

Printed Pages : 4



NAR203

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

**PAPER ID : 181208**

Roll No.

--	--	--	--	--	--	--	--	--	--

**B. Arch.**

(SEM. II) THEORY EXAMINATION, 2014-15  
**ARCHITECTURAL STRUCTURES -II**

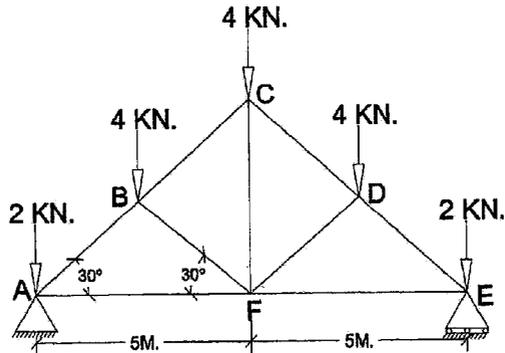
Time : 3 Hours]

[Total Marks : 50

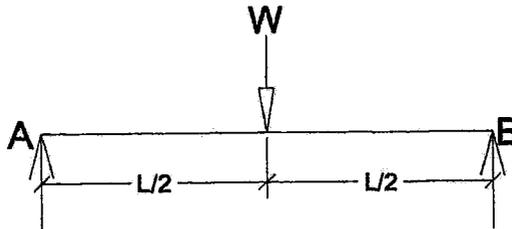
- Note:**
- (1) Answer any five questions. Question No.1 is compulsory.
  - (2) Assume any missing data.
  - (3) Answers should be supported with neat sketches/ diagram wherever required.

- 1** Explain the following; **2×5=10**
- (a) Perfect Frame
  - (b) Pure Torsion
  - (c) Crippling Load
  - (d) Grading of concrete with strength
  - (e) Shrinkage of concrete

- 2 Determine the forces in the various members of the truss as shown in the figure by method of Joints. 10



- 3 (a) Assumptions in the theory of pure torsion 3  
 (b) Determine maximum deflection in beam as shown in figure. 7



- 4 (a) Find the power transmitted by a 75 mm diameter shaft at 140 r.p.m. at a maximum shear stress of  $60\text{ N/mm}^2$ . 5  
 (b) Define Polar modulus with expression. 5

- 5 (a) What is the effective length of column of different end conditions as given below? 4
- (a) Both ends hinged
- (b) One end fixed, one end free
- (c) Both ends fixed
- (d) One end fixed, one end hinged
- (b) Find out shortest effective length "L" for pin ended steel column having a cross section of 60mm x 100 mm for which Euler's formula applies. 6
- Take  $E = 2 \times 10^5 \text{ N/mm}^2$  and critical proportion limit is  $250 \text{ N/mm}^2$ .
- 6 (a) What are the assumptions made in Euler's theory? 4
- (b) Explain the relation between number of joints and number of member in a perfect frame. 2
- (c) Write in brief about different types of cement and its use. 4

- 7 (a) Write short notes on following **3×2=6**
- (a) Slenderness ratio of column
  - (b) Workability of concrete
  - (c) Curing of concrete
- (b) A hollow steel shaft of 1.5 meter long **1×4=4**  
having external diameter 150 mm and internal dia  
100 mm. Find the maximum torque required to  
produce a twist of 0.5 degree over length of shaft.  
Take modulus of rigidity of the shaft material  
"C" =  $8 \times 10^4 \text{ N/mm}^2$
-