LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc., B.C.A., DEGREE EXAMINATION – **COMPUTER SCIENCE& COMP.APP.**

THIRDSEMESTER – APRIL 2017

CS 3204/ CA 3201 – STATISTICAL METHODS

Date: 04-05-2017 Dept. No. Max. : 100 Marks
Time: 09:00-12:00

SECTION A (10 X 2 = 20 Marks)

Answer ALL questions.

1. There are 50 students in a class. The average marks of the 10 failed students are 25. The total marks got by the entire class is 2,810.What is the average mark of the successful candidates?
2. Pearson's coefficient of skewness is – 0.4 and the value of the mean and median are 45 and 48 respectively. Determine the value of the standard deviation.
3. State axioms of probability.
4. Two dice are thrown. Find the probability of a total greater than 12
5. **Five men in a company of 20 are graduates. If 3 men are picked out from this 20 persons at random.**

What is the probability that all are graduates

6. State any two properties of binomial distribution.
7. State the additional theorem on probability of two events.
8. Explain different types of probability sampling.
9. A random variable X has the following probability function

Value of X	-1	0	1
$P(X=x)$	0.2	0.3	0.5

Find E(X).

10. Define normal distribution.

SECTION B (5 X 8 = 40 Marks)

Answer any FIVE questions

11. (a) Compute mean deviation about median from the following:

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No.of students	7	12	18	25	16	14	8

(OR)

(b) The scores of two players A and B in 12 rounds are given below:

A	74	75	78	72	78	77	79	81	79	76	72	71
B	87	84	80	88	89	85	86	82	82	79	86	80

Identify the better player and more consistent player.

12.(aCalculate Spearman's Rank Correlation for the following data:

Ranks of X	1	8	3	8	10	5	4	7	7	3
Ranks of Y	6	5	9	3	6	3	4	1	9	10

(OR)

(b).The following table shows the distribution of digits in numbers chosen at random from a telephonedirectory.

Digits:	0	1	2	3	4	5	6	7	8	9
Frequency:	1026	1107	997	966	1075	933	1107	972	964	853

Test whether the digits may be taken to occur equally frequently in the directory.

13.(a)The average daily sales of 500 branch offices was Rs.150,000 and the standard deviation Rs.15,000. Assuming the distribution to be normal, find how many branches have sales between
(i) Rs. 1,20,000 and Rs.1,45,000 (ii) RS.1,40,000 and Rs.1,60,000

(OR)

(b)State and prove Baye's theorem

14.(a) Find the mean, variance and standard deviation of the following probability distribution

Value of X	-3	-2	-1	0	1	2	3
p (x)	1/7	1/7	1/7	1/7	1/7	1/7	1/7

(OR)

(b) Determine the binomial distribution for which the mean is 4 and variance 3. Also find P(X=15).

15.(a) Find moment generating function of the normal distribution and hence find its mean and variance.

(OR)

(b)) Find moment generating function of the exponential distribution and hence find its mean and variance.

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SECTION C **(2 X 20 = 40 Marks)**

Answer any TWO questions

16.(a)In a partially destroyed laboratory record of an analysis of correlation the following results only are legible. Variance of X = 9 Regression equations: 8 X – 10 Y + 66 = 0. 40 X – 18 Y = 214.
What are (i) the mean values of X and Y (ii) The correlation coefficient between X and Y
(10) The standard deviation of Y?

(b) Following are the marks scored by a group of 10 students in Accountancy and Statistics. Calculate the Coefficient of correlation and find the Probable Error.

Marks in Accountancy	90	75	63	95	71	75	31	24	40	76
Marks in Statistics	65	62	55	75	55	90	36	32	42	56

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(12 +8)

17.(a)**A factory has two machines A and B. Past records show that machine A produces 30% of the total output and machine B the remaining 70%. Machine A produces 5% defectives and machine B produces 1% defective items. An item is drawn at random and found to be defective. What is the probability that it was produced (a) by machine A (b)by machine B.**

(b).State and prove the addition theorem of probability.

(12 +8)

18. (a)800 candidates of both sex appeared at an examination. The boys outnumbered the girls by 15 % of the total. The number of candidates who passed exceeded the number failed by 480. Equal number of boys and girls failed in the examination. Prepare a 2x2 table and find the coefficient of association and Comment

18.(b) Two random variables X and Y have the following joint probability density function : $f(x,y) = \begin{cases} 2-x-y, 0 \le x \le 1, 0 \le y \le 1 \\ 0, \quad Otherwise \end{cases}$

Find (i) Marginal density functions of X and Y.

(10) Conditional density functions (iii) Var (X), Var (Y) and (iv) Covariance between X and Y.

(10 +10)

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