

Unit - V

9. a) On January 1 (this year) Bakery A had 40% of its local market share while the other two bakeries B and C had 40% and 20% respectively of the market share. Based upon a study by a marketing research firm, the following facts were compiled. Bakery A retains 90% of its customers while gaining 5% of B's customers and 10% of C's customers. Bakery B retains 85% of its customers, while gaining 5% of A's customers and 7% of C's customers. Bakery C retains 83% of its customers and gains 5% of A's customers and 10% of B's. What will each firm's share be on January 1, next year, and what will each firm's market share be at equilibrium. (8)
- b) In a heavy machine shop the overhead crane is 75% utilized. Time study observations gave the average slinging time as 10.5 minutes with a standard deviation of 8.8 minutes. What is the average calling time for the service of the crane and what is the average delay in getting service? If the average service time is cut to 8 minutes, with standard deviation of 6.0 minutes, how much reduction will occur on an average in the delay of getting served. (8)

OR

10. a) Write a short note on Discrete Parameter Birth Death process. (8)
- b) Automata car wash facility operates with only one bay. Cars arrive according to Poisson distribution, with a mean of 4 cars per hour, and may wait in the facilities parking lot if the bay is busy. Find the time spent by a car in the system and in waiting if
- The time for washing and cleaning a car is exponential with a mean of 10 minutes.
 - The time for washing and cleaning a car is constant and equal to 10 minutes. Also find which facility is better. (8)