

Faculty of Science

B. Sc (Statistics) III-Year, CBCS-V Semester Regular Examinations, Dec/Jan 2019-20

PAPER: SAMPLING THEORY, TIME SERIES, INDEX NUMBERS AND DEMAND ANALYSIS

Time: 3 hours

Max Marks: 60

Section-AI. Answer any **Three** of the following questions (3x5=15 Marks)

1. Distinguish between Sample survey and Census survey.
2. Define Sampling and Non-Sampling Errors.
3. Explain Optimum allocation in Stratified Random Sampling.
4. Define the components of time series.
5. Define Price elasticity and Income elasticity of demand.
6. Distinguish between Chain base and Fixed base index numbers.

Section-B

II. Answer the following questions (3x15=45 Marks)

7.(a) Explain the Principle steps involved in sample survey.
(Or)b) Prove that in SRSWOR, the variance is given by $V(\bar{y}_n) = (\frac{1}{n} - \frac{1}{N})S^2$.

8. (a) When the population has a linear trend, prove that

$$V(\bar{y}_n) : V(\bar{y}_n) : V(\bar{y}_n) :: \frac{1}{n} : 1 : n$$

(Or)

b) Explain Ratio to trend method and write its merits and demerits.

9. a) State Pareto's law of Income Distribution. Assuming Pareto's law derive concentration ratio.

(Or)

b) Define Index numbers. Describe the various steps in construction of Index numbers and uses of it.

Faculty of Science**B.Sc. (Statistics) III-Year, CBCS-V Semester Regular Examinations, Dec/Jan 2019-20****ELECTIVE PAPER-I: STATISTICAL QUALITY CONTROL AND RELIABILITY**

Time: 3 hours

Max Marks: 60

Section-AI. Answer any **Three** of the following questions (3x5=15 Marks)

1. Explain 3σ —control limits in detail.
2. Differentiate Variable and Attribute Control Charts.
3. Explain the Control limits for U-Chart with varying sample size.
4. Explain Natural tolerance limits and Specifications limits.
5. Explain producer's risk and consumer's risk.
6. Suppose from the lot 89 samples have drawn with lot fraction defective 0.01 and with Acceptance number 2 find the probability of Acceptance.

Section-B

II. Answer the following questions (3x15=45 Marks)

7. (a) Explain Statistical basis of Stewart control charts.
(OR)
(b) Explain in detail Mean chart .what purpose does it serve.
8. (a) Explain the construction of fraction defective chart per unit of length in detail.
(OR)
(b) Explain the construction U- chart in detail.
9. (a) Obtain the OC -curve for Double sampling plan .
(OR)
(b) Explain Reliability of series systems.
