Seat No.

Total No. of Pages : 3

OCT-NOV 2025 WINTER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Strength of Materials

Sub. Code: 114405/112332

Day and Date: Friday ,05-12-2025 **Total Marks: 60**

Time: 02:30 PM To 05:00 PM

Instructions:
1. **All questions are compulsory**
2. **Assume suitable data wherever necessary and mention it boldly**
3. **Draw neat labelled diagrams wherever necessary**
4. **Figures to the right indicate full marks**
5. **Use of Scientific calculator is allowed**

Q1) Derive relationship between Young's modulus and modulus of rigidity. **[5]**

Q2) Define the following terms: **[5]**
i) Strain Energy
ii) Modulus of resilience

Q3) What are the different methods of analysis of truss? **[5]**

Q4) Attempt the following questions. **[15]**

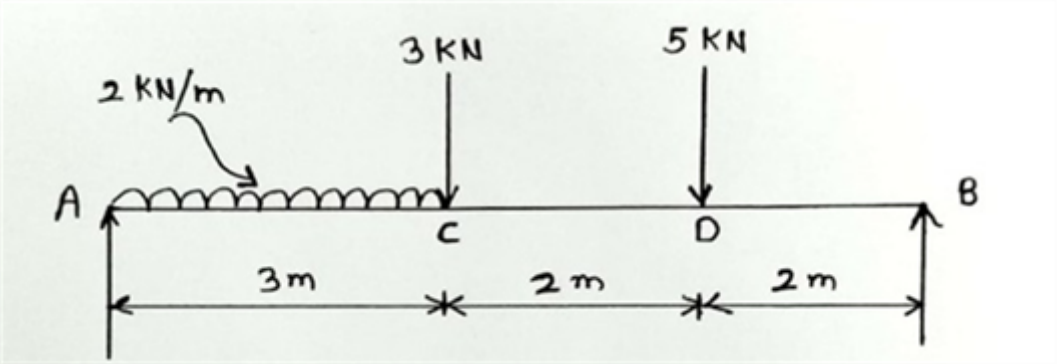
a. Explain the term point of contraflexure. **[5]**

b. Write assumptions made in theory of pure bending. **[5]**

c. Draw shear stress distribution diagram for L-section and T-section. **[5]**

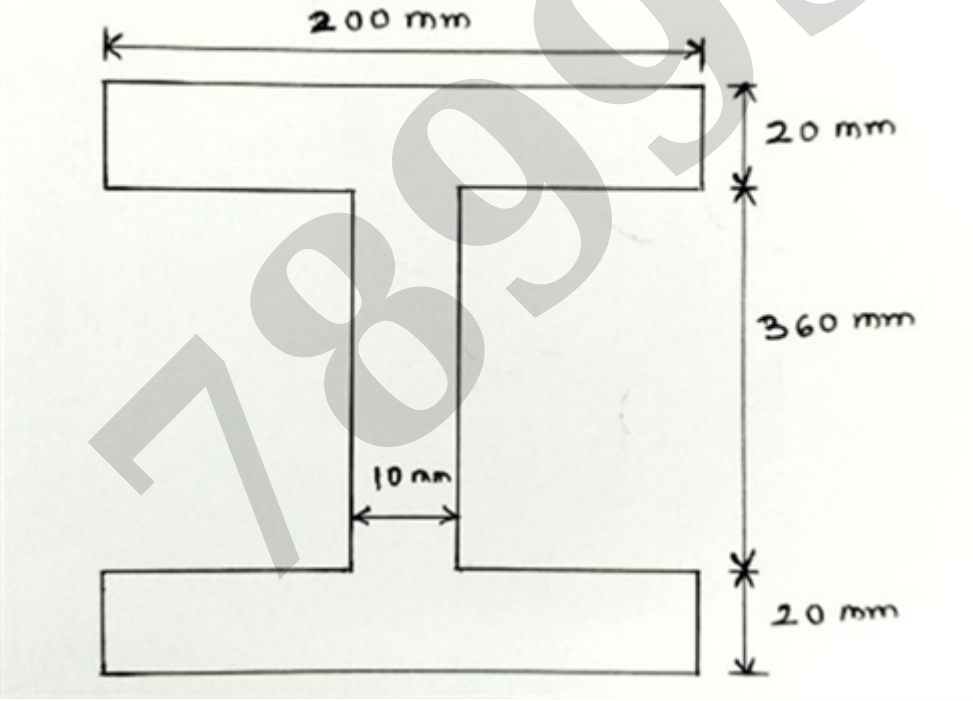
Q5) Attempt ***any one question*** from following. **[10]**

a. Construct S.F. and B.M. diagrams for the beam shown in the figure below. **[10]**



b. A cantilever 1.5m long is loaded with a uniformly distributed load of 2kN/m run over a length of 1.25m from the free end. It also carries a point load of 3kN at a distance of 0.25m from the free end. Draw the shear force and bending moment diagrams of the cantilever. **[10]**

Q6) A rolled steel joist of I section has the dimensions as shown in figure. This beam of I section carries a udl of 40 kN/m run over a span of 10 m, calculate the maximum stress produced due to bending. **[10]**



Q7) The shear force acting on a section of a beam is 50kN. The section of the beam is of T-shape having flange- 100mm X 20mm and web- 20mm X 80mm. The moment of inertia about the horizontal neutral axis is 314.221 X 10^4 mm^4. Calculate the shear stress at the neutral axis and at the junction of the web and the flange. Also sketch the shear stress distribution across the section. **[10]**

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (11731) Bachelor of Technology (NEP-2.0) (112332) Strength of Materials Part 2 SEM 3

2] (1154) B.Tech. CBCS (114405) Strength of Materials Part 2 SEM 3