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SE-8266

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

May / June – 2011

Structural Analysis - III

(New Course)

Time : **3** Hours] [Total Marks : **75**

Instructions :

(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 - 3 (NEW COURSE)

☛ Subject Code No. : 8 2 6 6 ☛ Section No. (1, 2,.....) : Nil

Seat No. :

Student's Signature

(2) Assume suitable data if required and mention it clearly.

(3) Use of non-programmable calculator is permitted.

(4) Figures to the **right** indicate full mark.

1 (a) Analyse the continuous beam shown in figure 1, if the downward settlement of supports B and C are 10 mm and 5 mm respectively. Take EI = 184×10^{11} N.mm^2. Use flexibility matrix method. **12**

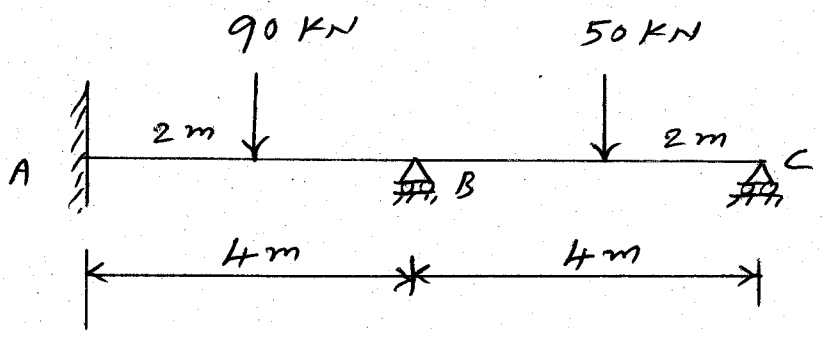

Fig.1

(b) Analyse the pin-jointed truss shown in figure 2 by stiffness matrix method. Take area of cross section for all members = 1000 mm^2 and modulus of elasticity E = 200 kN/mm^2. **10**

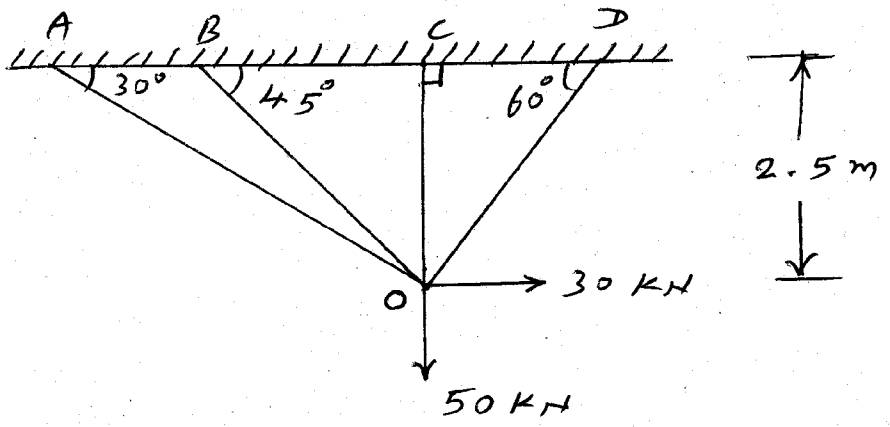

Fig.2

OR

(b) Using the displacement method, analyse the frame shown in figure 3. **10**

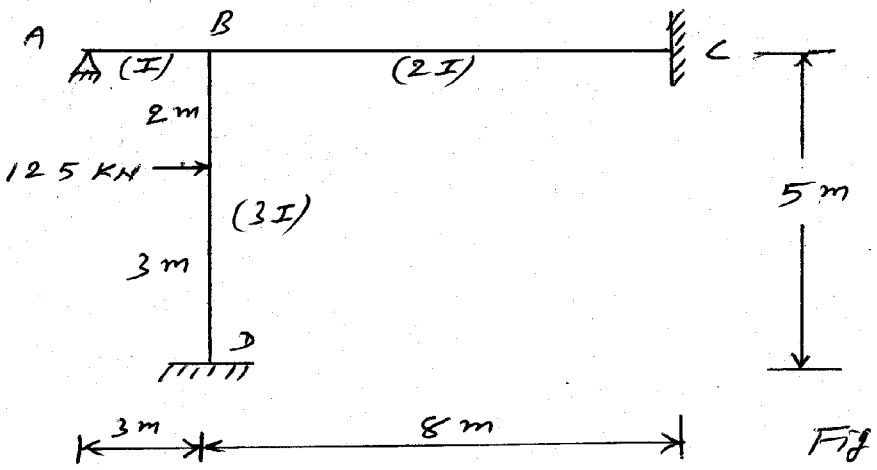

Fig.3

2 A curved beam AB of uniform cross section is horizontal in plan and in the form of a quadrant of a circle of radius R. The beam is fixed at A and free at B. It carries a uniformly distributed load of W per unit run over the entire length of the beam, as shown in figure 4. Calculate the shear force, bending moment and twisting moment values at A and B and sketch the variations of the same. Also determine the deflection at the free end B. **18**

