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RM-6073

B. Arch. I (Sem. II) Examination

May / June – 2010

Structural Design & System - II

(New Course)

Time : **2** Hours] [Total Marks : **50**

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. Arch. 1 (Sem. 2)**

Name of the Subject :

☛ **Structural Design & System - 2 (New)**

☛ Subject Code No. : **6 0 7 3** ☛ Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) Assume suitable data and specifically mention it.
(3) Figures to the **right** indicate full marks.
(4) Use of Nonprogrammable scientific calculator is permitted.

1 Explain following terms : **3**
(i) Lateral strain
(ii) Permissible stress
(iii) Stiffness.

OR

1 Calculate thermal stress if a steel rod of 0.6m length and 40 mm diameter with one end fixed and other free, is subjected to increase of 20 degree C temperature. Coefficient of thermal expansion is 0.6×10^{-8} per degree Celsius. Explain your answer. **3**

2 Calculate stresses induced in Cast iron and steel if both the materials are subjected to load as shown in **fig. 1**. Modulus of Elasticity of Cast Iron is 1×10^5 N/mm^2 and that of Steel is 2×10^5 N/mm^2. **7**

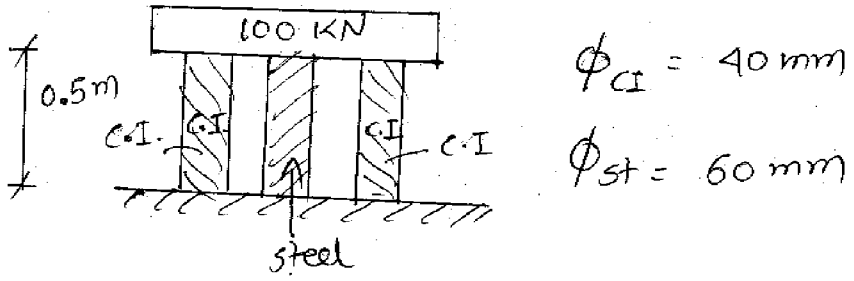

FIG-1

OR

2 Calculate stress in various parts of the rod shown in **fig. 2. 7** Also calculate overall deformation of the rod. Modulus of elasticity is 2×10^5 N/mm^2, θab = 30 mm, θbc = 40 mm, θcd = 60 mm.

