Total No. of Questions : 8]

SEAT No. : ____

P1482

[Total No. of Pages : 4

[6002]-109
S.E. (Civil)
STRUCTURAL ANALYSIS
(2019 Pattern) (Semester-IV) (201011)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.***
2) ***Neat sketches must be drawn wherever necesary.***
3) ***Figures to the right side indicate full marks.***
4) ***Assume Suitable data if necessary.***
5) ***Use of electronic pocket calculator allowed.***
6) ***Use of cell phone is prohibited in the examination hall.***

Q1) a) Analyze the beam shown in figure 1 by slope deflection method and draw B.M.D. Assume uniform flexural rigidity. **[12]**

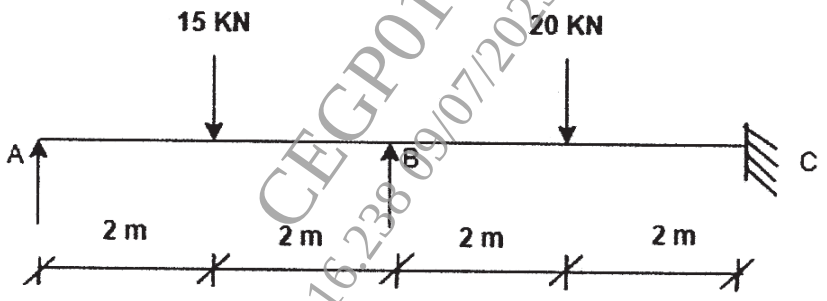

Figure 1

b) Find the rotation B (θB) for the beam with uniform flexural rigidity as show in figure 2. **[6]**

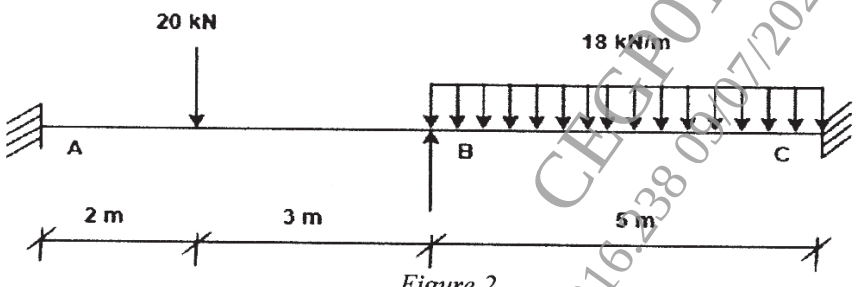

Figure 2

OR

P.T.O.

Q2) Analyze the frame shown in figure 3 by slope deflection method and draw BMD. Assume uniform flexural rigidity. **[18]**

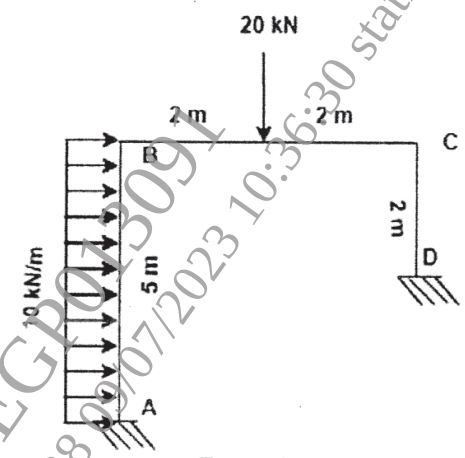

Figure 3

Q3) a) Analyze the beam shown in figure 4 by moment distribution method. Assume uniform flexural rigidity. **[12]**

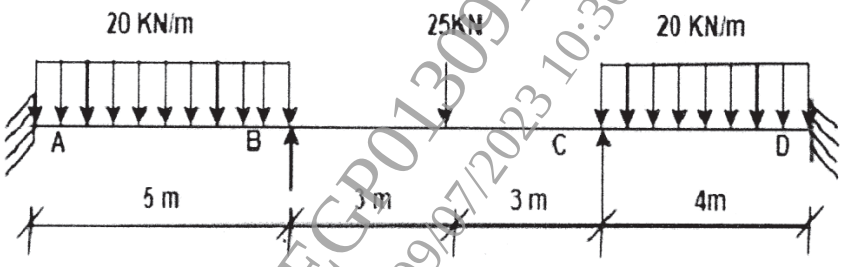

Figure 4

b) Define member stiffness, carry over moment and distribution factor. **[6]**

OR

Q4) Calculate final end moments for the frame shown in figure 5 by moment distribution method and draw BMD. Assume uniform flexural rigidity. **[18]**

