SF-7049/100

SF-7049

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

May / June - 2011

Structural Analysis - III

Time : **3** Hours] [Total Marks : **100**

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. 6) (CIVIL)

Name of the Subject :

☛ STRUCTURAL ANALYSIS - 3

☛ Subject Code No. : 7 0 4 9 ☛ 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 marks.

1 Calculate the collapse load W (see fig 1) **16**

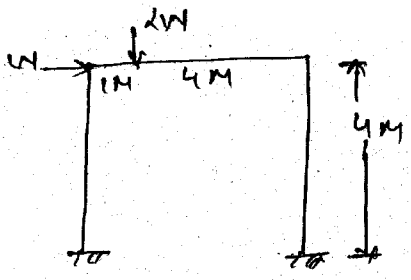


Fig. 1

2 Analyse the frame shown in fig. 2 and draw SF and BM diagram. **17**

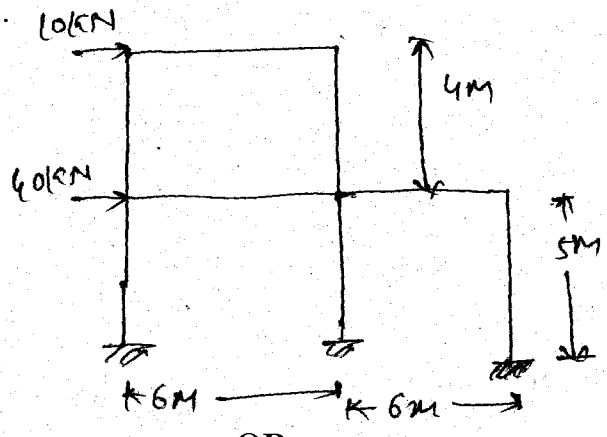


Fig. 2

OR

2 Analyse the frame shown in fig. 3 and draw SF and BM diagram. **17**

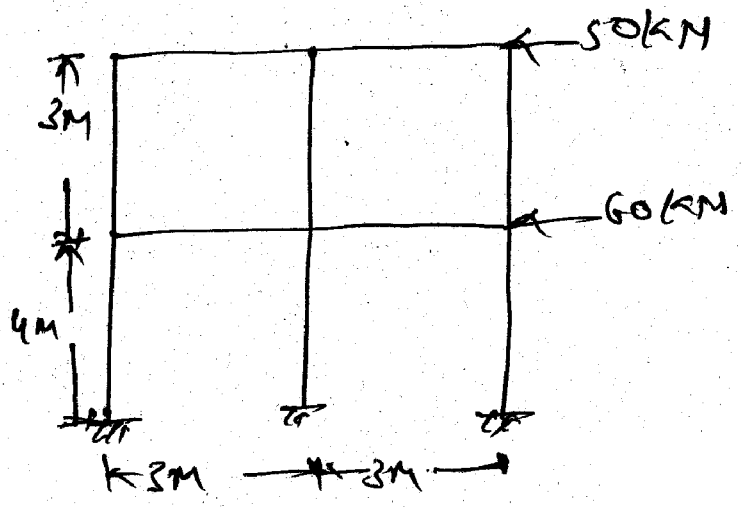
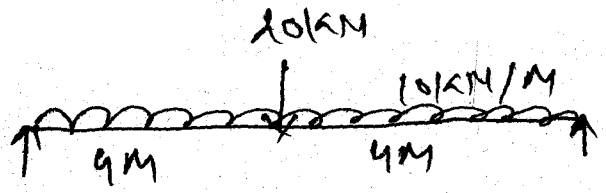


Fig. 3

3 Calculate the natural frequency of vibration for beam shown in fig. 4. **17**



$E = 2 \times 10^8 \, kN/m^2 \qquad I = 7.2 \times 10^{-3} \, m^4$

Fig. 4

4 Analyse the continuous beam shown in fig. 5 if the support B sinks by 11 mm, use displacement method. Take EI = 6200 kN.m^2.

