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

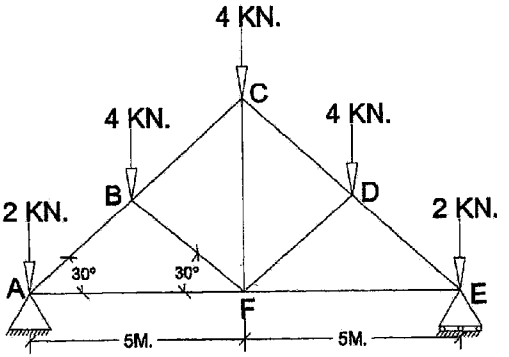
(b) Pure Torsion

(c) Crippling Load

(d) Grading of concrete with strength

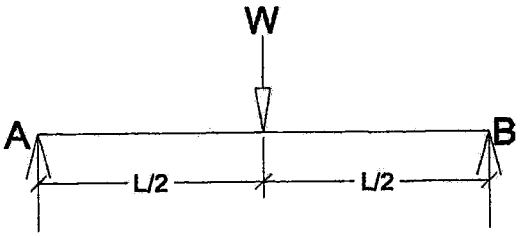
(e) Shrinkage of concrete

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 60N / 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. Take $E = 2 \times 10^5$ N/mm^2 and critical proportion limit is 250N/mm^2. **6**

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 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" = 8×10^4 N/mm^2 **1×4=4**