Total No. of Questions : 8]

SEAT No. : ____

PB3599

[Total No. of Pages :3

[6261]-4

S.E. (Civil)

STRUCTURAL ANALYSIS

(2019 Pattern) (Semester- IV) (201011)

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

Instructions to the candidates:

1) ***Attempt 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 necessary.***
3) ***Figures to the right 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]**

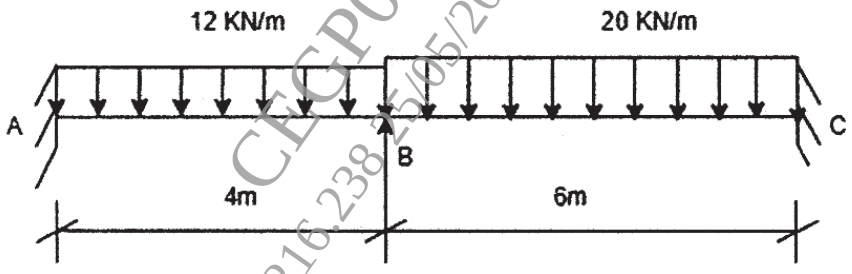

Figure 1

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

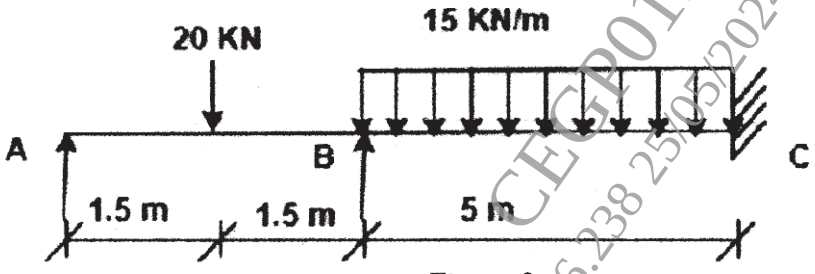

Figure 2

OR

P.T.O.

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

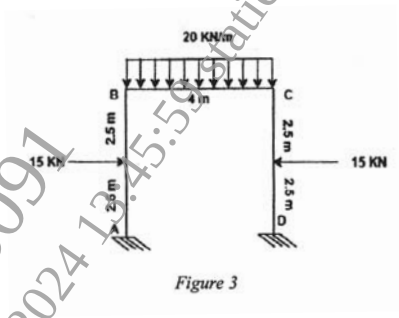

Figure 3

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

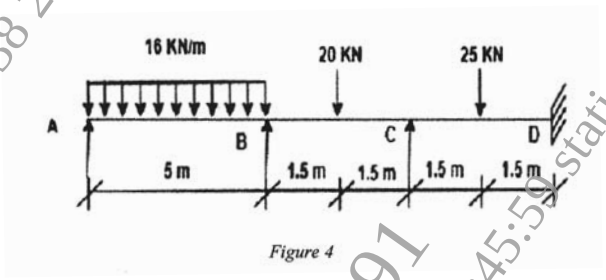

Figure 4

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]**

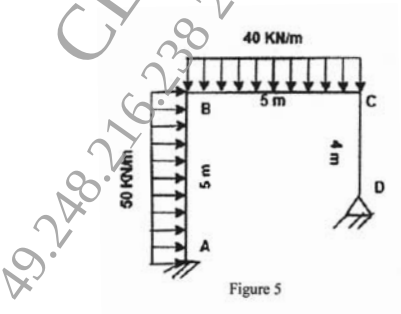

Figure 5

Q5) a) Analyze the beam ABC shown in figure 6 by stiffness method and draw BMD. **[13]**

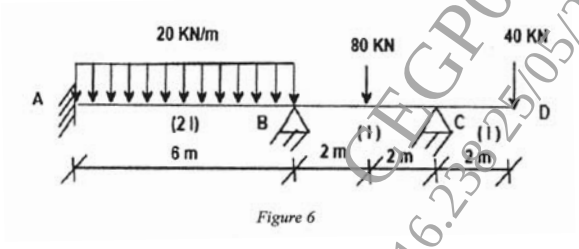

Figure 6

b) Explain degrees of freedom and stiffness. **[4]**

OR

Q6) Analyse the frame shown in figure 7 by stiffness method and draw BMD. **[17]**

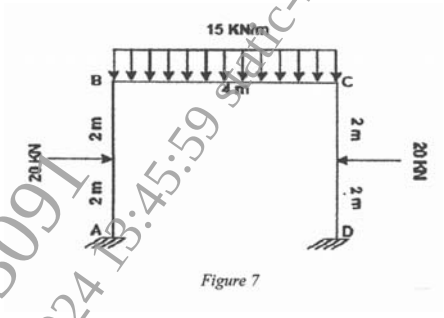

Figure 7

Q7) a) Determine plastic moment of resistance for the beam of uniform section as shown in figure 8. **[12]**

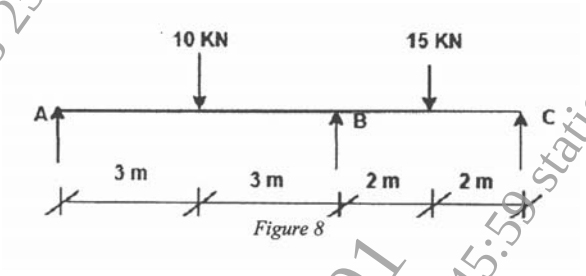

Figure 8

b) Explain lower bound theorem and upper bound theorem. **[5]**

OR

Q8) a) Calculate plastic section modulus, shape factor and plastic moment for the figure 9.

Properties of ISHT : Ixx = 573.7 cm^4, Zxx = 46.491 cm^3, A = 37.42 cm^2. **[13]**

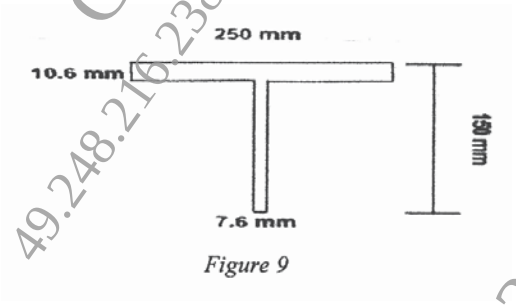

Figure 9

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