BHARATI VIDYAPEETH INSTITUTE OF TECHNOLOGY
Question Bank (K-Scheme)

Name of subject: Strength Of Material **Unit Test: I**
Subject code: 313308 **Course: CE**
Semester: III

Unit 1 (Moment Of Inertia)

2 Marks

1. Explain Hooke's law.
2. Explain Parallel Axis Theorem.
3. Explain perpendicular axis theorem.
4. Define Radius of gyration.

4 Marks

1. For a circular lamina of diameter 100mm, Calculate moment of inertia.
2. A triangle ABC has base BC= 75mm, vertical sideAB= 90mm, m∠B= 90° . Calulate MI about the sides AB & BC.
3. Calculate the moment of inertia for an inverted T section about its horizontal centroidal axis. Take size of flange 100mmX30mm and web 120mm X 30mm, overall depth 150mm.
4. A channel section of following dimensions:
   Flanges: 50mm X10mm
   Overall depth = 200mm
   Thickness of web= 10mm
   Find its Ixx and Iyy.
5. Determine the MI of an unsymmetrical I section having the following details.
   Top flange= 160mm X12mm
   Bottom Flange = 240mmX12mm
   Web= 200mmX10mm

Unit II (Simple Stresses, strains, and elastic constants)

2 Marks

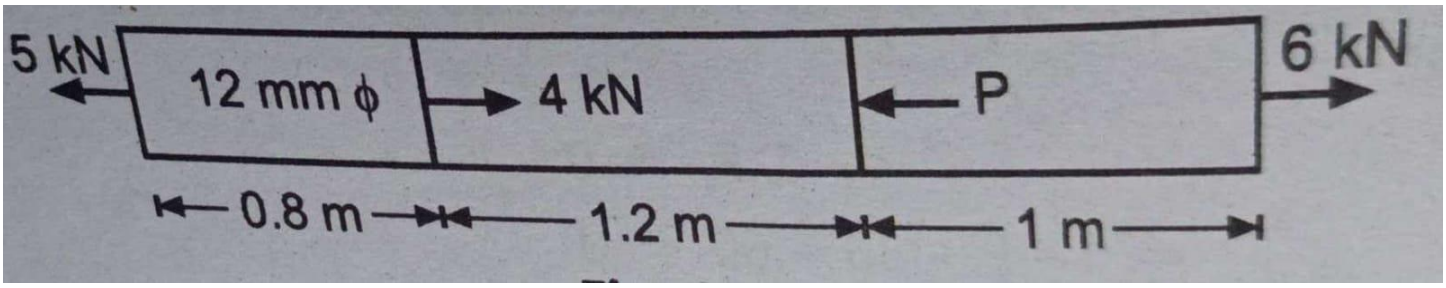
1. Define Young's Modulus with its unit.
2. State the formula for 3 elastic constant.
3. Draw the curve for stress and strain for mild steel.
4. Draw the curve for stress and strain for Tor steel.

4 Marks

1. Derive the relation between 3 elastic constants.

2. The two plates 100mmX10mm are joined by 2 rivets as shown in fig. Determine the stress induced in each rivet.

3. Determine P and total elongation. Assume E= 200 GPa



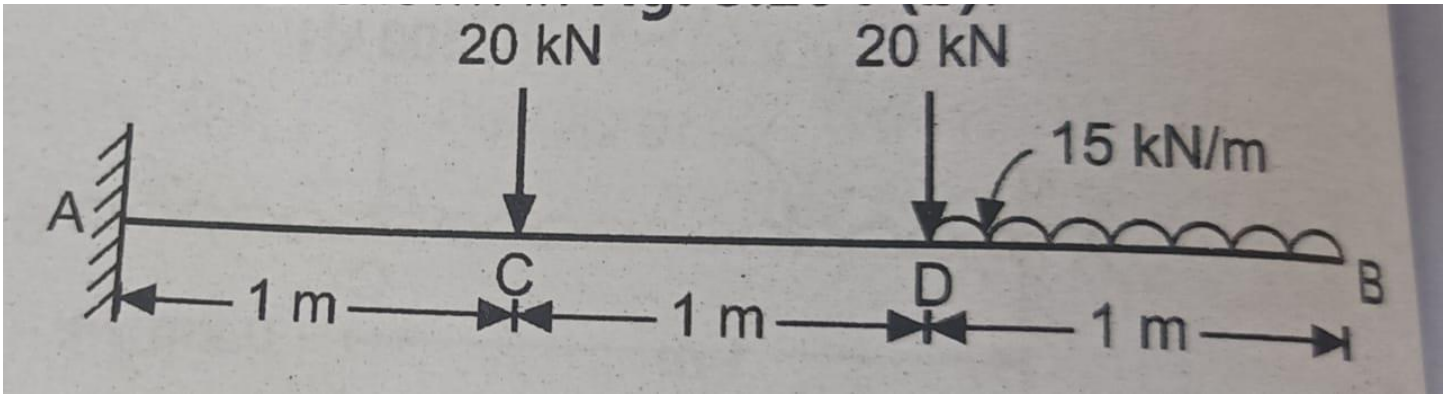
Unit III (Shear Force and Bending Moment)

