Quiz 2. When appropriate, *circle the answer.* Although you are not required to show work or justify your answer, doing so may earn you some partial credit if you get the answer wrong. If you need more room, you can use the back but make a note that you did so and label your work clearly. (10*3 = 30 points)

1. Write your full name. Key

2. Write your UA email.

$f(n) = 8n\log n + 7n + 2$ $g(n) = 9n + 8$

3. If $f(n) = 4n\log n^2 + 7n + 2$ and $g(n) = 3^{\log_3 n+2} + 8$, which of the following statements is/are true? Circle all that apply.

A. $f(n)$ *is* $O(g(n))$ (B.) $g(n)$ *is* $O(f(n))$ (C.) $f(n)$ *is* $\Omega(g(n))$ D. $g(n)$ *is* $\Omega(f(n))$

E. $f(n)$ *is* $\theta(g(n))$ F. $g(n)$ *is* $\theta(f(n))$

4. Consider $f(n) = 7n^2 + 3n + 2$. Put your answers in the blanks provided.

(a) Write constants c and n_0 that would prove that $f(n)$ *is* $O(n^2)$.

$c =$ 21 $n_0 =$ 1

(b) Write constants c and n_0 that would prove that $f(n)$ *is* $\Omega(n^2)$.

$c =$ 1 $n_0 =$ 1

5. Circle one to indicate whether or not you think the statement below is true or false.

True (*False*) → This is $\theta(n^3)$

Statement: $7n^2\log(16^{n+1})$ *is* $O(n^2)$.

6. Circle one to indicate whether or not you think the statement below is true or false.

True (*False*) → this sum is $\theta(N^2)$.

Statement: $5 + 10 + 15 + 20 + \ldots + N$ is $O(N)$.

For questions 7-10, use the following information. For each one, circle DT if the statement is definitely true, DF if the statement is definitely false, and PT if the statement is possibly true/possibly false.

$f(n)$ *is* $\theta(g(n))$, $g(n)$ *is* $O(h(n))$, and $h(n)$ *is* $\Omega(i(n))$

f g h i

7. $f(n)$ *is* $\Omega(i(n))$

DT DF (PT)

8. $h(n)$ *is* $\Omega(f(n))$

(DT) DF PT

9. $f(n) + g(n) + h(n)$ *is* $\theta(h(n))$

(DT) DF PT

10. $f(n) + g(n) + h(n) + i(n)$ *is* $\Omega(g(n))$

(DT) DF PT