



REGISTRATION NUMBER

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SRINIX COLLEGE OF ENGINEERING

1ST INTERNAL EXAMINATION-2018-19

Subject-MOS

Semester-3rd

Branch-CIVIL

Full Marks-50

Time-2.00Hrs

ANSWER ALL QUESTIONS (PART-A)

[2×5=10]

1. Limiting values of Poisson's ratio are
 - a) -1 and 0.5
 - b) -1 and -0.5
 - c) 1 and -0.5
 - d) 0 and 0.5
2. If a material has identical properties in all directions, it is said to be
 - a) Homogeneous
 - b) Isotropic
 - c) Elastic
 - d) Orthotropic
3. In a thin cylindrical shell the ratio of longitudinal stress to hoop stress is
 - a) 0.5
 - b) 1
 - c) 2
 - d) 4
4. Limit of proportionality depends upon
 - a) Area of cross section
 - b) Type of loading
 - c) Type of material
 - d) All the above
5. Rate of change of bending moment is equal to
 - a) Shear force
 - b) Deflection
 - c) Slope
 - d) Rate of loading

ANSWER ALL QUESTIONS (PART-C)

[10×2=20]

1. Draw the graph of stress versus strain diagram of mild steel and define Hooke's law and Poisson's ratio.

2. Define working stress and factor of safety
3. State and briefly explain Saint venant's principle.
4. What do you mean by composite beams? Give an example.
5. Define principle of superposition. What is its utility?
6. What is complimentary shear stress? What is its significance?
7. What do you mean by principal planes and principal stresses. Explain through diagrams
8. How can you use the Mohr's stress circle?
9. Define term –stress, true stress, proof stress and thermal stress.
10. Write different types of supports of the beam along with free body diagrams.

ANSWER ANY FOUR QUESTIONS (PART-C)

[5X4=20]

1. A material has modulus of rigidity $0.4 \times 10^5 \text{N/mm}^2$ and bulk modulus $0.75 \times 10^5 \text{N/mm}^2$. Find the modulus of elasticity and Poisson's ratio.
2. A thin cylinder 4m long 1.2m in diameter having thickness of 12mm is subjected to an internal pressure of 1.5MPa. Calculate the change in dimensions of the shell and the maximum intensity of shear stress induced. Give that $E=2 \times 10^5 \text{MPa}$ and Poisson's ratio=0.3
3. A horizontal girder which is freely supported at its ends and has a span of 9m supports a uniformly distributed load of 20 KN /m run over the whole span and also two concentrated loads 30KN and 40KN at points 6m and 7.5m respectively from the left support. Draw the bending moment and shearing force diagrams and state the values of the maximum bending moment and maximum shear force.
4. A bar 500mm long s having square cross section of size 60mmx60mm. If the bar is subjected to an axial load of 100KN and a lateral compression of 500KN in faces of size 60mmx500mm, find the change in size and volume. Take $E=200 \text{GPa}$, $\mu=0.3$
5. A compound bar ABC 2m long is consisting of two parts of copper and steel and that cross sectional area of copper is twice that of steel. The bar is subjected to an axial tensile force of 100KN. If the elongation of copper and steel are same. Determine the length of two parts. Take $E_s=200 \text{GPa}$ and $E_c=100 \text{GPa}$.