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**BJ—24—2016**

**FACULTY OF SCIENCE**

**B.C.S. (First Year) (First Semester) EXAMINATION**

**OCTOBER/NOVEMBER, 2016**

**(CBCS Pattern)**

**COMPUTER SCIENCE**

**Paper S1.4**

**(Statistical Techniques in Computer Science)**

**(Friday, 25-11-2016)**

**Time : 10.00 a.m. to 1.00 p.m.**

**Time—3 Hours**

**Maximum Marks—75**

**N.B. :—** (i) All questions are compulsory.

(ii) Figures to the right indicate full marks.

(iii) Assume suitable data, if required.

(iv) Use only non-programmable calculator.

1. Attempt any *five* of the following : **3 each**

(a) Write definitions of statistics defined by Webster and Bowley.

(b) Define variable, array and frequency.

(c) Write requisites for an ideal measure of central tendency.

(d) Define dispersion. Which are the measures of dispersion ?

(e) Define probability and write axioms of probability.

(f) Define correlation, positive correlation and negative correlation.

(g) Write scope of statistics in computer science.

2. Attempt any *two* of the following : **5 each**

(a) Give Introduction to Statistics.

(b) Write limitations of Statistics.

(c) Write importance of Statistics in Economics.

**P.T.O.**

3. Attempt any *two* of the following : 5 each

- (a) Write a note on primary and secondary data.  
 (b) Represent the following data by means of a histogram :

Weekly Wages (‘00 Rs.)	No. of Workers
10—15	7
15—20	19
20—25	27
25—30	15
30—40	12
40—60	12
60—80	8

- (c) Represent the following data by a pie diagram :

Head of Expenditure	Expenditure
1. Agriculture	8,000
2. Irrigation and power	4,000
3. Industry and mining	7,000
4. Transport	5,500
5. Miscellaneous	2,500

4. Attempt any *two* of the following : 5 each

- (a) Write merits and demerits of Arithmetic mean.  
 (b) From the following data find the missing frequency, it is given that mean is 15.38 and total frequency is 55 :

Class	Frequency
9—11	3
11—13	7

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13—15	—
15—17	20
17—19	—
19—21	5

- (c) The following table shows the age distribution in a particular region find median age :

Age (in yrs)	No. of Persons
Below 10	2
Below 20	5
Below 30	9
Below 40	12
Below 50	14
Below 60	15
Below 70	15.5
70 and over	15.6

5. Attempt any *two* of the following : 5 each

- (a) Write characteristics of an ideal measure of dispersion.  
 (b) Calculate range and coefficient of range of A's monthly earnings for a year :

Month	Monthly Earnings
1	139
2	150
3	151
4	151
5	157

P.T.O.

6	158
7	160
8	161
9	162
10	162
11	173
12	175

- (c) Calculate the Standard deviation for the following table giving the age distance of 542 members :

Age (in yrs)	No. of Members
20—30	3
30—40	61
40—50	132
50—60	153
60—70	140
70—80	51
80—90	2

6. Attempt any *two* of the following : 5 each

- (a) Prove Addition theorem of probability.
- (b) Four cards are drawn at random from a well shuffled pack of 52 cards. Find the probability that :
- (i) Two cards are red and two are black
- (ii) One in king.
- (c) Let A and B be two events defined on a sample space S, such that  $P(A) = \frac{3}{4}$  and  $P(B) = \frac{5}{8}$  then show that  $\frac{3}{8} \leq P(A \cap B) \leq \frac{5}{8}$ .

7. Attempt any *two* of the following : 5 each

- (a) Write a note on correlation and causation.
- (b) Calculate Karl Pearson's coefficient of correlation between expenditure on advertising sales from the data given below :

Advertising Expenses (’000 Rs.)	Sales (lakh Rs.)
39	47
65	53
62	58
90	86
82	62
75	68
25	60
98	91
36	51
78	84

- (c) Find the means of  $x$  and  $y$  variables from the following two regression equations :

$$8x - 10y + 66 = 0$$

$$40x - 18y = 214.$$