Fourth Semester B.Arch. Degree Examination, Dec.08 / Jan.09

Structures IV

Time: 3 hrs.   Max. Marks:100

Note :1. *Answer any FIVE full questions.*
2. *Any missing data may be assumed suitably.*

1   Draw SFD and BMD for the propped cantilever shown in figure Q1. Locate point of contra flexure if any.   **(20 Marks)**
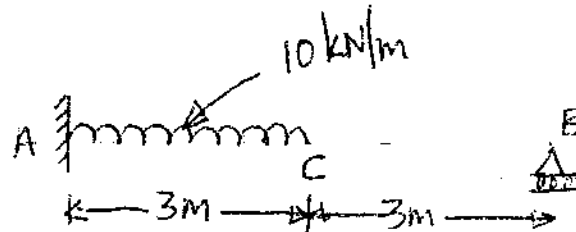

Fig. Q1

2   a. Define static indeterminacy of a structure and determine the degree of static indeterminacy for a propped cantilever.   **(04 Marks)**
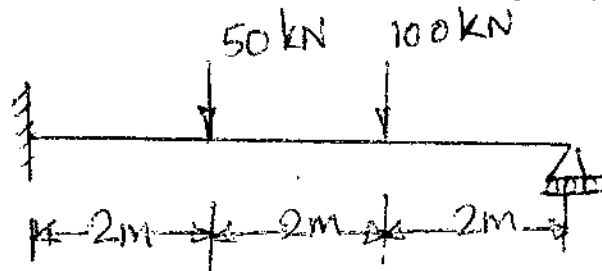   b. Draw SFD and BMD for the propped cantilever shown in figure Q2 (b).   **(16 Marks)**

Fig. Q2 (b)

3   A fixed beam with a span of 8 m carries two point loads, 20 kN and 40 kN, at 2 m and 5 m from the left support respectively. Draw the S.F. and B.M. diagrams.   **(20 Marks)**

4   Find the fixing moments and support reactions of a fixed beam AB of length 6 m, carrying a uniformly distributed load of 4 kN/m over the left half of the span. Draw S.F. and B.M. diagrams.   **(20 Marks)**

5   A continuous beam ABCD is supported at ABCD as shown in figure. Q5. Find the support moments and draw B.M. and S.F. diagrams. Use Clapeyron's theorem of three moments. Assume EI as constant for the beam.   **(20 Marks)**
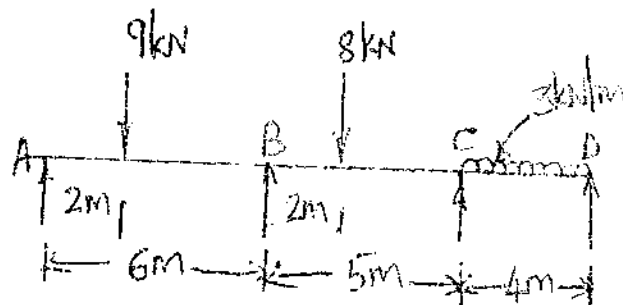

Fig. Q5

6   A continuous beam ABC of uniform section, with span AB and BC as 6m each, is fixed at A and C and supported at B as shown in figure Q6. Find the support moments and the reactions. Draw the S.F. and B.M. diagrams of the beam. Use clapeyron's theorem of three moments.

(20 Marks)

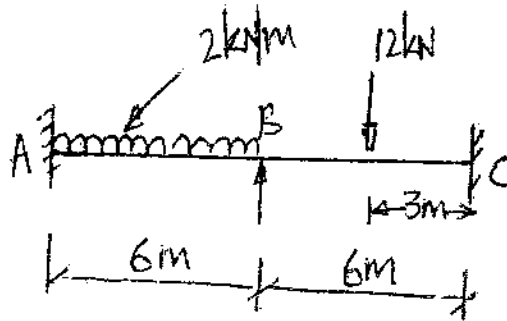Fig. Q6

7   Analyse the continuous beam loaded as shown in figure Q7 by the method of moment distribution. Sketch the B.M. diagrams. End A is fixed and D is simply supported. Assume the beam is of uniform cross section throughout its length. **(20 Marks)**
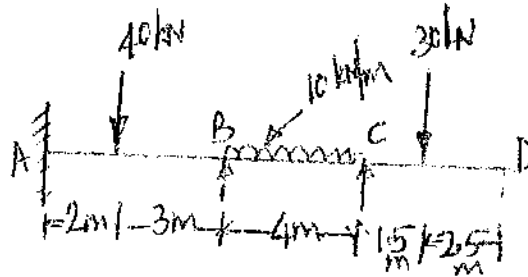

Fig. Q7

8   A continuous beam ABC is supported on an elastic column BD and is loaded as shown in figure Q8. Treating joint B as rigid, analyse the frame and the draw BMD. **(20 Marks)**
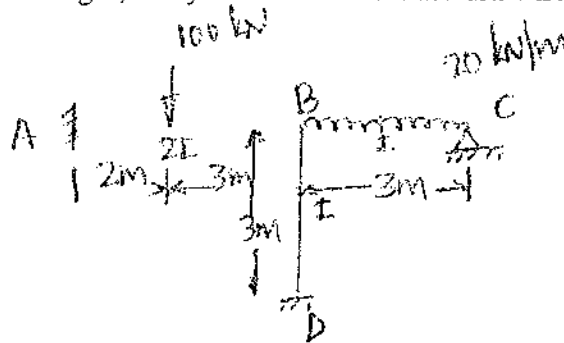

Fig. Q8

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