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

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.

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.

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.

OR

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

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Discuss in brief Rankine’s theory and discuss Euler’s theory for columns with hinged at both ends.

OR

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 kN/sqmm and factor of safety 5, Euler’s load. Also write types of columns.