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10CV53

Fifth Semester B.E. Degree Examination, June/July 2015

Structural Analysis - II

Time: 3 hrs. Max. Marks:100

Note: 1. ***Answer FIVE full questions, selecting at least TWO questions from each part.***
2. Missing data, if any, may be suitably assumed,

PART – A

1 a. Draw the influence line diagram for Bending moment at any given section of a simply supported beam. **(04 Marks)**

b. Show that for maximum bending moment at any section of a simply supported girder traversed by a moving uniformly distributed load shorter than the girder span, the section should divide the uniformly distributed load in the same ratio as it divides the girder span. **(06 Marks)**

c. A uniformly distributed load of 5kN/m and 5m long sides across a beam of 15m long simply supported at it's both ends. Determine Max Bending moment and shear force at a section 6m from left hand support. **(10 Marks)**

2 Analyse the continuous beam shown in Fig Q No.2 by slope deflection method. Draw B.M.D.

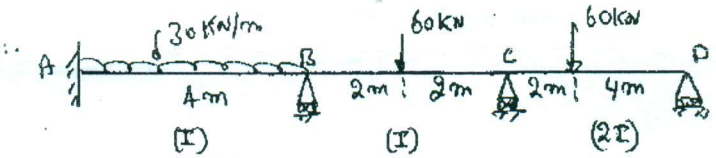

Fig Q No.2

(20 Marks)

3 Analyse the frame shown in Fig. Q No. 3 by moment distribution methods. Draw B.M.D

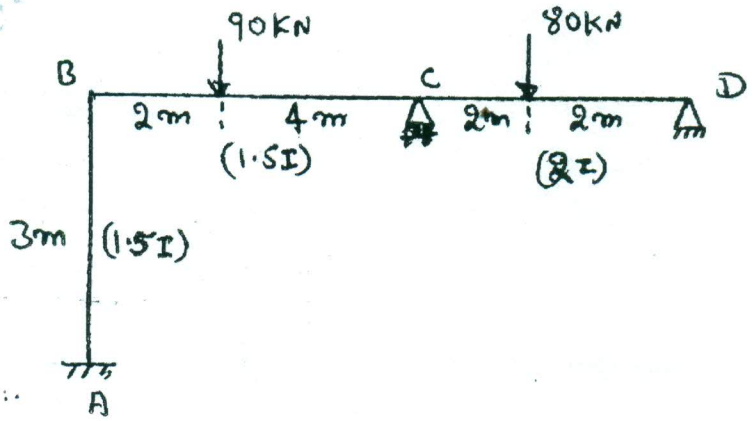

Fig. Q No. 3

(20 Marks)

4 Analyse the frame show below by moment distribution methods. Draw B.M.D. (Refer Fig. Q No.4).

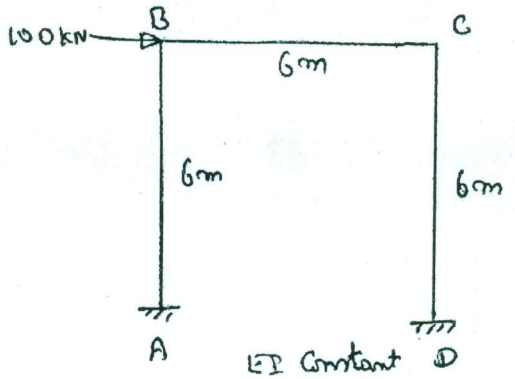

Fig. Q No.4. **(20 Marks)**

PART – B

5 Analyse the frame shown in Fig. Q No.5 by taking advantage of symmetry. Draw B.M.D.

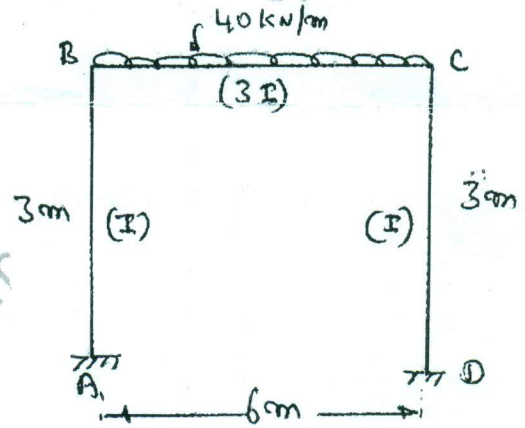

Fig. Q No.5 **(20 Marks)**

6 Analyse the frame shown in Fig. Q No.6 by using Flexibility matrix method. Use system approach.

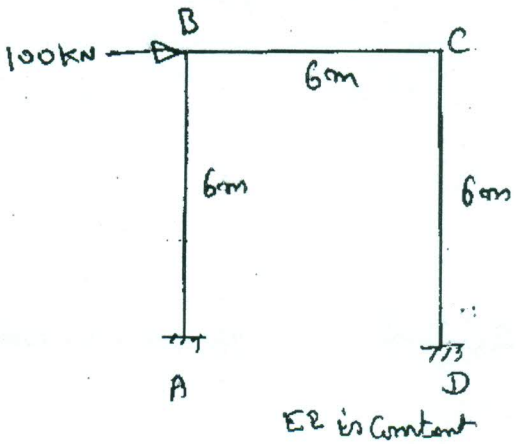

Fig. Q 6 **(20 Marks)**

7 Find the displacement components along the system coordinates for the frame shown in Fig Q No. 7 using stiffness method (use system approach)

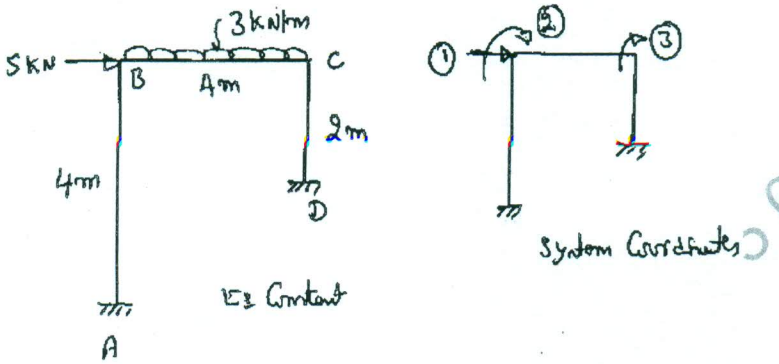

Fig Q No. 7 **(20 Marks)**

8 a. Define the following terms
i) Free Vibration i) Forced Vibration iii) Periodic motion. iv) Natural frequency
v) Damping **(10 Marks)**

b. Determine the natural frequency and Time period of the system as shown in Fig Q No. 8 (b). Take $E = 2.1\times10^5\ N/mm^2$ and $I = 13\times10^6\ mm^4$.

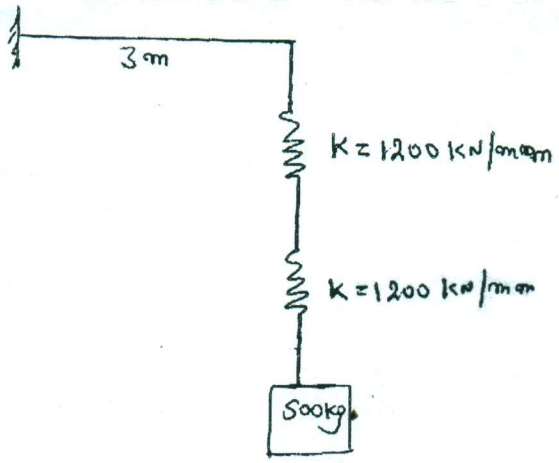

Fig Q No. 8 (b)

(10 Marks)

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