GNG1105E – Midterm Exam

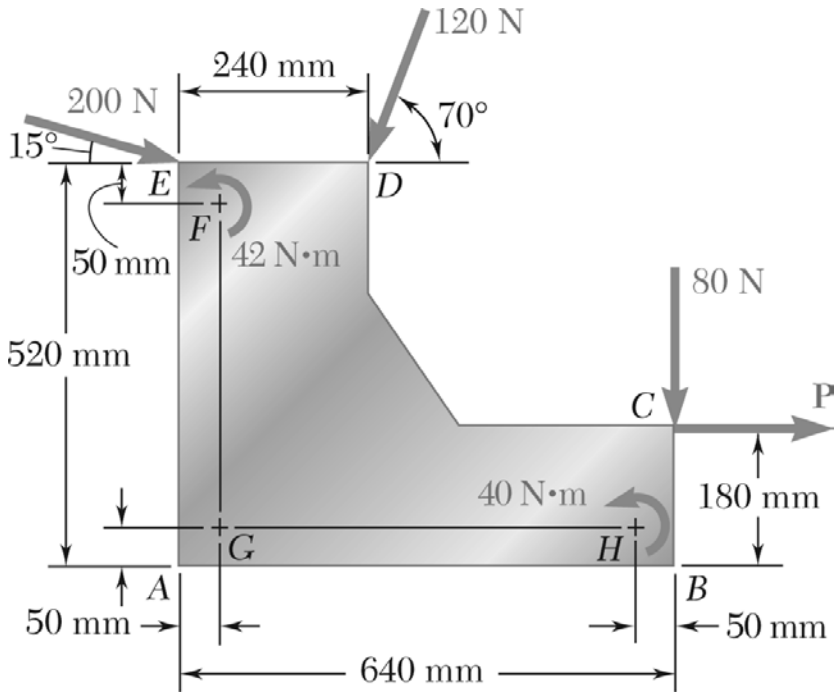
November 2 2017

Student Number:_____

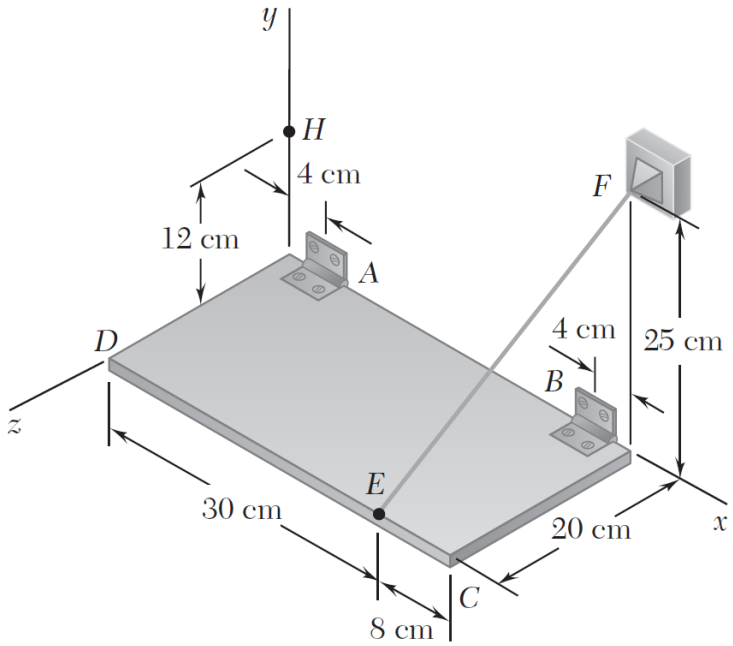
***NOTE: This exam is CLOSED BOOK and must be completed individually.**

- *Calculators are permitted.*
- *You have 1 hour and 15 minutes to complete this exam.*
- *There are **three** questions. Marks for each question are as indicated.*
- *You must submit your question sheet with your answer booklet.*
- *This exam is double-sided.*

1. A machine component is subjected to the forces and couples shown. The component is to be held in place by a single rivet that can resist a force but not a couple. For P = 0, determine the location of the rivet hole if it is to be located (a) on line FG, (b) on line GH. **[20 marks]**



2. The rectangular plate shown weighs 75 N and is held in the position shown by hinges at A and B and by cable EF. Assuming that the hinge at B does not exert any axial thrust, determine (a) the tension in the cable, (b) the reactions at A and B. **[20 marks]**



3. The homogeneous wire ABCD is bent as shown and is attached to a hinge at C. Determine the length L for which portion BCD of the wire is horizontal. **[10 marks]**