(i) Printed Pages : 4 Roll No. .....

(ii) Questions : 9 Sub. Code : 0 9 1 2

Exam. Code : 0 0 2 7

Bachelor of Computer Applications 1st Semester

(2122)

FUNDAMENTALS OF MATHEMATICAL STATISTICS

Paper : BCA-16-102

Time Allowed : Three Hours] **[Maximum Marks : 65**

Note :— Attempt any **ONE** question from each Section. Section E is compulsory.

SECTION—A

1. (a) Define Statistics. How do you think that the knowledge of statistics is essential in decision making ? Give example. 6

   (b) The mean age of a group of 50 students is 15 years and the mean age of another group of 70 students is 20 yrs. Find the mean age of all the 120 students together. 7

2. (a) Define tabulation of data and its objectives. Also write advantages and disadvantages of tabulation. 6

   (b) Explain the use of harmonic mean as an average. Given the following frequency distribution of first year students of a particular college, calculate the harmonic mean.

Age	13	14	15	16	17
No. of students	2	5	13	7	3

7

SECTION—B

3. (a) Calculate the value of x and y from the following data. Given the median of the distribution is 28.5 and total students are 60.

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No. of Students	5	x	20	15	y	5

6

(b) Calculate Standard deviation and coefficient of variation of the following data :

Items	10	12	14	16	18	20	22
Frequency	4	6	10	15	9	4	2

7

4. (a) Define various absolute measures of dispersion. 6

(b) Find out median and mode for the following data :

Classes	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	4	8	10	12	10	4	2

7

SECTION—C

5. (a) Define Concurrent Deviation method of correlation. Calculate coefficient of concurrent deviation for the following data :

Price	25	28	30	23	35	38	39	42
Demand	35	34	35	30	29	38	26	23

6

(b) Following are the marks obtained by eight students in two subjects as given below :

Students	Marks	
	Computer	Statistics
1	46	55
2	65	54
3	86	77
4	69	75
5	75	66
6	48	55
7	70	60
8	68	52

Calculate the Spearman's rank correlation coefficients. 7

6. (a) What is meant by coefficient of correlation between two variables ? Also distinguish between positive correlation and negative correlation. 6

(b) Calculate Karl Pearson's coefficient of correlation between X and Y :

X	7	4	6	9	3	8
Y	8	5	4	8	3	6

7

SECTION—D

7. (a) What do you mean by regression ? Why are there two regression lines in a bivariate series ? Can there be one regression line ? 6

(b) The two regression equations, Regression equation of X on Y is $10x - 2y = 4$ and regression equation of Y on X is $2y - 5x = 8$, Find $\bar{x}$, $\bar{y}$ and coefficient of correlation. 7

8. For the following data :

(i) Calculate two regression equations

(ii) Estimate the value of x when $y = 30$

(iii) Determine the correlation coefficient using regression coefficients.

X	10	14	16	24	26
Y	5	6	7	9	13

13

SECTION—E

9. Answer the following questions :

(i) Define probable error. 2

(ii) Mention any two limitations of regression analysis. 2

(iii) Define variance. 2

(iv) Define the term frequency density. 2

(v) Write merits and demerits of range. 2

(vi) If the sum and difference of upper and lower quartiles are 55 and 11 respectively, find the coefficient of quartile deviation. 3