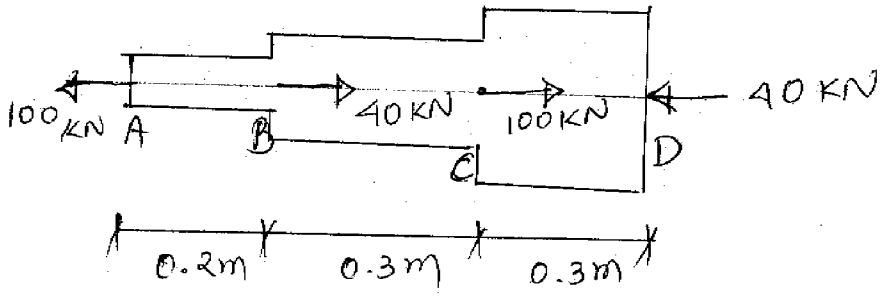

FIG-2

3 Locate the Centroide, for the shaded area shown in **fig. 3. 12**

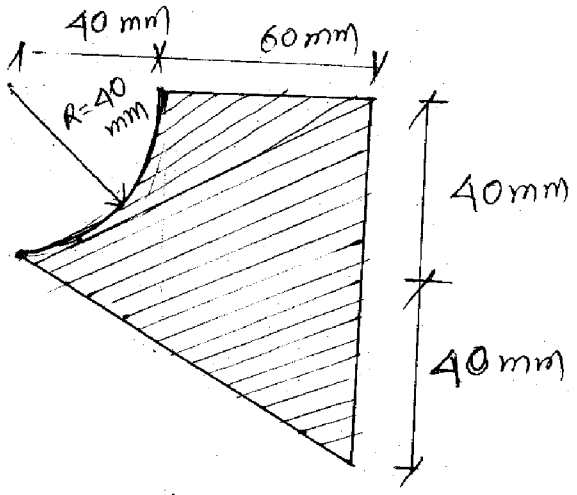

FIG-3

4 Calculate MI about the given x-x axis, for the shaded area shown in **fig. 4**. **12**

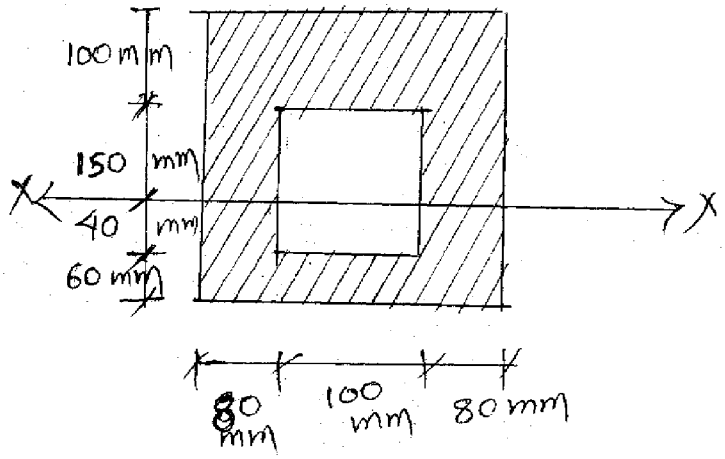

FIG-4

5 (a) Calculate and draw shear force and bending moment diagram for the beam shown in **fig. 5**. **7**

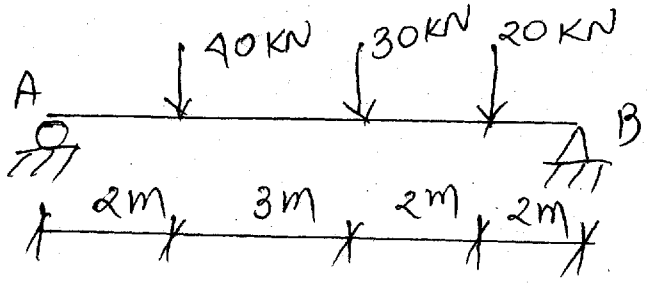

Fig - 5

(b) Calculate and draw shear force and bending moment diagram for the beam shown in **fig. 6**. **6**

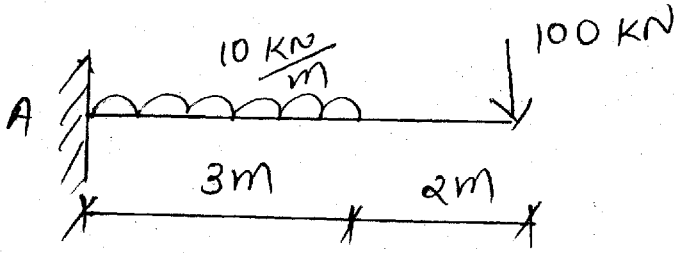

FIG-6

OR

5 Calculate and draw shear force and bending moment diagram for the beam shown in **fig. 7** and locate the point of contraflexure. **13**

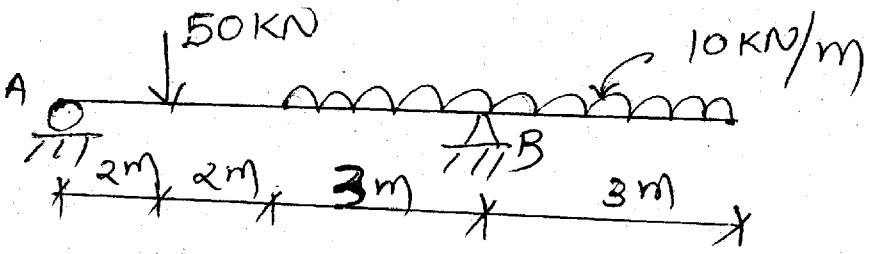

Fig-7

6 Explain and draw bending moment diagram for a Frame shown in **fig. 8** or **fig. 9**. **3**

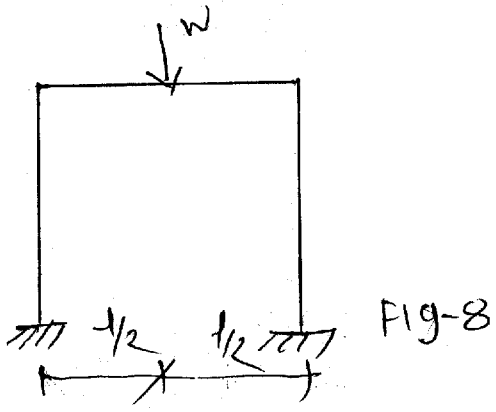

Fig-8

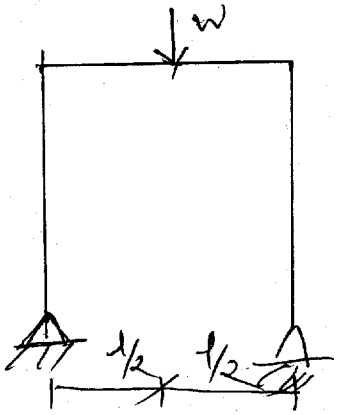

Fig-9