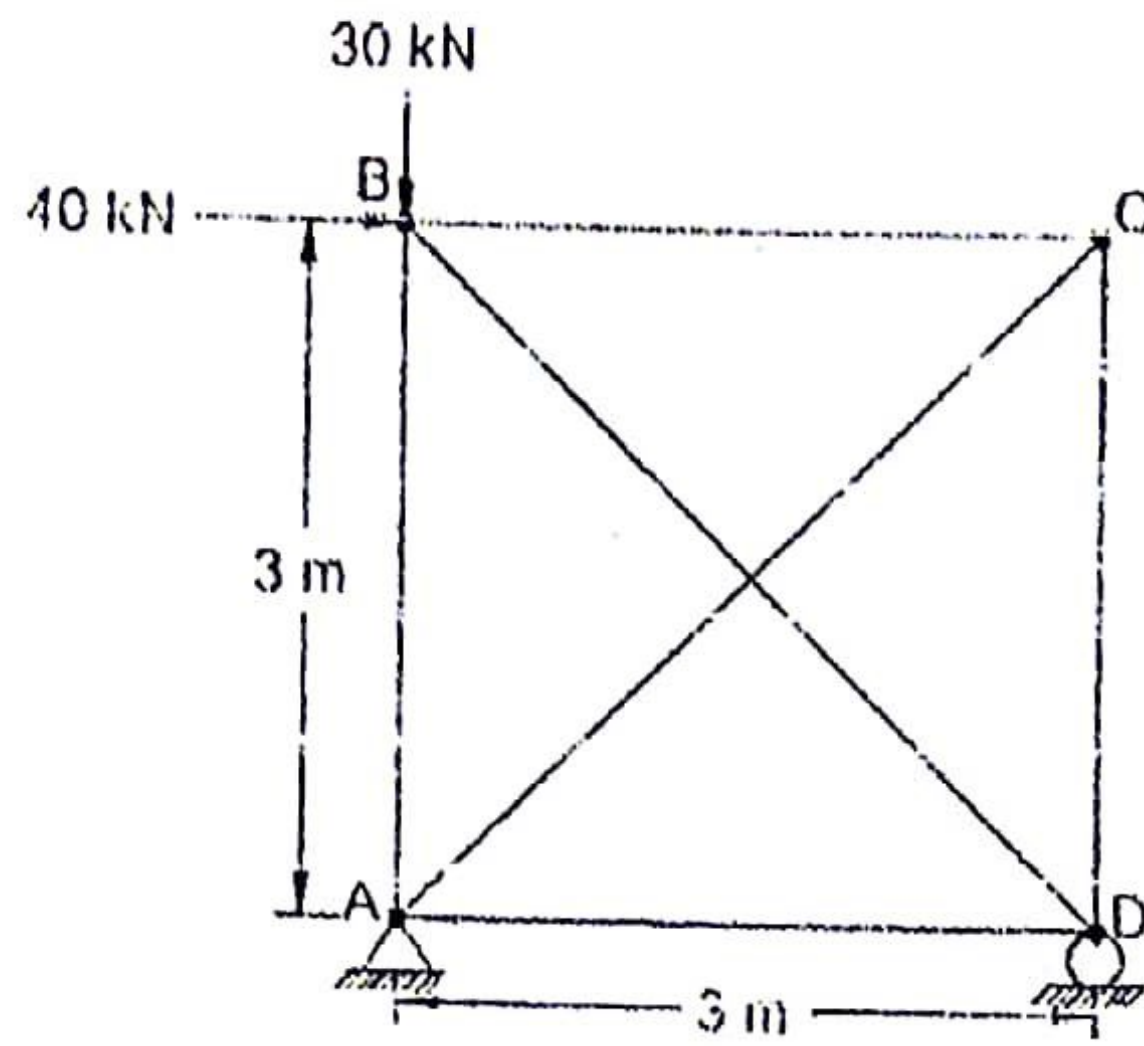

Figure 8