



Printed Pages : 3

AR-203

(Following Paper ID and Roll No. to be filled in your Answer Book)

**PAPER ID : 8539**

Roll No.

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**B. Arch.**

**(SEM. II) EXAMINATION, 2006-07**

**AR – STRUCTURES - II**

*Time : 3 Hours]*

*[Total Marks : 50*

**Note :** (1) Attempt *all* questions.

(2) All questions carry *equal* marks.

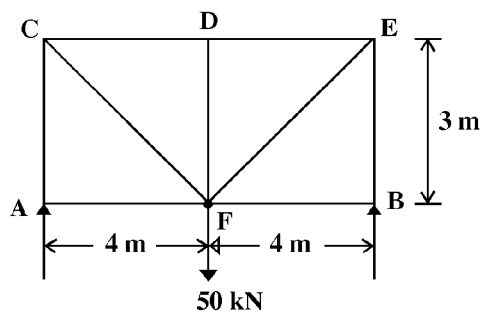
(3) Assume any missing data.

1 (a) Explain methods of analysis of trusses **5**

**OR**

(a) Write assumption of analyzing a truss, its member with force sign convention.

(b) Find member forces in following truss. **5**



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[Contd...

- 2 (a) Show how section modulus is related with strength of a beam also write pure bending equation. 5

**OR**

- (a) Write relation of eccentricity with cross section of columns in case of direct and bending stresses combined.
- (b) A cast iron pipe of external diameter 70 mm and 14 mm thickness 6 m long, is fixed at one end. The pipe carries a point load of 40 kN at free end. Calculate the maximum bending stress induced. 5
- 3 Derive expression and diagram for shear stress distribution of I-section beam. Explain use of shear stress and bending stress diagrams. Show it for rectangular, triangular and circular section beams. 10
- 4 Explain moment area method and find slope and deflection of a cantilever beam subjected to point load 20 kN at free end and UDL of 15 kN/m on full span. 10

**OR**

- 4 Derive formula for slope and deflection for simple supported beam subjected to UDL on full span.

- 5      Discuss in brief Rankine's theory and discuss      10  
Euler's theory for columns with hinged at both  
ends.

**OR**

- 5      Calculate the safe load on hollow cast iron column  
fixed at ends, its external diameter is 150 mm and  
10 mm thickness, length 6 m,  $E = 90 \text{ kN/sqmm}$  and  
factor of safety 5, Euler's load. Also write types of  
columns.
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