501 MCA: Artificial Intelligence & Expert Systems


UNIT 2: AI Production Systems, Search and Control Strategies:

UNIT 3: Knowledge Representations:
First order predicate calculus, Clause form representation of WFFs, resolution principle & unification, inference mechanism, semantic networks, frame systems and value inheritance, scripts, conceptual dependency.

UNIT 4: Natural Language Processing:
Overview of linguistics, grammars and languages, Parsing techniques: Chart Parsers, transition nets, augmented transition nets, WASP Parser.

UNIT 5: Expert Systems:

Books:
1. Introduction to AI and Expert Systems: D.W. Patterson PHI.
502MCA: Computer Graphics & Multimedia

UNIT 1: Introduction: Computer graphics, definition, classification & applications, development of hardware & Software for computer graphics, Refresh Cathode ray tubes, Random and raster scan devices, DVST, plasma panel display, LED and LCD monitors, laser devices, printers, plotters, display processors, raster and random scan system.

Output primitives: DDA along with, Bresenham’s line drawing algorithm, antialiasing, circle generation: Midpoint algorithms, ellipse, other curves, character generation, area filling scan line algorithm, boundary fill flood fill algorithm, attributes of output primitives line attributes, area fill attributes, character attributes.

UNIT 2: Two-dimensional Transformations and Clipping: Translation scaling rotation reflection shear, matrix representation and homogeneous coordinates composite transformation commands. Viewing coordinates window, view port, window to view transformation line clipping Cohan Sutherland algorithm polygon clipping Sutherland-hodgeman algorithm.

UNIT 3: Three-dimensional concepts: Three dimensional viewing, three dimensional object presentation: polygon, curved line & surfaces quadratie (sphere, ellipsoid), surfaces, design of curves & surfaces, bezier’s methods, Bspling methods; three dimensional transformation: Translation, scaling composite transformation, rotation, about arbitrary axis, projection: parallel, perspective.


Books:
503 MCA SIMULATION AND MODELLING

UNIT 1: Definition of simulation. Type of simulation (continuous & discrete) Definition of models. Types of models. Comparing model data with real system data. Why to use simulation? Simulation is used for solving real life problem.


References:
1. System Simulation. G. Gordon. PHI
4. Operation research by Heera and Gupta
504-E1 MCA Theory of computation

Unit 1: Mathematical preliminaries: set, relations and functions, graphs and trees, string, alphabet and language, principle of induction, predicate and propositional calculus.

Theory of automation: definition and description, DFA, NFA, transition system, 2DFA, equivalence of DFA, NFA, regular expression, regular grammar, FSM with output. Minimization of finite automata.


Unit 3: Context free grammar and PDA: properties unrestricted grammar & their equivalence, derivation tree simplifying CFG, unambiguity CFG, normal form for CFG, push down automata, 2 way PDA, relation of PDA with CFG, Determinism and non determinism in PDA, and related theorems, parsing & pushdown Automata.

Unit 4: Turning Machine: model, design, representation of TM, language accepted by TM, universal TM, deterministic and non-deterministic, TM as acceptor/ generator, algorithms, multidimensional, multitracks, multi-tape, halt problems in TM.


References:
1) Marvin L. Minsky "Computation Finite and Infinite machine", PHI.
2) Hopcroft and Ullman "Introduction to automata theory, languages & computation", Narasha PHI
3) Lewis "Theory of computation", PHI
4) Mishra and Chander shreekar "Theory of computer science"(A L &C), PHI
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504-E2MCA ERP AND BPR ALLIED CONCEPTS

UNIT 1 - Introduction to ERP: Evolution of ERP, Growth of ERP Market, advantages of ERP, ERP & Related technologies, BPR, MIS, DSS & EIS, Data Warehousing & Data Mining, OLAP, Supply Chain Management.

UNIT 2 - Business Functions, Processes, & Data Requirements: Functional Areas of operation, Marketing & sales, Production & Materials Management, Accounting & Finance, Human Resources.

