(4)

6. Answer any one question: **1x8=8**

a) i) State the feathers of trend component in time series analysis.

ii) The value of a function f(x) is given of certain values of x.

X:	15	16	19	21
f(x)	12.5	11.5	10	8

Obtain the best approximation of f (18).   **2+6=8**

b) i) What is extrapolation?

ii) Prove Fishers Ideal Index number satisfies the time reversal test.

                                    2+6=8

*(**Internal Assessment :10 marks**)*

Total Pages - 04 (Four)

2019

M. Com.

1st Semester Examination

BUSINESS STATISTICS

PAPER – COM – 102

Full Marks : 50

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

UNIT – I

1. Answer any two questions: **2 × 2 = 4**

a) Match:

Angle between two regression lines	Value of correlation coefficient (r)
90^0	Greater than zero
0^0	Less than zero
60^0	± one
130^0	Zero

b) For two events A and B, write the condition that they are i) independent ii) mutually exclusive.

c) What do you mean by conditional and unconditional probability?

d) You are given that unexplained variation is 19.70 and explained variation 19.22. Determine the coefficient of correlation.

2. Answer any two questions: **2 × 4 = 8**

a) State any four properties of simple linear regression.

b) A box contains 5 red, 8 white and 7 black balls. If you draw 4 balls from the box at random, then what is the probability that you will have at least 1 ball of each colour?

*(**Turn Over**)*

c) A shot is fired from each of the three guns E_1, E_2 and E_3 denote the events that the target is hit by 1st, 2nd and 3rd guns respectively. If P (E_1) = 0.5, P (E_2) = 0.6 and P (E_3) = 0.8 are independent. Find the probability that i) exact 1 hit is registered ii) at least 2 hits are registered.

d) The coefficient of rank correlation of the marks obtained by 10 students in Accountancy and Statistics was found to be 0.8. It was later discovered that the difference in marks in the two subjects obtained by one of the students was wrongly taken as 7 instead of 9. Find the correct coefficient of rank correlation.

3. Answer any two questions: $8 \times 1 = 8$

a) i) What is error in regression?

ii) For a random sample of 50 male students of Contai College, the following calculations regarding their

weight (y) in inches and height (x) in kgs are made:

Mean of (x) = 66 inches, Mean of (y) = 58 kgs, b_{xy} = 0.8, r_{xy} = 0.5

Estimate the weight of a student if his height is 70 inches.   2 + 6

b) Two lines of regression are given by x+2y = 5 and 2x + 3y = 8 and Var (x) = 12.
Calculate the values of i) Mean of x, ii) Mean of y, iii) Standard deviation of y and iv) Correlation Co efficient between X and Y (r).

UNIT – II

4. Answer any two questions: 2x2=4

a) You are given

Y=540+.8t (origin: Year 2015, t=1 year)

Convert the above equation to monthly equation.

b) Examine whether the given data are consistent or not-

(A)= 100, (B) = 150, (AB) = 160, N = 500

c) Find out cost of living index numbers from the following

Group	Index No.	Weight
Food	350	5
Fuel	220	1
Clothing	230	2
Rent	160	2

d) What do you mean by Yule's coefficient of association?

(Continued)

5. Answer any two questions: 2x4=8

a) You are given the following index number series. Split both the series and recast a new series with base 2015

Year	Index No. (Base: 2012)	Index No. (Base: 2014)
2010	95	-
2011	98	-
2012	100	-
2013	105	-
2014	108	100
2015	-	110
2016	-	112
2017	-	115
2018	-	120

b) Show that

$$\frac{L(P)}{L(Q)} = \frac{P(P)}{P(Q)} = V_{0N}$$

Where L(P)= Laspeyer's Price Index

P(P)= Paschee's Quantity Index

L(Q)= Laspeyer's Quantity Index

P(Q)= Paschees Quantity Index

V_{0N} = Value Index

c) Find if A and B are independent, positively or negatively associated from data given below:

(A)= 470, (B) = 620, (AB) = 320, N= 1000

d) Calculate values of Y, when X=10

X	7	11	15	19	23	27
Y	20256	20625	21296	22407	24098	26511

(Turn Over)