Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 08

B. Architecture (2012 & Onwards) (Sem.–2)

THEORY OF STRUCTURES - I

Subject Code : BACH-207

M.Code : 45095

Time : 3 Hrs. **Max. Marks : 60**

INSTRUCTIONS TO CANDIDATES :

1. **Attempt total four questions from Question no. 2 to 8.**
2. **Missing data, if any may be assumed suitably.**
3. **Question no. 1 is compulsory.**
4. **Draw neat sketches wherever necessary.**

1. Answer the following :

(a) What is a Perfect Frame? (2)

(b) What are Dead and Live loads? (2)

(c) Differentiate between a Cantilever and Simply Supported beam. (2)

(d) What do you understand by Young's Modulus of elasticity? (2)

(e) Define the term 'Section Modulus'. (2)

(f) State Triangle law of forces. (2)

2. (a) Define centroid and centre of gravity. (2)

(b) Find Moment of Inertia (I_{xx} and l_{yy}) of the unequal angle section 125×95×10mm with longer leg vertical. (10)

3. A simply supported rectangular beam of cross 300mm deep is of span 4.0 m. What uniformly distributed load per meter the beam may carry if the bending stress is not to exceed 120 N/mm^2? Take I = 8×10^{6}mm^4. (12)

4. A simply supported beam of span of 16 m span carries a concentrated load of 4 kN, 5 kN and 3 kN at distance of 3 m, 7m and 11m respectively from left hand support. Calculate maximum shear force and bending moment. Also draw SFD and BMD. (12)

5. Explain various loads (as per IS 875) to which the structures are generally subjected to during their life span. Also discuss their impact on the structures. (12)

6. Write short notes on :

   a) Neural Axis (4)

   b) Moment of Resistance and its significance (4)

   c) Minimum Radius of Gyration (4)

7. Find magnitude and nature of forces in all members of frame given in figure using method of joints. (12)

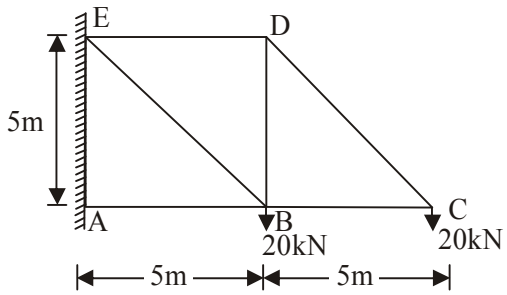

Fig.1

8. Explain various Force systems acting on a body in brief with the help of sketches. (12)

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.