(3 HOURS) **[TOTAL MARKS 80]**

Please Note:

1) Question **no 1** is compulsary
2) Attempt any **three** questions from remaining questions
3) Assume suitable data if required and justify the same.

Q1. Attempt following

(a) Draw following structures (any three) **06**

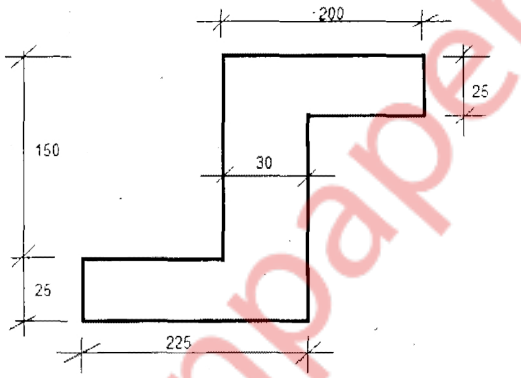
1) Truss with degree of static indeterminacy two

2) Beam with kinematic indeterminacy two

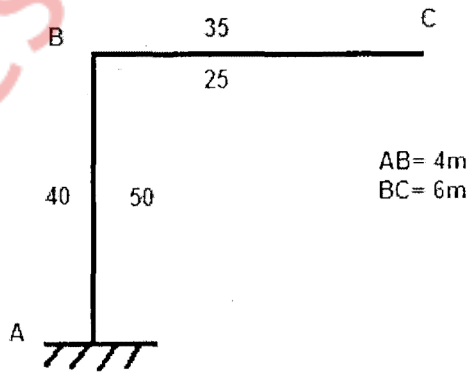
3) Beam with kinematic indeterminacy equal to zero.

4) Frame with kinematic indeterminacy equal to three

(b) Find the shape factor of the section shown in following figure. **08**



(c) For the figid frame subjected to temperature variation shown in figure. Find horizontzl deflection at C. Assume depth of all members as 550mm. Take $\alpha = 12 \times 10^{-6}/0_C$. All temperatures in degree centigrade. **06**

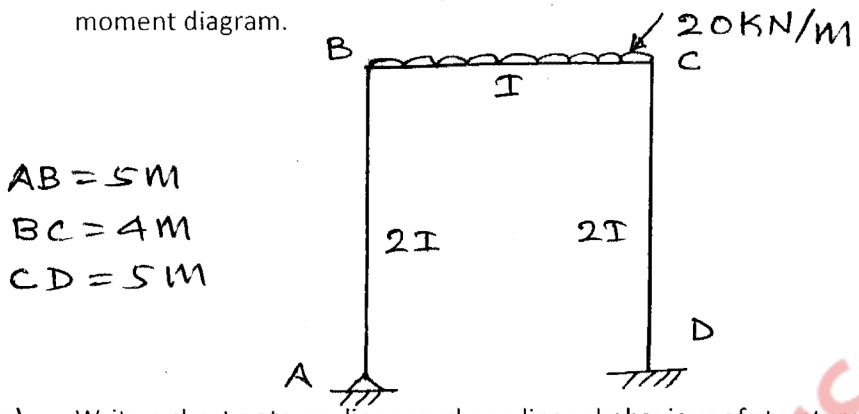


muquestionpapers.com

TURN OVER

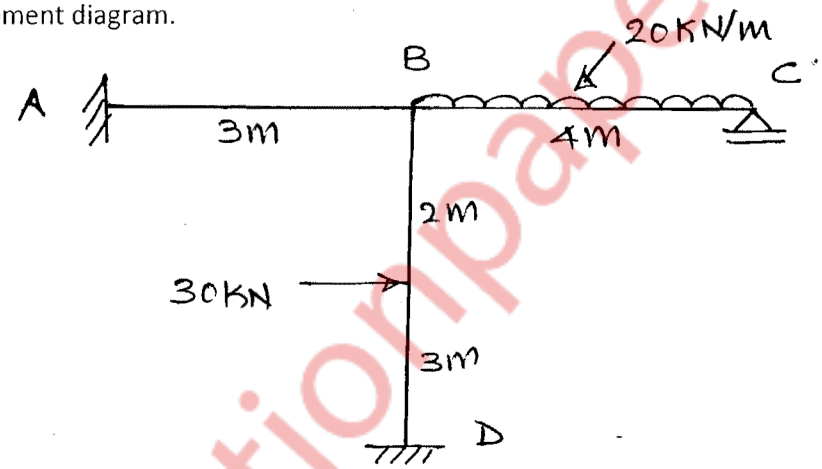
Q2 (a) Write a note on different methods used to analyse the determinate and indeterminate structures. State the situtaions where each method is preferred. 05

