SYLLABUS FOR ENTRANCE TEST FOR ADMISSION TO Ph.D. COURSE IN
COMPUTER SCIENCE & APPLICATIONS (w.e.f. 2019-20)

Marks: 200

Time: 2 Hours

Instructions for Paper Setters: Paper will consist of 100 Multiple Choice Questions, spread uniformly throughout the syllabus. For each correct response, the candidate will get 2 marks. There shall be no negative marks for incorrect response. No marks will be given for unanswered questions.

Statistics: Frequency distributions; Graphical Representation; Measures of Central tendency: arithmetic mean, geometric mean, harmonic mean, weighted mean, median, mode; Measures of Dispersion: Skewness, Kurtosis; Probability: Sample space, Event, Mathematical Notation, Laws of probability, types of events, Bayes Theorem; Correlation; Regression.

Simulation: Analog vs. Digital simulation, Continuous & discrete system simulation, Simulation of Hypothetical Computer, Inventory system & Corporate system, simulation of PERT, Generation of uniform & Non- uniform random number, Monte Carlo method, Design of experiment, simulation languages.

Optimization: Linear Programming: LPP in the standard form, canonical forms, conversion in standard form, Simplex prevention of cyclic computations in Simplex & Tableau, Big-M method, Dual Simplex & revised simplex.

Programming Languages: Paradigms, Data types, operations, Expressions, Control structures, I/O statements, Parameter parsing techniques. Language constructs for object-oriented, functional, logic & concurrent programming, Chomsky hierarchy of formal languages, finite automata & pushdown automata.

Software Engineering: Development models, Metrics, Software Project Management, Analysis, Design: System design, detailed design, function-oriented, Object-oriented analysis & design, user interface design, Coding & Testing, Software quality & reliability, Object Modeling Technique (OMT) methodology, UML.


Data Structure: Arrays, String, Linked Lists - Singly, doubly & Circular List; Stacks, Queues, Priority Queues: Representation & Manipulation; Trees: Binary & Threaded Trees, traversal, Binary Search Tree, Huffman & AVL Trees, B Trees; Graphs: Adjacency Matrix, Path Matrix, Linked Representation, traversal; Searching & Sorting techniques.


