Total No. of Questions : **9**] [Total No. of Printed Pages : **7**

(1126)

Bachelor of Computer Applications Ist Semester (0027) Examination

0912

FUNDAMENTALS OF MATHEMATICAL STATISTICS

Paper : BCA-16-102

Time : 3 Hours] **[Maximum Marks : 65**

Note :– Candidate is required to attempt *five* questions in all including Question No. **9** (Which is compulsory) and attempt remaining *four* questions by selecting *one* question from each Section.

Unit–I

1. (a) Discuss various types of statistical techniques. Write steps in statistical investigation. 6

   (b) How arithmetic mean, geometric mean and harmonic mean differ from each other. Explain each with suitable example. 7

2. (a) You can take a trip which entails travelling 900 km. by train at an average speed of 60 km. per hour, 3000 km. by boat at an average of 25 km. per hour, 400 km. by plane at 350 km. per hour and finally 15 km. by taxi at 25 km. per hour. What is your average speed for the entire distance ? 6

(b) Calculate the arithmetic mean of the marks from the following table : 7

Marks	No. of Students
0–10	12
10–20	18
20–30	27
30–40	20
40–50	17
50–60	6

Unit–II

3. In a factory employing 3,000 persons, 5 per cent earn less than Rs. 3 per hour, 580 earn from Rs. 3·01 to Rs. 4·50 per hour, 30 per cent earn from Rs. 4·51 to Rs. 6·00 per hour, 500 earn from Rs. 6·01 to Rs. 7·50 per hour, 20 per cent earn from Rs. 7·51 to Rs. 9·00 per hour, and the rest earn Rs. 9·01 or more per hour. What is the median wage ? 13

4. Eight coins were tossed together and the number of heads resulting was noted. The operation was repeated 256 times and the frequencies (f) that were obtained for different values of X, the number of heads, are

shown in the following table. Calculate median, quartiles, 4th decile and 27th percentile.

X	*f*
0	1
1	9
2	26
3	59
4	72
5	52
6	29
7	7
8	1

13

Unit–III

5. (a) What is correlation analysis ? Discuss various types of correlation with example. 6

   (b) Prove that Correlation coefficient is independent of change of origin and scale. 7

6. Explain various techniques of measuring correlation. Calculate the correlation coefficient for the following heights (in inches) of fathers (X) and their sons (Y) :

X	Y
65	67
66	68
67	65
67	68
68	72
69	72
70	69
72	71

13

Unit–IV

7. How regression analysis differ from correlation analysis ? Explain the concept with the help of suitable example. Discuss its uses and limitations in detail. 13

8. Why do we have, in general, two lines of regression ? Obtain the regression of Y on X, and X on Y from the following table and estimate the blood pressure when the age is 45 years : 13

Age in years (X)	Blood pressure (Y)
56	147
42	125
72	160
36	118
63	149
47	128
55	150
49	145
38	115
42	140
68	152
60	155

(Compulsory Question)

9. (a) Define quintile and its utility. 2

(b) What are the limitations of secondary data ? 2

(c) List methods of calculation mode in case of individual series. 2

(d) What is the significance of standard deviation ? 2

(e) List various properties of regression coefficients. 2

(f) Discuss significance of standard error of estimate. 3