(b) Analyse the following frame by moment distribution method and draw bending moment diagram. 15

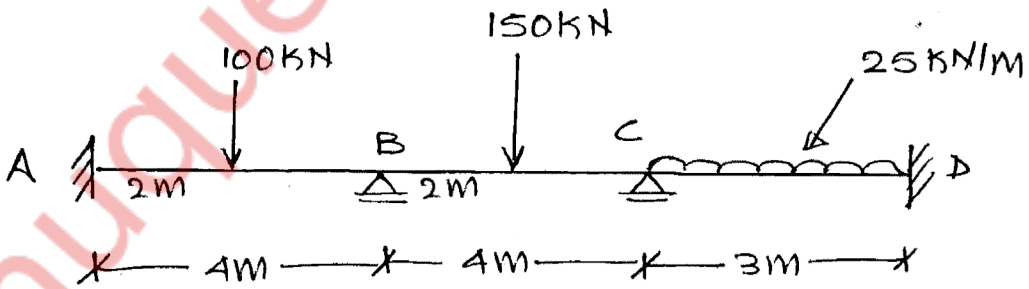


Q3 (a) Write a short note on linear and non linear behaviour of structures. 05

(b) Analyse the following frame by slope deflection method and draw bending moment diagram. 15



Q4 (a) Using stiffness method analyse the following beam and draw bending moment diagram. 10

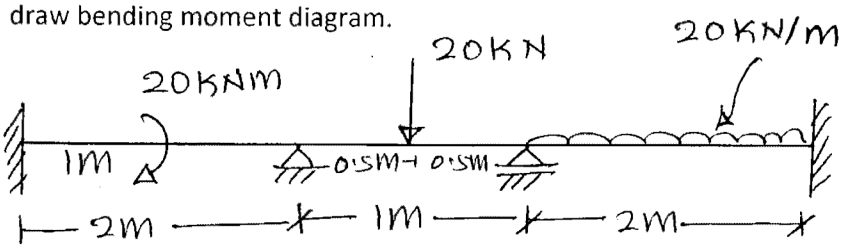


(b) Analyse the following beam using Clapeyron's theorem of three moments and 10

45C1BFB1EA9CA447BE1F1DFF7ACCE92A

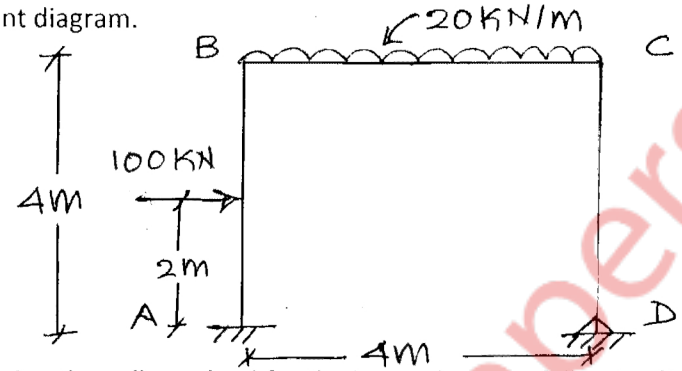
muquestionpapers.com

draw bending moment diagram.

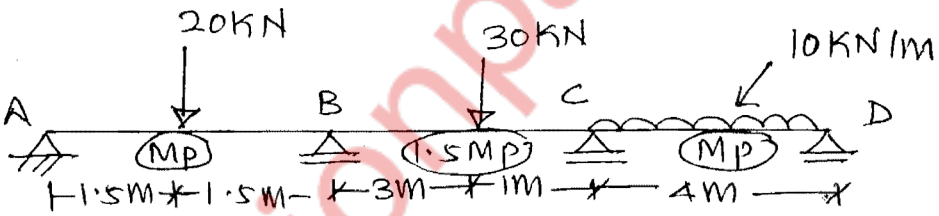


Q5 (a) Write a short note on castiglios theorem of least work and its applications. 05

(b) Using flexibility method analyse the following structure and draw bending moment diagram. 15



Q6 (a) Determine the collapse load for the beam shown in following figure. 10



(b) A two hinged parabolic arch of span 18 m and rise 6 m carries a UDL of 30 kN/m over the left half span and concentrated load of 100 kN at crown. Analyse the arch and and draw bending moment diagram. 10

muquestionpapers.com