

PARUL UNIVERSITY
FACULTY OF COMMERCE
B.Com (Hons) Summer 2017 – 18 Examination

Semester: 3

Date: 02/06/2018

Subject Code: 16100204

Time: 10.30 am to 1.00 pm

Subject Name: Business Statistics-II

Total Marks: 60

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) Do as directed**(06)**

1. A time series consists of:
 - (a) Short-term variations
 - (b) Long-term variation
 - (c) Irregular variations
 - (d) All of the above
2. The fire in a factory is an example of:
 - (a) Secular trend
 - (b) Seasonal movements
 - (c) Cyclical variations
 - (d) Irregular variations.
3. If H_0 is true and we reject it is called:
 - (a) Type-I error
 - (b) Type-II error
 - (c) Standard error
 - (d) Sampling error.
4. In simple linear regression, the numbers of unknown constants are:
 - (a) One
 - (b) Two
 - (c) Three
 - (d) Four
5. If $b_{yx} = 1.6$ and $b_{xy} = 0.4$, then r will be:
 - (a) 0.4
 - (b) 0.64
 - (c) 0.8
 - (d) -0.8

6. When using the chi-square test for differences in two proportions with a contingency table that has r rows and c columns, the degree of freedom for the test statistics will be.
 - (a) $(r-1)(c-1)$
 - (b) $(r-1) + (c-1)$
 - (c) $n-1$
 - (d) none of these

(B) Do as directed**(6)**

1. Arithmetic mean of regression coefficients is less than or equal to the coefficient of correlation [True/False]
2. The Formula of correlation coefficient by Spearman's method is _____
3. Write the components of time series.
4. Doctors believe that the average teen sleeps on average no longer than 10 hours per day. A researcher believes that teens on average sleep longer. Write H_0 and H_1
5. Write the types of correlation.
6. Write the name of Non parametric test.

Q.2 Answer the following.**(12)**

1. In a big city 480 men out of a sample of 800 men are smokers. Does this information support the hypothesis that the majority of men in the city are smokers?
2. The result in the last exam of a sample of 100 students is given below:

	1 st class	2 nd class	3 rd class	Total
Boys	10	28	12	50
Girls	20	22	8	50
Total	30	50	20	100

Can it be said that the performance in the exam depends upon gender. Using χ^2 test

3. Find trend by 5 yearly moving averages.

Year	1961	1962	1964	1965	1966	1967
Sale	200	194	178	202	247	258
Year	1968	1969	1971	1972	1973	1974
Sale	218	196	203	191	189	203

Q.3 Attempt Any Three.

(18)

- If $\bar{x}_1 = 6.8, \bar{x}_2 = 7, \bar{x}_3 = 74, \sigma_1 = 1, \sigma_2 = 0.8, \sigma_3 = 0.9, r_{12} = 0.6, r_{13} = 0.7, r_{23} = 0.65$. Find $R_{1,23}, R_{3,12}$
- Find the coefficient correlation between x and y.

X	100	101	102	102	100	99	97	98	96	95
Y	98	99	99	97	95	92	95	94	90	91

3. Fit a straight line trend to the following data and obtain trend values:

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

4. The average daily wage of 1000 labors of a factory A is Rs 47 with s.d Rs 28. The average daily wage of 1500 labors of a factory B is Rs 49 with s.d Rs 40. Can it be said that the average daily wage of factory B is more than the average daily wage of factory.

Q.4 Attempt Any Two

(18)

1. The following figures relate to the price of commodity in 4 different cities. Test at 5% significance level that there is no significant difference in the prices of the 4 cities.

City	Price				
A	12	16	16		
B	15	14	14	15	
C	17	16	15	14	
D	15	12	15	16	16

2. Find the Laspeyre's, Paasche's and Fisher's index numbers of 2004 taking 2000 as base year from the following data:

Commodity	2000		2004	
	Price	Quantity	price	Quantity
Wheat	8	30	10	35
Rice	20	8	25	10
Pulses	16	3	24	5
Suger	12	5	15	5
Oil	35	5	45	5

3. In order to compare the effectiveness of two sunburn lotions, a random sample of seven subjects is selected. Lotion A is applied to the left side of their faces and lotion B to the right side. After the subjects have sat in the sun watching a three-hour tennis match, the degree of sunburn is measured on a scale.

subject	1	2	3	4	5	6	7
Lotion A	48	62	42	69	74	35	84
Lotion B	46	49	48	63	43	32	53

Applying Wilcoxon signed rank test, determine whether the data support the claim that the two lotions are equally effective.