



SD-6105

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

May / June - 2011

Structural Design & Systems - III

(New Course)

Time : 2 Hours]

[Total Marks : 50

Instructions :

(1)

नीचे दृशावेव निशानीवाणी विगतो उत्तरवही पर अवश्य लपवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<input type="text" value="B. Arch. - 2 (Sem - 3)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="Structural Design & Systems - 3 (New)"/>	<input type="text"/>
Subject Code No. : <input type="text" value="6"/> <input type="text" value="1"/> <input type="text" value="0"/> <input type="text" value="5"/>	<input type="text" value="Student's Signature"/>
Section No. (1, 2,.....) : <input type="text" value="Nil"/>	

- (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 all questions :

- (i) What is deflection ? 1
- (ii) What is the use of bending stress diagram and shear stress diagram ? 1
- (iii) It is required to build a column of 10 m height. Its cross section is such that column is long column and as per architectural requirement you can't change cross section and length of column. - so now how you will solve the issue ? Explain the logic behind your solution. 2
- (iv) A structure is stable but deflects more, how you will handle the problem. Explain logic of your solution. 1

2 Calculate deflection and slope at point 'C' for a given beam shown in **fig-1** using Macaulay's method. (integration method) 10

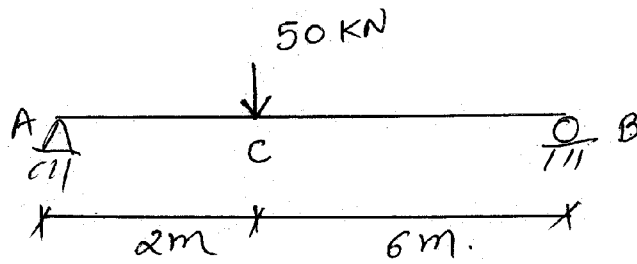


FIG-1

OR

- (a) Calculate deflection and slope at point 'C' for a beam shown in **fig. 2** using direct method.

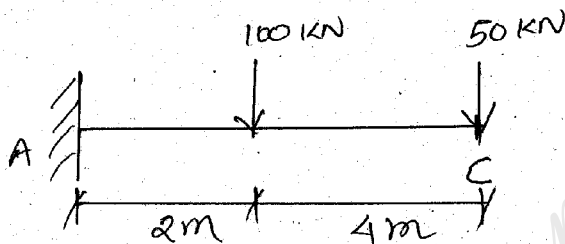


FIG-2

- (b) Calculate deflection at point 'C' and slope at point 'A' for a beam shown in **fig. 3** using direct method.

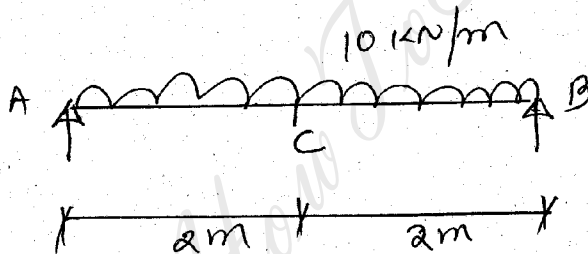


FIG-3

- 3 Calculate and draw shear stress diagram for a beam shown in **fig. 4**, cross section of beam is rectangular of size 300 mm × 500 mm.

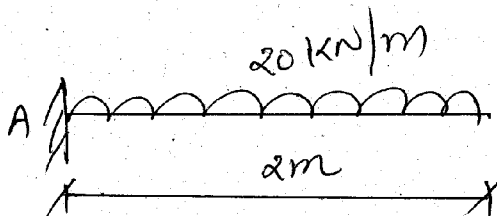


FIG-4

- 4 Calculate and draw bending stress diagram for a beam shown in **fig. 5a**, cross section of beam is shown in **fig. 5b**.

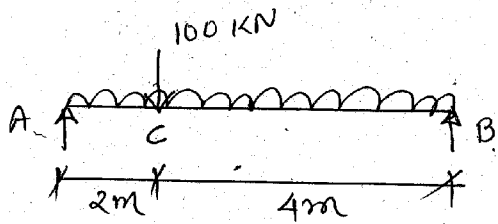


Fig- 5(a)

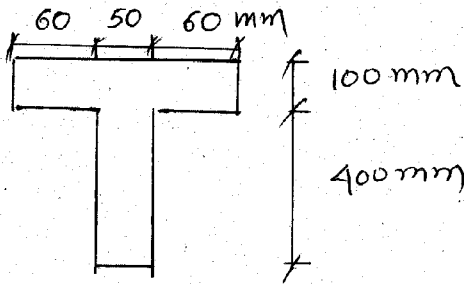


Fig- 5(b)

OR

Calculate stress at points A,B,C and D for a column subjected to 600 kN eccentric load at P as shown in **fig. 5**.

