MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) &.12(B)of the UGC act.1956

MLRS

II B.Tech I Sem Regular End Examination, March 2021
COMPUTER ORIENTED STATISTICAL METHODS
(CSE & IT)

Time: 3 Hours.

Max. Marks: 70

Note: 1. Answer any FIVE questions.
   2. Each question carries 14 marks and may have a, b as sub questions.

1.	a)	What is the probability of getting a total of 7 or 11 when a pair of fair dice is tossed?	7M	CO1	U
	b)	A box contains 6 red. 4 white and 5 black balls. A person draws four balls from the box, at random. Find the probability that among the balls drawn there is at least one ball of each color.	7M	CO1	U
2	a)	A problem in Statistics is given to the three students A, B and C whose chances of solving it are 1/2 , 3/4 ,and 1/4 respectively. What is, the probability that the problem will be solved if all of them try independently?	7M	CO1	U
	b)	In 1990 there were three candidates for the position of principal- Mr. Challerji, Mr. Ayangar and Dr. Sing, whose chances of getting the appointment are in the proportion 4:2:3 respectively. The probability that Mr. Challerji if selected would introduce co-education in the college is 0·3. The probabilities of Mr. Ayangar and Dr. Singh doing the same are respectively 0.5 and 0·8. What is the probability that there was co-education in the college in 1990?	7M	CO1	AP
3	a)	In a certain factory turning out razor blades, there is a small chance of 0.002 for any blade to be defective. The blades are supplied in packets of 10, use Poisson distribution to calculate the approximate number of packets containing no defective, one defective and two defective blades respectively in a consignment of 10,000 packets.	7M	CO2	AP
	b)	Fit a binomial distribution to the following:	7M	CO2	U

x	0	1	2	3	4	5
frequency	5	16	28	12	10	4

4	a)	In a normal distribution 31% of the items are under 45 and 8% are over 64. Find the mean and standard deviation of the distribution	7M	CO2	AP
	b)	Explain briefly about the properties of t-Distribution?	7M	CO2	U

5. a) Fit a Poisson distribution to the following data.   7M   CO2   U

X	0	1	2	3.	4
f	419	352	154	56	19

   b) Derive Normal distribution as a limiting case of Binomial   7M   CO2   AN
Distribution.

6. a) Find the 'maximum likelihood estimate for the parameter λ of a   7M   CO3   AN
Poisson distribution on the basis of a sample of size n, also find its
variance.

   b) Ten objects are chosen at random from a large population and the   7M   CO3   AN
weights are found to be in grams: 63, 63, 64, 65, 66, 69, 69, 70,
70, 71. Discuss the suggestion that mean weight is 65gm.

7. a) A random sample of 1200 apples were taken from a large   7M   CO3   AN
consignment and found that 10% of them are bad. The supplier
claims that only 2% are bad. Test his claim at 95% level.

   b) Explain the classification of states in first order Markov process?   7M   CO1   R

8. a) Explain the terms: 7M   CO1   R
(i)Stochastic process
(ii)Markov process
(iii)Matrix of Transition probability

   b) The transition probability matrix of a Markov chain $\{X_n\}$: n = 1, 2, 3..   7M   CO3   AN
having three states 1, 2 and 3 is

$$P = \begin{bmatrix} 0.1 & 0.5 & 0.4 \\ 0.6 & 0.2 & 0.2 \\ 0.3 & 0.4 & 0.3 \end{bmatrix}$$ and the initial distribution is $P^{(0)} = (0.7, 0.2, 0.1)$

Find
   i. $P\{X_2 = 3\}$
   ii. $P\{X_3 = 2, X_2 = 3, X_1 = 3, X_0 = 2\}$

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