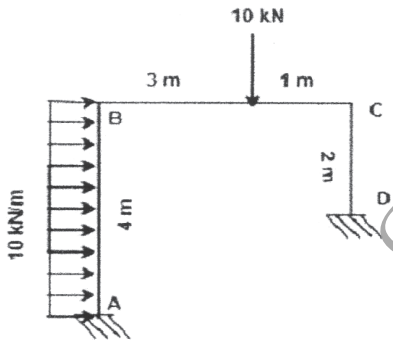

Figure 5

Q5) a) Analyze the beam ABC shown in figure 6 by stiffness method and draw BMD. **[11]**

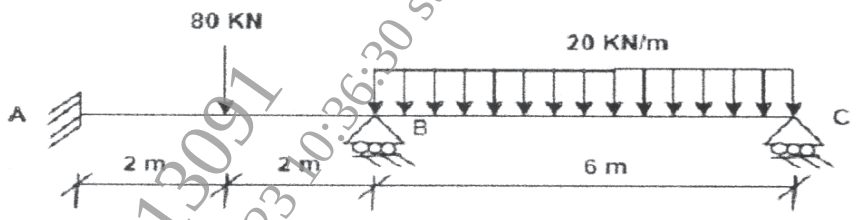

Figure 6

b) Explain stiffness and flexibility and write elements of displacement matrix for the frame shown in figure 7. **[6]**

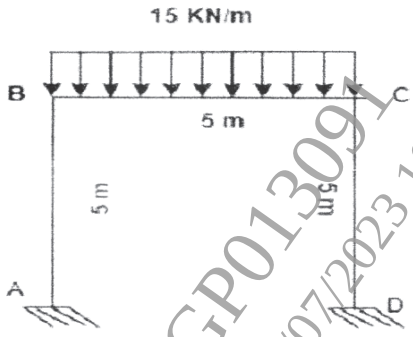

Figure 7

OR

Q6) Analyse the bent shown in figure 8 by stiffness method. **[17]**

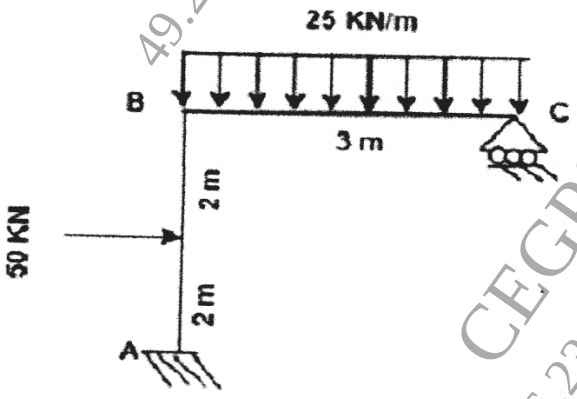

Figure 8

Q7) a) Determine collapse load for the beam shown in figure 9 with variable moment or resistance. **[12]**

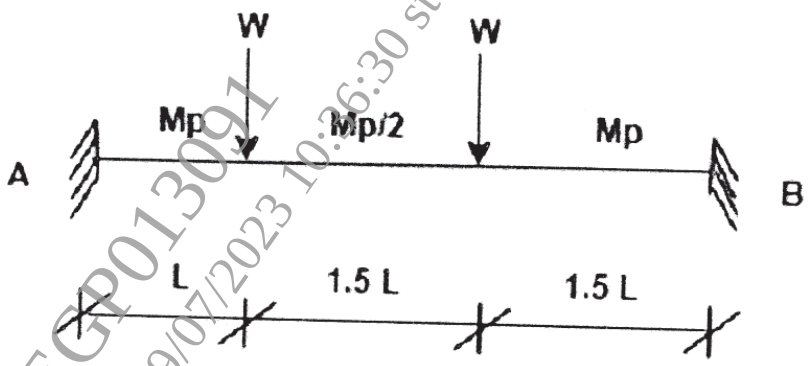

Figure 9

b) Explain idealized stress strain curve for plastic analysis. **[5]**

OR

Q8) a) Calculate plastic section modulus, shape factor and plastic moment for the figure 10. **[13]**

Properties of ISMB 200 section ; I xx = 2235.4 cm^4, Zxx = 223.5 cm^3, A = 32.33 cm^2.

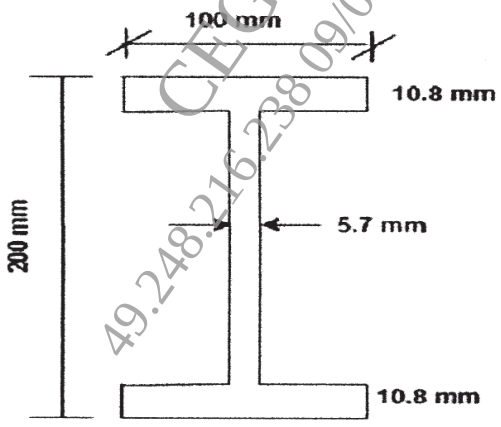

Figure 10

b) Define load factor and shape factor. **[4]**

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