



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

PAPER ID : 181216

Roll No.

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B. Arch.

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

Time : 3 Hours]

[Total Marks : 50

Answer all questions.

1 Answer any one :

- (a) Find the member forces in different members of the truss shown in fig. 1 by graphical method.

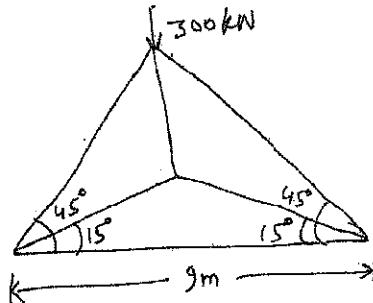


Fig. 1

- (b) A 12 m span is loaded as shown in fig. 2 Find the forces in the member of the truss by method of joint.

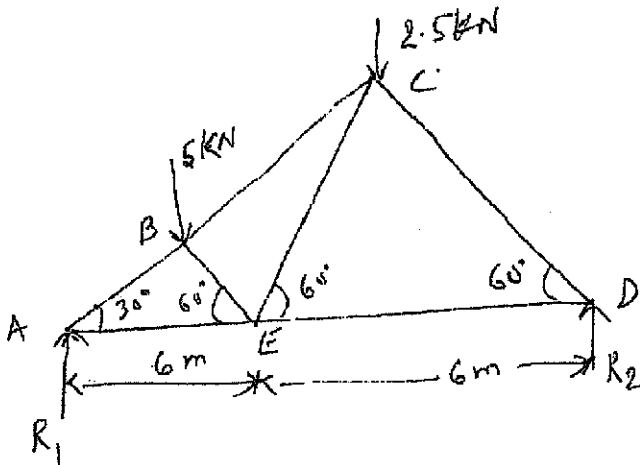


Fig. 2

2 Answer any one :

- (a) A beam of triangular section having base width 20 cm and height of 30 cm is subjected to a shear force of 3 kN. Find the value of maximum shear stress and sketch the shear stress distribution along with the depth of beam. **10**
- (b) A circular beam 150 mm diameter is subjected to a shear force of 7 kN. Calculate the value of maximum shear stress and sketch variation of shear stress along the depth of the beam. **10**

3 Answer any two : **5×2=10**

- (a) A cantilever 1.5 m long carries a udl over the entire length. Find the deflection at the free end if the slope at the free end is 1.5° .
- (b) A 250 mm long cantilever of rectangular section 40 mm wide and 30 mm deep carries a udl load 'w'. Calculate the value of 'w' if the maximum deflection in the cantilever is not to exceed 0.5 mm. take $E = 70 \text{ GN/m}^2$.
- (c) A simply supported beam of span 3m carried a central point load of 30 kN.
Given $I_{xx} = 15.614 \times 10^{-6} \text{ m}^4$. Calculate central deflection.

4 Answer any two : **10×2=20**

- (a) Define :
 - (i) Short column
 - (ii) Medium size column
 - (iii) Long column
 - (iv) Strut
 - (v) Slenderness ratio.
- (b) What are the different end conditions of column ?
What are the assumptions of Euler's theory ?
- (c) Derive the expression for Euler's formula when one end of the column is fixed and the other end is hinged.