

F.Y. B. SC. (Computer Science) SEM – I (CBCS - 2016 COURSE) :
WINTER - 2018

SUBJECT : ELECTIVE – I: COMPUTER ORIENTED STATISTICAL TECHNIQUES – I

Day : Thursday
Date : 25/10/2018

W-2018-0900

Time : 11.00 AM TO 02.00 PM
Max. Marks : 60

N.B.:

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

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

- a) Suppose the first quartile is 10, the third quartile is 40 and Bowley's coefficient of skewness is $-\frac{1}{3}$ the median is _____.
i) 25 ii) 30 iii) 50 iv) 35
- b) If $\beta_2 > 3$ then the distribution is _____.
i) Leptokurtic ii) Platykurtic iii) Mesokurtic iv) skew
- c) Which of the following is not qualitative characteristics?
i) Religion ii) Height iii) Sex iv) Blood group
- d) For any frequency distribution 2nd central moment gives _____.
i) Standard deviation ii) Zero
iii) Variance iv) Range
- e) If $X = \text{constant}$, then $\text{Cov}(X, Y)$ is _____.
i) 1 ii) -1 iii) 0 iv) None of these
- f) If line of regression of X on Y is $3x - 2y = 9$, then b_{xy} is _____.
i) $\frac{3}{2}$ ii) 1 iii) 3 iv) $\frac{2}{3}$

B) State whether each of the following is True or False: [06]

- a) $\text{Corr}(X, Y) = \text{Corr}(Y, X)$.
- b) The standard deviation is always negative.
- c) Third central moment of symmetric distribution is zero.
- d) Mean is affected by change of origin and scale.
- e) $r \neq \sqrt{b_{xy} \cdot b_{yx}}$.
- f) Bowley's coefficient of skewness lies between -3 and +3.

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

- a) The weekly earnings (in Rs.) of number of persons is given below:

Weekly earnings (in Rs.)	150 – 200	200 – 250	250 – 300	300 – 350	350 – 400
No. of persons	15	27	30	---	20

Find the missing frequency if the mode of the distribution is Rs. 280/-.

- b) Explain different methods of classification briefly.

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- c) Draw the cumulative frequency curve for the following frequency distribution. Also find median graphically.

Class	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
f	4	12	18	16	3

- d) For a moderately symmetrical distribution mean, median and Karl Pearson's coefficient of skewness (S_k) are 160, 159, 0.06 respectively. Find the mode and coefficient of variation.

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

- a) Find the range and coefficient of range of the following data:

11, 10, 14, 11, 10, 13, 11.

- b) State the types of kurtosis.
 c) Define raw moment and central moment.
 d) If $\mu_2 = 4$, $\mu_4 = 27$, find γ_2 and interpret.

- e) Obtain frequency distribution for the following data:

Mid point	15	25	35	45	55
Frequency	5	10	15	13	7

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

- a) State the properties of regression coefficients.
 b) Explain the term skewness. Also explain different types of skewness.
 c) Find the mean, mode and median for the following data:
 60, 70, 60, 58, 58, 62, 67, 54, 64.

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

- a) Twenty pairs of values of X and Y gives
 $\bar{X} = 5$, $\bar{Y} = 3$, $\sum x^2 = 680$, $\sum y^2 = 500$, $\sum x(y - \bar{y}) = 120$. Find correlation coefficient between X and Y. Also find $Corr\left(\frac{X-10}{5}, \frac{3-Y}{5}\right)$.
 b) Compute the coefficient of variation for the following observations:
 36, 15, 25, 10, 14.
 c) Find the mean and variance of first 'n' natural numbers.

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