Probability and Queueing Theory

Important 2Mark Questions

Unit I

1. If X is a geometric variate, taking values 1, 2, 3, ……∞, find P(X is odd).
2. If a fair coin is tossed is tossed twice, find P(X≤1), where X denotes the number of heads in each experiment.
3. If X is a normal random variable with mean 3 and variance 9, find the probability that X his between 2 and 5.

Unit II

1. Let X and Y be two independent R. Vs with Var(X) = 9 and Var(Y) = 3. Find Var(4X-2Y + 6).
2. Define conditional distribution for two-dimensional discreate and continuous random variables.
3. Write any two properties of joint cumulative distribution function.

Unit III

1. The random process X(t) is given by X(t) = Y cos(2πt), t>0, where Y is a R. V. with E(Y) = 1. Is the process X(t) stationary?
2. Define Markov process.
3. State any two properties of a Poisson process.

Unit IV

1. Define (i) balking and (ii) reneging of the customers in the queueing system.
2. State Little's formula for the queueing model (M/M.1): (K/FIFO).
3. Arrivals at telephone booth are considered to be Poisson with an average time of 10 minutes between one arrival and the next. The length of phone calls is assumed to be distributed exponentially with a mean of 3 minutes. What is the average length of the queue that forms from time to time?

Unit V

1. Write a expression for the traffic equation of the open Jackson queueing network.
2. State Pollaczek-Khintchine formula for (M/G/1) queueing model.
3. Define series queue model.