



School of Development Studies

MBA Development Management

Batch-3rd (2023-2025)

First Year, Term 3 End Term Examinations, April 2024

CC – 663 Statistics for Social Science Research

Time - 3 Hour

Maximum Marks: 50 (Minimum Marks: 20)

Instructions to students:

- This question paper contains 2 printed pages.
- Don't write anything on the Question Paper except writing your Enrolment No.

Part A

(Maximum Marks: 5)

Q1. Fill in the blanks / select the most appropriate option as applicable for the following statements (1 mark each):

- (a). The assumption that states equality of all population means under consideration is called _____ hypothesis.
- (b). As per _____ $\geq 88.9\%$ population lies in the range of $\mu \pm 3sd$.
- (c). $1 - R^2_{1.23} = (1 - r^2_{12})(1 - r^2_{13.2})$ is
 (i) Multiple Regression
 (ii) Multiple Correlation
 (iii) Relationship between Multiple and Partial Correlation
 (iv) Relationship between Multiple and Simple Correlation
- (d). σ^2 between / σ^2 within is
 (i) z value
 (ii) T value
 (iii) χ^2 value
 (iv) F value
- (e). $\mu_d / (s\sqrt{n})$ is
 (i) Independent T-test
 (ii) One tailed T-test
 (iii) Paired T Test
 (iv) Two tailed T-Test

Part B

(Maximum Marks: 15)

Q2. Write short notes with appropriate examples / solve any three of the following:

- (a) Randomised Control Trial (5)
- (b) Two tailed T test (5)
- (c) Unweighted Price Index (5)

- (d) Information about a random sample is given. Verify that the sample is large enough to use it (5)
to construct a confidence interval for the population proportion.
Then construct a 90% confidence interval for the population proportion.
(i) $n = 25$, $\hat{p} = 0.7$
(ii) $n = 50$, $\hat{p} = 0.7$

- (e) In an experiment on immunization of cattle from tuberculosis, the following results were obtained: (5)

	Affected	Not Affected
Inoculated	12	26
Not inoculated	16	6

Calculate the χ^2 and discuss the effect of vaccine in controlling susceptibility to tuberculosis.
(Table value of $\chi^2_{(1, \alpha = 0.05)} = 3.84$)

Part C

(Maximum Marks: 30)

Answer any two of the following, in detail.

- Q3. Determine the regression equation for the following tables of two variables and find out the simple correlation and the r^2 . (15)

x	y
42.00	56.00
44.00	49.00
58.00	53.00
55.00	58.00
89.00	65.00
98.00	76.00
66.00	58.00

- Q4. Determine Laspeyres's price index, Paasche's price index, Fisher's ideal index and value index for the data given in the in Table below: (15)

Sl. No	Item	Price 2017 (₹)	Quantity Sold 2017	Price 2022 (₹)	Quantity Sold 2022
1	Bread	40	50	45	50
2	12 Eggs	80	26	88	26
3	Milk	64	102	70	102
4	Mango	50	30	55	30
5	Orange Juice	100	40	95	40
6	Tea	200	12	225	14

- Q5. The following table gives the number of units of production per day turned out by four different types of machines. Using analysis of variance (15)

- (i) Test the hypothesis that the mean production is same for four machines [Table value with $df = 3, 9$ & $\alpha = 0.05 = 3.86$]
(ii) Test the hypothesis that the employees do not differ with respect to mean productivity. [Table value with $df = 3, 9$ & $\alpha = 0.05 = 3.86$]

Employees	Type of machine			
	M ₁	M ₂	M ₃	M ₄
M ₁	40	36	45	30
M ₂	38	42	50	41
M ₃	36	30	48	35
M ₄	46	47	52	44