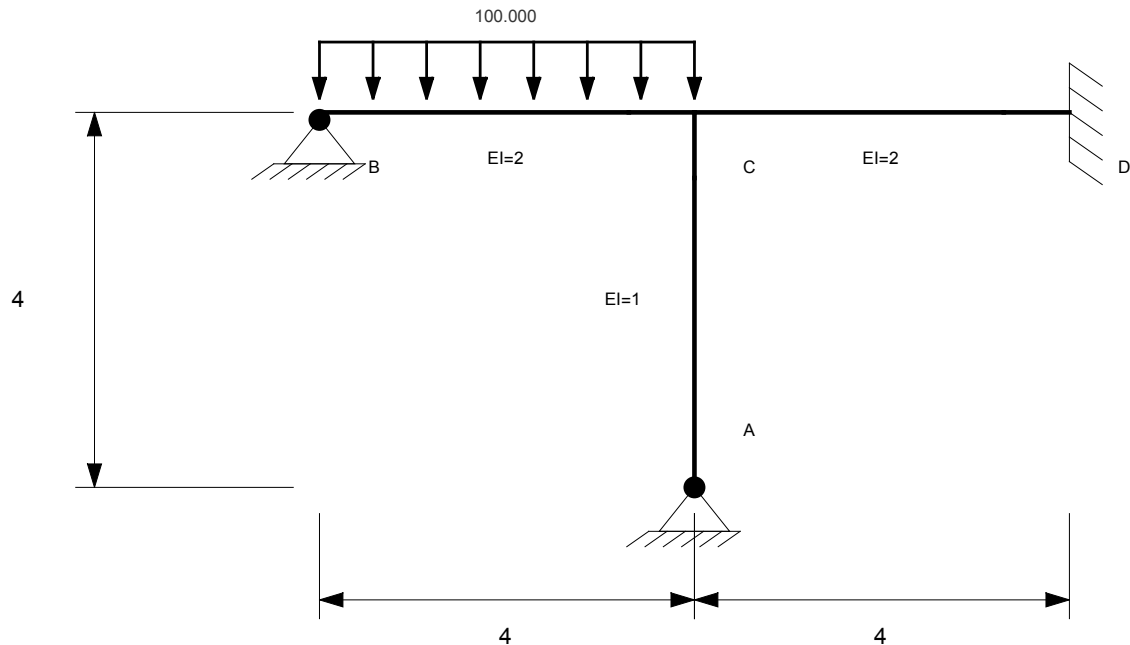


Assignment 3

Q1



- a - Sketch the deformation and the moment diagram of all members.
- b - Describe how you would obtain the moment diagram
- c - Demonstrate and identify the formulas that would allow you to obtain the moments at all endpoints and the maximum moment in member BC.

Q2

Briefly answer the following questions:

- A. (6 points) For an ideal I-beam, the plastic moment is equal to the yield moment. Explain why this happens. Also explain why the plastic moment is NOT equal to the yield moment for a rectangular section.
- B. (6 points) Under what condition should an engineer choose a rectangular section instead of an I-beam when designing against plastic collapse. Explain.

Q3

Briefly answer the following questions:

- A. For an ideal I-beam, the plastic moment is equal to the yield moment. Explain why this happens. Also explain why the plastic moment is NOT equal to the yield moment for a rectangular section.
- B. Under what condition should an engineer choose a rectangular section instead of an I-beam when designing against plastic collapse. Explain.
- C. The plastic shape factor is 50% higher for a rectangular cross-section than for an ideal I-beam. Does that mean that a rectangular cross-section is more efficient than an ideal I-beam cross-section

under plastic collapse? Explain.