

Structural Engineering

Event Structure:

The event will consist of a written test and will last for 50 minutes. Participants will work in teams of two, and each team will turn in a single answer sheet. The first half of the test will be multiple-choice and the second half will be free response (worth slightly more per question). For all questions it is important to show working to receive full credit.

Description:

This event is centered on a written test in which participants will be tested on the fundamental concepts in structural engineering. Questions will be predominantly quantitative, and are designed such that participants will be required to demonstrate analytical problem-solving skills as well as conceptual understanding of the subjects. Fundamental topics from solid mechanics, statics of structures, and materials in civil engineering will be covered. Calculators are allowed during this event.

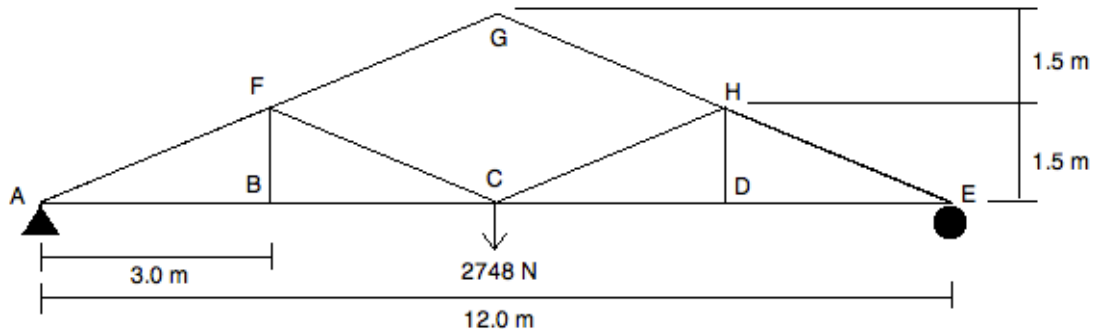
Topics:

Participants should be able to:

- Determine axial forces, shear forces and moments in beams, frames and trusses
- Understand the stress-strain curve and Hooke's law
- Determine the degrees of freedom of a structure
- Construct influence lines and shear and moment diagrams
- Analyze geometrical properties of regular and irregular cross-sectional areas
- Calculate structural deformations from loads and thermal variations

Sample Problem:

The force in member HE from the truss shown is most nearly



- (A) 1874 N tension
- (B) 1874 N compression
- (C) 3072 N tension
- (D) 3072 N compression

Contact:

This event is designed by ASCE Princeton (email contact: setung@princeton.edu).

All email inquiries about the event should have the subject line: "PEO Event Inquiry- Structural Engineering."