

MASTER OF COMPUTER APPLICATIONS

SCHEME

SEMESTER II

NO.	SUBJECT	No. Of periods per week		Duration of Uty. exam in hours	Max. Marks		TOTAL MARKS
		Lecture	Lab		Sessional	Uty. Exam	
MCA201	Computer Organization	4	--	3	25	75	100
MCA202	Data Structures	4	--	3	25	75	100
MCA203	Microprocessors And Peripherals	4	--	3	25	75	100
MCA204	Cobol And Business Data Processing	4	--	3	25	75	100
MCA205	Micro Processor Lab	4	6	3	100	--	100
MCA206	Software Lab 2(Cobol Programming)	--	6	--	100	--	100
	Total	16	12	--	300	300	600

1 Period is 1 hour duration

SYLLABUS

MCA-201 COMPUTER ORGANIZATION

Introduction: Functional units, Basic operational concepts, Bus structure.

Addressing Methods: Memory locations, addresses encoding information-Main memory operation instruction sequencing-concepts of various addressing modes.

Arithmetic and logic units: Concepts of A.L.U-Number Representations Addition of +ve numbers-logic design for fast addresses, addition and subtraction using 2's complement representations-concept of binary multiplication-concept of fast multiplication-concept of floating point number & operation.

The main memory-Basic concepts-semi conductor RAM memories, Memory system consideration Semi conductor ROM memory ,Interleaving, cache memories -Virtual memory.

The processing unit:-basic concepts-execution of complete- instruction sequencing of Control signals, concept of micro programmed control

Input-Output Organization:-accessing I/O devices-DMA Interrupts , Interrupts Handling Introduction to I/O Interfaces and I/O channels.

Introduction to parallel processing-Evolution , structure, classification & Applications.

Text Book:

Computer organization-V. C Hamacher (Mc –Graw Hill)

International Edition 1990 IV edn.

References:

1.structured Computer organization (3rd ed)

Andrew.s.tanenbaum(Prentice Hall)

2. Computer organization and architecture (4th ed)William Stalling(Prentice Hall)

3. Computer System architecture M Morris Mano(Prentice Hall)

MCA-202 DATA STRUCTURES

Introduction: Algorithmic notation-Analysis of Algorithms-'Oh' notation.

CONTIGUOUS DATA STRUCTURES

Arrays: Structure for arrays – representation of arrays, multidimensional arrays-Sparse Matrices-String representation and manipulation.

Stacks: Definition- operation of stacks. Implementation , Application of stacks – Evaluation of arithmetic expressions- Recursion removal.

Queues: Definition –Operation on a queue –Circular queue- Dequeues –Priority queues- Applications

NON CONTIGUOUS DATA-STRUCTURES

Lists : Representation and Traversing of linked list –Operation with linked list –doubly linked list-circular lists- Header linked list Application –Representation and manipulation of sets ,sparse polynomials ,matrices , strings ,graph.

Trees: Basic Terminology –Binary Trees-Traversal application –Expression Trees, Search of Trees- Definition, Insertion ,Deletion ,traversal ,Need for Balancing ,B-tree ,AVL Tree.

SORTING AND SEARCHING

Searching: Linear search, binary search, Fibonacci and Interpolation searches comparison of different methods.

Sorting: Insertion ,Bubble ,Selection ,Quick ,heap ,radix sort techniques ,comparison.

Hashing Techniques: Different Hashing functions, Methods for collision Handling.

Text Book:

1.Fundamental of Data Structure Using ‘C’ –Ellis Horowitz and Sartag Sahni.

References:

- 1.E.M Reingald and W.Hamen , Data structures CBS PUBLISHERS and Distributors.
2. R.L.Kurse,Data structures and program Desig,Prentice Hall of India.
3. Tannenbaum and Augustine,Data Structures using C-prentice Hall.

MCA 203 MICROPROCESSORS AND PERIPHERALS

Introduction to the microprocessor and computer : Internal Microprocessor Architecture,Functional block diagram ,Pin diagram ,Addressing modes.

Programming 8086 : Data movement instruction , Arithmetic and logic Instruction ,Program control Instruction ,Programming techniques- Examples .Modular Programming –Stacks ,Subroutines ,Macros ,String instruction ,Interrupts and Interrupt routines.

I/O Interfaces and Programming : Fundamental I/O consideration ,Data Transfer Schemes-Programmed I/O Interrupt I/O.DMA ,System Bus Structure-Min ,Max modes. Application of 8259,8255,8251,8257,8253, Using Keyboard and Displays.

Introduction to other 16 bit,32 bit,64 bit processors.80286,386,486,Pentium and Pentium Pro processors.

General Introduction To PC system : PC Motherboard ,BIOS & DOS Interrupts.

Text Books:

1. Microcomputer System 8086/8088 Family- Yu Cheng Liu and G.A Gibson(Prentice Hall)
2. The Intel Microprocessors- Architecture Programming and Interfacing –Barry .b .Brey(Prentice Hall)

References:

1. The 8088 and 8086 Microprocessors- Programming ,Interfacing , S/W and Application –Walter .A .Triebal and Autar Singh(Prentice Hall).
2. IBM PC Assembly Language and Programming –Peter Abel (Prentice Hall).
3. 8086 Assembly Language Programming.
4. Microprocessor x86 programming- K.R. Venugopal and Raj Kumar(BPB).
5. Microprocessors and microcomputer Based System Design- Mohamed Rafiqussaman.

MCA 204 COBOL AND BUSSINESS DATA PROCESSING

Data processing concepts : Data, Information and data processing .Records and files-data collection, preparation ,verification ,editing and checking.

Business files: Types of business files-Master and Transaction files-file organization-sequential, indexed sequential and random files ,backups and file recovery procedures.

File Processing : Sorting ,Searching ,Updating ,Merging and Matching.

Cobol Programming : Introduction to Cobol ,Structure of Cobol Language – Cobol words ,literals figurative constants ,Division ,sections and paragraphs .Picture clause and special name paragraph in COBOL.

Procedure Division and COBOL ,verbs : Writing complete program Execution and debugging .Different Clauses and their usage Renames and Redefines .Elementary and group move.

Conditional and Sequence Control Statements : If statement and nested IF statement .Different formats of PERFORM Statements.

Table handling : Single and multidimensional tables ,Subscripts and indexes .SET and Search verbs ,sorting.

File handling : File creation, updating ,sorting ,merging of sequential files .Random and indexed files .COBOL subroutine

Linkage section: Structure program development, report generation.

References:

1. M.K Roy and dastidar : COBOL Programming; Tata- Mc Graw Hill.
- 2.philippakis & Kazmier : Information System Trough COBOL.
- 3.Pookin G.S : Advanced Structured COBOL,Kent publ.cmp.
- 4.stem & Stern : StructuresdCOBOL Programming,John Wiley & SMS.
- 5.Rajaraman V & Sahasrabudhe : Computer Programming in COBOL ,Prentice Hall