

Seat No: _____

Enrollment No: _____

PARUL UNIVERSITY
FACULTY OF ARCHITECTURE
B.Arch Summer 2016-17 Examination

Semester: 4

Date: 25/05/2017

Subject Code: 01101256

Time: 02:00 PM to 04:00 PM

Subject Name: Structural Design and Analysis -II

Total Marks: 50

Instructions:

1. Each section carries 25 marks.
2. Q1 & Q2 are compulsory questions in each section.
3. Only one question has to be attempted out of Q3 and Q4.
4. Figures to the right indicate full marks.
5. Write section-A, section-B on separate answer sheets.

SECTION - A

Q:1 Define following. (10)

1. Stress, 2. Strain, 3. Hooke's law, 4. Bulk modulus, 5. Volumetric strain,
6. Principle of superposition, 7. Poisson's ratio, 8. Modular ratio, 9. Shear force,
10. Bending moment.

Q:2 (a) Write difference between. (any two) (05)

1. Super structure and substructure.
2. Young's modulus and bulk modulus.
3. Longitudinal strain and direct strain.

Q:2 (b) Fill in the blanks. (05)

1. Modulus of elasticity is $2.0 \times 10^5 \text{ N/mm}^2$ is called _____.
2. _____ and cantilever beams are example of determinate structure.
3. _____ is unit of bulk modulus.
4. Shear stress upon shear strain is known as _____.
5. The material goes under considerable deformation with rupture is called _____.

OR

Q:2 (b) A reinforced concrete circular column of 400 mm diameter has 6 steel bars of 20 mm diameter embedded in it. Find the maximum load which the column can carry, if the stress on the steel is 120 kN and the stress of concrete is 5 kN. (05)

Q:3 Draw shear force diagram for a cantilever beam. For Fig.1 (05)

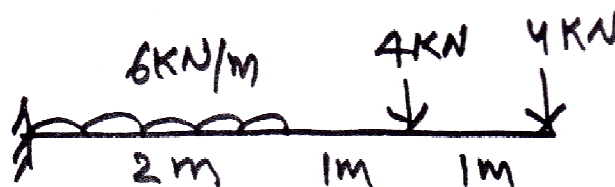


Fig.1

Q:4 Draw bending moment diagram for a cantilever beam. For Fig 1. (05)

SECTION - B

- Q:1 (a) Derive the expression of principle of superposition for composite section. (10)
 (b) Explain the different type of beam, support and loads in detail.
- Q:2 (a) Explain advantages and disadvantages of determinate structure. (05)
 (b) Draw stress- strain curve for mild steel and explain the important point. (05)

OR

- Q:2 (b) A member ABCD is subjected to point load as shown in Fig.2 determine the total change in length of the member take $E = 200 \text{ GPa}$. Fig 2 (05)

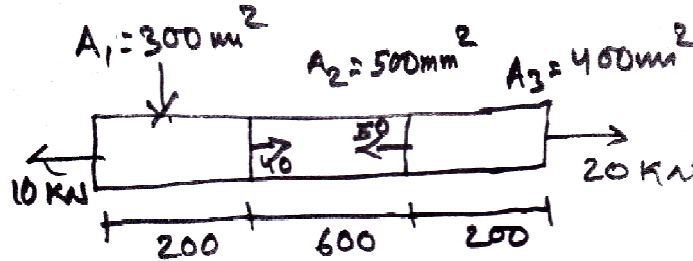


Fig. 2

- Q:3 Solve for bending moment and draw the bending moment diagram Fig 3. (05)
 Q:4 Solve for shear force and draw the shear force diagram for Fig 3. (05)

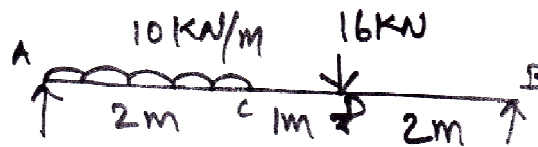


Fig.3