ECE 314 Quiz 1

At the top of the page you scan in, please write:

name: UIN:

1. (-1 point if you don't answer this problem) Write your _name initials_ on the paper to indicate your agreement to the following statement:
    I know that:
    - **I may consult one page of notes.   Otherwise it is closed book, no calculators, tablets, etc.**
    - **The time limit of this quiz is 20 minutes writing + 10 minutes uploading to Gradescope.**

2. (20 points) Look at the following code segments. Write down the output generated by these two codes.

[ ]:
```
x = ["dog", "cat", "mouse", 1, 2, 3 ]
print (x[1]+x[2])
```

[ ]:
```
import numpy as np
x = np.array([1, 2, 3], [4, 5, 6])
print (x[:,1])
```

3. (30 points) Sketch the pmf and CDF of a random variable specified by the following c and p vectors. Clearly label the axes of your two graphs.

c	1	2	3
p	0.2	0.3	0.5

4. (20 points) Suppose X is a Poisson random variable with parameter 3. The possible values for such a random variable are all nonnegative integers. The probability distribution of X is implemented by the object our_poisson in the code snippet below.   Write some additional code or pseudocode that prints out the probability that X is an odd integer less than n.   Your code should work for any positive integer value of n.

[ ]:
```
import scipy.stats as st
our_poisson = st.poisson(3)
# Your code would go here
```

5. (30 points)
Calculate the probabilities of getting a single pair and getting a three of a kind in a poker hand. (You don't need to solve for the probability, just show the equation)

   (a) From a standard 52-card deck you draw a 6 ♦, 5 ♦, 4 ♥, and 3 ♥. You then reshuffle the deck and draw two more cards. What is the probability that you will complete a straight? (A straight is a poker hand containing five cards of sequential rank and not all of the same suit.)

   (b) Suppose you draw **four** cards randomly from a standard 52 card deck. Calculate p, the probability that you get TWO-PAIRS (e.g. 6 ♠, 6 ♥, 4 ♥, 4 ♣) . Just show the expression, no need to calculate the value.