USN ☐☐☐☐☐☐☐☐☐☐   **14ENG2.5**

Second Semester B.Arch. Degree Examination, Dec.2016/Jan.2017
Building Structures – II

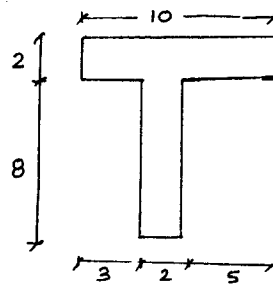Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

1 a. State and explain the term "Centroidal Axes".   **(08 Marks)**
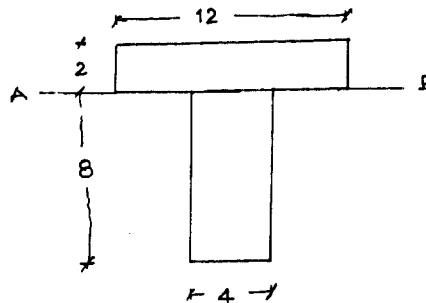   b. Locate the centroid of the area shown all dimensions are in "cm"   **(12 Marks)**

Fig Q1(b)

OR

2 a. State and explain "Parallel Axis theorem".   **(08 Marks)**
    b. Calculate the moment of inertia of the area shown about axis AB. All dimensions are in cm

Fig Q2(b)
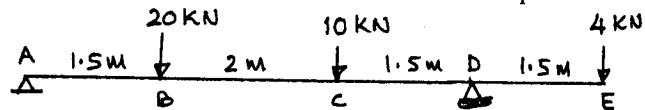
                                                                        (12 Marks)

Module-2
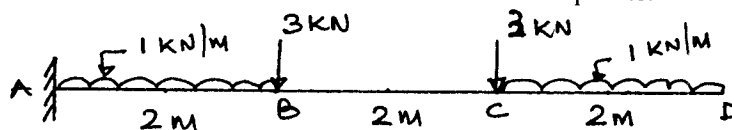
3 Draw SFD and BMD for the beam shown. Indicate the salient points.   **(20 Marks)**

Fig Q3

OR

4 Draw SFD and BMD for the beam shown. Indicate the salient points.   **(20 Marks)**

Fig Q4

Module-3

5 A rectangular section 200mm wide and 500mm depth is used as a beam calculate
a. Moment of inertia about N.A.
b. Section modulus
c. Max Bending stress, if M = 30KNm
d. Max shear stress, if SF = 15kN.   (20 Marks)

OR

6 a. Calculate the deflection at midspan for a simply supported beam of span 6mt, carrying a udL of 20kN/m over its entire span. EI = 10,000 kNm^2 (10 Marks)

b. Calculate the deflection under the load for a simply supported beam of span 6m. It carries a point load of 16kN at 3m from right support EI = 6000kNm^2.   (10 Marks)

Module-4

7 a. Differentiate between short column and long column.   (06 Marks)

b. A mild steel tube 5m long, 30mm internal dia and 6mm wall thickness, used as strut with fixed ends. Calculate the critical load using Euler's formula. E = 2.10×10^5 N/mm^2. (14 Marks)

OR

8 a. Differentiate between "Length of a column" and "Effective length of a column"   (08 Marks)

b. Calculate the 'Effective length' of a column of Length 8000mm for different standard end conditions.   (12 Marks)

Module-5

9 A reinforced concete column is of section 300mm × 300mm. Determine the strength of the column if
  a. 6 vertical bars at 16mm dia
  b. 6 vertical bars of 20mm dia
are used. Take f$_{ck}$ = 20N/mm^2
      f$_y$ = 415 N/mm^2 (20 Marks)

OR

10 A reinforced concrete column of circular section is of dia 300mm. Determine the strength of the column if
  a. 6 vertical bars of 16mm dia
  b. 6 veritcal bars of 20mm dia
are used. Take f$_{ck}$ = 20N/mm^2
      f$_y$ = 415 N/mm^2 (20 Marks)

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