2 Marks

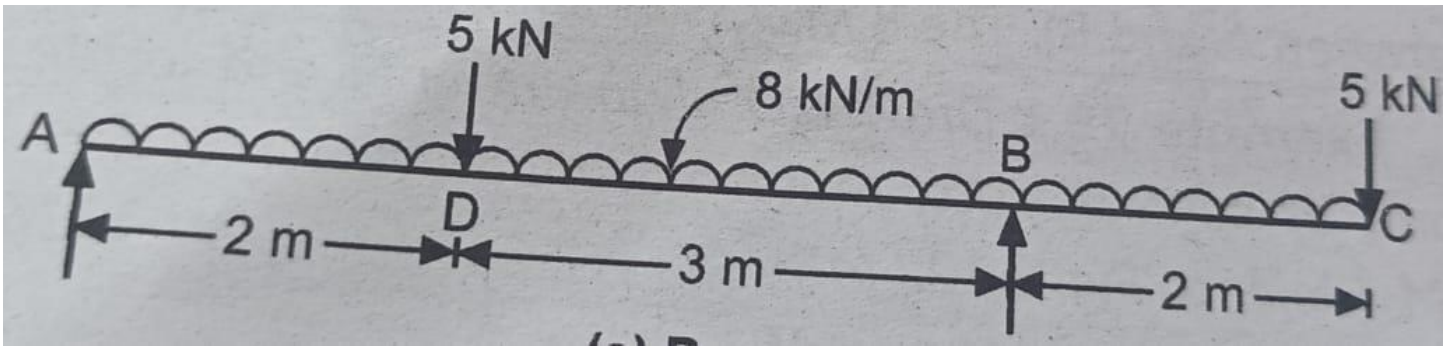
1. Write down types of beam with its diagram.
2. Define Shear force with its sign convention.
3. Define Bending moment with its sign convention.

4 Marks

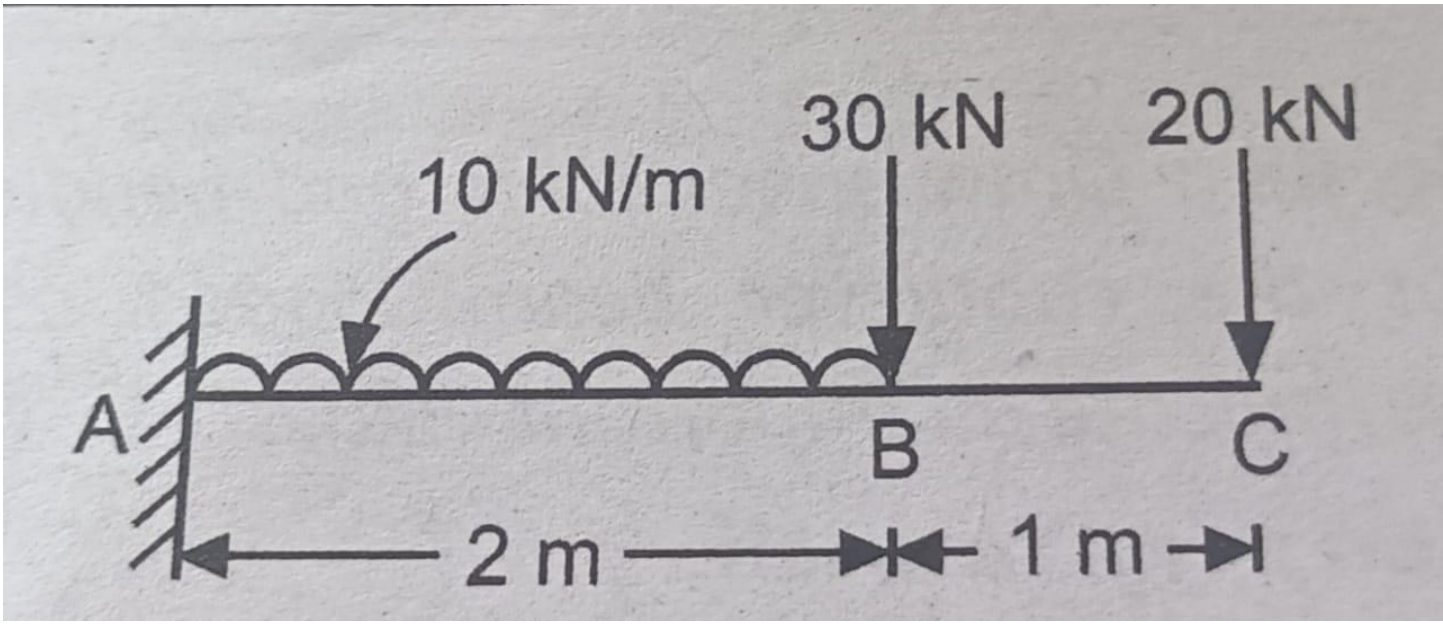
1. Draw SFD and BMD for a beam simply supported having span 7m carries two point loads 3KN at 3m from left face and 7KN at 2m from right face in addition to this an UDL of 3KN/m over a span of 5m form left support.
2. Draw SFD and BMD for a simply supported beam of 5m one point load of 45KN at a 2m distance from left support and a UDL over entire span of magnitude 20KN/m.
3. A beam ABCD is supported at A&D. AB=BC=CD=2m. It is subjected to UDL of 10KN/m over AB and a point load of 20KN at C. Draw SFD and BMD State the value of maximum BM and Maximum SF.
4. Draw SFD and BMD for cantilever beam as shown in fig.



5. Draw SFD and BMD for overhanging beam



6. Draw SFD and BMD for cantilever beam



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