SRI VENKATESWARA UNIVERSITY, TIRUPATI

Department of Computer Science

ADOPTION OF CBCS SYSTEM FOR MCA PROGRAMME WITH EFFECT FROM 2016 – 2017

MCA 101 : DISCRETE MATHEMATICAL STRUCTURES

UNIT-I:

Function: Definition, type of functions, one to one, into and onto function, inverse function, composition of functions, recursively defined functions. Algebraic Structures: Definition, Properties, types: Semi Groups, Monoid, Groups, Abelian group, properties of groups, Subgroup, cyclic groups, Cosets, factor group, Permutation groups, Normal subgroups.

UNIT-II:

Posets, Hasse Diagram and Lattices: Introduction, ordered set, Hasse diagram of partially, ordered set, isomorphic ordered set, well ordered set, properties of Lattices, and complemented lattices. Combinatorics: Basic Counting Technique, Pigeon-hole Principle, Recurrence Relation, Generating function, Polya's Counting Theorem Paths and Circuits : Isomorphism, Subgraphs, Walks, Paths and Circuits, Connected and disconnected graphs, Euler graphs, Operations on graphs, Hamiltonian graphs, Travelling salesman problem.

UNIT-III:

Introduction and Basic Concepts : Definition, Representation of graphs, Finite and infinite graphs, Directed graphs, Incidence and degree, Bipartite graph, Planar graphs, Matrix representation of graphs, Applications of graph in computer science. Graphs: Simple graph, multi graph, graph terminology, representation of graphs, Bipartite, Regular, Planar and connected graphs, connected components in a graph, Euler graphs, Hamiltonian path and circuits, Graph coloring, chromatic number, isomorphism and Homomorphism of graphs.

Trees and Fundamental Circuits : Definition, Properties of trees, Spanning trees, Fundamental circuits and cut-sets, Connectivity and separability, Minimal spanning tree and connected algorithms, Rooted and Binary trees, Applications of trees.

UNIT-IV:

Tree: Definition, Rooted tree, properties of trees, binary search tree, tree traversal. Shortest Path Problems: Shortest path algorithms, Generalized shortest path algorithms, Applications of shortest path problems.

Network Flow Problems: Flows in network, formulation, Max-flow min-cut theorem, Minimum cost flow problems, Ford-Fulkerson algorithm for maximum flow.

UNIT - V:

Propositional Logic: Proposition, First order logic, Basic logical operation, truth tables, tautologies, Contradictions, Algebra of Proposition, logical implications, logical equivalence, predicates, Universal and existential quantifiers.

Text books

1. Discrete Mathematics and Its Applications, By Kenneth H Rosen, McGraw Hill, Sept.2002.
2. Discrete Mathematical Structures with Applications to Computer Science, By J.P.Tremblay, R.Manohar, McGraw Hill Pub, 1975.

3. “Graph Theory With Applications to Engineering and Computer Science” Prentice Hall,
    a. Englewood Cliffs, 1974

4. Combinatorics: Theory and Applications, By V. Krishnamurthy, East-West Press Pvt. Ltd.,New Delhi, 1986.
5. K. L. P. Mishra, N. Chandrasekaran, “Theory of Computer Science: Automata,
    a. Languages and Computation, PHI Publication

MCA 102 : INTRODUCTION TO INTERNET TECHNOLOGIES

UNIT - I

Introduction to Internet, Internet Services, WWW, Working of Internet, Internet Connection Concepts, Introduction to Intranet, DNS working, Configuring Internet Connection, Connecting LAN to Internet. Single User, Multi User, Server, Workstation, Client-Server environment, Computer Network, Types of Computer Network: LAN, WAN, MAN; Network Topologies. Protocols used in internet FTP, HTTP etc. Windows and GUI. Latest Developments and usage of Internet for IOT, Cloud Computing, Web Services.

UNIT - II

E-Mail Concepts – Configuring E-Mail Program, Sending and Receiving Files through E-Mail, Fighting Spam, Sorting Mail, and avoiding E-Mail viruses. Web-Based chat rooms and discussion boards, Voice and Video conferencing. Streamlining Browsing, Keeping track of Favorite Web Sites, Web Security, Privacy, and Site-Blocking. Searching the Web – Audio and Video on the Web. Two tier-Three Architectures, Internet Architecture

UNIT-III

Web Browsers, Search Engines, Categories of Search Engines, Searching Criterion, Surfing the Net, Hypertext Transfer Protocol (HTTP), URL. Other Internet Tools. Online Chatting, Messaging, and Conferencing Concepts, E-Mail mailing lists, Usenet newsgroup concepts – Reading usenet newsgroups, Internet Relay Chat, Instant messaging.

UNIT-IV

HTML-5: Internet Language, Understanding HTML, Create a Web Page, Linking to other Web Pages, Publishing HTML Pages, Text Alignment and Lists, Text Formatting Fonts Control, E-mail Links and link within a Page, Creating HTML Forms with HTML 5 controls.

