

**F.Y. B. SC. (COMPUTER SCIENCE) SEM – I (CBCS - 2016
COURSE) : SUMMER - 2018**
SUBJECT : ELECTIVE – I: COMPUTER ORIENTED STATISTICAL TECHNIQUES – I

Day : **Saturday**
Date : **28/04/2018**

S-2018-0798

Time : **11.00 A.M. TO 02.00 PM**
Max. Marks : 60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat and labeled diagrams **WHEREVER** necessary
- 4) Use of logarithmic tables, statistical tables and pocket calculator is **ALLOWED**.

Q.1 A) Choose the correct alternative for: [06]

- a) The first order moment about mean is equal to _____.
i) One ii) Mean iii) Zero iv) Median
- b) Which of the following is an example of attribute?
i) Weight ii) Height iii) Blood group iv) Wages
- c) The median of the observations: 30, 27, 25, 16, 10 is _____.
i) 27 ii) 25 iii) 30 iv) None of these
- d) Karl Pearson's coefficient of correlation lies between _____.
i) 0 to 1 ii) -1 to 1 iii) $-\infty$ to ∞ iv) 0 to ∞
- e) The regression coefficients have _____.
i) Always negative sign iii) The same algebraic sign
ii) Always positive sign iv) The opposite algebraic sign
- f) If X and Y are independent variables then Cov (X, Y) is _____.
i) 1 ii) -1 iii) 0 iv) Cannot be determine

B) State whether the following statements are true or false: [06]

- a) If $\gamma_1 = 0$ then distribution is symmetric.
- b) It is possible to measure the range of an open ended distribution.
- c) Correlation coefficient cannot be negative.
- d) If X and Y are uncorrelated then they are independent.
- e) If X and Y are independent then the regression coefficients are zero.
- f) It is possible to have $b_{yx} = \frac{-4}{5}$, $b_{xy} = \frac{-1}{5}$.

Q.2 Attempt ANY THREE of the following: [12]

- a) Describe the scope of statistics in Industry.
- b) Compute range, coefficient of range and quartile deviation for the following data:
36, 15, 25, 10, 14, 17, 13, 11, 30, 29, 40.

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- c) Draw a histogram and frequency curve for the following data:

Monthly house rent	100 - 300	300 - 500	500 - 700	700 - 900	900 - 1100	1100 - 1300
No. of families	6	16	24	20	10	4

- d) The first three moments of a distribution about value 6 are 1, 5 and 20. Find the β_1 and interpret it.

Q.3 Attempt **ANY FOUR** of the following: **[12]**

- a) Find the standard deviation of the following observations:
10, 20, 30, 40, 50.

- b) Prepare the usual frequency distribution for the following:

Marks below	10	20	30	40	50
No. of students	1	8	35	46	50

- c) If $\mu_2 = 3$, $\mu_4 = 27$, find β_2 and γ_2 and interpret.
d) State the types of skewness.
e) Define midpoint and frequency density of a class.

Q.4 Attempt **ANY TWO** of the following: **[12]**

- a) State the properties of regression coefficients.
b) Calculate the arithmetic mean, mode and median of the following observations:
51, 52, 53, 51, 53, 54, 54, 50, 55, 53.
c) Calculate the coefficient of correlation from the following data:

X	2	4	6	8	10
Y	4	7	9	3	2

Q.5 Attempt **ANY TWO** of the following: **[12]**

- a) Two samples of sizes 40 and 50 have the same mean and standard deviations 20 and 10, respectively. Find the mean, variance and coefficient of variation of combined group.
b) Define covariance between two variables. Also, if X, Y, Z are three variables then show that $\text{Cov}(X + Y, Z) = \text{Cov}(X, Z) + \text{Cov}(Y, Z)$.
c) Find the first quartile, second quartile and third quartile for the following frequency distribution:

X	10	30	50	70	90
f	6	12	17	10	5

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