| Name: | | Section | | Roll No. | |
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# INDIAN INSTITUTE OF TECHNOLOGY KANPUR

**Quiz – 2**

**Date:** 03.04.17 **Time:** 30 mins. **Full Marks:** 20 **No. of Students:** 168

**Sub. No.:** ESO202A/204 **Sub. Name:** Mechanics of Solids **2016-17, II Semester**

**Instructions:** i) Neatly draw the free body diagram, ii) Assume suitable data if not mentioned, iii) Show the calculations, iv) Use extra sheet(s) if required

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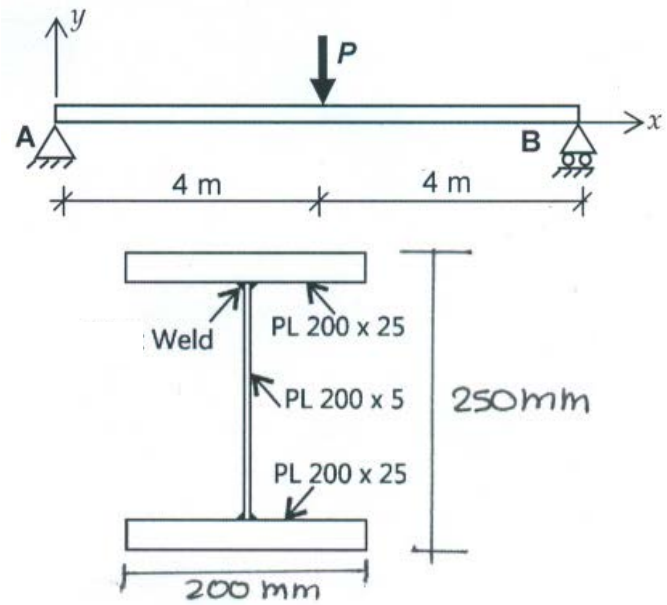
A 8 m long simply supported beam is loaded at mid span. The I-shaped beam cross-section is made by welding together two 25 × 200 mm steel flanges and 5 × 200 mm steel web. Assuming elastic behavior, find maximum allowable load P if the allowable stresses in steel are $\sigma_{all}$ (bending stress) = 165 MPa, $\tau_{all}$ (shear stress) = 100 MPa and the allowable shear flow in each weld is 200 N/mm.




All dimensions are in mm, PL - Plate