* K D - 6 0 7 3 *

KD-6073

B. Arch. - I (Sem. II) Examination

December – 2012

Structural Design & Systems - II

(New Syllabus)

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 & SYSTEMS - 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 Calculate and draw shear force and bending moment diagram for the beam shown in **fig. 1**. **12**

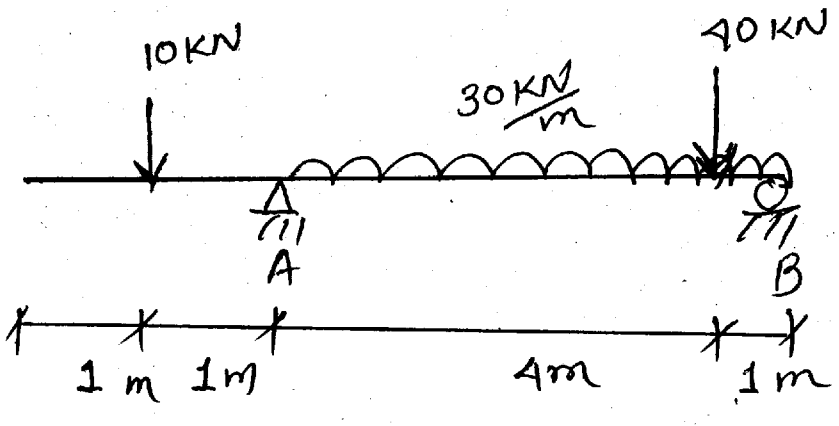

Fig. 1

OR

1 (a) Calculate and draw shear force and bending moment diagram for the beam shown in **fig. 2**. **6**

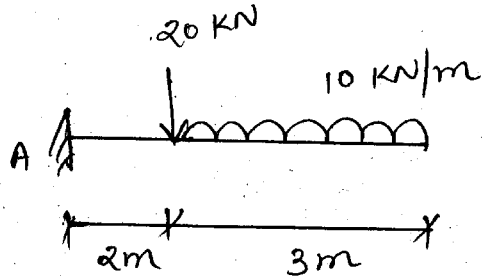

Fig. 2

(b) Calculate and draw shear force and bending moment diagram for the beam shown in **fig. 3**. **6**

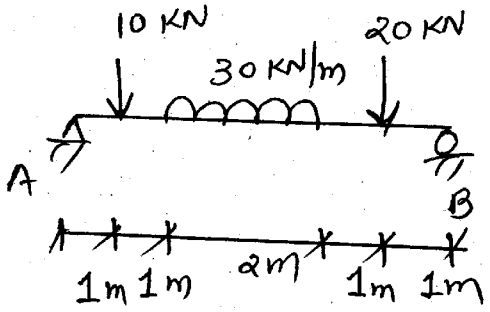

Fig. 3

2 Explain behaviour of mild steel bar under tension subjected to failure. Explain stress-strain graph for the same. Show important points on that graph. **5**

3 Locate the Centroide of the shaded area shown in **fig. 4** OR **fig. 5**. Show your chosen reference axis. **10**

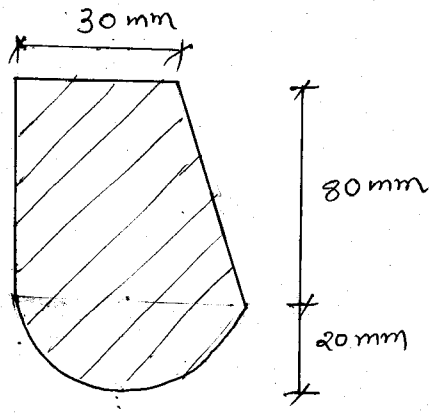

Fig. 4

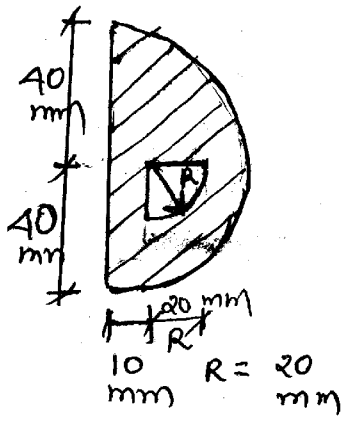

Fig. 5

4 Calculate MI about the given x-x axis, for the shaded area shown in **fig. 6**. **10**

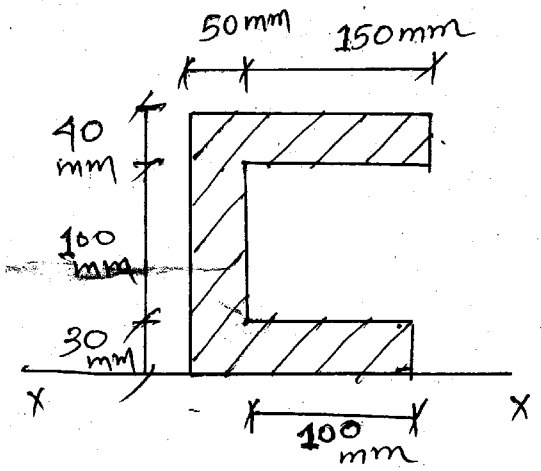

Fig. 6

5 Calculate stress and strain in various parts of the rod shown in **fig. 7**. Modulus of Elasticity is 2×10^5 N/mm^2, $\varnothing ab = 40\ mm$, $\varnothing bc = 60\ mm$, $\varnothing cd = 40\ mm$. **7**

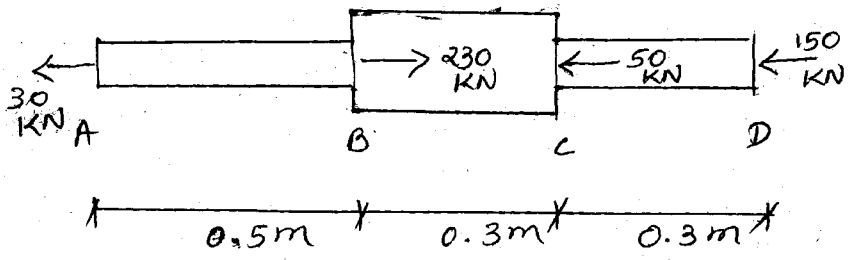

Fig. 7

6 Explain and draw bending moment diagram for a parabolic arch shown in **fig. 8** and frame shown in **fig. 9**. **6**

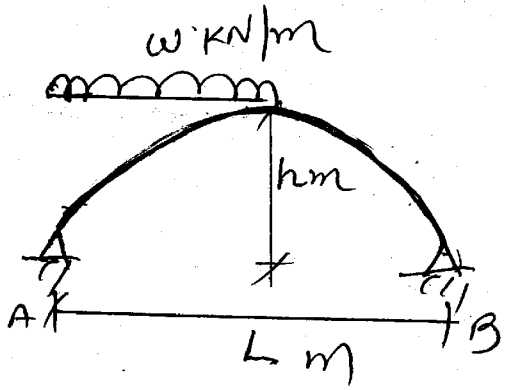

Fig. 8

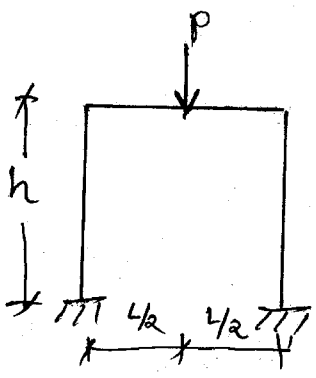

Fig. 9