PARUL UNIVERSITY
FACULTY OF COMMERCE
B.Com.(Hons) Summer 2018-19 Examination

Semester: 3   Date:22/04/2019
Subject Code: 16100204   Time:02:00pm to 4:30pm
Subject Name: Business Statistics-II   Total Marks: 60

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Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1

A) Multiple choice type questions   (06)

1. The sale of woolens in winter reach its peak is a kind of,
   a)cyclical variation   b)short term variation
   c)seasonal variation   d)Irregular variation
2. If standard deviation of population is 3 and sample size is 9 then ,the standard error is
   a)1   b)2
   c)3   d)1/3
3. The range of coefficient of correlation is
   a) 0 to 1   b) -1 to 1
   c)1 to ∞ d) none of the above
4.If Laspayre's and Paasche's indices are 12 and 3 respectively then , Fisher's index number is,
   a)6   b)12
   c)36   d)none of the above
5. Degree of freedom for contingency table is ,
   a) $n - 1$ b) $(r - 1)(c\text{-}1)$
   c) $n - k - 1$ d) $h - 1$
6. If regression coefficients are 0.6 and 0.6 then coefficient of correlation is ,
   a)0.6   b)0.36
   c)6   d)0.12

B)   Do as directed   (06)

1.The index   number of the base year is_____
2.Write formula for Spearman's rank correlation coefficient.
3.Calculate regression coefficient b_{yx} when $r = 4\ \sigma_y = 3\ and\ \ \sigma_x = 2$
4.Write null and alternative hypothesis for the statement .
"Doctors believe that teenagers sleeps on an average no longer than 10 hrs per day. A researcher believes that teenagers sleeps longer.
5. State one difference between large and small samples.
6. If calculated χ^2 is greater than tabular value of χ^2 at some significant level ,then H_0 may be accepted.True/False?

Q.2 Evaluate the following.   (12)

1.Construct index number for the years 2000,2001,2002,2003,2004, taking 2000 as base year for following data.

Year	2000	2001	2002	2003	2004
Price	120	144	168	204	216

2. Find trend by taking 3 yearly moving averages for the following time series

Year	1960	1961	1962	1963	1964	1965	1966	1967	1968
Index number	112	104	108	121	116	111	133	125	129
Year	1969	1970							
Index number	139	131							

3. Using simple average of Price relative method find the price index for 2001, taking 1996 as base year from the following data:

Commodity	Wheat	Rice	Sugar	Ghee	Tea
Price in 1996	12	20	12	40	80
Price in 2001	16	25	16	60	96

Q.3 Solve the following.   (Any Three)   **(18)**

1. Calculate coefficient of correlation for the following data.

x	5	9	13	17	21
y	12	20	25	33	35

2. Two judges have given ranks to 10 students for their honesty .Find the rank correlation coefficient for the following data.

1st Judge	3	5	8	4	7	10	2	1	6	9
2nd Judge	6	4	9	8	1	2	3	10	5	7

3.Fit a straight line trend to the following data .

Year	1960	1962	1964	1966	1968
Population	83	92	71	90	169

4. In a trivariate distribution $\bar{x}_1$=28.02 $\bar{x}_2$=4.91 , $\bar{x}_3$=594, $S_1 = 4.4, S_2 = 1.1, S_3 = 80, r_{12} = 0.8, r_{13} = -0.4 , r_{23} = -0.56$.Estimate x_1,when $x_2 = 6$ and $x_3 = 650$.

Q.4 Solve the following.   (Any two)   **(18)**

1. Calculate Laspeyre's and Paasche's index numbers from the following data.

Commodity	Base Year		Current Year	
	Price	Quantity	Price	Quantity
A	10	12	12	15
B	7	15	5	20
C	5	24	9	20
D	16	5	14	5

2. An average life of 150 electric bulbs of a company A is 1400 hrs with a standard deviation $\sigma_1 = 120$ while the average life of 200 electric bulbs of company B is 1200 hrs with standard deviation of $\sigma_2 = 80$ .Is the difference between average life of the bulbs significant? (Z_{table}=1.96 at 5% level of significance)

3. The number of road accidents on a highway during a week is given below. Can it be concluded that the proportions of accidents are equal for all days.
(χ^2_{table}=12.59 at 5% level of significance)

Days	1	2	3	4	5	6	7
No. of Accidents	14	16	8	12	11	9	19