Total No. of Questions : 8] SEAT No. :

P3859 [Total No. of Pages : 3

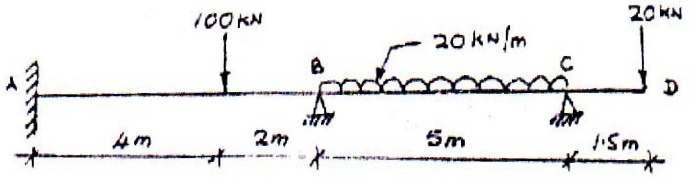
[4758] - 502
T.E. (Civil)
STRUCTURAL ANALYSIS - II
(2012 Pattern)

Time : 2.5 Hours] *[Max. Marks : 70*

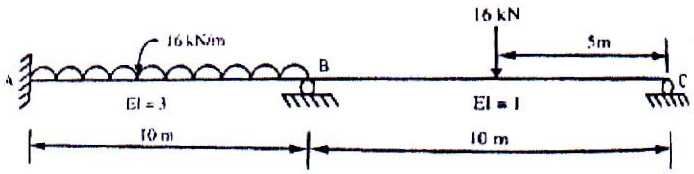
Instructions to the candidates:

1) ***Answer questions Q.1 or Q.2 Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.***
2) ***Figures to the right indicate full marks.***
3) ***If necessary, assume suitable data and indicate clearly.***
4) ***Use of electronic pocket calculator is allowed.***

Q1) a) Analyse the continuous beam ABCD shown in figure by slope deflection method. The support B sinks by 15mm. **[8]**



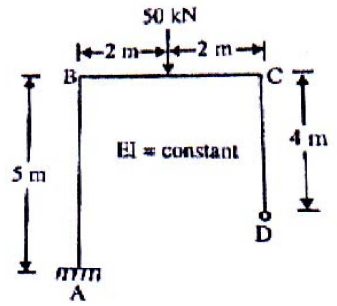
b) Analyse the continuous beam shown in figure of above question 1 a. Using the flexibility method **[8]**



c) Explain fixed end moment and carry over **[4]**

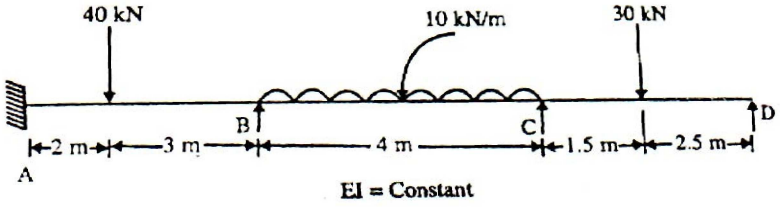
OR

Q2) a) Analyse the portal frame loaded as shown in Fig by slope deflection method and sketch the bending moment and shear force diagram **[8]**



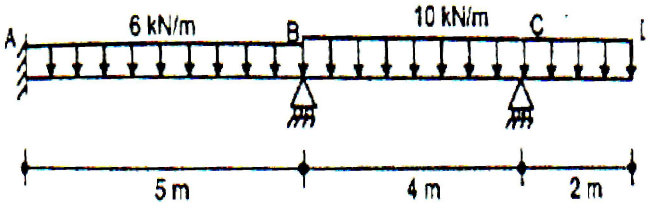
P.T.O.

b) Analyse the continuous beam loaded as shown in figure by the method of moment distribution method. Draw BMD and SFD **[8]**



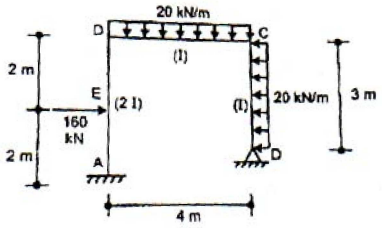
c) Explain flexibility matrix **[4]**

Q3) Find the end moments of the beams as shown in fig by stiffness matrix method add draw SFD and BMD. Take EI = 3800 KN-m^2 **[16]**

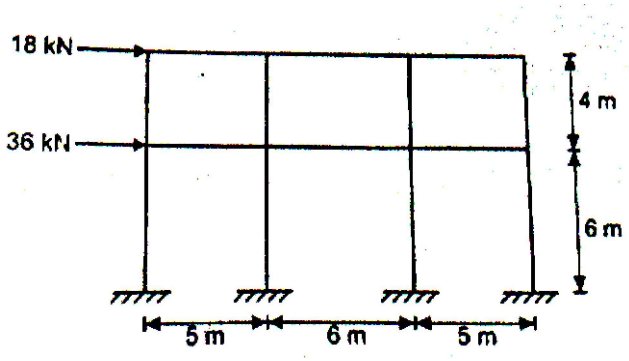


OR

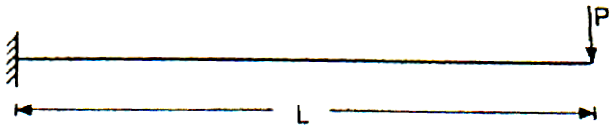
Q4) Analyse the frame by matrix stiffness method and sketch the bending moment diagram. **[16]**



Q5) a) Analyse the portal frame under lateral loading by cantilever method. The columns are assumed to have equal cross sectional areas. **[10]**



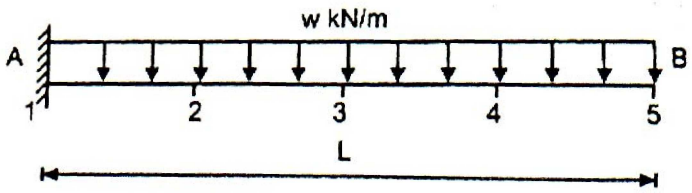
b) The beam is loaded and supported as shown in fig. Determine the deflection at the centre of the beam. **[8]**



OR

Q6) a) Analyse the frame as shown in Q.5 a) by portal method. **[10]**

b) Determine the deflection at the nodal points for beam AB loaded and supported as shown in fig. **[8]**



Q7) a) Explain shape functions for Quadratic rectangular element. **[8]**

b) Explain the terms **[8]**

i) Nodes

ii) Higher order elements

iii) Constant strain triangle

iv) Linear strain triangle

OR

Q8) a) Explain constant strain triangle and linear strain triangle. **[6]**

b) Determine shape funcions for the constant strain triangle (CST) using polynomial functions. **[10]**