



SD-6106

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

May / June - 2011

Structure - III

(Old Course)

Time : 3 Hours]

[Total Marks : 100

Instructions :

(1)

नीचे दृशावेव निशानीवाणी विगतो उत्तरवही पर अवश्य लपवी.
 Fillup strictly the details of signs on your answer book.

Name of the Examination :
 B. Arch. - II (Sem - III)

Name of the Subject :
 Structure - III (Old)

Subject Code No. : 6 1 0 6 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 non programmable scientific calculator is permitted.
- (5) Draw detailed drawings to support your answer.

1 (a) **Figure 1** shows a Flitched beam consisting of two timber joists and a steel plate securely bolted between them. Beam is simply supported on a span of 12 m carrying 10 KN/m udl. Calculate maximum Tensile and Compressive stresses on both the materials $E_{steel} = 2 \times 10^5 \text{ N/mm}^2$, $E_{wood} = 0.6 \times 10^4 \text{ N/mm}^2$.

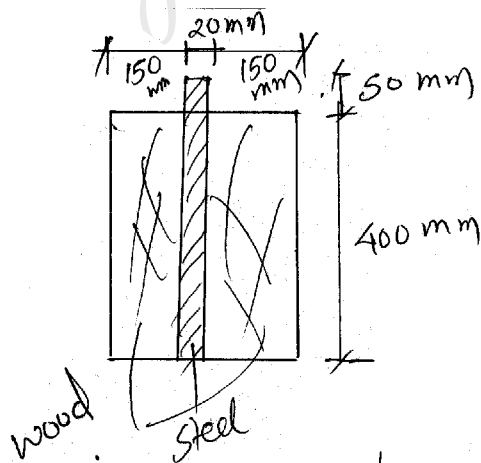


Fig-1

- (b) For the beam shown in fig-2, calculate bending stresses 12
also draw the bending stress diagram. Cross section of
beam is rectangular of size 230mm × 600mm.

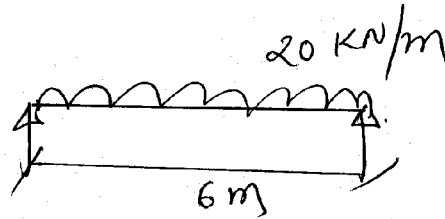


Fig-2

Attempt any two questions out of Q-2, Q-3 & Q-4.

- 2 Calculate deflection under the point load. Refer fig-3. 12

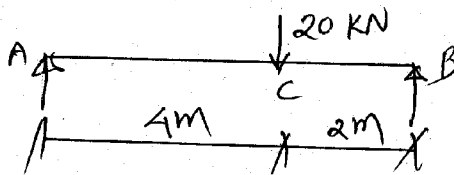


Fig-3

- 3 Calculate slope and deflection at point C. Refer fig-4. 12

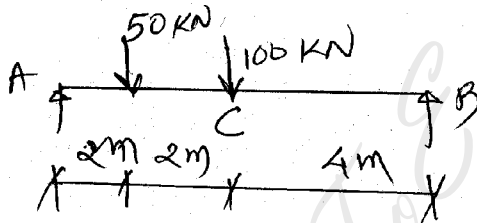


Fig-4

- 4 Explain behaviour of Load bearing wall under the effect of 12
seismic load. Explain basic design criteria to be consider while
designing a building with load bearing wall in a seismic zone.

- 5 Draw bending Moment diagram for the continuous beam 14
shown in fig-5 using Moment Distribution method.

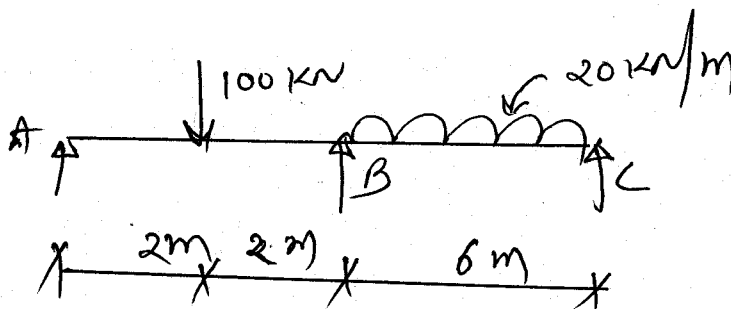
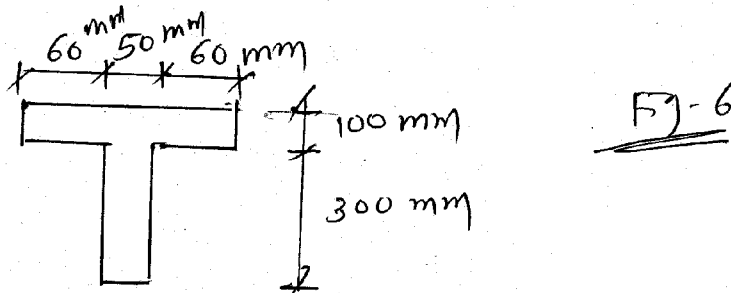


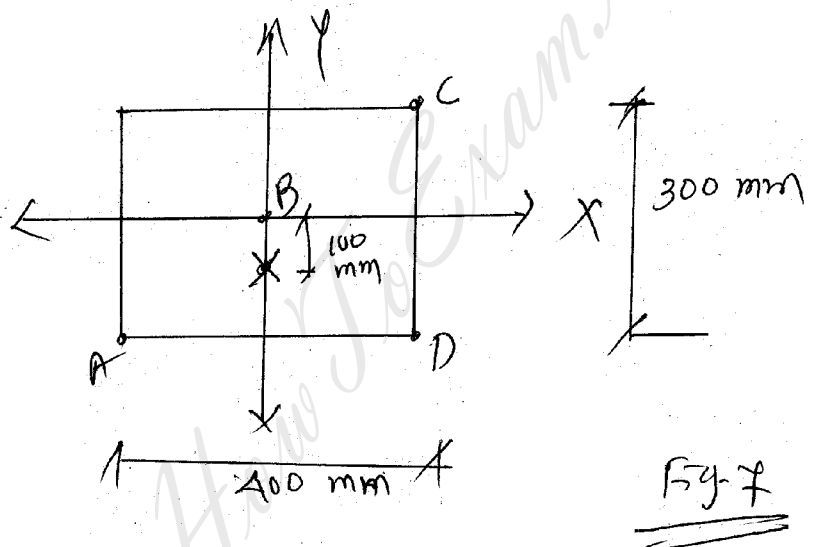
Fig-5

Attempt any **two** questions out of Q-6, Q-7 & Q-8.

- 6** Calculate and draw Shear stress diagram for the beam shown **12**
in **fig-6** beam is simply supported with a span of 10 m with
20 KN/m loading.



- 7** A column is subjected to eccentric load of 700 KN as shown **12**
in **fig-7**. Calculate stresses at points A, B, C & D.



- 8** Calculate load carrying capacity of a column using Rankine's **12**
formula for rectangular column of 300 mm × 550 mm size
and 3.5 m length. Both the ends of column are
fixed, $\alpha = 1/1600$, $f_c = 550 \text{ N/mm}^2$, $E=1 \times 10^5 \text{ N/mm}^2$.

- 9** Answer following questions : **12**
- (i) What is flitched beam ?
 - (ii) Why bending stress is zero at neutral axis ?
 - (iii) What is equivalent area ?
 - (iv) What is distribution factor in a moment distribution method ?