CS 429 Homework 9

Name: ___________________ Section #: ___________________

Instructions: Work these problems on your own paper. As usual, you may collaborate
with your classmates and ask for assistance from the TA. But don’t copy anyone else’s
answer. Each problem is worth the same number of points (more or less).

1. In slideset 12, we took several Y86 instructions and “microcoded” them into a set
of lower level steps in six phases. For example, slide 14 shows how to do this for
rmmovq. Do a similar thing for the following additional instructions:

   (a) nop
   (b) mrmovq
   (c) irmovq
   (d) pushq


3. Do problem 3.70 on p. 322 of Bryant and O’Hallaron.

4. Write an HCL description of the functionality of the “PC Increment” component
of the Fetch stage of the datapath (slide 5 of slideset 13). Use icode and PC as the
inputs, not need_valC and need_regIds.