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RN-6749

B. E. III (Sem. V) (Civil) Examination

May / June – 2010

Structural Analysis - II

Time : **3** Hours] [Total Marks : **70**

Instruction :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. E. 3 (Sem. 5) (Civil)**

Name of the Subject :

☛ **Structural Analysis - 2**

☛ Subject Code No. : **6 7 4 9** ☛ Section No. (1, 2,.....) : **1&2**

Seat No. :

Student's Signature

(2) Figures to the **right** indicate full marks.
(3) Answers to the **two** sections should be written in **separate** answer books.
(4) Assume suitable data when required and mention them clearly.
(5) Use of non-programmable calculator is permitted.

SECTION - I

1 Determine the support moments at A, B, C and D for the continuous girder shown in **Fig. 1** by moment distribution method. **18**

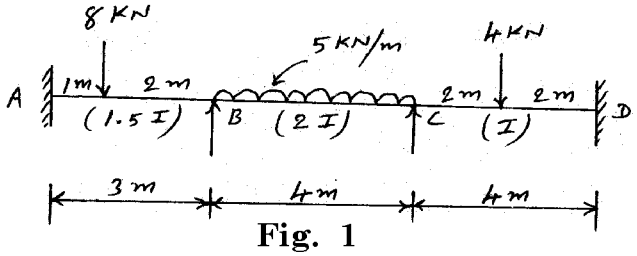

Fig. 1

OR

1 Analyse the frame shown in **Fig. 2** by moment distribution method. Draw the bending moment digram for the frame. **18**

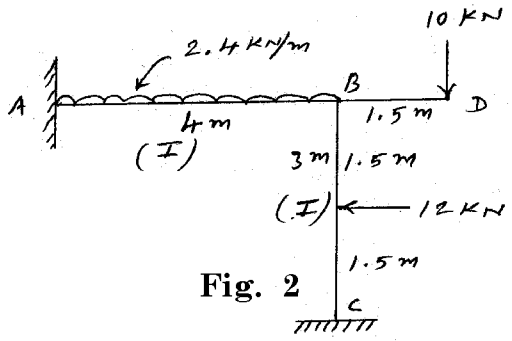

Fig. 2

2 Analyse the continuous beam shown in **fig. 3** by slope deflection method. Draw shear force and bending moment diagrams. Also sketch the deflected shape of the beam. **16**

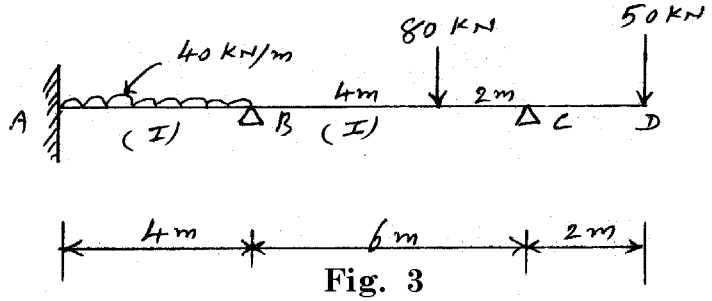

Fig. 3

3 Find the support moments for the continuous beam shown in **fig. 4** by Kani's Method. **16**

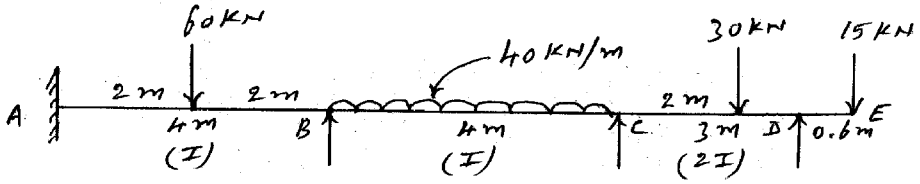

Fig. 4

SECTION - II

4 Find the axial force for members AD of following **fig. 5**. **18**

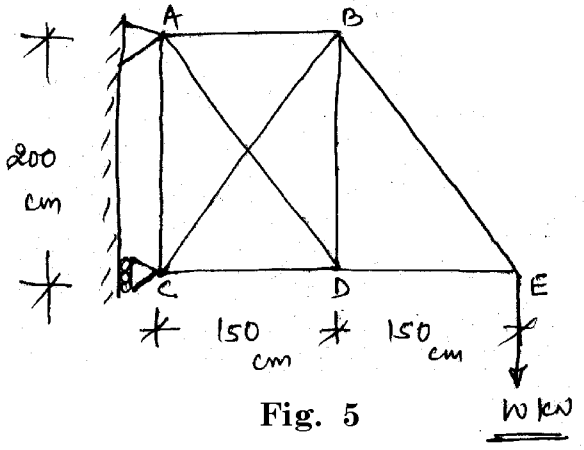

Fig. 5

5 A symmetrical parabolic arch with a central hinge of rise r and length L is supported at its ends on pins at the same level. What is the value of horizontal trust when a load W which is uniformly distributed horizontally covers the whole span? Show also that this loading there is no BM at any point in the arch rib. **16**

OR

5 An arch in the form of a parabola with axis vertical has hinges at the abutments and the vertex. The abutments are at different levels, the horizontal span being L and the heights of vertex above the abutments being h_1 and h_2. **16**

Show that horizontal thrust due to a load w/unit length uniformly distributed across the span is

$$\frac{WL^2}{2\left(\sqrt{h_1}+\sqrt{h_2}\right)^2}$$

6 For the **fig. 6**, determine vertical deflection at 'C'. Frame ABCD consists of two equilateral triangles. All members having length L. All tension members having area 'a' and compression members of area '2a'. **16**

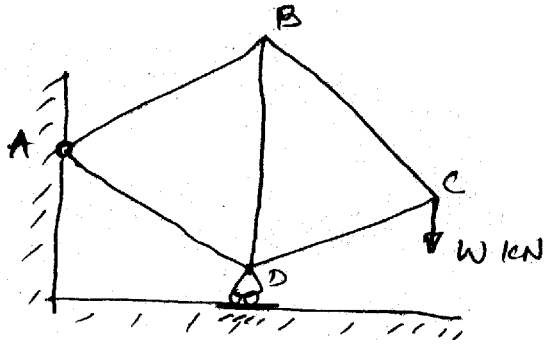

Fig. 6

6 For the fig (6) determine horizontal deflection at 'D'. **16**