Algebra Prelim part A
January 9, 2017

Directions: You have 90 minutes.

A1. Fix a field $\mathbf{F}$. Suppose J is a Jordan block of size n with eigenvalue $\lambda \in \mathbf{F}$. Establish the shape of the Jordan decomposition of J^2.

A2. Classify the groups of order 105 up to isomorphism.

A3. Suppose R is a PID. Say what the following assertion means, and prove it. "Any two nonzero elements x, y of R have a least common multiple."