SYLLABUS FOR M. TECH ADMISSION IN PRINTING ENGINEERING AND GRAPHIC COMMUNICATION

MATHEMATICS AND NUMERICAL ANALYSIS 10

Integration by resolution into partial fractions. Some elementary properties of definite integrals (to be defined as the limit of a sum) Lengths and areas of plane curve. Numerical integration by Trapezoidal and Simpson's rules

Linear Algebra **:** Determinates, Solution of liner equations using determinants. Matrices: Definitions, operations and solution of equations.algebra of matrices, rank, inverse, system of linear equations, symmetric, skew-symmetric and orthogonal matrices. Hermitian, skew-hermitian and unitary matrices. eigenvalues and eigenvectors, diagonalisation of matrices, Cayley-Hamiltonian, quadratic forms.

Probability and Statistics: Set theory and elements of Boolean algebra, Definitions of probability and simple theorems, conditional probability, mean, mode and standard deviation, random variables, discrete and continuous distributions, Poisson, normal and Binomial distribution, correlation and regression

Numerical Methods: Truncation errors, round off errors and their propagation; Interpolation; Lagrange, Newton's forward, backward and divided difference formulas, least square curve fitting, solution of non-linear equations of one variables using bisection, false position, secant and Newton Raphson methods; Rate of convergence of these methods, general iterative methods. Simple and multiple roots of polynomials. Solutions of system of linear algebraic equations using Gauss elimination methods, Jacobi and Gauss-Seidel iterative methods and their rate of convergence; ill conditioned and well conditioned system. eigen values and eigen vectors using power methods. Numerical integration using trapezoidal, Simpson's rule and other quadrature formulas. Numerical Differentiation. Solution of boundary value problems. Solution of initial value problems of ordinary differential equations using Euler's method, predictor corrector and Runge Kutta method.

Ordinary Differential Equations: First order exact and linear equation, initial and boundary value problems, Laplace transforms. Solution of linear differential equation with constant coefficients by Laplace transform,

Sequence and infinite series, convergent and divergent series, comparison tests, D'Alembert's ratio test, Cauchy's root test.

Fourier Series.

Vector Calculus: Vectors, position vectors, addition and subtraction of vectors, components of a vector.

GENERAL APTITUDE 5

Verbal Ability: English grammar, sentence completion, verbal analogies, word groups, instructions, critical reasoning.

PROGRAMMING LANGUAGE 5

Programming : Elementary concepts and terminology of a computer system and system software, C programming.

PRINTING TECHNIQUES **5**

An introduction to different printing processes such as letter press, lithography/offset, gravure, intaglio, flexography, and screen printing. Introduction to digital printing, thermal printing, laser printing, ink jet printing etc.

WEB TECHNOLOGY **5**

History of the Internet and World Wide Web – HTML 4 protocols – HTTP, SMTP, POP3, MIME, IMAP. XML, Parsers.

ELECTRICAL TECHNOLOGY **5**

Electrical units, Dimensions, DC and AC circuits, DC Generators and Motors, Motor starters, Electrical measuring instruments, Different types of lamps used in printing, Hg-Vapour, Metal halide and Halogen lamps.

ELECTRONICS **5**

Pulse, Digital waveform characterisation, duration and period, Rise and fall time; overshoot and undershoot, linearity of sweep and its measure, etc. Basis logic gates: AND, OR, NOT, NAND, NOR, EXOR etc. Logical symbols and truthtables. Boolean algebra, and DeMorgans theorem. Introduction to computer system design, CPU memory, I/O and peripheral Interface (Block level).

COLOUR AND IMAGING SCIENCE **5**

Fundamentals of Color, Importance of Definitions of color: Hue,Brightness and Lightness, Colorfulness and Saturation, Additive and subtractive principles of color. Introduction To Digital Imaging: Conventional vs digital images. Image capturing and output devices. Digital Images: Vector and bitmap graphics.

ENVIRONMENTAL SCIENCE **5**

Different types of pollution. Overview of pollution control strategy.