

SCHOOL OF PLANNING AND ARCHITECTURE, VIJAYAWADA  
SEMESTER END EXAMINATIONS (REGULAR) APRIL – MAY - 2017

B. ARCH II YEAR IV SEMESTER

STRUCTURAL ANALYSIS (10110405)

Maximum Marks - 50

Time – 2.00 Hours

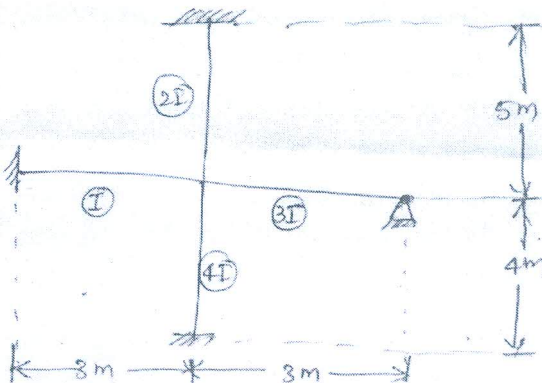
- a) Answer any Two questions out of 1 to 4 questions.  
b) Question No.5 is compulsory and answer any four out of six sub-questions.

- Q1. A Cantilever beam of span 2m long is carrying (12M)  
a point load of 30KN at the free end and 20 KN  
at a distance of 1m from the fixed end. Find the  
slope and deflection at the free end by moment  
area method.

Take  $E = 200 \text{ KN/mm}^2$  and  $I = 150 \times 10^6 \text{ mm}^4$ .

Draw the B.M.D due to loading of the (3M)  
cantilever beam.

- Q2. What are the moments  $M_oA$ ,  $M_oB$ ,  $M_oC$  and (15M)  
 $M_oD$ ? Solve for the following.



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- Q3. a) Define bearing capacity and write factors affecting bearing capacity of soil. (10M)
- b) Explain (5M)
- i) Gross bearing pressure
  - ii) Net bearing pressure
  - iii) Allowable Net bearing pressure
- Q4. a) What is Eulers Crippling load for the four conditions of the column? (8M)
- b) Design a short column square in section to carry an axial load of 800 KN using M20 grade concrete and Fe415 grade steel. (7M)
- Q5. Write short notes on any FOUR of the following: (4x5=20M)
- a) Explain Relative stiffness and Absolute stiffness factors
  - b) Briefly explain slenderness ratio of columns
  - c) Derive crippling load formula for a column having both ends fixed
  - d) Boundary conditions of Cantilever beam and simply supported beam
  - e) Explain Bulking of sand
  - f) Write about grade of concrete and grade of steel.

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