**CS 5/7350**

**Quiz #4 Due Mar 8 for Completion Grade**

Name & ID:\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ CS5370 Yes or No

1. [2.5 pt] Consider two different algorithms that each solve a different problem.

* Implementation X, Ix, solves Problem Px and Implementation X is Θ(n)
* Implementation Y, Iy, solves Problem Py and Implementation Y is Θ(2n)
* Implementation Z, Iz, solves Problem Pz and Implementation Z is O(n2)

Determine if each of these “**Yes** it is true”, “**Maybe** it is true but doesn’t have to be”, or “**No** it is not true”

* 1. \_\_\_\_\_\_\_\_    Px is harder than Py
  2. \_\_\_\_\_\_\_\_    Py is harder than Px
  3. \_\_\_\_\_\_\_\_    Iy is harder than Ix
  4. \_\_\_\_\_\_\_\_    Iz is harder than Ix
  5. \_\_\_\_\_\_\_\_    Problem X is Ω (n)
  6. \_\_\_\_\_\_\_\_    Problem X is ω (n)
  7. \_\_\_\_\_\_\_\_    Problem X is O (n3)
  8. \_\_\_\_\_\_\_\_    Problem X is o (n2)
  9. \_\_\_\_\_\_\_\_    Implementation Y is Ω (n)
  10. \_\_\_\_\_\_\_\_    Implementation X is ω (n)

1. [2 pts] How many edges exist in:
   1. A complete graph of |V| vertices
   2. A cycle of |V| vertices
   3. A Tree of |V| vertices
   4. A complete bi-partite graph Bj,k with j vertices on one part and k vertices on the other part.
2. [2 pts] Find an integer for n modulo 14635 that satisfies the following equation. Note that you may use the following: 1/2793 % 14635 is 2047:

(2793n + 91) % 14635 = 1374