

F.Y.B.SC. SEM – II (2014 COURSE) : SUMMER - 2018

SUBJECT : STATISTICS : DESCRIPTIVE STATISTICS – II (S – 21)

Day : Friday
Date : 20/04/2018

S-2018-0697

Time : 03.00 PM TO 05.00 PM
Max. Marks : 40

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of statistical tables and **CALCULATOR** is allowed.

Q.1 Attempt **ANY TWO** of the following: [10]

- a) Derive an expression for Spearman's rank correlation coefficient.
- b) Obtain Spearman's rank correlation coefficient for the following data:

X	34	19	30	27	28
Y	37	35	26	27	22

- c) Find correlation coefficient between X and Y given following data:
 $n = 5, \Sigma X = 20, \Sigma X^2 = 90, \Sigma Y = 20, \Sigma Y^2 = 90, \Sigma XY = 73$.

Q.2 Attempt **ANY TWO** of the following: [10]

- a) Obtain the regression line of Y on X for the following data:

X	7	6	10	14	13
Y	22	18	20	26	24

- b) Two regression lines are given by $X - 4Y = 5$ and $X - 16Y = -64$. Calculate mean values of X and Y and correlation coefficient between X and Y.
- c) Explain the concept of "explained variation" and "unexplained variation" of dependent variable.

Q.3 Attempt **ANY TWO** of the following: [10]

- a) Compute Laspeyres's and Paasche's price index number for the following data:

Commodity	Base year Price	Base year Quantity	Current year Price	Current year Quantity
U	1	4	2	8
V	8	10	12	11
W	4	6	5	6

- b) Describe the procedure of fitting of second degree curve.
- c) If X and Y are uncorrelated and $\sigma_x^2 = k, \sigma_y^2 = 4$.
Find k such that $\text{Var}(2X - Y) = 29$, also find $\text{Var}(X - 2Y)$.

Q.4 Attempt **ANY FIVE** of the following: [10]

- a) State the uses of index number.
- b) If $b_{yx} = 2.3, b_{xy} = 0.3$, find correlation coefficient between X and Y.
- c) Given : $\sigma_x = 2, \sigma_y = 4, r = -0.8$. Find $\text{Cov}(X, Y)$.
- d) Show that $b_{yx} \cdot b_{xy} = r^2$.
- e) If $\text{cov}(X, Y) = 16$, find $\text{cov}(2X, -Y)$.
- f) Explain the term base year.
- g) Explain the term scatter diagram.

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