SRI VENKATESWARA UNIVERSITY, TIRUPATI
Department of Computer Science
**ADOPTION OF CBCS SYSTEM FOR TWO YEAR MCAPROGRAMME
WITH EFFECT FROM 2020–21**

MCA I SEMESTER

MCA 101:Discrete Mathematical Structures

UNIT-I

Logic and Proof: Propositional Logic, Propositional Equivalent, Predicators and Quantifiers, Nested Quantifiers, Rules of Inference, Induction to Proofs, Proof Methods and Strategies.

UNIT-II

Induction and Recursion: Mathematical Induction, Strong Induction and Well Ordering, Recursive Definitions and Structural Induction, Recursive Algorithms.

UNIT-III

Counting: The basics of counting, The Pigeonhole Principle, Permutations and Combinations, Binomial Coefficients, Generalized permutations and Combinations, Generating Permutations and Combinations.

UNIT-IV

Advanced Counting Techniques: Recurrence Relations, Solving Linear Recurrence Relations, Divide and Conquer algorithms and Recurrence Relations, Inclusion – Exclusion, Applications of Inclusion – Exclusion.

UNIT – V

Graphs: Graphs And Graph Methods, Graph Terminology And Special Types of Graphs, Representing Graphs and Graphs Isomorphism, Connectivity, Euler and Hamilton Paths, Shortest-Path Problems, Planar Graphs, Graph Coloring,

Text books

1. Discrete Mathematics and Its Applications, By Kenneth H Rosen, McGraw Hill, Sept.2002.

Reference Books

1. Discrete Mathematical Structures with Applications to Computer Science, By J.P.Tremblay, R.Manohar, McGraw Hill Pub, 1975.

2. Discrete Mathematics by N. Chandrasekaran and M. Umaparvathi, Prentice-Hall of India.

MCA 102: Object Oriented Programming with Java

UNIT-I

Introduction: Object Oriented Programming Concepts, Features of Java Language, Architecture, Data Types, Variables, Operators, Control Structures, Arrays. Classes: Classes, Wrapper Classes, Constructors, Overloading of methods, Access control, Nested and Inner classes, Abstract classes. Inheritance: Inheritance basics, Using Super, Multilevel hierarchy, Method overriding, Dynamic method dispatch, Final with inheritance.

UNIT-II

Math Class and Methods, Packages and 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.

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UNIT-III

Wrapper Classes: Number class, Character class, Boolean class.More utility classes: Vector, Stack, Dictionary, Hash table. String Tokenizer, Bit set, Date, Calendar. Input/output: File, Stream classes, Byte Streams, Character Streams.GUI Programming,

UNIT-IV

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

Network Programming with Java: Networking classes and Interfaces, Internet 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 communications 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 Scheldt: "The Complete Reference Java "(Eighth 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.

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MCA103: Computer Organization

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UNIT I

Flip-flops – Registers and shift registers – counters – decoders – Multiplexers – PLDs – sequential circuits.Basic Structure of Computers. Functional UNITs – Basic operational concepts – Bus structures – performance – Multiprocessors and Multi computers – Historical Perspective.

UNIT II

Addressing Methods and Machine Program Sequencing: 1. Basic Concepts: –Memory locations and address, Main Memory operations, Instructions and Instruction Sequencing –Addressing Modes.

UNIT III

Input / Output organization: Accessing I/O Devices – Interrupts – Direct Memory Access-I/O Hardware-Standard I/O Interface.

UNIT IV

Memory System Concepts: – Semiconductor RAM Memories - Read only memories – Cache Memories – Performance Considerations –Virtual Memories: - Memory Management Requirements, 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.

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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.

Text Book:

1. Hamacher C, Vranesic Z, and Zaky S. Computer Organization, 5th edition, McGraw – Hill,2002.
2. Stallings W, Computer Organization and Architecture, 6th edition. Parson Education,2003.

Reference Books:

1. Yarbrough JM, Digital Logic – Applications and Design, Thomas Learning, 1997.

MCA 104: Operating Systems

UNIT I

Computer System Structures: Computer System operation, I/O Structure, storage structures, Storage hierarchy, Hardware protection, Network structure. Operating system structures: System components, Operating System services, System calls, System programs, System structure, Virtual machines, System Design and Implementation, System Generation. Processes: Processes Concept, Processes Scheduling, Operations in processes, Inter processes communication, Communication in Client server systems, Threads: overview, multithreading models, Threading issues, PThreads,

UNIT II

CPU Scheduling: Scheduling criteria, Scheduling Algorithms, Multiple processor Scheduling, Real-time scheduling. Process Synchronization: - The critical-section problem, Synchronization hardware, Semaphores, Classic problems of Synchronization, Critical regions, Monitors. Dead Locks: Deadlock characterization, Deadlock handling, Deadlock prevention, Deadlock avoidance, Deadlock detection, and Recovery.

