C 59282 (Pages 3) Name.....

Reg. No.....

FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2009

Civil Engineering

CE 04 501—STRUCTURAL MECHANICS—III

(2004 Admissions)

Time : Three Hours Maximum : 100 Marks

Missing data, if any, may be assumer.

Answer **all** *questions.*

I. (a) Explain the steps in the analysis of a continuous beam with a support with settlement by slope deflection method.

(b) Briefly explain the analysis of frames by moment distribution method.

(c) How do you analyse a continuous beam with overhangs on both ends using three moment equation ?

(d) What are the advantages of Kani's method ?

(e) Explain the substitute frame method and the loading criteria for maximum moments in beams and columns.

(f) Write the basic steps in portal method of analysis for wind loads.

(g) What is the difference between the forces developed at a section in a curved beam as compared to a similar straight beam ?

(h) What are the assumptions made in plastic theory ?

(8 × 5 = 40 marks)

II. (a) Analyse the frame shown in Figure 1 by slope deflection method and draw bending moment diagram.

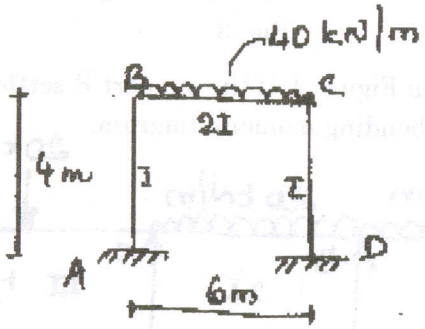

Fig. 1

Or

(b) Analyse the rigid frame shown in Figure 2 by moment distribution method.

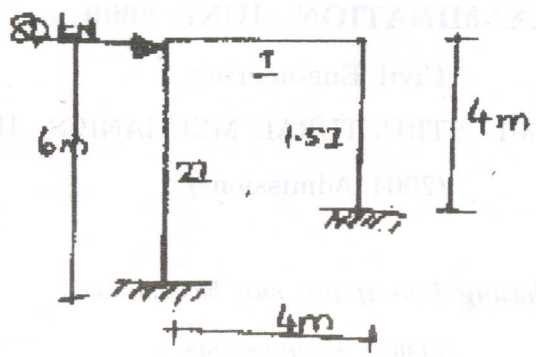

Fig. 2

III. (a) Analyse a three bay four storeyed frame with equal bay length of 3.6 m and storey height 3 m. The frames are placed at 4 m intervals dead load is 4 kN/m^2 and line load is 5 kN/m^2. Find the maximum moment in beams. EI constant.

Or

(b) Analyse the multistorey frame shown in Figure 3 by Portal method.

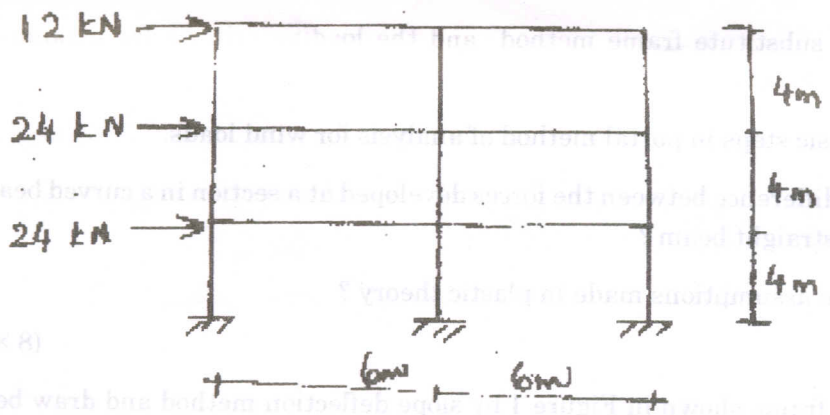

Fig. 3

IV. (a) Analyse the frame shown in Figure 4. if the support B settles by 10 mm using the method of three moments. Draw the bending moment diagram.

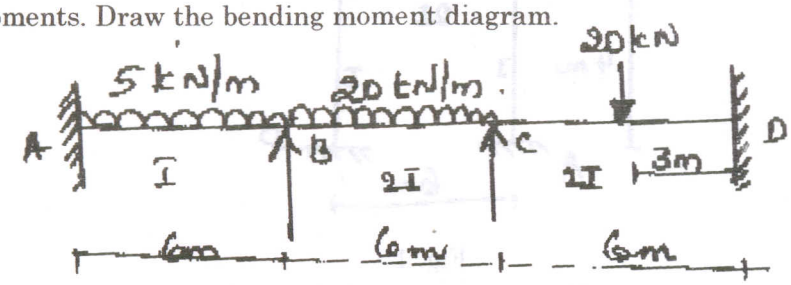

Fig. 4

Or

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(b) Analyse the continous beam shown in Figure 5 by Kani's method.

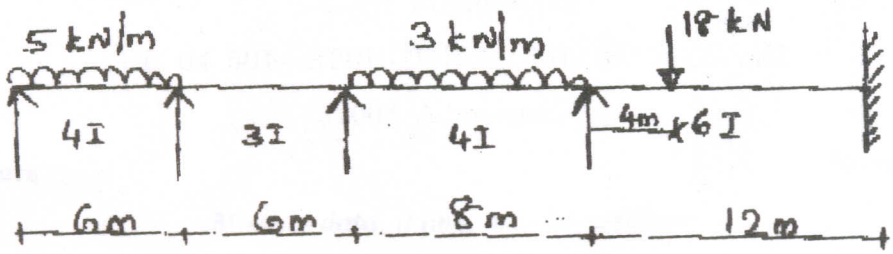

Fig. 5

V. (a) Determine the rotation at the free end of a cantilever curved beam of quarter circle of radius 'R' subject to a concentrated load 'P' at is free end.

Or

(b) Determine the collapse load in the continuous beam shown in Figure 6.

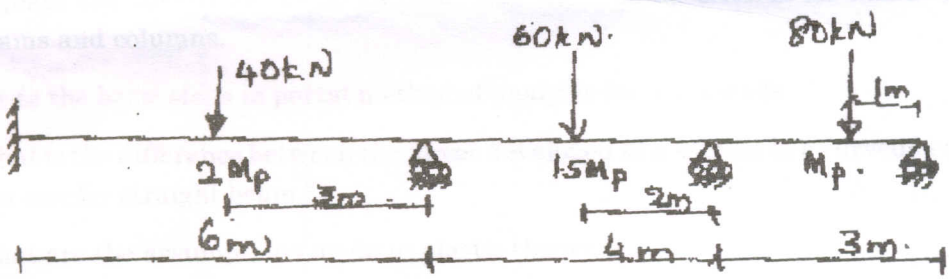

Fig. 6

(4 × 15 = 60 marks)