STATE ENTRANCE EXAMINATION
UTTAR PRADESH TECHNICAL UNIVERSITY
IET Campus, Sitapur Road, Lucknow

SYLLABUS (PG Courses)

UPSEE – 2014

For Admission to

FIRST YEAR in MBA/MCA/MAM (Dual Degree)
And
2nd YEAR IN MCA (Lateral Entry) only

PAPER – 9 (APTITUDE TEST FOR MBA)

The test is aimed at evaluating the verbal ability, quantitative aptitude, logical & abstract reasoning and knowledge of current affairs. The following is a brief description of contents of the test paper.

Section A (English Language): Grammar, vocabulary, uncommon words, sentence completion, synonyms, antonyms, relationship between words & phrases and comprehension of passages.

Section B (Numerical Aptitude): Numerical calculation, arithmetic, simple algebra, geometry and trigonometry, Interpretation of graphs, charts and tables.

Section C (Thinking and Decision Making): Creative thinking, unfamiliar relationships, verbal reasoning, finding patternstrends and Assessment of figures & diagrams.

Section D (General Awareness): Knowledge of current affairs and other issues related to trade, industry, economy, sports, culture and science.

PAPER – 10 (APTITUDE TEST FOR MCA)

(i) MATHEMATICS

Modern Algebra: Idempotent law, identities, complementary laws, Demorgan's theorem, mapping, inverse relation, equivalence relation, Piano's Axiom, definition of rational numbers and integers through equivalence relation.

Algebra: Surds, solution of simultaneous and quadratic equations, arithmetic, geometric and harmonic progression, Binomial theorem for any index, logarithms, exponential and logarithmic series, determinants.

Probability: Definition, dependent and independent events, numerical problems on addition and multiplication of probability, theorems of probability.

Trigonometry: Simple identities, trigonometric equations, properties of triangles, use of mathematical tables, solution of triangles, height and distance, inverse functions, DeMoiver's theorem.

Co-Ordinate Geometry: Co-ordinate geometry of the straight lines, pair of straight lines, circle, parabola, ellipse and hyperbola and their properties.

Calculus: Differentiation of function of functions, tangents and normal, simple examples of maxima of minima, limits of function, integration of function (by parts, by substitution and by partial fraction), definite integral (application to volumes and surfaces of frustums of sphere, cone and cylinder).

Vectors: Position vector, addition and subtraction of vectors, scalar and vector products and their applications.

Dynamics: Velocity, composition of velocity, relative velocity, acceleration, composition of acceleration, motion under gravity, projectiles, laws of motions, principles of conservation of momentum and energy, direct impact of smooth bodies, pulleys.

Statics: Composition of co-planar, concurrent and parallel forces, moments and couples, resultant of set of coplanar forces and conditions of equilibrium, determination of Centroides in simple case, problems involving friction.

(ii) STATISTICS
Theory of probability, Mean, Median, Mode, Dispersion and Standard Deviation.

(iii) LOGICAL ABILITY
Questions to test analytical and reasoning capability of candidates.

PAPER- 11
APTITUDE TEST FOR MASTER IN APPLIED MANAGEMENT (MAM)
(Dual Degree course 5 years)

The test is aimed at asses the language, quantitative aptitude, logic and reasoning power and general knowledge of candidates.

Section A (**English Language**): Grammar, Vocabulary, Synonyms, Antonyms, Sentence Completion and Pharses, Comprehension of Passages.

Section B (Numerical Aptitude): Arithmetic's, Algebra, Geometry, Trigonometry, Interpretation of Graphs, Charts and Tables.

Section C (Mental Ability): Reasoning Aptitude, Patterns, Trends, Recognition and Assessment of Figures and Diagrams.

Section D (General Knowledge & Current Affairs): Political Awareness, Economic Affairs and Business Environment, General Awareness of Sciences, Sports and Games, Society, History, Geography, Civilzation and Culture.

PAPER 12
APTITUDE TEST FOR 2nd Year MCA (Lateral Entry)

(I) MATHEMATICAL STRUCTURES

Modern Algebra and Matrices: Algebraic structures and general properties, semigroups, groups. Rings and Fields: definitions, elementary properties and standard results. Matrices, operation on matrices, Inverse and rank of a matrix, Eigen values, eigenvectors and system of linear equations.

Set Theory: Introduction, sets and cardinals, combination of sets, multisets and set identities. Relations - definition, operations on relations, composite relations, properties of relations, partial order relations. Functions - definition, classification of functions, operations on functions, recursively defined functions.

Number Theory and Methods of Proof: Natural numbers, factorization and prime numbers, floor and ceiling functions. Methods of proof – Introduction, direct and indirect methods of proof, mathematical Induction.

Combinatorics and Probability: Introduction, counting techniques, Pigeonhole principle. Probability –definition, sample space, algebra of events, axioms of probability, prior and posterior probability, Bayes theorem.

(II) COMPUTING CONCEPTS

Principles of Computer Science: Computer organization - evaluation of computers, computer arithmetic, control design, processor design, input output organization, memory organization. Data Structures – Arrays, lists, stacks, queues. Trees and graphs - definition, properties and applications. Analysis of algorithms.

Proposition logic and Boolean Algebra: Propositions, truth tables, tautology, contradiction, algebra of propositions. Binary systems, axioms and theorems of Boolean algebra, Boolean functions and digital circuits.

Numerical Techniques: Floating point Arithmetic, solution of the system of linear equations, roots of polynomials, interpolation and curve fitting.

Theory of Computation: Finite-state machines, regular and non-regular languages, Turing machines and applications.

(III) REASONING ABILITY
Questions in this part will be aimed to asses the reasoning and logical ability of the candidates.