

FOURTH SEMESTER B.Sc. DEGREE (SUPPLEMENTARY)
EXAMINATION, APRIL 2018

(CCSS—SDE)

Mathematics

ST 4C 04—APPLIED STATISTICS

Time : Two Hours and Forty-Five Minutes

Maximum : 27 Weightage

Part B

I. Short Answer Type Questions. Answer all *nine* questions. Each question carries 1 weightage :

- 1 Distinguish between positive skewness and negative skewness.
- 2 Define moment measure of Kurtosis. How will you interpret the results ?
- 3 If $y = -\frac{3}{4}x + 7$ and $x = -\frac{1}{3}y - 2$ are the regression lines, find correlation co-efficient.
- 4 Define multiple correlation co-efficient.
- 5 What is the test statistics used for testing the significance of correlation co-efficient ?
- 6 The equation of the trend line with 2004 as origin is $y = 1.5x + 32$, what is the estimated trend value for 2009.
- 7 Find the three yearly moving averages of 15, 24, 18, 33, 42, 48, 54.
- 8 What are assignable causes ?
- 9 What is meant by specification limits.

(9 × 1 = 9 weightage)

II. Short essay or paragraph questions. Answer any *five* questions. Each question carries 2 weightage :

10 Calculate Pearson's co-efficient of skewness of the following data :

X	:	5	10	15	20	25	30
f	:	3	7	11	17	7	5

11 Show that correlation co-efficient is independent of any change of origin and scale.

Turn over

- 12 In a tri-variate distribution $r_{12} = 0.7$ $r_{13} = r_{23} = 0.5$. Compute $r_{12.3}$ and $R_{1.23}$.
- 13 Explain the properties of regression co-efficients.
- 14 Explain the moving average method of measuring trend.
- 15 Explain how control charts for fraction defective are prepared.
- 16 Explain ANOVA with one-way classification.

(5 × 2 = 10 weightage)

III. Essay questions. Answer any *two* questions. Each question carries 4 weightage :

- 17 Calculate Karl Pearson's coefficient of correlation for the following data and interpret the result :—

X	:	78	36	98	25	75	82	90	62	65	39
Y	:	84	51	91	60	68	62	86	58	53	47

- 18 (a) Explain briefly the various components of time series.

(b) Fit a straight line by the method of least squares to the following data :

X	:	1	2	3	4	5	6	7
Y	:	60	72	75	65	80	85	95

- 19 A farmer applies three types of fertilizers on four separate plots. The yield per acre are given below :

Fertilizer \ Plot	A	B	C	D
N	6	4	8	6
P	7	6	6	9
K	8	5	10	9

find out if plots are materially different in fertility.

(2 × 4 = 8 weightage)