

April 2025
B.A./B.Sc.
Fourth Semester
GENERIC ELECTIVE – 4
STATISTICS
Course Code: STG 4.11
(Applied Statistics)

Total Mark: 70

Pass Mark: 28

Time: 3 hours

Answer five questions, taking one from each unit.

UNIT-I

1. (a) Elucidate any two components of time series. 4
- (b) Explain the following methods of trend fitting: 3×2=6
 - (i) Graphic method
 - (ii) Fitting of straight line by least squares method
- (c) Describe the mathematical models of time series. 4
2. (a) What is meant by time series? Explain the importance of time series in business and economics. 1+3=4
- (b) Define trend in time series. Discuss the method of moving averages for measuring trend. 1+5=6
- (c) Describe different methods for determining seasonal fluctuations in a time series. 4

UNIT-II

3. (a) Explain in brief the problems involved in the construction of index number. 5
- (b) Show that Marshall Edgeworth index number lies between Laspeyre's and Paasche's index numbers. 5
- (c) Define index number and write some of its advantages. 1+3=4
4. (a) Explain simple aggregate method. 3
- (b) Briefly explain two criteria of a good index number. 8
- (c) With regard to Laspeyre's and Paasche's price index numbers, it is maintained that "if the price of all the goods change in the

same ratio, the two indices will be equal, for then the weighting system is irrelevant". Prove the given statement. 3

UNIT-III

5. (a) Briefly explain the importance of quality. 4
(b) What are the two types of variation? Differentiate between them. 2+4=6
(c) Set a control limits for fraction of defectives. 4
6. (a) What is the main purpose of statistical quality control? Write some of its benefits. 2+4=6
(b) Explain the criterion to detect lack of control in \bar{X} and R charts. 4
(c) How will you set a control limits for mean chart? 4

UNIT-IV

7. (a) With respect to demography define the following terms: 1×2=2
(i) Rates
(ii) Child women ratio
(b) Mention all the measurement of mortality and explain in detail any two methods with its merits and demerits. 2+4=6
(c) Explain all the columns for mortality table. Also, give four uses of mortality table. 4+2=6
8. (a) Define the following: 1×3=3
(i) Sex ratio
(ii) Dependency ratio
(iii) Infant mortality
(b) Explain two methods for measurement of fertility with its merit and demerit. 6
(c) Differentiate between standardized death rates and non-standardised death rate. 5

UNIT-V

9. (a) Describe demand and supply curves mentioning the uses and limitations of these curves. 7
(b) If the demand function $p = 4 - 5x^2$, for what value of x , will the elasticity of demand be unity. 3

- (c) State Pareto's law of income distribution and discuss its limitation. 4
 - 10. (a) Discuss about the laws of supply and demand. 5
 - (b) Write a short note on algebraic forms of Engel's curves. 4
 - (c) Explain price elasticity of demand. 5
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