UNIT - V

Creating Web Page Graphics, Putting Graphics on a Web Page, Custom Backgrounds and Colors, Creating Animated Graphics. Web Page Design and layout, Advanced Layout with Tables, Using Style Sheets.

Text Books:

1. Dick Oliver: Tech Yourself HTML 4 in 24 Hours, Techmedia.
2. Satish Jain: "O" – Level Information Technology,
3. Craig Zacker: 10 minutes Guide to HTML Style Sheets, PHI.
4. V.K. Jain: "O" – Level Information Technology, BPB Publications.
5. Gill, Nasib Singh: Essentials of Computer and Network Technology, Khanna Books
6. Publishing Co., New Delhi.
7. Margaret Levine Young: Internet – The Complete Reference
8. Harley Hahn: The Internet – Complete Reference, TMH.
9. Rajender Singh Chillar: Application of IT to Business, Ramesh Publishers, Jaipur.

MCA 103: Object Oriented Programming With Java

UNIT – I

Object Oriented Programming Fundamentals & Java: Java Features, Object Oriented Programming Concepts –Abstraction, Encapsulation, Inheritance and Polymorphism. Java Fundamentals: Data Types, variables, arrays, Inheritance to classes: class fundamentals, Objects, References, Constructors, Overloading of methods, Access control, Nested and Inner classes. Inheritance: Inheritance basics, Using Super, multilevel hierarchy, method overriding, dynamic method dispatch, abstract classes, final with inheritance.

UNIT-II

Packages, Exceptions and Threads: Packages and Interfaces: Packages, Access protection, Importing packages, interfaces, Exception Handling: fundamentals, exception types, uncaught exceptions, using try, nested try statements, throw, throws, Java built-in exceptions, user defined exceptions. Multithreading: Thread model, main thread, creating a thread, multiple threads, thread priorities, synchronization, Inter thread communication, String handling.

UNIT-III

Java Utilities: Type wrappers: Number, Double, Float, Byte, Short, Integer and Long, Character, Boolean, Math class. Collections: Collection interfaces, collection classes, legacy classes and interfaces: Enumeration interface, Vector, Stack, Dictionary, Hash table. More utility classes: String Tokenizer, Bit set, Date, And Calendar Input/output: File, Stream classes, Byte Streams, Character Streams.

UNIT-IV

GUI Programming Features Applets: Applet basics, Applet architecture, an applet skeleton, Applet display method, Repainting, Using Status window, HTML APPLET tag, passing parameters to applet, Audio Clip interface. Even Handling; two event handling mechanisms, Event model, Event classes, sources of events, Event Listener interfaces, Adapter classes. Introduction to SWING: Window Fundamentals, working with frame windows, creating window programs, working with color, fonts, SWING Controls, Layout Managers and Menus: Control fundamentals, Labels, Using buttons, check boxes, checkbox group, choice controls, lists, scroll bars, text field, layout managers, menu bars, and menus.

UNIT - V

Networking in Java Network Programming with Java, Networking classes and Interfaces, Inet Address, Factory method, Instance Methods, Sockets, Knowing IP address, URL-URL Connection class. Creating a server that sends data, creating a client that receives data, two way communication between server and client, Stages in a JDBC program, registering the driver, connecting to a database, Preparing SQL statements, improving the performance of a JDBC program.

Text Book

1. Herbert Schildt : "The Complete Reference Java 2"(Fifth Edition),TMH.

Reference Books

1. Dietel & Dietel : "Java2 How to Program", Prentice Hall.
2. Thamus Wu: "An Introduction to Object Oriented Programming With Java." TMH
3. Balagurusamy:"Programming With Java": TMH.

MCA104: COMPUTER ORGANIZATION

UNIT I

Logic Circuits: Logic functions – synthesis of logic functions – Minimizations of logic - Synthesis with NAND and NOR gates Implementation of Logic gates - Flip-flops – Registers and shift registers – counters – decoders – Multiplexers – PLDs – sequential circuits. Basic Structure of Computers: Functional UNITs - Basic operational concepts – Bus structures – performance – Multi processors and Multi computers: Functional UNITs – Basic operational concepts – Bus structures – performance – Multiprocessors and Multi computers – Historical Perspective.

UNIT II

Machine Instructions and programs: Numbers, Arithmetic operations and characters – Memory locations and address, operations – instructions and instruction, sequencing – addressing modes.

UNIT III

Input / Output organization: accessing I/O Devices – Interrupts – direct memory access – buses 240-interface circuits – Standard I/O Interfaces.

UNIT IV

Memory System, Concepts – semiconductor RAM memories - Read only memories – cache memories – performance considerations – virtual memories management requirements – secondary storage Arithmetic: Addition and subtraction of sign members – design of fast adders – multiplication of positive members – signed operand multiplication – fast multiplication – integer division – floating point numbers and operations.

UNIT V

Basic Processing UNIT: Concepts – execution of a complete instruction – Multiple – Bus organization – hardware control – micro programmed control. Pipelining: Concepts – Data hazards – instruction hazards – influence on Instruction sets - data path and control constructions – supers cal operation- ultra SPARC II – Performance considerations.

