**Directorate of Information Technology, University of Kashmir**

*Entrance Syllabus for M.Sc. IT*

**Unit-I** (4 Marks)

Noun, pronoun, Verbs (Lexical& Auxiliary), Verb Tenses, Adjectives & Adverb, Preposition, Conjunction, Phrases and Clause, Sentence Types, Transformations, Word meanings, synonym, antonym, Root words, one word substitutes, Phrasal Verbs, Idioms, Word games – Vocabulary development.

**Unit-II** (4 Marks)

English comprehension: English composition. Fact Inference Judgment, Fill in the blanks, Grammar, Para Completion, Para Jumble, Sentence Correction, Verbal Reasoning, Analogies and Reverse Analogies, Synonyms Antonyms (Vocabulary Based), etc.

**Unit-III** (4 Marks)

Analogy, Classification, Series, Coding-Decoding, Blood relations, Direction Sense Test, Logical Venn Diagrams, Alphabet Test Sitting arrangements, mathematical operations Arithmetical reasoning

Inserting the Missing Character, Number, Ranking and time sequence Test, Eligibility Test

Data Interpretation, Bar Graph, Combination of Graphs, Case let, Data Sufficiency, Line Graph, Pie Chart, Tables, etc.

**Unit-IV** (4 Marks)

Syllogism Statement and arguments statement and assumptions statement nd courses of action statement and conclusions Deriving conclusion assetion and reason puch lines situation reaction tests cause and effect Analytical reasoning Assumptions, Blood Relations, Binary Logic.

**Unit-V** (4 Marks)

Arithmetic progression, Arithmetic mean, Average, Angles, triangles, sphere's rectangles, cubes, cone, BODMAS, Clocks, Geometric progression, Geometric mean, HCF and LCM, Harmonic mean, Installment and payments ,Lines, Median, Mode, Percentage, Partnership, Profit and loss, Ratio and proportion, Partnership, Pipe and cisterns, Speed and distance, Work & time.

*Entrance Syllabus for M.Sc. IT*

**Unit-VI** (4 Marks)

Algebra: Fundamentals operations in Algebra, Expansion, factorization, quadratic equations, indices, logarithms, arithmetic, geometric and harmonic progressions, binomials theorem, permutations and combinations.

**Unit-VII** (4 Marks)

Co-ordinate Geometry: Rectangular Cartesians co-ordinates, equations of a line, midpoint, intersections etc., equations of a circle, distance formulae pair of straight lines parabola, ellipse and hyperbola, simple geometric transformations such as translation, rotation, scaling.

**Unit-VIII** (4 Marks)

Differential equations: Differential Equations of first order and their solutions, linear differential equations with constant coefficients. Homogenous linear differential equations.Trigonometry: simple identities, trigonometric equations, properties of triangles, solution of triangles, height and distance, inverse function.

**Unit-IX** (4 Marks)

Probability and Statistics: Basic concepts of probability theory, Averages, Dependent and independent events, frequency distributions, and measures of dispersions, skewness and kurtosis, random variable and distribution functions, mathematical expections, Binomial, poisson, normal distributions, curve fitting, and principles of least squares correlation and regression.

**Unit-X** (4 Marks)

Basic Set theory and Functions: Set, relations and mappings. Mensuration: areas, triangles and quadrilaterals, area and circumference of circle, volumes and surface areas of simple solids and cubes, spheres, cylinders and cones. Matrices: Determinants, Addition, Multiplication, Transpose, Inverse, Rank of a matrix and other basic operations, Differential and integral Calculus:

*Entrance Syllabus for M.Sc. IT*

**Unit-XI** (4 Marks)

Computer Fundamentals: History of computer, characteristics of computer, classification of computer. Applications of computer, organization of a computer, hardware, Software, Fimware, Central processing Unit (CPU), Input/ Output devices. Secondary storage devices, Memory organization, back up devices. Intrroduction to internet and email. Functions of operationg system. Classification of operating system. Viruses- Types and Control measures.

Data Communication and Networking: introduction, Data Transmission concepts-simple, half Duplex, Full Duplex. Bandwidth and Channel capacity. Analog and Digital Signals. Transmission media- Twisted pair, coaxial cable, optical fiber, terrestrials and satellite communication. Computer Network- Classification, Toologies. OSI and TCP/IP model-Basic concept and comparsion.

**Unit-XII** (4 Marks)

Data Representation : Representation of characters, integers, and fractions, binary decimal, octal and hexadecimal representations and inter-conversions, Binary Arithmetic- Addition, Subtraction, division, multiplication. One's complement arithmetic and two's  complement arthematic, floating point representation, Boolean algebra, truth tables, Venn diagrams. Computer Architecture: organization of CPU, Hardwired and micro- programmed CU, Register organization and instruction formats. Instruction set0register transfer, arthematic, logic and shift operations. Addressing modes, memory management Associative memory, cashe, virtual memory , introduction to 8086 instruction set.

**Unit-XIII** (4 Marks)

Computer programming in C and C++: C- language fundamentals, Basic Constructs- Loops. Control statement, Arrays, Functions, Structures and unions, Pointer, Files. Object oriented paradign (OOPs) Classes, objects, Abstraction, Polymorphism, Inheritance, Encapsualtion, Constructors, Destructors inline and friend function dynamic and static binding, virtual class, virtual functions, operator overloading and function overloading. Operating System Basics: introduction, Classification of OS, process Management, memory management, IO management.

**Directorate of Information Technology, University of Kashmir**

*Entrance Syllabus for M.Sc. IT*

Data Structures: introduction, Algorithmic Compexity, stacks, queues, linked lists, sorting techniques and searching Techniques: Quick sort, merge sort, heap sort, bubble sort, selection sort, and insertion sort. Linear and binary search algorithms. Trees and Graph terminology and representation in memory, binary tree, traversal techniques of graphs.

## Unit-XIV (4 Marks)

DBMS: introduction, Database Vs File systems, DB Users, DBMS- Basic concepts and Terminology, models and Architecture. Relational algebra and Relational DBMS, Normalization. Elements of structured query language. Transaction Management , Concurrency control techniques, Different Types of Files like sequential, index based files, etc.

System Analysis, Design and implementation: introduction, SDLC, phase of system Development life cycle, structured Analysis, Elements of Design-DFD, Process descriptions, Data dictionary. ER diagram. System planning and Feasibility Analysis. Project management-PERT and CPM. CASE Tools.

## Unit-XV (4 Marks)

Windows programming: introduction, visual Basic-IDE, design basics, data types, variables, subroutines, functions, arrays, collections. Control and looping structures. ActiveX controls  and OLE-Basic concept. Database- connectivity, access, Data bound controls.

Multimedia and Web Designing: introduction, multimedia basics, design, applications, building blocks. Multimedia file formats-BMP, JPEG, TIFF, GIF, TGA, AVI, MPEG, WAV. Vector and Rster graphics. Image- Resolution, . Pixel depth, color palettes, aspect ratio. Animation and its techniques. HTML- frames, tables, images, etc. FORM Elements. Frontpage.