



LUUPDATE

Lucknow University MBA (LUMBA)

First Semester Examination, 2026

(New Syllabus w.e.f. July 2026)

QUESTION BANK

Model Question Papers – 5 Sets (Set A – Set E)

QUANTITATIVE TECHNIQUES

Paper : MBACC101 (CORE) – 4 Credits

Time : 3 Hours

Maximum Marks : 70

Answer any five questions. All questions carry equal marks.

Unit	Topic Coverage
I	Data Collection - Primary and Secondary Data; Classification and Tabulation of Data; Descriptive Statistics - Mean, Median, Mode, Percentile, Quartile; AI tools for descriptive statistics; Indian Knowledge System in descriptive statistics (ancient data collection, census-taking and systematic organisation of data)
II	Measures of Variation - Range, Inter-Quartile Range, Mean Absolute Deviation, Variance and Standard Deviation; Correlation - Scatter Diagram, Karl Pearson's Coefficient of Correlation, Rank Correlation; AI in dispersion and distribution analysis; Indian Knowledge System - ancient Combinatorics, Prosody and Astronomy
III	Simple Regression Analysis - Regression Lines, Coefficient of Determination and Estimation, Trend Line; Probability - Methods of Assigning Probabilities, Joint and Conditional Probabilities, Addition and Multiplication Laws, Bayes' Theorem; AI in Predictive Modelling; Indian Knowledge System - Pingala's Chandahshastra

IV	Analysis of Categorical Data - Chi-Square Test of Independence and Goodness of Fit; Probability Distributions - Binomial, Poisson and Normal Distributions; AI for feature selection and model evaluation; Indian Knowledge System and the Chi-Square Test
V	Matrices - Types of Matrices, Matrix Operations, Adjoint and Inverse of a Matrix, Solving Linear Equations Using Matrix Method, Business Applications of Matrices; AI use of Matrices in Neural Networks; Indian Knowledge System - Kuttaka and Linear Equations

This question bank contains five model question papers (Set A to Set E), each with ten unified 14-mark questions balanced across all five units of the syllabus, prepared for practice ahead of the LUMBA First Semester Examination.



16101

LUMBA First Semester Examination, 2026

(New Syllabus w.e.f. July 2026)

QUANTITATIVE TECHNIQUES

Paper : MBACC101 (CORE)

[SET – A]

Time : 3 Hours]

[M.M. : 70

Note :- Answer any five questions. All questions carry equal marks.

Q.1. Distinguish between Primary Data and Secondary Data, and discuss the important methods of collecting primary data used in a business research study. **[14]**

Q.2. Discuss the various sources of secondary data available to a researcher, and explain the precautions that must be observed before using secondary data in an analysis. **[14]**

Q.3. Explain the meaning and computation of Range and Inter-Quartile Range as measures of dispersion, and discuss their merits and limitations. **[14]**

Q.4. Explain the meaning and computation of Mean Absolute Deviation, and discuss why it is considered a better measure of dispersion than the Range. **[14]**

Q.5. Explain the meaning and importance of Regression Analysis, and distinguish between the regression line of Y on X and the regression line of X on Y. **[14]**

Q.6. Explain the meaning of the Coefficient of Determination, and discuss how it is used, along with the concept of estimation, to judge the goodness of fit of an estimated regression line. **[14]**

Q.7. Explain the meaning and applications of the Chi-Square Test of Independence, and state the assumptions that must be satisfied before it can be validly applied. **[14]**

Q.8. Explain the Chi-Square Test of Goodness of Fit, and discuss, with an example, how it is used to test whether an observed frequency distribution conforms to an assumed theoretical distribution. **[14]**

Q.9. Explain the meaning of a Matrix, and describe the various types of matrices, such as row, column, square, diagonal, scalar, unit and null matrices, with suitable examples. **[14]**

Q.10. Explain the rules for Addition and Subtraction of Matrices, and illustrate with a suitable numerical example involving two matrices of order 2 by 2. **[14]**

16102

LUMBA First Semester Examination, 2026

(New Syllabus w.e.f. July 2026)

QUANTITATIVE TECHNIQUES

Paper : MBACC101 (CORE)

[SET – B]

Time : 3 Hours]

[M.M. : 70

Note :- Answer any five questions. All questions carry equal marks.

