

**St. Xavier's College (Autonomous), Kolkata**  
**Department of Statistics**  
**M.Sc. in Data Science**  
**2024**

**PAPER STRUCTURE AND SYLLABUS FOR ENTRANCE TEST**  
**Time: 2 ½ Hours**

	<b>Section A</b>	<b>Section B</b>	<b>Total</b>
<b>Paper Structure for the Entrance Examination</b>	30 Multiple Choice (MCQ) type questions carrying 3 Marks each.	1 long answer type Question carrying 10 marks.	100
	30x3 = 90	10x1 = 10	
	All questions are compulsory.	1 out of 3.	

**Syllabus for the Entrance Examination**

**MATHEMATICS**

Natural numbers & Integers. Divisibility rules. Factorisation and Primes. HCF & LCM. Arithmetic and Geometric progression. Arithmetic, Geometric and Harmonic mean. Matrices & Determinants. Real Vector Spaces. Solution of System of Linear equations. Eigen Values and Eigen Vectors. Real Quadratic Forms. Basic ideas of functions. Logarithm & Exponential function. Elementary Calculus. Sets and relations. Combination and permutation. Elementary Counting Techniques, Binomial theorem, Mathematical induction, Boolean logic.

**PROBABILITY AND STATISTICS**

Classical definition of probability and problems; Conditional probability; Bayes theorem; Independence of events; Random variables; Mass and Density functions; Distribution function; Expectation & Variance; Standard Probability Distributions.

Data and its types; Scales of measurement; Graphical presentation; Elementary summary measures of central tendency and dispersion; Correlation and regression; Simple random sampling for a finite population; Unbiasedness and minimum variance estimation; Method of Moments and Maximum Likelihood Estimation; Elements of Testing and interval estimation; Tests of significance; Likelihood Ratio Test; ANOVA; Pearsonian Chi-square.

**COMPUTER SCIENCE**

Basic computing and programming concepts; Digital logic; Algorithms and Data Structure; Database Management System.