MCIT - 101 MATHEMATICAL FOUNDATIONS OF INFORMATION TECH

Unit 1

Uncertainty, Information and Entropy Information Measures Characteristics on information measure, Shannon's concept of information, Shannon's measure of information, Model for source coding theorem communication system: Source coding ad line / channel coding, channel mutual information capacity (Bandwidth).

Unit 2

Channel coding, Theorem for discrete memory less channel, Information Capacity theorem: Error detecting & error correcting codes, types of codes: Block codes, Tree codes, Hamming and Lee Metrics, Description of linear block codes by matrices, Description of linear tree codes by matrices, Parity check codes, and Parity check polynomials.

Unit 3

Introduction to Fuzzy Sets – Basic Definition and Terminology – Set-theoretic operations – Member Function Formulation and parameterization – Fuzzy Rules and Fuzzy Reasoning - Extension principle and Fuzzy Relations – Fuzzy If-Then Rules – Fuzzy Reasoning.

Unit 4

Discrete Fourier transform, Fast Fourier transform, Wavelet Transform, Numerical Solutions of Boundary Value Problems.

Unit 5

Finite probability - Probability distributions - Conditional Probability – Independence - Bayes' theorem - Mathematical expectation.

Reference Books :

1. Judith L.Gersting, Mathematical Structures for Computer Science, Freeman Co.
2. J.P. Tremblay and R. Manohar, "Discrete Mathematical Structures with Applications to Computer Science", TMH
3. Kenneth H. Rosen, "Discrete Mathematics and its Applications", Fifth Edition, TMH
4. R.P. Grimaldi, "Discrete and Combinatorial Mathematics", Pearson Edition, New Dlhi
5. M.K Venkataraman, Sridharan, Chandrasekaran, Discrete Mathematics, National Pub
6. Scheinerman, Mathematics: A discrete Intoduction, Cengaga Learn (Thomson)

MCIT - 102 INTERNET TECHNOLOGY

Unit 1 Protocols and architecture, Protocols, Characteristics, Functions, Need for multiple protocols, Conceptual layers of multiple protocol software, Protocol layering principles, Multiplexing and Demultiplexing.

Unit 2 Internet Protocol, Virtual network, Internet architecture and philosophy, Purpose of the internet protocol, Internet diagram, Routing in an internet, table driven IP internet, IP routing algorithm, Internet control message protocols (ICMP), Internet protocol version 6, Features, Format, Source routing, Options, address space assignment, User data gram protocol, Format of UDP messages, UDP encapsulation and protocol layering.Transmission control protocol, Need for stream delivery, Properties of reliable delivery service, Ports, Connections and pins, Window size and flow control - TCP segment format, Acknowledgement, Timeouts, Robustness, Establishing and clearing TCP connects.

Unit 3 Route discovery protocols, Core, peers, Gateway to gating algorithm (GGP), Routing, Autonomous system concepts, Exterior gateway protocol, Routing information protocol (RIP), The Hello protocol, Open shortest path first protocol (OSPF).Application layer protocols, TELNET protocols, File transfer protocols (FTP), Simple mail transfer protocol (SMTP), X-Window system protocol, Remote procedure call, Network file system, proof to point protocol.

Unit 4 General structure of a network management product, Information extraction and collection instruments, Monitoring principles, Instruments supporting physical network management, Line monitors, Data scopes, network monitors, Instruments supporting logical network management, Accounting packages, Application monitoring, Communication monitors, Security monitors, LAN monitors.
Configuration management, Configuration management functions, Inventory managements, Network topology services, Order processing and provisioning, Charge management directory services.

Unit 5 Fault management, Processes and procedure, Fault management functions, Performance management, Security management, accuracy management, Network capacity planning.

Reference Books:

1. Uyless Black, TCP/IP and related protocols, McGraw Hill.
2. Udupa, Network Management System Essentials, McGraw Hill.
3. DE. Comer, Internetworking with TCP/IP Vol. I, Principles, Protocol, Arch., PHI
4. Kernel Terplan, Communication Network management, PHI
5. TCP/IP Protocol Suite, Forouzan, TMH

MCIT - 103 OBJECT ORIENTED TECHNOLOGY

Unit 1

Review of programming practices and code-reuse; Object model and object-oriented concepts.

Unit 2

Object-oriented programming languages and implementation; Object-oriented analyses and design using UML structural, behavioral and architectural modeling.

Unit3

Unified development process, Software reuse design patterns, components and framework; Distributed object computing, interoperability and middleware standards COM/DCOM and CORBA.

Unit4

Object-oriented database system data model, object definition and query language, object-relational system

Reference Books:

1. Object Oriented Modelling and Design, Booch Rambaugh, PHI
2. Analysis & Design, Atul Kahate, TMH
3. Satzinger, Object Oriented Analysis and Design, Cengage Learn (Thomson)
4. Johnson, An Introduction to JAWA programming and OOAD, Cengage.

MCIT - 104 COMPUTER GRAPHICS & MULTIMEDIA

Unit 1

Basics of Computer Graphics, Graphics display devices, Input devices; Raster Graphics: line and circle drawing algorithms Windowing and clipping: Cohen and Sutherland line clipping. Cyrus beck clipping method.

Unit 2

Computations on polygons: point inclusion problem, polygon filling, polygon intersection, clipping. 2D and 3D Geometrical Transformations: scaling, translation, rotation, reflection.

Unit 3

Viewing Transformations, parallel and perspective projection, curves and Surfaces: cubic splines, Bezier curves B-splines, Hidden line/surface removal methods; Rendering & Visualization, Illuminations model. Shading: Gouraud, Phong. Introduction to Raytracing.

Unit 4

Multimedia Components, Multimedia system designs an introduction compression & decompression data & file format standard. Multimedia input/output technologies. Storage technologies, Multimedia authoring & user interface. Hyper media massaging. Distributed multimedia system

Reference Books:

1. Rogers D.F. Procedural Elements of Computer Graphics, McGraw Hill.
2. Hearn and Baker. Computer Graphics, Prentice-Hall of India, New Delhi
3. Foley, VanDam, Fundamentals of Interactive Computer Graphics, Addison-Wesley
4. Multimedia System Design- Prabhat K. andleigh and Kiran Thakrar, PHI
5. Shuman, Multimedia in action, Cengage (Thomson)

MCIT - 105 ADVANCE DBMS

Unit 1

DBMS Concepts Introduction, Data models, Entities and attributes, Relationships, E-R diagram. Relational Data models: Domains, Tupples, Attributes, Keys, Relational database, Schemas, Integrity constraints. Relational algebra and relational calculus, Normalization, Normal forms.

Unit 2

Query Processing and Optimization. Distributed databases: Fragmentation, Replication, Location & Fragment transparency, Distributed Query Processing and Optimization.

Unit 3

Object oriented and object relational databases: Specialization, Generalization, Aggregation,

Unit 4

Association. Introduction to Image and Multimedia databases and data structures. Data structure- R tree, K d tree, Quad trees, Content based retrieval: Color Histograms.

Unit 5

Web databases: Accessing databases through web

Reference Books:

1. R. Elmasri, S. Navathe, Fundamentals of Database System, Benjamin Cummings
2. C.J. Date, An Introduction to Data base Systems, Volume I, Addison Wesly
3. H. F. Korth and A. Silberschatz. Database Concept, TMH
4. Object Oriented databases :Narang, Prentice-Hall of India, New Delhi
5. Rob, Database Systems, Cengage, (Thomson)
6. Pratt, Concepts of DBMS, Cengage.