



**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**

**U.G.DEGREE EXAMINATION – COMPUTER SCIENCE& COMP.APP.**

THIRD SEMESTER – APRIL 2018

**CS 3204/CA 3201 - STATISTICAL METHODS**

Date: 04-05-2018  
Time: 01:00-04:00

Dept. No.

Max. : 100 Marks

**SECTION A**

**(10 X 2 = 20 Marks)**

**Answer ALL questions.**

1. The mean of 200 items was 50. Later on it was discovered that two items were misread as 92 and 8 instead of 192 and 88. Find the correct mean.
2. Find range for the following data: 65, 70, 78, 65, 68, 60
3. Define probability
4. Two dice are tossed. What is the probability that total is divisible by 3 or 4?
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 Poisson distribution.
7. Define the conditional probability.
8. Explain different types of non- probability sampling.
9. A random variable X has the following probability function

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

Find  $E(X)$ .

10. Define binomial distribution.

**SECTION B**

**(5 X 8 = 40 Marks)**

**Answer any FIVE questions**

11. (a) Calculate the median for the following data.

Class Interval	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80
Frequency	9	12	10	8	6	4	7

(OR)

- (b) From the following data, find out which product is more stable in prices.

Prices of product A (Rs.)	20	22	19	23	16
Prices of product B (Rs.)	10	20	18	12	15

12. (a) Find the Rank Correlation coefficient from the following data:

Sl. No.	1	2	3	4	5	6	7	8	9	10
Ranks in Statistics	9	7	5	6	1	4	3	2	5	10
Ranks in Maths	8	6	7	5	4	3	2	1	10	9

(OR)

- (b) A company keeps records of accidents. During a recent safety review a random sample of 60

accidents was selected and classified by the day of the week on which they occur

Day	Mon	Tue	Wed	Thu	Fri
No . Of accidents	8	12	9	14	17

Test whether there is any evidence that accidents are more likely on some days than others .

13. (a) Students of a class were given an aptitude test . Their marks were found to be normally distributed with mean 45 and standard deviation 10. If 1000 students appeared at the examination, calculate the number of students scoring (i) less than 40 marks and (ii) more than 60 marks.

(OR)

- (b) Briefly explain the procedure for testing of hypothesis.

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

Value of X	-2	-1	0	1	2
p ( x)	1/5	1/5	1/5	1/5	1/5

(OR)

- (b) A husband and wife appeared in an interview for two vacancies in the same post. The probability of husband's selection is 1/7 and that of wife is 1/5. What is the probability that (i) both of them will be selected (ii) only one of them will be selected (iii) none of them will be selected.

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

(OR)

- (b) ) Find mean and variance of the beta distribution.

### SECTION C

(2 X 20 = 40 Marks)

Answer any TWO questions

16. Calculate the regression equations of x on y and y on x for the following data. Also find the correlation coefficient

x	10	12	13	17	18
y	5	6	7	9	13

(20)

- 17.(a) State and prove Baye's theorem.

- (b).In a company of 500 employees 280 participate in company's profit sharing plan (p) , 400 have major medical insurance coverage (m) and 200 employees participate in both programs. What is the probability that (i) A randomly selected employee will be a participant in at least one of the two program,(ii) Determine the probability that an employee will be a participant of (p) given that he has insurance coverage (m)

(10 +10)

18. Two random variables X And Y have the following joint probability density function

$$f(x,y) = \begin{cases} K(4 - x - y) ; & 0 \leq x \leq 2 ; 0 \leq y \leq 2 \\ 0, & \text{otherwise} \end{cases}$$

- Find (a) the constant k (b) marginal density function of X and Y.  
(c) Conditional density functions and (d) Var(X), Var(Y), Cov(X,Y)

(20)

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