Text Book:

1. Hamacher C, Vranesic Z, and Zaky S. Computer Organization, 5th edition, Mc Graw – Hill,2002.

Reference Books:

1. Stallings W, Computer Organization and Architecture, 6th edition. Parson Education,2003.
2. Mano M.M. Computer System Architecture, 3rd edition. PHI, 1993.
3. Yarbrough JM, Digital Logic – Applications and Design, Thomas Lernig, 1997.
4. Heuring VP, and Jordan HF, Computer Systems Design and Architecture, PearsonEducation, 1997.

MCA 105 A: Business and Management

UNIT-I

Management science Theory and practices: Definition, evolution of Management Thought, Systematic Approach, Functions of Managers. Management and Society: Social Responsibility, Ethics in managing. International Management: International Management and multinational corporations, porters competitive advantage of nations

UNIT-II

Communication: purpose of communication, process, communication in the organization, electronic media in communication Planning: Types, steps, objectives. Strategic planning process, tows matrix, portfolio matrix, premising and forcasting.

UNIT-III

Decision Making: importance and limitations, development of alternatives, evaluation and selection, programmed and non programmed decisions, decision making under certainty, uncertainty and risk.

UNIT-IV

Organizing: formal and informal, organizational levels, reengineering the organization, structure and process of organizing, line staff authority: line staff concepts and functional authority, decentralization and delegation of authority

UNIT - V

Staffing: factors affecting staffing, systems approach to selection, characteristics needed by the managers, selection process, technique and instruments. Performance appraisal: importance and choosing of appraisal, team evaluation approach, rewards and stress of managers set Staffing functions, Selection, Leadership: ingredients of leadership, leadership behavior and styles, transactional and transformational leadership.

Text Books:

1. Management:Text & Cases,Satya Raju,2nd Ed,PHI
2. Management Science,Rao,Scitech

References:

1. Mgmt. Concept & Strategies, Chandan,VIKAS
2. Mgmt. Concept & Strategies, Chandan,VIKAS
3. Management Science,Rao,Scitech

MCA 105 B: Essentials of Management

UNIT-I

Basics of management; Planning, scheduling, organizing, staffing, directing, controlling

UNIT-II

Managerial economics and financial management, productivity management

UNIT-III

Human resource development and management, selection, training and role of IT

UNIT-IV

Introduction to management control systems: goals, strategies; Performance measures

UNIT – V

Strategy: firm and its environment, strategies and resources, industry structure and analysis, corporate strategies and its evaluation, strategies for growth and diversification, strategic planning

Text Books:

1. Essentials of Management, Koontz, TMH
2. Management:Text & Cases,Satya Raju,2nd Ed,PHI
3. BO and Principles of Management, A. Roy, TMH
4. Mgmt. Text & Cases, V.S. P. Rao & Harikrishna, EXCEL BOOKS
5. Mgmt. Concept & Strategies, Chandan,VIKAS
6. Principal & Practice of Mgmt.,Ghanekar, EPH
7. Principal & Practice of Mgmt, Amrita Singh, EPH

MCA 106: Human values and Professional Ethics

UNIT I

Definition and Nature of Ethics- Its relation to Religion, Politics, Business, Law, Medicine and Environment. Need and Importance of Professional Ethics- Goals – Ethical Values in various Professions.

UNIT II

Nature of Values- Good and Bad, Ends and Means, Actual and potential Values, Objective and Subjective Values, Analysis of basic moral concepts- right, ought, duty, obligation, justice, responsibility and freedom, Good behavior and respect for elders, Character and Conduct.

UNIT III

Individual and society: Ahimsa (Non-Violence), Satya (Truth), Brahmacharya (Celibacy), Asteya (Non possession) and Aparigraha (Non-stealing). Purusharthas (Cardinal virtues)- Dharma (Righteousness), Artha (Wealth), Kama (Fulfillment Bodily Desires), Moksha (Liberation).

UNIT IV

Bhagavad Gita – (a) Niskama karma. (b) Buddhism – The Four Noble Truths – Arya astanga marga, (c) Jainism – mahavratas and anuvratas. Values Embedded in Various Religions, Relirious Tolerance, Gandhian Ethics.

UNIT V

Crime and Theories of punishment – (a) Reformative, Retributive and Deterrent. (b) Views on manu and Yajnavalkya.

Text Books:

1. John S Mackenjie: A manual of ethics.
2. "The Ethics of Management" by Larue Tone Hosmer, Richard D. Irwin Inc.
3. "Management Ethics – integrity at work" by Joseph A. Petrick and John F. Quinn, Response Books: New Delhi.
4. "Ethics in Management" by S.A. Sherlekar, Himalaya Publishing House.
5. Harold H. Titus: Ethics for Today
6. Maitra, S.K: Hindu Ethics
7. William Lilly: Introduction to Ethics
8. Sinha: A Manual of Ethics