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14ENG2.5

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

Time: 3 hrs.

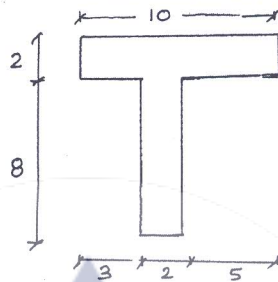
Max. Marks: 100

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)

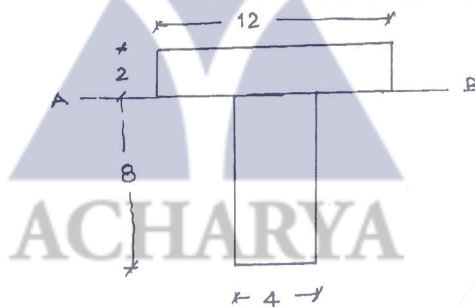
Fig Q1(b)



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 (12 Marks)

Fig Q2(b)

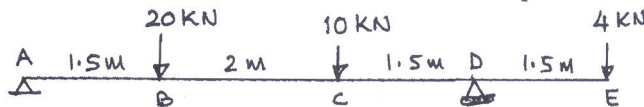


(12 Marks)

Module-2

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

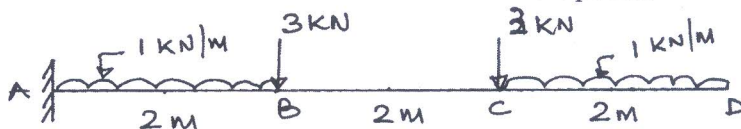
Fig Q3



OR

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

Fig Q4



Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

**Module-3**

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

OR

- 6 a. Calculate the deflection at midspan for a simply supported beam of span 6m, carrying a uDL of 20kN/m over its entire span. $EI = 10,000\text{ kNm}^2$ (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 $EI = 6000\text{kNm}^2$. (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. $E = 2.10 \times 10^5\text{ N/mm}^2$. (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 concrete column is of section $300\text{mm} \times 300\text{mm}$. Determine the strength of the column if
- 6 vertical bars at 16mm dia
 - 6 vertical bars of 20mm dia
- are used. Take $f_{ck} = 20\text{N/mm}^2$
 $f_y = 415\text{ N/mm}^2$
- (20 Marks)

OR

- 10 A reinforced concrete column of circular section is of dia 300mm. Determine the strength of the column if
- 6 vertical bars of 16mm dia
 - 6 vertical bars of 20mm dia
- are used. Take $f_{ck} = 20\text{N/mm}^2$
 $f_y = 415\text{ N/mm}^2$
- (20 Marks)