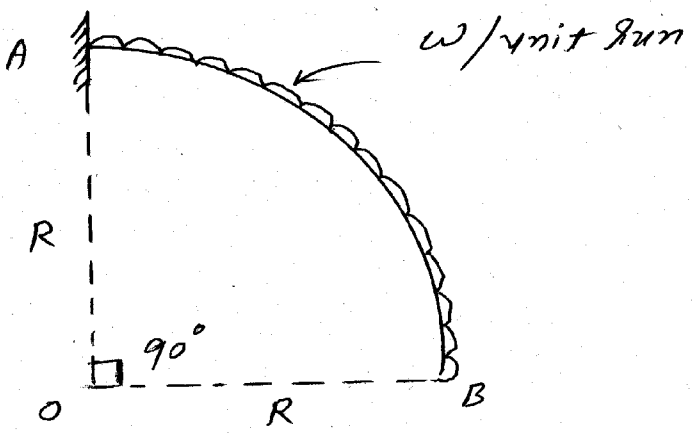

Fig.4

3 (a) Determine the shape factor of the section shown in figure 5. **6**

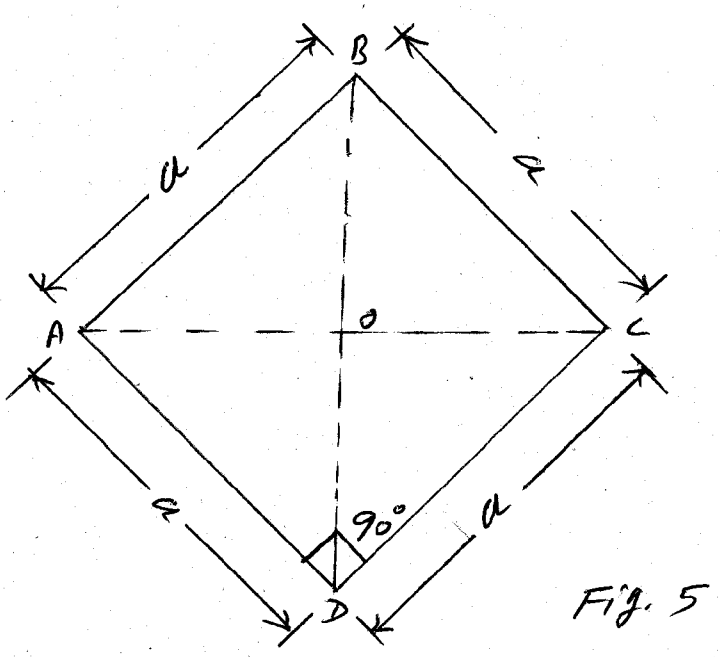

Fig. 5

(b) Analyse the propped cantilever loaded as shown in figure 6, determine the collapse load. **12**

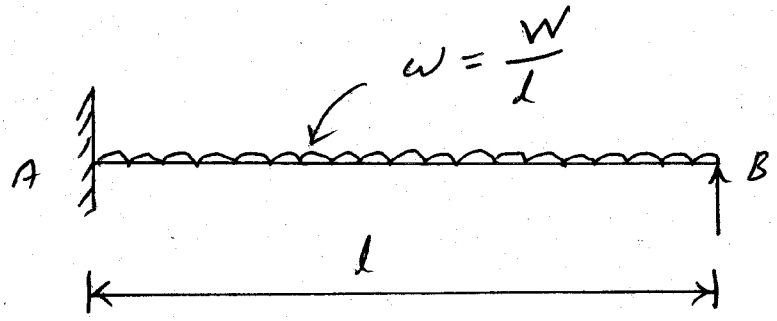

Fig.6

OR

4 Calculate the collapse load for frame shown in figure 7. **18**

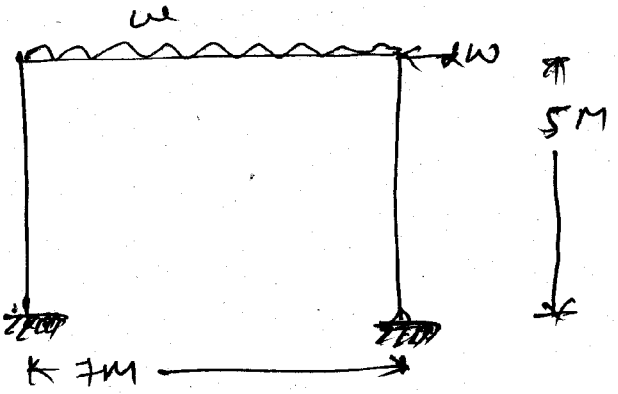

Fig.7

5 Obtain the equation for various stresses in conical dome subjected to u.d.l. and point cord at crown. **17**