Assignment 5, PME, 4th Semester, Spring

Deadline: Before the final exam paper of PME

Assignment should be hand written.
Write your name, registration No. and section; else your assignment may not be marked.
Copying is not allowed.
Properly staple your pages (binding is not required).

1. Let X be the number of heads obtained when a fair coin is flipped four times.
    a. Plot the cdf of X.
    b. Use properties of cdf to find $P[2 < X \leq 3]$, $P[0.7 \leq X \leq 1.3]$ and $P[1 \leq X < 3]$.
2. An urn contains nine Rs. 10 notes and one Rs. 50 note. Let the random variable X be the total amount that results when two notes are drawn from the urn without replacement.
    a. Plot the cdf of X.
    b. Use properties of cdf to find $P[20 \leq X < 60]$.
3. Let X be a random variable with pmf $p_k = 0.6/k^2$ for $k = 1, 2, 3, \ldots$. Plot the cdf of X for $k = 0$ to 4. Use the properties of cdf to find
    a. $P[X > 4]$.
    b. $P[6 \leq X \leq 8]$.
4. The transmission time X of messages in a communication system has an exponential distribution. If $\lambda = 1$, find
    a. $P[X > 3]$.
    b. $P[2 \leq X \leq 4]$.
5. Let Y be the difference between the number of heads and the number of tails in the 3 tosses of a fair coin.
    a. Plot the cdf of Y.
    b. Determine the mean and variance of Y.
6. $S_C = \{1, 2, 3, 4\}$ where C is a uniform random variable having four possible values of electric current. If W is a random variable and represents the corresponding power values such that $W = 3C^2$. Plot the cdf of C and W.