ST. XAVIER'S UNIVERSITY, KOLKATA

Syllabus for PG Admission Test – 2024

M.COM, M.A. in English, M.A. in Mass Communication, M.S.W., M.A. in Economics, M.A. in Psychology, M. Sc. in Statistics and M. Sc. in Computer Science

Total Marks: 100

Time: 2 hours

Question Pattern

- MCQ
- Each question will carry One (1) mark.
- No negative marking

Course: M. COM

1. Quantitative Techniques -   20 marks
2. Accounting and Finance -   30 marks
3. Management -   30 marks
4. Economics-   20 marks

Course: M.A. in English

1. Grammar and vocabulary (20 marks)

2. Comprehension (20 marks)

3. Authors from British literature, American literature and Indian writing in English (10 marks)

4. Title of works: British literature, American literature and Indian writing in English (10 marks)

5. History of English Literature, trends and literary movements: British literature (10 marks)

6. Overview of American literature and Indian writing in English (10 marks)

7. Literary types and genres—Classical and British literature (10 marks)

8. Critical analysis, analysis of style, common rhetoric (10 marks)

Course: M.A. in Mass Communication

PART A:

Current affairs and General knowledge (50 Marks)
- Sports
- Politics
- Communication and Media related matters
- Film and Entertainment
- Advertising
- Prominent personalities
- National & International affairs

PART B:

General English (25 Marks)
- Vocabulary
- Prepositions
- Voice change
- Common phrasal verbs
- Synonyms and antonyms
- One word answer
- Use of articles
- Comprehension

Logical Reasoning (25 Marks)

Course: M.S.W.

1. General Knowledge and Current Affairs -   20 marks
2. Govt. Policies and Laws   -   20 marks
3. Indian Polity   -   20 marks
4. Logical Reasoning   -   20 marks
5. Social Problems   -   20 marks

Course: M.A. in Economics

Economics (50 marks)

Microeconomics: Theory of Consumer behaviour, Theory of Production & Costs, Market structure under perfect
competition, monopoly, price discrimination, monopolistic competition, duopoly with cournot, stackelberg and bertrand competition, public goods, externalities, general equilibrium, welfare economics.

Macroeconomics: National income accounting, simple Keynesian Model of income determination and the multiplier, IS-LM Model, Complete Keynesian model, models of aggregate demand and aggregate
supply, money, banking and inflation, Phillips Curve, open-economy macroeconomics, Growth model.

International Economics: Gains from trade, Ricardian model of trade, H-O-S model of trade, Trade policies, Open economy simple Keynesian model, Mundell-Fleming model.

Development Economics: Measure of inequality and poverty, Dual economy models.

Introductory Econometrics*:* SLRM, MLRM, Violation of classical assumptions, Regression Diagnostics and Specification, Dummy variable.

Indian Economy*:* Economic Reforms in India, Growth and Distribution.

Statistics and Mathematics for Economics (50 marks)

A. Set, Relation and Number theory, A.P., G.P., Binomial Theorem, Permutations and Combinations, Theory of Polynomial Equations, Function, Series, Sequence, Limit, Continuity, Differentiability, Mean value theorem, Matrices and Determinants, Vector space and subspaces, Definite and Indefinite Integrals, Convexity and quasi-convexity, The implicit function theorem, Homogeneous and Homothetic functions, Optimization, Difference and Differential equation, level curves, Unconstrained and Constrained Optimization.

B. Probability, Probability distributions, Measure of central tendency and dispersion, Correlation and Regression, Sampling theory, Inference, Index number.

Course: M.A. in Psychology

1. English Usage -   20 Marks
2. Analytical Ability -   30 Marks
3. Understanding Human Behaviour -   50 Marks

Course: M. Sc. in Statistics

Statistics (70 marks)

Probability: Set theory; Permutation and combination; Theory of Probability; Approaches to the calculation of probability; Calculation of event probabilities. Addition and multiplication laws of probability; Conditional probability, Theorem of total probability along with Bayes' theorem and independence of events.

Random Variables: Probability mass function and density function; cumulative distribution functions Mathematical expectation, variance, moments and moment generating function, skewness and kurtosis.

