CT-3 (important)

unit-4

Q. two independent samples of size 5 (or) 6 gave the following data ~~S1 & S2~~

Sample						
I	21	24	25	26	27	-
II	22	27	28	36	31	36.

test wheather the samples are drawn from the same normal population

Q. fit a Binomial distribution for the following data & test using Square test.

x	0	1	2	3	4	5	6
y	5	18	28	12	7	6	4

Q. A customer arrived at a watch repair shop according to a poisson process at a rate of one per every 10 min & service time is an exponential random variable with its mean 8 min.

i) find avg number of customers in the shop. L_s

ii) find avg time a customers spend in the shop W_s.

iii) " " " " " " " " W_q.

iv) L_q.

v) what is the probability that server is ideal.

Q. two independent size 8 & 9 samples

Sample I	19	17	15	21	16	18	16	14
II	15	14	15	19	15	18	15.	-

i) test whether the sample are drawn from the same normal population.

Q. customer arrived at a one man barber shop according to poission process at a rate of one per every 15 min & the services time is an exponential & random variable with mean 10 min.

unit = 5.

Q. The transition prob matrix of markov chain $\{x_n\}$, $n = 1, 2, 3 \ldots$ having 3 state 1, 2 & 3 is.

$$P = \begin{bmatrix} 0.1 & 0.5 & 0.4 \\ 0.6 & 0.2 & 0.2 \\ 0.3 & 0.4 & 0.3 \end{bmatrix}$$

$P^{(0)} = (0.7, 0.2, 0.1)$.

find, i) $P(x_2 = 3)$

ii) $P(x_3 = 2, x_2 = 3, x_1 = 3, x_0 = 2)$.

Q. Two boys b_1 & b_2 & two girls G_1 & G_2 are throwing a ball from one to another each boy throw the ball to other boy with prob $\frac{1}{2}$ & to each girl with prob $\frac{1}{4}$ on the other hand each girl throw the ball to each boy with prob $\frac{1}{2}$ & never to another girl in the long run. how obtained does each received the ball.

Q. The three state markov chain is given by.

$$P = \begin{bmatrix} 0 & 2/3 & 1/3 \\ 1/2 & 0 & 1/2 \\ 1/2 & 1/2 & 0 \end{bmatrix}$$

i) classify the state of markov chain.

ii) find the steady state distribution of chain.

Q. A man each drive a car or catch a train to go to office each day (problem).

Q. Three girls A, B, C are throw a ball to each other. A always throw a ball to B & B always throw a ball to C. But C is just a likely to throw a ball to B as to A. So that the process is markov n. find the transition problem matrix & classify the states.

Q. The salesman territory consists of three cities A, B & C. He never sales in the same city on successive days -- etc (problem).