

PARUL UNIVERSITY
FACULTY OF ARCHITECTURE & PLANNING
B.Arch. Summer 2018-19 Examination

Semester: 4

Subject Code: 01101256

Subject Name: Structural Design & Analysis- II

Date: 23/05/2019

Time: 10:00 am to 01:00 pm

Total Marks: 50

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever required.
4. Draw suitable sketches wherever required.

Q.1 Define following:**(10)**

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

Q.2 Attempt any five out of the following six:**(20)****1) Fill in the blanks (Any 4)**

- a) _____ is unit of bulk modulus.
- b) Shear stress upon shear strain is known as _____.
- c) The material goes under considerable deformation with rupture is called _____.
- d) Modulus of elasticity is 2.0×10^5 N/mm² is called _____.
- e) _____ and cantilever beams are example of determinate structure.

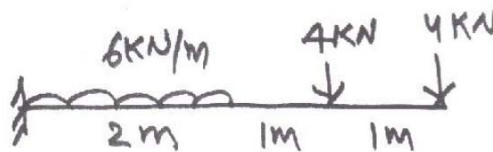
2) Derive the expression of principle of superposition for composite section.**3) Draw shear force diagram for a cantilever beam shown in Fig.1**

Fig 1

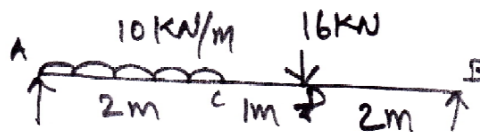
4) Draw stress- strain curve for mild steel and explain the important point.**5) Explain advantages and disadvantages of determinate structure.****6) Solve bending moment and draw the bending moment diagram of the conditions shown in Fig 2**

Fig 2

Q.3 Explain the following in brief: (Any five)**(10)**

- a) Young's modulus
- b) Equilibrium of body
- c) Longitudinal strain.
- d) Direct strain
- e) Super structure
- f) Substructure

Q.4 Explain the following: (Any two)**(10)**

- 1) Explain the role of plinth beam in multistory building.
- 2) 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.
- 3) Explain different types of beam, support and loads in detail.