Marketing Information System & Sales Order Process: Sales Quotations & Orders, Order Filling, Accounting & Invoicing, Payment & Returns, Sales & Distribution in ERP, Pre-sales activities, Sales Order Processing, Inventory Sourcing, Delivery, Billing, Payment, CRM (Customer Relationship Management).

UNIT 3 - Production & Materials Management Information System: Materials Requirement Planning (MRP), Manufacturing Resource Planning (MRP-II), Bill of Materials (BOM), JIT & Kanban, CAD/CAE, Product Data Management, Make-to-Order (MTO), Make-to-Stock (MTS), Assemble-to-Order (ATO), Engineer-to-Order (ETO), Configure-to-Order (CTO), Accounting & Finance: Accounting & finance activities, creating financial statements, Operational Decision Making Problem, Credit Management, Product Profitability Analysis, ERP & Inventory Cost Accounting Activity, Activity Based costing & ERP.

UNIT 4 - ERP Implementation Life Cycle: Pre-evaluation screening, Package evaluation, Project Planning phase, Gap Analysis, Reengineering, Configuration, Implementation team training, Testing, Going live, End user training, Post-implementation, Role of vendors & consultants.

UNIT 5 - Business Process Reengineering (BPR) & its Implementation: BPR, five step methodology to implement BPR, Development process vision & determining process objectives, defining the processes to be reengineered, understanding & measuring the existing processes, identifying the IT levels, designing the prototypes & implementing it.

BOOKS:
2. Business Process Reengineering, Jayaraman, Natarajan & Ranganathan
3. ERP Concepts & Practice, V.K. Garg & Venkatakrishnan
4. Enterprise Resource Planning, Arvind, Lein

5. 313


References:

1. Dean, J., "Management Economics". Prentice Hall of India, New Delhi 1982
505-E4MCA - Data warehousing and data mining

UNIT 1 - Introduction to Data Mining: Data Mining, features, business context, technical context, approaches to data mining. Types of Data Mining: Direct & Undirected, Virtuous Cycle.

UNIT 2 - Data Mining Process & Technique: Data Mining Techniques: automatic, cluster detection, Decision trees, Neural Networks, Data Mining Methodologies: Conventional System Development, Waterfall process, Rapid Prototyping.

UNIT 3 - Introduction to Data Warehouse: Data warehousing concepts, Goals & objectives, Issues involved in Data Warehousing. The three C's of Data Warehousing: Commitment, Completeness & Connectivity, OLAP, Types of Data Warehouse.

Constructing a Data Warehouse System:

UNIT 4 - Stages of the Project: Planning stage: Justifying the data warehouse, obtaining user buy-in, overcoming Resistance to the Data Warehouse, Developing a project plan; Data Warehouse Design approaches, Architectural stage: Process architecture, Introduction, Load manager, Query manager, Detailed Information, Summary Information, Metadata, Data Marting.

UNIT 5 - Testing the Data Warehouse: Introduction, developing the test plan, testing backup recovery, testing the operational environment, testing the database, testing the application, Logistics of the test, Security. Requirements, performance, impact of security, security impact on design.

References:
1. "Data Warehousing" by Amitesh Sinha
2. "Data Warehousing in the real world" by Sam Anahory & Dennis Murray
Unit 1: Introduction of Networking


Unit 2: Introduction of Browser and WebPage

Browser, Features of browser, types of browser, use of browser, About IE and its versions, Mozilla, AGL. What is webpage and its structure.

Unit 3: HTML

What is HTML and it use, HTML TAGS, URL, head, body, anchor link, tables, frameset, span, div, image, audio, buttons, submit, reset, cancel, lists, font.

Unit 4: HTML FORMS

What is Forms, Use of forms, method, action, POST, GET etc. Events mouse over, click, mouse down. Form Designing, Introduction of DHTML.

Unit 5:

Good web design, the process of web publishing, document overview, header elements, website hosting, HTTP & URL, search engines, FTP, downloading & uploading, FTP, site promotions.

References:
1) Thomas A. powell "The complete reference HTML", TMH
2) Douglas Corner "The Internet Book", pearson Education, Asia
3) Jeel sklar "Principles of Web design", Vikash publication
4) K.Kalata "Internet programming Thomson learning"