CS 198:206

Exam II **Name:**_____

- The approximate time required to complete this exam is 60 minutes.
- **For full grade, show and write all of your work, step by step.**
- In case if you need more space, you might use the back side of the last page. **I DO NOT ACCEPT** any other sheet attached to the exam paper.
- To avoiding any missing or mistake, please read the question **carefully and completely**.

1. (3 Points) Let X be the winnings of a gambler. Let $p(i) = P(X = i)$ and suppose that:

$$p(0) = 1/3; \quad p(1) = p(-1) = 13/55; \quad p(2) = p(-2) = 1/11; \quad p(3) = p(-3) = 1/165$$

Compute the conditional probability that the gambler wins $i = 2$, given that he wins a positive amount.

2. (3 Points) Suppose that the distribution function of X is given by:

$$F(b) = \begin{cases} 0, & b < 0 \\ \frac{b}{4}, & 0 \le b < 1 \\ \frac{1}{2} + \frac{b-1}{4}, & 1 \le b < 2 \\ \frac{11}{12}, & 2 \le b < 3 \\ 1, & 3 \le b \end{cases}$$

Find $P\{X = 2\}$.

3. (6 Points (3 points each part)) A box contains 5 red and 5 blue marbles. Two marbles are withdrawn randomly. If they are the same color, then you win \$1.10; if they are different colors, then you lose \$1.00. Calculate:
i). the expected value of the amount you win.
ii). the variance of the amount you win.

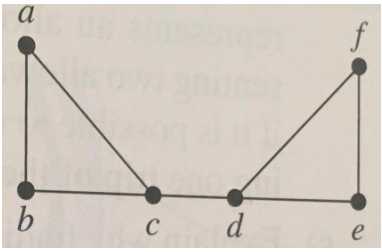
4. (3 Points) Suppose tat a biased coin that lands on heads with probability p is flipped 10 times. Given that a total of 6 heads results, find the conditional probability that the first 3 outcomes are h, t, t.

5. (4 Points(2 points each)) People enter a gambling casino at a rate of 1 every 2 minutes.
i). What is the probability that no one enters between 12:00-12:05?

ii). What is the probability that at least 4 people enter the casino during that time?

6. (4 Points) How many edges does a graph ave if it degree sequence is 4, 3, 3, 2, 2? Draw such a graph.

7. (3 Points) Find all the cut vertices and edges of the graph:



8. (2 Points) Define a connected graph.

Good Luck! :)