

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

Semester: III

Subject Code: 16100204

Subject Name: Business Statistics-II

Date: 11/12/2017

Time: 10:30am to 1:00pm

Total Marks: 60

Instructions:

- All questions are compulsory.
- Figures to the right indicate full marks.
- Make suitable assumptions wherever necessary.
- Start new question on new page.

Q.1 (A) Do as directed.**(06)**

- Testing $H_0: \mu = 25$ against $H_1: \mu \neq 20$ leads to:
 - Two-tailed test
 - Left-tailed test
 - Right-tailed test
 - Neither (a), (b) and (c)
- If both variables X and Y increase or decrease simultaneously, then the coefficient of correlation will be:
 - Positive
 - Negative
 - Zero
 - One
- 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.
 - $(r-1)(c-1)$
 - $(r-1) + (c-1)$
 - n-1
 - none of these
- Index numbers can be used for:
 - Forecasting
 - Fixed prices
 - Different prices
 - Constant prices.
- A time series consists of:
 - Short-term variations
 - Long-term variation
 - Irregular variations
 - All of the above
- If $b_{yx} = -0.2$ and $b_{xy} = 0.8$ then the value of r is
 - .016
 - .016
 - 0.4
 - 0.4

(B) Do as directed.**(06)**

- If coefficient of correlation is more than 6 times of probable error ($r > 6 P.E$), it is significant [True/False]
- Arithmetic mean of regression coefficients is less than or equal to the coefficient of correlation [True/False]
- Confidence interval for one population variance is _____
- Write the name of the types of Index Number.
- The Formula of correlation coefficient by Spearman's method is _____
- The value of correlation coefficient lies between 0 to 1 [True/False]

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

- 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 A?

- The IQ of two groups of children with variations in mental functions are given below

Group-1	2.5	4.5	3.3	4.5										
Group-2	1.5	1.7	1.6	2	2.2	2.3	1.6	2.2	3	2.8	3	2.8	3.5	3.5

Using Wilcoxon rank sum test, assess the significance of difference between the IQs of the two groups of children.

- Find the coefficient correlation between x and y.

X	5	9	13	17	21
Y	12	20	25	33	35

Q.3 Attempt Any Three.

(18)

1. 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

2. In a certain sample of 2000 families, 1400 families are consumers of tea. Out of 1800 Hindu families, 1236 families consume tea. Use χ^2 test and state whether there is any significant difference between consumption of tea among Hindu and non-Hindu families.
3. On the basis of observation made on 30 cotton plants, the total correlation of yield of cotton (x_1), number of bolls i.e seed vessel (x_2) and height(x_3) are found to be:
 $r_{12} = 0.8$, $r_{13} = 0.65$, $r_{23} = 0.7$
 Compute the partial correlation between yield of cotton and the number of bolls, eliminating the effect of height. Also find $R_{1.23}$
4. The proportions of literates in two towns A and B are 30% and 25%. If samples of 1200 and 900 are taken from these population, will the difference between the proportion remain hidden?

Q.4 Attempt Any Two.

(18)

1. Set up two-way ANOVA table for the data given below:

Field	Treatment			
	A	B	C	D
P	45	40	38	37
Q	43	41	45	38
R	39	39	41	41

2. a) What is time series? Explain the component of the time series. (03)
 b) Below are given the gain in weights (in lbs) of cows fed on two diets X and Y. (06)

Diet X	25	32	30	32	24	14	32			
Diet Y	24	34	22	30	42	31	40	30	32	35

- Test at 5% level whether the two diets differ as regard their effects on mean increase in weight.
3. Fit a second degree parabolic trend to the data given below and obtain trend values.

Year	1950	1955	1960	1965	1970
Profit(thousand)	11	12	14	18	16