Q.1. Explain the meaning and objectives of Classification of Data, and discuss the various bases on which statistical data may be classified. **[14]**

Q.2. Explain the meaning and importance of Tabulation of Data, and describe the essential parts of a good statistical table with a suitable example. **[14]**

Q.3. Explain the meaning and computation of Variance and Standard Deviation for a grouped frequency distribution, and discuss the properties that make the Standard Deviation the most widely used measure of dispersion. **[14]**

Q.4. The daily wages (in Rs.) of 7 workers in a factory are: 200, 220, 210, 250, 240, 260, 230. Compute the Range, the Mean Absolute Deviation and the Standard Deviation of the wages. **[14]**

Q.5. Discuss the meaning and method of developing a Trend Line for a business time series using the method of least squares, and explain its use in business forecasting. **[14]**

Q.6. From the following data on Advertising Expenditure (X, in Rs. lakh): 2, 4, 6, 8, 10 and Sales (Y, in Rs. lakh): 20, 28, 35, 45, 50, fit a simple linear regression line of Sales on Advertising Expenditure, and use it to estimate the sales corresponding to an advertising expenditure of Rs. 12 lakh. **[14]**

Q.7. A company wishes to test whether product preference (Product A or Product B) is independent of the gender of the customer. A sample survey gave the following data: Male customers preferring A = 40, Male customers preferring B = 30; Female customers preferring A = 25, Female customers preferring B = 45. Set up the null and alternative hypotheses and calculate the expected frequencies required for applying the Chi-Square Test of Independence. **[14]**

Q.8. Explain the essential characteristics of the Binomial Distribution, and state the formula for computing the probability of exactly r successes in n independent trials. **[14]**

Q.9. Explain the rule for Multiplication of two matrices, and illustrate, with a suitable example, the condition that must be satisfied for two matrices to be conformable for multiplication. **[14]**

Q.10. Explain the meaning of the Adjoint and the Inverse of a square matrix, and describe the steps involved in computing the inverse of a matrix of order 3 by 3 using its adjoint. **[14]**



16103

LUMBA First Semester Examination, 2026

(New Syllabus w.e.f. July 2026)

QUANTITATIVE TECHNIQUES

Paper : MBACC101 (CORE)

[SET – C]

Time : 3 Hours]

[M.M. : 70

Note :- Answer any five questions. All questions carry equal marks.

Q.1. Define the Arithmetic Mean, state the direct and short-cut methods of computing it for a grouped frequency distribution, and discuss its merits and limitations as a measure of central tendency. **[14]**

Q.2. Explain the meaning and computation of Median and Mode for a grouped frequency distribution, and compare their suitability with the Arithmetic Mean under different business situations. **[14]**

Q.3. Explain the meaning and construction of a Scatter Diagram, and discuss how it helps in studying the nature and degree of correlation between two variables. **[14]**

Q.4. State the properties and computational formula of Karl Pearson's Coefficient of Correlation, and discuss the assumptions underlying its use. **[14]**

Q.5. Explain the classical, statistical (empirical) and subjective methods of assigning probabilities to an event, illustrating each with a suitable example. **[14]**

Q.6. Distinguish between Joint Probability and Conditional Probability, and state the Multiplication Law of Probability for both independent and dependent events. **[14]**

Q.7. In a quality control process, the probability that an item produced is defective is 0.1. If a random sample of 5 items is drawn, use the Binomial Distribution to find the probability that exactly 2 items in the sample are defective. **[14]**

Q.8. Explain the essential characteristics of the Poisson Distribution, and discuss the business situations in which it is more appropriate to use than the Binomial Distribution. **[14]**

Q.9. A firm produces two products using two raw materials. Explain, with a suitable numerical illustration of your own, how matrix representation and matrix multiplication can be used to determine the total raw material requirement of the firm. **[14]**

Q.10. Explain the Matrix Method of solving a system of simultaneous linear equations, and discuss the condition, in terms of the determinant of the coefficient matrix, under which a unique solution exists. **[14]**

LUMBA First Semester Examination, 2026

(New Syllabus w.e.f. July 2026)

QUANTITATIVE TECHNIQUES

Paper : MBACC101 (CORE)

[SET – D]

Time : 3 Hours]

[M.M. : 70

Note :- Answer any five questions. All questions carry equal marks.

