SEMESTER EXAMINATION, 2022-23
YEAR

Programme – Ist Yr. M.Tech – STRUCTURE ENGINEERING

ADVANCE STRUCTURAL ENGINEERING

Duration : 3:00 hrs   **Max Marks: 100**

Note:-Attempt all questions. All Question carry equal marks. In case of any ambiguity or missing data, the same may be assumed and state the assumption mad in the answer.

Q 1. Answer any four parts of the following.

a) Define: stress and strain.
b) Define: Poisson's ratio.
c) Define Dead load and live load.
d) Give difference between Pad footing and slope footing.
e) Write Theorem of perpendicular axis.
f) Define: Young's modulus and Shear modulus.

Q 2. Answer any four parts of the following.

a) Difference between Short column & Long column.
b) Define: Effective length & actual length.
c) Define: One way slab & Two way slab.
d) Definition of radius of gyration and slenderness ratio.
e) Definition of radius of gyration and slenderness ratio.
f) Bulk modulus and Factor of Safety.

Q 3. Answer any two parts of the following.

a) A copper rod of 45mm x 45mm square section and 2m length is subjected to an axial pull of 100Kn. What will be the change in length if modulus of elasticity E =100Kn/mm2.
b) A sample is having modulus of elasticity 1.4x105 N/mm2 and modulus of rigidity 0.56x105 N/mm2.Find Poisson's ratio.
c) A circular brass rod of 2m length is subjected to axial pull of 15kN. What should be the diameter of the rod so that stress should not be more than 120n/mm2 and elongation should not be more than 6mm. take E= 120GPa.

Q 4. Answer any two parts of the following.

a) Find maximum bending moment for the following cases (a)Simply supported beam with central point load (b)Cantilever beam with UDL on entire span.
b) A wooden beam 200 mm wide & 300 mm deep is simply supported over a span of 4 m. Bending stress does not exceed 8 N/mm2, Find maxi. UDL on the beam
c) Draw bending stress diagram for a beam 200 mm × 300 mm deep subjected to a bending moment of 80 KN.m.

Q 5. Answer any two parts of the following.

a) Give assumptions of Euler's theory.
b) Draw & Write effective length of the column for different end Conditions.
c) A strut 2.5 meters long is 60 mm in diameter. One end of the strut is fixed while its other end is hinged. Find the crippling load. E=2×105 N/mm2.