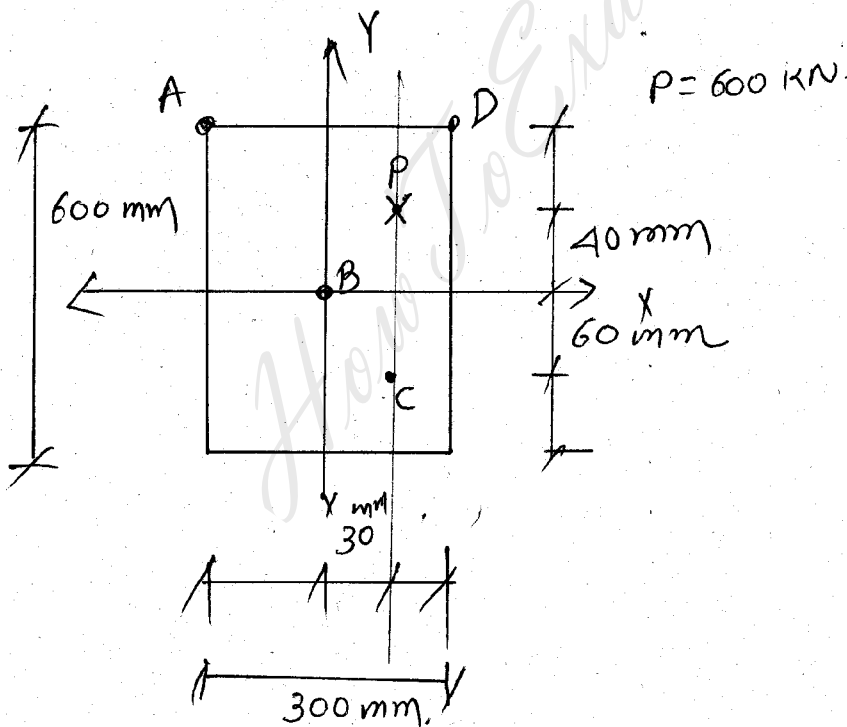


FIG-5

- 5 Calculate Euler's crippling load for a hollow rectangular column of size as shown in **fig. 6**, both the ends are fixed. Actual length of column in 3m. Modulus of elasticity is $2 \times 10^5 \text{ N/mm}^2$. 5

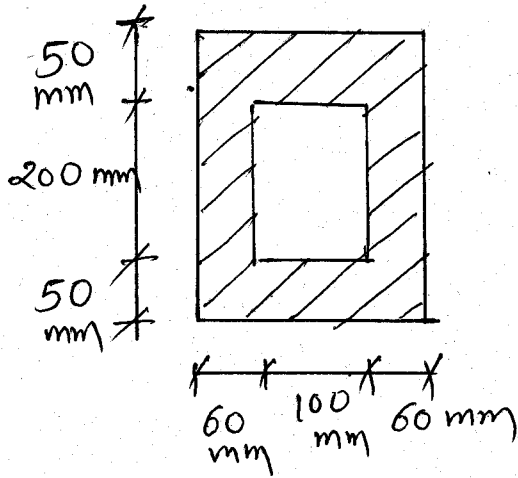


FIG-6

- 6 Calculate and draw bending moment diagram using Moment Distribution method for a beam shown in fig. 7. 11

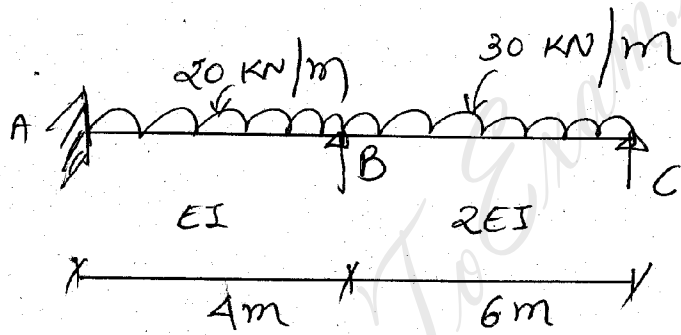


FIG 7