Q.1. Explain the meaning and business significance of Percentiles and Quartiles, and describe the method of computing the median, quartiles and percentiles from a grouped frequency distribution. **[14]**

Q.2. The marks obtained by 10 students in a class test are: 32, 45, 28, 50, 38, 42, 35, 48, 40, 45. Compute the Arithmetic Mean, Median and Mode of the marks, and briefly comment on the shape of the distribution suggested by the relationship among the three measures. **[14]**

Q.3. Explain the meaning and computation of Spearman's Rank Correlation Coefficient, and discuss the circumstances under which it is preferred over Karl Pearson's Coefficient of Correlation. **[14]**

Q.4. The price (in Rs.) and demand (in units) of a commodity over five months are given as Price: 10, 12, 15, 18, 20 and Demand: 60, 55, 50, 42, 38. Compute Karl Pearson's Coefficient of Correlation between price and demand, and interpret the result. **[14]**

Q.5. State the Addition Law of Probability for mutually exclusive and non-mutually exclusive events, and illustrate each with a suitable business example. **[14]**

Q.6. State Bayes' Theorem and explain, with the help of a suitable numerical example, how it is used to revise prior probabilities of an event in the light of new information. **[14]**

Q.7. Explain the essential characteristics and properties of the Normal Distribution, and discuss the significance of the empirical rule relating to the areas under the normal curve within one, two and three standard deviations of the mean. **[14]**

Q.8. Discuss how Artificial Intelligence tools are used for feature selection and model evaluation in statistical and machine learning models, with reference to the role that the Chi-Square statistic plays in such processes. **[14]**

Q.9. Solve the following system of linear equations using the Matrix Inversion Method: $2x + y = 5$ and $3x + 2y = 8$. **[14]**

Q.10. Discuss the important business applications of matrices, such as in solving simultaneous equations for cost and revenue analysis, input-output analysis and linear programming problems. **[14]**



16105

LUMBA First Semester Examination, 2026

(New Syllabus w.e.f. July 2026)

QUANTITATIVE TECHNIQUES

Paper : MBACC101 (CORE)

[SET – E]

Time : 3 Hours]

[M.M. : 70

Note :- Answer any five questions. All questions carry equal marks.

Q.1. Discuss the growing role of Artificial Intelligence tools in the computation, visualization and interpretation of descriptive statistics for large business datasets. **[14]**

Q.2. Explain the contribution of the Indian Knowledge System to descriptive statistics, with reference to ancient Indian practices of data collection, census-taking and the systematic organisation of data, such as those described in the Arthashastra. **[14]**

Q.3. Discuss how Artificial Intelligence based tools automate the calculation and interpretation of measures of dispersion, correlation and distribution shape for large and complex business datasets. **[14]**

Q.4. Discuss the contribution of the Indian Knowledge System to areas allied with modern statistical thought, with reference to ancient Indian Combinatorics, the Prosody of Sanskrit poetry (Chandahshastra) and ancient Astronomy. **[14]**

Q.5. Discuss the growing applications of Artificial Intelligence in predictive modelling, with reference to the role that regression analysis and probability theory play as its statistical foundation. **[14]**

Q.6. Discuss the contribution of the Indian Knowledge System to the conceptual foundations of probability and combinatorics, with special reference to Pingala's Chandahshastra and its treatment of permutations and combinations in Sanskrit prosody. **[14]**

Q.7. Discuss how researchers working within the Indian Knowledge System framework apply the Chi-Square Test to examine whether people's choices, beliefs or practices are associated with their social or cultural background. **[14]**

Q.8. Distinguish between discrete and continuous probability distributions, illustrating your answer with reference to the Binomial, Poisson and Normal Distributions. **[14]**

Q.9. Discuss how Artificial Intelligence and Machine Learning techniques, particularly Neural Networks, make extensive use of matrices for representing data, weights and for performing the underlying computations. **[14]**

Q.10. Discuss the contribution of the Indian Knowledge System to the mathematical foundations of matrix algebra and linear equations, with special reference to the ancient Indian method of Kuttaka used for solving linear indeterminate equations. **[14]**