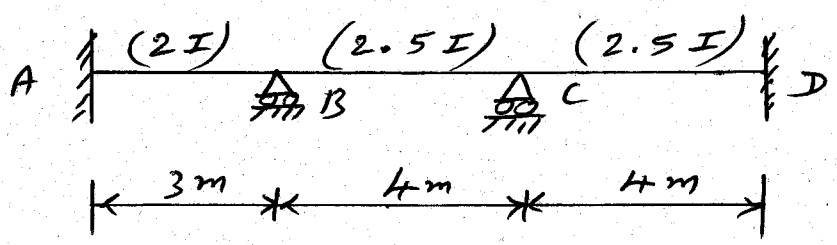


Fig. 5

OR

4 Using the displacement method, analyze the frame shown in fig.6.

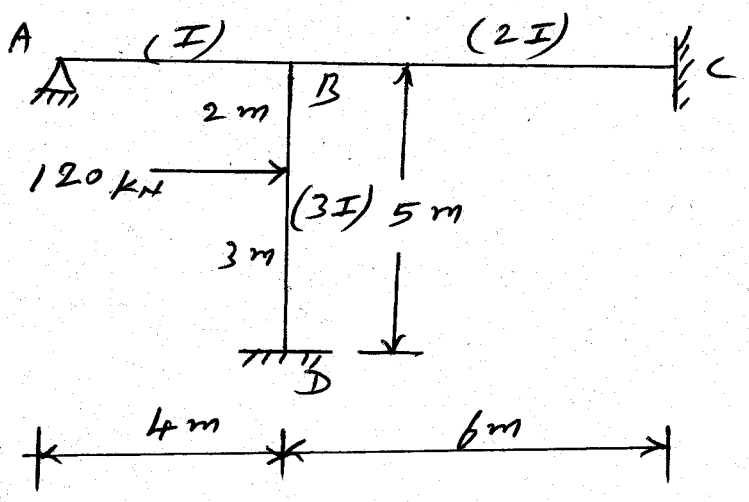


Fig. 6

5 Using the stiffness method determine the displacements at the joint B of a pin-jointed frame shown in fig. 7. Also calculate the forces in members AB and BC due to the given loading. The values of area of cross section are indicated. Take E = 2×10^5 N/mm^2. **15**

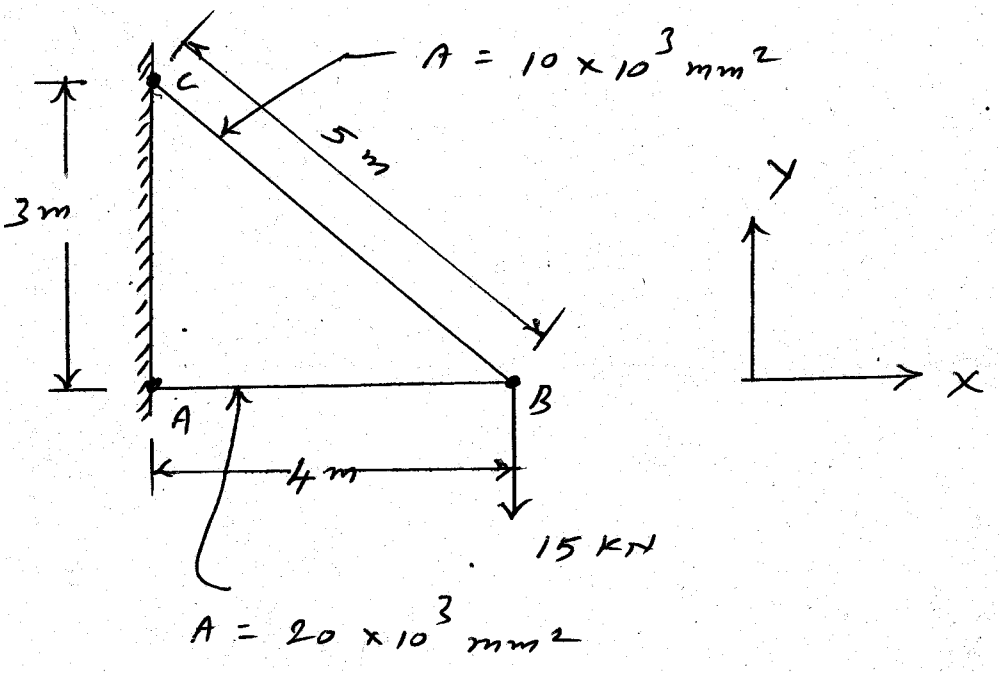


Fig. 7

6 Draw the influence line diagram for shear force at D in the beam shown in fig. 8 after computing the values of the ordinates at 1m interval. Assume flexural rigidity is constant throughout.

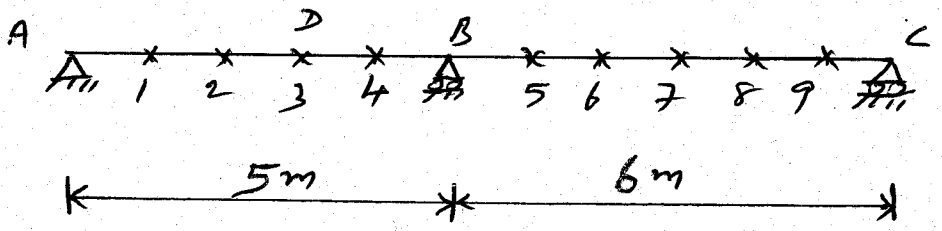


Fig. 8