Standard Distributions: Uniform, Binomial, Poisson, Normal and Exponential Distributions

Joint Distributions: Joint, marginal and conditional distributions; Distribution of functions of random variables; Meaning of simple, multiple and partial, linear and non-linear correlation; Product moments correlation coefficient and its properties; Simple linear regression, Principle of least squares and regression lines, Regression equations and estimation, Properties of regression coefficients; Relationship between Correlation and Regression coefficients; Independence of random variables.

Sampling Theory: Populations and samples, Parameters and Statistics, Descriptive and inferential statistics; Random and non-random sampling techniques; Simple random sampling, Stratified sampling, Cluster sampling, Two-phase Sampling, Two-Stage sampling, Systematic sampling, Purposive sampling, Convenient sampling, Quota sampling and Snowball sampling; Description and statement of unbiased estimate of population mean and sampling variance, Sampling distributions of Sample Mean and Sample Variance; Central limit theorem.

Estimation: Concept of point estimation; Properties of a good estimator (unbiasedness, consistency, efficiency and sufficiency); Minimum Variance Unbiased Estimator; Methods of estimation (Methods of moments, Method of maximum likelihood and Least squares method). Concept of Interval estimation and Confidence intervals for population mean and proportions.

Testing of Hypothesis: Basic concepts of hypothesis testing; Small sample and large sample parametric tests based on Z, t, Chi-square and F statistic for population means and proportions.

Mathematics (30 marks)

Differential Calculus: Concepts of limit, and continuity of a function; Concept and rules of differentiation, Application of differentiation, rate measure, slope, increasing and decreasing functions, Partial derivatives up to second order; Homogeneity of functions and Euler's theorem; Total differentials; Differentiation of implicit functions with the help of total differentials.
Maxima and Minima involving second or higher order derivatives.

Integral Calculus: Standard forms, Fundamental theorems of integral calculus; Methods of integration – by substitution, by parts, and by use of partial fractions; Definite integration; Finding areas in simple cases.

Matrices: Algebra of matrices. Inverse of a matrix, Matrix Operation – Business Application, Rank of a Matrix; System of linear equations using matrix inversion Method and Cremer's Rule; Linear transformations, eigenvalues and eigenvectors to Cayley-Hamilton theorem.

Course: M. Sc. in Computer Science

Basics of Computer Science   **70 Marks**

Group A (20 Marks)

Programming and Data Structures: C Programming (Variables, Constants, Operators, Branching and Looping, Functions, Structures, Pointers). Data Structures (Array, Linked List, Stack, Queue, Tree)

Python Programming: String, List, Tuples, Dictionary, Set, Branching and Looping, Functions

Group B (50 Marks)

Computer Fundamentals and Digital Logic Design: Hardware, Software, Flowchart, Algorithms, Pseudo Code, Number Systems, Boolean Algebra, Logic Gates, Adder, Multiplexer, Encoder, Decoder, Flip Flop

Computer Organization: Von Neumann Architecture, Instruction Types, Addressing Modes, Instruction Cycle, Booth's Algorithm, Hardwired and Microprogrammed Control Units, Interrupts, Types of memory

Operating System: Types of OS, CPU Scheduling, Synchronization, Deadlock, Paging, Virtual Memory

Database Management System: ER Model, Relational Model, Normalization, SQL

Networking: OSI and TCP/IP Models, Network Topology, Transmission Media, IP Addressing

Computational Mathematics   **30 marks**

Algebra: Determinants, Matrices, Vector Algebra, Dot Product and Cross Product of Vectors, Congruence relation on integers, Eigen Values, Eigen Vectors

Calculus: Limits, Continuity, L'Hospital's Rule, Derivatives of common functions, Chain Rule of Differentiation, Maxima and Minima, Evaluation of definite integrals, Roll's Theorem, Lagrange's Theorem

Coordinate Geometry: Equations of line, circle, parabola and ellipse

Numerical Methods: Significant Figures, Rounding off rules, Types of errors, Forward Difference Operator, Backward Difference Operator, Shift Operator, Interpolation, Numerical Integration,

Probability and Statistics: Elements of Probability Theory, Classical Definition of Probability, Conditional Probability, Baye's Theorem, Random Variable, Uniform and Gaussian Distributions, Mean, Median, Standard Deviation, Percentile, Skewness, Kurtosis