* K D - 6 1 0 5 *

KD-6105

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

December – 2012

Structural Design & Systems - III

(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. - 2 (SEM. 3)

Name of the Subject :

☛ STRUCTURAL DESIGN & SYSTEMS - 3 (NEW)

☛ Subject Code No. : 6 1 0 5 ☛ 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 Attempt following questions : **5**

(1) Draw bending stress diagram for a cantilever beam of "T" section.

(2) How column fails ?

2 Calculate deflection and slope at point 'C' for a beam shown in **fig. 1**. **6**

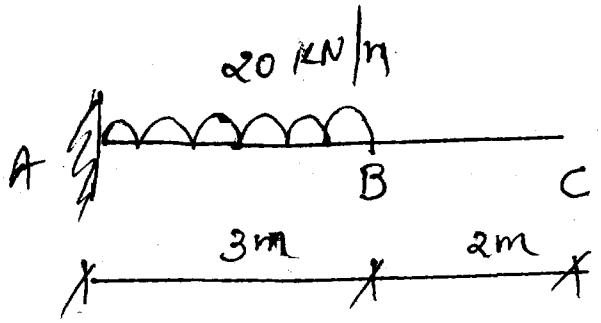

Fig. 1

OR

2 Calculate deflection and slope at point 'C' for a beam shown in **fig. 2**. **6**

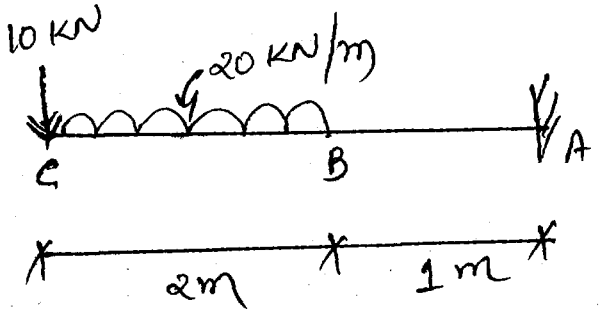

Fig. 2

3 Calculate and draw shear stress diagram for a beam shown in fig. **3(a)**, cross section of beam is 300 mm × 500 mm. **10**

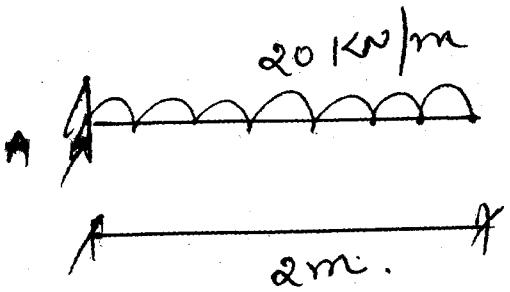

Fig. 3(a)

OR

3 Calculate stress at point A and B for a column subjected to 600 kN eccentric load as shown in **fig. 3(b)**.

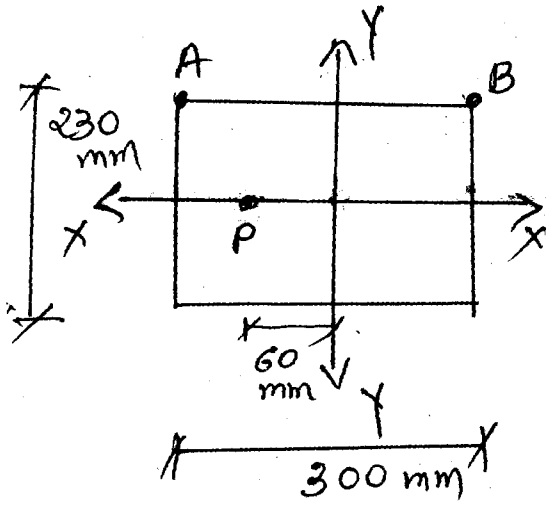

Fig. 3(b)

4 Calculate and draw bending stress diagram for a beam shown in **fig. 3(a)**, cross section of beam is shown in **fig. 4**. **12**

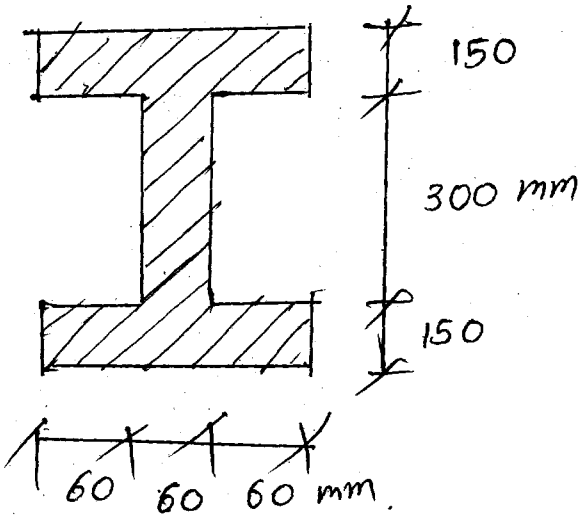

Fig. 4

5 Calculate load carrying capacity for a cast iron rectangular column of 100 mm × 250 mm size, using Rankin's formula. One end of column is fixed and other is free. Actual length of column is 6m. Take Rankin's constant $\alpha = 1/1600$, $f_c = 550\ N/mm^2$. **5**

6 Calculate and draw bending moment diagram using moment distribution method for a beam shown in **fig. 5**. **12**

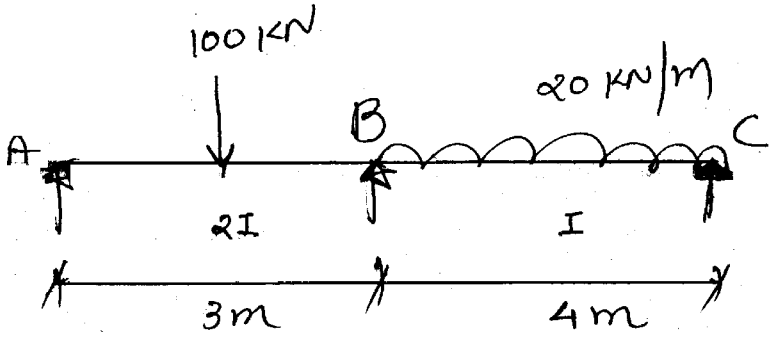

Fig. 5