



GULBARGA UNIVERSITY, KALABURAGI  
DEPARTMENT OF COMPUTER SCIENCE

SYLLABUS FOR  
M.Phil and Ph.D Entrance Test-2016  
in  
COMPUTER SCIENCE



Approved by the B.O.S vide Resolution No. 3 dated 19.11.2016

  
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GULBARGA UNIVERSITY  
KALABURAGI - KARNATAKA



## Programming in JAVA

### UNIT- V

Creating and executing Java Applets, Inserting applets in a Web page, Java Thread models: priorities, synchronization, messaging, thread class, Runnable interface, Interthread communication, suspending, resuming and stopping threads, reading and writing from console and files using standard Java Packages, AWT Classes, Event Handling and Swing classes, AWT Programming, Working with windows, Graphics and Text, Layout managers and menus, Handling image, animation, sound and video, the Delegation Event Model, Event Classes, Event Listener interfaces, Adapter and Inner Classes, Java Swings, JDBC connectivity with a backend database, RMI –Two tier and Multi-tier Architecture, Object serialization, Programming using Java RMI Classes and interfaces, Servlets-Background.

### Data Communications and Computer Networks

Components of Data Communications, ISO / OSI model, RS232 Interfacing sequences, Error detection and correction techniques, Parity, LRC, CRC, Hamming code, low Control and Error control, stop and wait, go back-N ARQ, selective repeat ARQ- sliding window, HDLC, Packet Switching and Datagram approaches, IP addressing methods, Sub netting, Distance Vector Routing, Link State Routing and Routers, Multiplexing and De-multiplexing, User Datagram Protocol (UDP), Transmission Control Protocol (TCP), Congestion Control, Quality of services (QOS), Domain Name Space (DNS), SMTP, FTP

### Computer Graphics

### UNIT- VI

Basic raster graphics algorithms for drawing 2D primitives, scan converting lines, circles and ellipses, 2D transformations, homogeneous coordinates, matrix representation of 2D transformations, window-to-viewport transformation, 3D-transformations, composition of 2D and 3D transformations, Polygon meshes, parametric cubic curves, techniques for efficient visible surface algorithms, algorithms for visible line determination, the z-buffer algorithm, list-priority algorithm, scan-line algorithm, area-subdivision algorithm, algorithm for octrees and curved surfaces, visible surface ray tracing.

### Internetworking and Web Design

Internet architecture, concept of Universal service, virtual networks, protocols for internetworking, IP addressing scheme, IP address hierarchies classes of IP addresses and dotted decimal notation, IP encapsulation, fragmentation and reassembly, Characterization of features in Ipv6, Ipv6 datagram format, Ipv6 base header format, fragmentation reassembly and path MTU, Ipv6 addressing, Ipv6 colon hexadecimal notation, An error reporting mechanism (ICMP), Web page building blocks and XML, Client-Server interaction, CGI technology for dynamic web documents, JAVA Script programming language concepts, creating JavaScript source file, hiding JavaScript from incompatible browsers, JavaScript with CSS styles, document object model, Java Applets and embedded data.

### Software Engineering

### UNIT- VII

Software characteristic and components, software engineering layered technology, software process models, software Measures, Metric indicators, metric in process and in the project domains, software quality assurance, Requirement analysis and analysis principles, software prototyping & Specification, mechanics of structured analysis, software Engineering design process and Design principles, Design methods, Software Testing Methods and its principles, Test case design, White box testing, basis path testing, control structure testing, black box testing, Software testing strategies.

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## Artificial Intelligence

### UNIT- VIII

Artificial Intelligence Techniques, problem solving state space search-DLF, BFS Generate and Test, Hill Climbing, Best First Search, Knowledge representation & mapping, approaches to knowledge, issues in knowledge representation, Representing simple facts in logic, representing instance and relationships, Resolution and natural deduction Representing knowledge using rules, Procedural v/s Declarative knowledge, Logic programming, Forward v/s Backward chaining, Matching & control knowledge, Prolog- objects, relationships, facts, rules and variables, representing objects & relationships by using "trees" and "lists", Syntactic processing parsing techniques, semantic analysis case grammar, augmented transition net, discourse & pragmatic processing, translation.

## Data Warehousing and Mining

### UNIT-IX

Fundamentals of data mining, Data Mining Functionalities, Data Warehouse and OLAP Technology for Data Mining and Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Needs of Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, Characterization and Comparison of Data, Analytical Characterization, Discriminating between Different Classes, Mining Descriptive Statistical Measures in Large Databases, Association Rule Mining, Mining Single-Dimensional Boolean Association Rules from Transactional Databases, Mining Multilevel Association Rules from Transaction Databases, Mining Multidimensional Association Rules from Relational Databases and Data Warehouses, Classification by Decision Tree Induction, Bayesian Classification, Classification by Back propagation, Classification Based on Concepts from Association Rule Mining, Other Classification Methods, Cluster Analysis, Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Density-Based Methods, Grid-Based Methods, Model-Based Clustering Methods, Multidimensional Analysis and Descriptive Mining of Complex, Mining of Multimedia Databases, Mining of Time-Series and Sequence of Data, Mining Text Databases, Mining the World Wide Web.

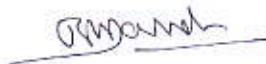
## Optimization Techniques

### UNIT-X

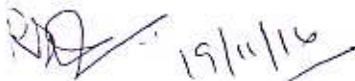
Two variable LP model, Graphical LP solution, LP model in equation form, the simplex method, two-phase method, special cases in simplex method, dual simplex method, generalized simplex algorithm, the transportation algorithm, the assignment model of the Hungarian method, minimal spanning tree algorithm, shortest-route problem, maximal flow model, CPM and PERT.

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1. Dr. B.V.Dhandra



2. Dr. P. Nagabhushan



19/11/16

3. Sri. Shivanand Rumma



19/11/16