UNIT III

Memory Management: Swapping, Contiguous memory allocation, Paging, Segmentation with paging Concept of Virtual memory Demand paging Page replacement, Allocation of frames, Thrashing. File System Interface & Implementation: File concept, Access methods, Directory structure, File System Mounting File Sharing Protection, File system structure, and implementation, Directory implementation, Allocation methods. Free space management, Efficiency and performance, Recovery.

UNIT IV

I/O Systems: overview, I/O hardware, Application I/O interface, Kernel I/O subsystem, Transforming I/O to Hard ware operations, streams , Performance of I/O. Mass Storage Structure:- Disk Structure Disk Scheduling, Disk management, Swap-space Management,
RAID Structure,

UNIT V

Security: User authentication, program threats, system threats, security systems Facilities, Linux system: History, Design principles, Kernel modules, process management, Scheduling Memory Management, File Systems.

Text Books:

1. Silberschatz A, Galvin P.B, and Gaghe G. Operating System Concepts, 8th edition, John Wiley, 2002.
2. Tenenbaum A.S., Modern Operating Systems, 2nd edition, Pearson Education, 2001.

Reference Books:

1. Dhamdhere D.M., Operating Systems – A concept based Approach, Tata McGraw-Hill, 2002.
2. Bhatt P.C.P., An Introduction to Operating Systems – Concepts and Practice, PHI, 2003.

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MCA 105A: Accounting and Financial Management

UNIT I

Introduction to Financial Accounting Concepts: Definition and concepts, Significance, Branches of Accounting, Accounting Cycle-Journal – Ledger – Trial Balance – Final accounts.

UNIT II

Cost Accounting: Elements of Cost, Nature and significance – Cost classification and Allocation, Cost Sheet – Method of Inventory Valuation.

UNIT III

Financial Management: Meaning, scope and role. Financial Analysis through Ratios: Types of Ratios, Liquidity, Activity, Capital Structure and profitability ratio, Limitations of Ratios.

UNIT IV

Working Capital Management: Nature, Elements and Importance of working capital, types of working capital, Determinants of working capital.

UNIT V

Budgeting: Budgets, Purpose, Budgetary control, preparation of budgets, Types of budgeting methods, difference between Master Budget, fixed and flexible budgeting.

Text Books:

1. RajeswaraRao K and Prasad G, Accounting & Finance (MCA), Jai Bharat Publishers, Guntur
2. Jain and Narang, *Cost Accounting*, Kalyani Publishers.

Reference Books:

1. Sharma R K, and Gupta S K, *Management Accounting*, Kalyani Publishers.
2. Financial Management Text and Problems: M.Y.Khan, P.K.Jain.
3. Financial Management Theory and Practices, Prasanna Chandra tata McGraw Hills.

MCA 105B: Accounting Essentials for Computer Applications

UNIT I

Introduction to accounting Packages Ms Excel as Accounting tool Features of MS Excel Function wizard Different categories of functions Date, numeric string, Accounting and Misc. Functions. An overview of Accounting functions Auditing Tool in MS Excel.

UNIT II

Annual budgeting applications of spreadsheet preparation of cash budget preparation of Production budget - preparation of Flexible Budget Preparation of projected profit and loss statement and proforma balance sheet. Introduction to Tally, Tally Features.

UNIT III

Cost Volume Profit Applications of Computer spreadsheet Pricing and product decisions including special order pricing, product addition and deletion and make or buy decisions.

UNIT IV

Financial accounting software package features of an accounting package voucher Entry Ledger preparation of Trail Balance, Profit and Loss Account and Balance using Tally. Sheet under specific package environment. Inventory accounting software package Basic Features Economic order quantity Maintenance of stock levels Stock valuation and reporting using Tally.

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UNIT - V

Problems of Accounting Software Packages Security Problems Power problems Data integrity problems Computer virus problems of system adoptions.

Text books

1. Horngreen Introduction to Management Accounting, Prentice Hall

2. Smith, J.L. Keith, R.M. and Stemphens, W. L. Managerial Accounting, McGraw Hill

Reference Books

1. Guy Hart Davis, The ABCs of Microsoft Office, BPB Publications

2. Computer Accounting with Tally 7.2 Paperback – 2006 by Firewall Media

3. Implementing Tally 9/7.2/6.3 A.K.Nandhini ,K.K.Nandhini-First Edition 2007 BPB publications

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