B.A. (Honours) Examination, 2019

Semester–II

Integrated Mathematics & Statistics

Course– S-1.2.5.P.2 (Subsidiary)

(For Back Candidates)

Time: Three Hours **Full Marks: 40**

Questions are of value as indicated in the margin.

Answer ***anyfour*** questions.

1. (a) What is a scatter diagram? Draw the scatter diagrams showing different types and degrees of correlation.

   (b) Find the coefficient of correlation from the following data 6+4

X	65	63	67	64	68	62	70	66
Y	68	66	68	65	69	66	68	65

2. (a) Prove that the correlation coefficient does not depend on the origin or scale of the observations.

   (b) If the correlation coefficient between x and y is 0.5 what would be the correlation coefficient between $5x$ and $-3y$? 8+2

3. (a) Derive the regression equation of x on y using method of least squares.

   (b) Write two important properties of linear regression. 6+4

4. (a) Deduce spearman's Rank Correlation Coefficient.

   (b) If the regression equation of Y on x be $Y = 2x+3$ and the regression equation of x on y be $X=.8Y-2$ find r_{xy}. 6+4

5. (a) Explain the different components of Time Series.

   (b) Assuming a four yearly cycle, calculate the trend by the method of moving averages from the following data relating to the production of tea in India. 4+6

Year	1941	'42	'43	'44	'45	'46	'47	'48	'49	'50
Production	464	515	518	470	502	540	557	571	586	612

6. Fit a linear trend equation from the following series of observations and estimate the value for 1969 10

Year	1960	1961	1962	1963	1964	1965	1966	1967
Value	380	400	650	720	690	600	870	930

P.T.O.

7. (a) Define Laspeyer's, Paasche's, Edgeworth-Marshall and Fisher's ideal index no.

   (b) Find he index numbers by the (i) simple aggregative method(ii) Price relative method from the following: 4+6

Commodity	Base Price	Current Price
Rice	35	42
Wheat	30	35
Pulse	40	38
Fish	107	120

8. Construct Fisher's Ideal Index for the following table commodity 10

	1960		1968	
Commodity	Price	Quantity	Price	Quantity
A	8	6	12	5
B	10	5	11	6
C	7	8	8	5