

**F.Y. B. SC. (COMPUTER SCIENCE) SEM – I (CBCS - 2016  
COURSE) : WINTER - 2017**  
**SUBJECT : ELECTIVE – I: COMPUTER ORIENTED STATISTICAL TECHNIQUES – I**

Day : **Thursday**  
Date : **09/11/2017**

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

**W-2017-0706**

**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) If  $X = \text{constant}$ , the corr (X, Y) is \_\_\_\_\_.  
i) 1                      ii) 0                      iii) -1                      iv) None of these
- b) The mode of the observations: 61, 65, 62, 63, 62, 60, 59, 62 is \_\_\_\_\_.  
i) 62                      ii) 63                      iii) 60                      iv) 59
- c) The regression coefficient  $b_{yx}$  is given by \_\_\_\_\_.  
i)  $r \frac{\sigma_x}{\sigma_y}$                       ii)  $r \frac{\sigma_y}{\sigma_x}$                       iii)  $r^2$                       iv) None of these
- d) In the following which is not a measures of dispersion?  
i) Range                      iii) Standard deviation  
ii) Quartile deviation                      iv) Mode
- e) If  $\text{Cov}(X, Y) = 20$  then,  $\text{Cov}(2X, -5Y)$  is \_\_\_\_\_.  
i) 20                      ii) 40                      iii) -200                      iv) 200
- f) The mean and S.D. are 2 and 4 respectively then second order moment about origin is \_\_\_\_\_.  
i) 24                      ii) 20                      iii) 22                      iv) None of these

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

- a) If coefficient of skewness  $\gamma_1$  is positive then the distribution is positively skewed.
- b) The standard deviation is equal to the positive square root of the variance.
- c) Correlation coefficient cannot be positive.
- d)  $\text{Corr}(X, Y) = \text{Corr}(X - a, Y - b)$ , where a and b are constants.
- e) It is possible to have  $b_{yx} = 2$ ,  $b_{xy} = 1.5$ .
- f) If  $\sigma_x = \sigma_y$  then  $b_{xy} = b_{yx}$ .

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

- a) Draw a pie diagram to represent the following data:

Item	A	B	C	D	E	F
Expenditure	1400	800	1000	300	400	900

- b) Describe the scope of statistics in economics and social science.

**P.T.O.**

- c) Given that  $\bar{X} = 160$ , mode = 157,  $\sigma = 50$ , find Karl Pearson's coefficient of skewness ( $S_K$ ) and coefficient of variation.
- d) If  $\mu_1^1 = 1$ ,  $\mu_2^1 = 4$ ,  $\mu_3^1 = 10$ ,  $\mu_4^1 = 46$ . Compute  $\beta_1$  and  $\beta_2$ .

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

- a) Explain different method of classification.
- b) Find the variance of the following observations:  
3, 4, 6, 7, 10.
- c) Prepare usual frequency distribution for the following:

Income more than ₹	500	1000	1500	2000	2500	3000
No. of persons	100	96	92	59	28	2

- d) Write note on kurtosis.
- e) The first two moments of a distribution about the value 5 are 0.2 and 19.4, find the mean, variance and standard deviation.

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

- a) Explain the term correlation between the two variables X and Y. Also discuss types of correlation.
- b) The regression equations are given by:  
 $8X - 10Y + 66 = 0$  and  $40X - 18Y - 214 = 0$ .  
Find mean of X and Y, correlation coefficient between X and Y. Also find  $\sigma_y$  if  $\sigma_x = 3$ .
- c) Compute mean, mode and median from the following data:  
111, 110, 114, 111, 110, 113, 111, 112, 113, 111.

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

- a) Discuss the effect of change of origin and scale on arithmetic mean.
- b) For the following information, find the correlation coefficient between X and Y.  
 $n = 25$ ,  $\Sigma x = 75$ ,  $\Sigma y = 100$ ,  $\Sigma x^2 = 250$ ,  $\Sigma y^2 = 500$ ,  $\Sigma xy = 325$ .  
Also find the correlation coefficient between  $3X - 10$  and  $20 - 4Y$ .
- c) For a set of 90 items the mean and S.D. are 59 and 9 respectively. For 40 items selected from those of 90 items the mean and S.D. are 54 and 6 respectively. Find the mean and variance of remaining groups.

\* \* \* \*