**Question Bank of Mechanics of Structures (22303)**

**Unit Test-II (S**hift:-I)

Program: - Civil Engg. Course Code:- 22303

Semester: - III Course: - MOS

***Question for 2 Marks***

**Chapter 05 (CO5)**

1. State any two assumptions made in the theory of pure bending.
2. Define moment of resistance and neutral axis.
3. State the shear stress equation and write the meaning of symbols used.
4. Draw the shear and bending stress distribution diagram for solid rectangular section.

**Chapter 06 (CO6)**

1. Define Radius of Gyration and Slenderness Ratio
2. Define Effective length of column
3. State the Assumptions made in Eulers Theory of long columns .

**Chapter 04 (CO4)**

1. Define Shear Force and Bending Moment .
2. Define point of Contra flexure
3. State the different types of beams

***Question for 4 Marks***

**Chapter 05 (CO5)**

1. A rectangular beam of 400 mm \* 200 mm size is of wood material. If the permissible bending stress in wood is 2 MPa, calculate the moment of resistance of beam.
2. Find the bending stress at 25 mm below the top edge of rectangular section 80 mm wide and 200 mm deep, if maximum bending moment is 4 KN-m.
3. A cantilever rectangular M.S. section is 4 m in length. It carries load due to its self weight of 5 KN/m and the permissible bending stress in the M.S. is 5 MPa. Find the size of the section, if depth to width ratio is 2.
4. A solid circular compression member 60 mm in diameter is to be replaced by a hollow circular section of the same material. Find the size of the section if the internal diameter is 0.6 times the external diameter.
5. Determine the concentrated load , when placed at the free end of a cantilever beam of length 1 m will produce a shear stress 1.5 MPa. The cross-section is circular of diameter 100 mm.

**Chapter 06 (CO6)**

1. A column having dia 200 mm is of length 3m .both the ends of the column are hinged .find Eulers Crippling load .
2. A 4m length of a tube has a buckling of 2KN when used as column hinged at both the ends Calculate the buckling load for a 4.5m length of the same tube when used as a column if i) both ends are fixed ii) one end is fixed and other end is hinged ii) one end is fixed and other end is free .
3. A rectangular Column of cross section 300mmx200mm and length of the column 3m find slenderness ratio when i) both ends are pinned joined ii) both the ends are fixed
4. Determine by Rankines formula the safe load of the column of 5.5m length with both ends fixed can carry with a factor of safety 4 the properties of the section are A=1777mm2 Ixx = 11.6 x 106 Iyy= 0.84x106 mm4 fc=320N/mm2 a=1/7500

**Chapter 04 (CO4)**

1. Draw SFD and BMD for the Cantilever beam span =4m =AE end A is fixed and AB= BC =CD= DE =1m over portion AC a u.d.l of 20KN/m acts and point loads of 20KN, 30KN AND 10KN Acts at B ,D AND E.

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1. Draw shear force and bending moment for simply supported beam as shown in Fig.



1. Draw shear force and bending moment diagram for cantilever beam of 5 m span. Beam is loaded with udl of 15 N/m over entire span. Vertically downward point load of 100 N at its free and clockwise moment of 50 Nm at its mid span.
2. A simple supported beam of span 6 m carries udl of 10 kN/m upto 2 m and couple of 5 kNm (clockwise) at 3 m respectively from left side support. Draw SFD and BMD with appropriate calculation.



1. A beam ABCD is supported at ‘A’ and ‘D’. AB=BC=CD=2m. It is subjected to udl of 10 kN/m over AB and a point load of 20kN at ‘C’ Draw shear force and bending moment diagrams.
2. Draw shear force and bending moment diagrams for the cantilever beam loaded as shown in figure 1. Indicate all important values.



1. Draw shear force and bending moment diagrams for the beam as shown in fig. 2.



1. Draw shear force and bending moment diagram for an overhang beam loaded as shown in fig.3

