## COT 4210 Quiz #1: Regular Languages (1/27/2015)

Directions: Please answer each question on your own paper. Write your name on the top right corner of each sheet of paper you use. Clearly mark your answers and include justifications as needed. Staple your paper in the top left corner and turn your answers in. Keep this sheet for reference.

1) Draw the DFA that is formally described below:

$Q = \{a, b, c, d\}$ $\qquad \Sigma = \{0, 1\}$ $\qquad q_0 = a$ $\qquad F = \{b, d\}$

δ	0	1
a	b	c
b	a	d
c	c	d
d	d	b

2) Using the algorithm shown in class (and described in the textbook), convert the following NFA into an equivalent DFA. (Note: all credit will be assigned based on following the algorithm, not for creating any equivalent DFA. Hint: Your result should have 7 states.)
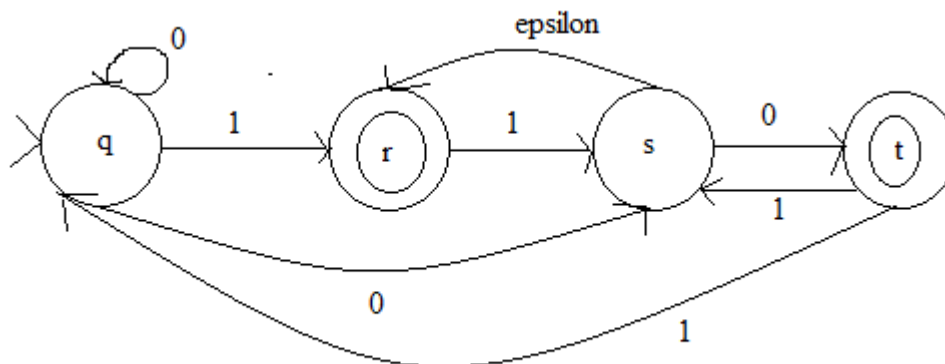
3) Without proof, give regular expressions for the following languages over the alphabet {0, 1}:

a) Set of strings with an even number of zeroes.

b) Set of strings without consecutive 1s in them.