

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BARCH – SEMESTER-II– • EXAMINATION – SUMMER 2015

Subject Code: 1025004

Date: 16-05-2015

Subject Name: Structure - II

Time: 10:30 am - 12:30 pm

Total Marks: 50

Important Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Draw neat sketches where required.
4. Figures to the right indicate full marks.
5. If more options are attempted, then, highest scoring answers will be considered.

Q.1 Define and explain (any ten) of the following: (1 mark each) 10

- (1) Modulus of Elasticity, (2), Stress, (3) Poisson's Ratio, (4) Strain, (5) Shear Force, (6), Bending Moment, (7) Point of contra-flexure Or Point of Inflection, (8) Hooke's Law, (9) Lateral Strain, (10) Tangential Stress, (11) Perfect or Stable Truss, (12) Redundant Truss, (13) Imperfect Truss, (14) Deficient Truss, (15) Statically Determinate Truss

Q.2. Write Short notes (any five) of the following: (4 marks each) 20

- (1) Differentiate between a Truss and a Frame
- (2) Any four types of Stable Trusses (with sketches)
- (3) Types of Beams and their support conditions
- (4) Conditions of Equilibrium
- (5) Assumptions in Theory of a Plane Truss
- (6) Composite Element
- (7) Compound Element
- (8) Prismatic and Non-Prismatic Elements

Q.3. Solve (any four) of the following problems: (5 marks each) 20

- (1) Analyze the beam as shown in Figure 1.
Calculate and Draw Bending Moment Diagram (BMD) and Shear force Diagram (SFD)
- (2) Analyze the beam as shown in Figure 2.
Calculate and Draw Bending Moment Diagram (BMD) and Shear force Diagram (SFD)
- (3) An aluminum bar 3m long and 2500mm² (Figure 3.) in cross section is rigidly fixed at A and D.
Determine the loads shared and stresses in each portion and the distances through which the points B and C will move. Take E for aluminum as 80 GPa
- (4) Analyze the Truss as shown in Figure 4. Determine magnitude of forces in members BC, CG and GF
Using method of Joints **OR** method of Sections **OR** the Graphical Method.
- (5) Analyze the Truss as shown in Figure 4. Determine magnitude of forces in all members.
Using method of Joints **OR** method of Sections **OR** the Graphical Method.

FIGURE 1

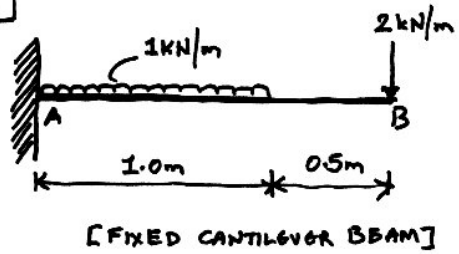


FIGURE 2

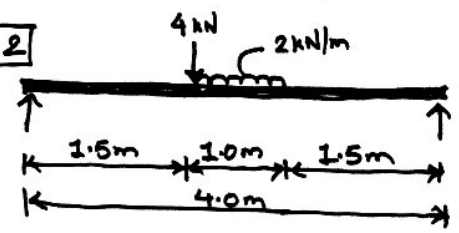


FIGURE 3

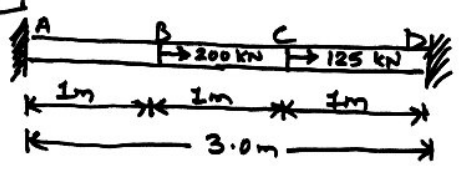


FIGURE 4

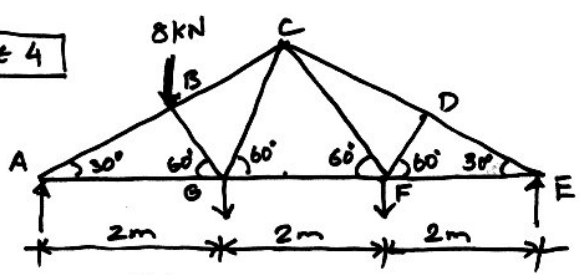


FIGURE 5

