



School of Sciences
Bachelor of Computer Maintenance&Repair

SISTER NIVEDITA UNIVERSITY
SYLLABUS
FOR
THREE YEARS BACHELOR DEGREE COURSE
IN
COMPUTER MAINTENANCE&REPAIR
UNDER
UGC-CBCS SYSTEM



2022

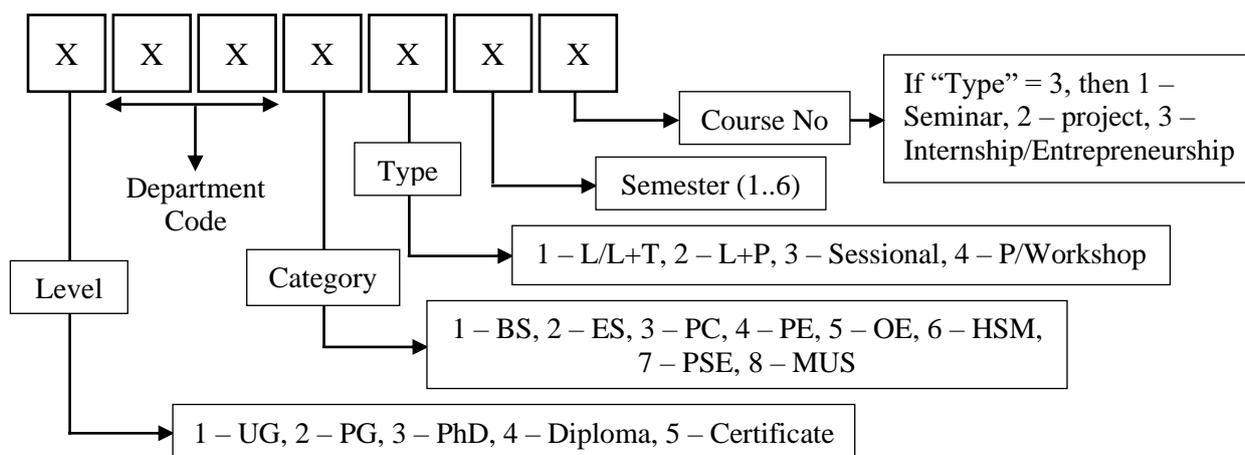
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Credit Definition

Type	Duration (in Hour)	Credit
Lecture (L)	1	1
Tutorial (T)	1	1
Practical (P)	2	1

Subject Codification Nomenclature



CC: Core Courses; GE: General Elective; AECC: Ability Enhancement Compulsory Course;
 SEC: Skill Enhancement Courses; DSE: Discipline Specific Elective; USC: University specified course

First Year

Mandatory Induction Program – Duration 3 weeks

- Physical Activity
- Creative Arts
- Universal Human Values
- Literary
- Proficiency Modules
- Lectures by Eminent People
- Visits to Local Areas
- Familiarization to Department/Branch & Innovations



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SEMESTER: I

Category	Course Title	Code	Credit	Type		
				L	T	P
CC-1	IT Exploration		4	3	1	0
CC-2	Digital Electronics		6	4	0	2
CC-3	Network Basics		4	3	1	0
GE-1	Generic Elective		4	3	1	0
AECC-1	Communicative English-I		2	2	0	0
USC-1	Foreign Language – I (German /Spanish /Japanese)		2	2	0	0
Total Credit			24			

SEMESTER: II

Category	Course Title	Code	Credit	Type		
				L	T	P
CC-4	Data Security Awareness		4	3	1	0
CC-5	Computer System Architecture		6	4	0	4
DSE-1	Linear Algebra and Ordinary Differential Equations		4	3	1	0
GE-2	Generic Elective		4	3	1	0
SEC-1	Mentored Seminar – I		1	1	0	0
USC-2	Foreign Language – II (German /Spanish /Japanese)		2	2	0	0
Total Credit			21			

SEMESTER: III

Category	Course Title	Code	Credit	Type		
				L	T	P
CC-6	Computer Peripherals & Maintenance		6	4	0	4
CC-7	Operating System & Operating System Lab (UNIX)		6	3	1	4
DSE-3	Electronic Instruments and Measurements		4	3	1	0
GE-3	Generic Elective		4	3	1	0
AECC-2	Environmental Science		2	2	0	0
SEC-2	Mentored Seminar – II		1	1	0	0
USC-3	Foreign Language – III (German /Spanish /Japanese)		2	2	0	0
Total Credit			25			



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SEMESTER: IV

Category	Course Title	Code	Credit	Type		
				L	T	P
CC-8	Microprocessors I		6	4	0	4
DSE-4	Programming in C		6	3	1	4
CC-9	Computer hardware maintenance Motherboard, Basic Troubleshooting		4	4	0	0
GE-4	Generic Elective		4	3	1	0
SEC-3	Mentored Seminar – III		1	1	0	0
USC-4	Foreign Language – IV (German /Spanish /Japanese)		2	2	0	0
Total Credit			23			

SEMESTER: V

Category	Course Title	Code	Credit	Type		
				L	T	P
CC-10	Microprocessors II		6	4	0	4
CC-11	Linux Administration		6	4	0	4
CC-12	Internet and Web Technologies		4	3	1	0
CC-13	Fault Diagnosis		4	3	1	0
Total Credit			22			

SEMESTER: VI

Sl No	Course Title	Code	Credit	Type		
				L	T	P
1	Elective I		4	4	0	0
2	Elective II		4	4	0	0
3	Project Work I		13	0	0	26
Total Credit			21			

Elective I:

- Broadband Technology
- Information Security Management
- Computer Forensics
- Telecommunication I

Elective II:

- Accounting Information Systems
- Concepts of Coding
- Database and Information System
- Electronic Spreadsheets and Graphics

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SYLLABUS OUTLINE:**PAPER NAME: IT Exploration**

Topics to be Covered (General)

1. Office Productivity
2. Digital Media
3. Operating Systems
4. PC Hardware & Software
5. Networks & the Internet
6. Programming & Game Design
7. Data Analytics

PAPER NAME: Digital Electronics

UNIT I: TOPICS	Number Systems & Codes (6L) Decimal Number, Binary Number, Octal Number, Hexadecimal Number, Conversion – Decimal to Binary, Binary to Decimal, Octal to Binary, Binary to Octal, Hexadecimal to Binary, Binary to Hexadecimal, Octal to Binary to Hexadecimal, Hexadecimal to Binary to Octal; Floating Point Number Representation, Conversion of Floating Point Numbers, Binary Arithmetic, 1's and 2's Complement, 9's and 10's Complement, Complement Arithmetic, BCD, BCD addition, BCD subtraction, Weighted Binary codes, Non-weighted codes, Parity checker and generator, Alphanumeric codes
UNIT II: TOPICS	Logic Gates (2L) OR, AND, NOT, NAND, NOR, Exclusive – OR, Exclusive – NOR, Mixed logic
UNIT III: TOPICS	Boolean Algebra (4L) Boolean Logic Operations, Basic Law of Boolean Algebra, Demorgan's Theorem, Principle of Duality
UNIT IV: TOPICS	Minimization Techniques (5L) Sum of Products, Product of Sums, Karnaugh Map (up to 4 variables)
UNIT V: TOPICS	Multilevel Gate Network (3L) Implementation of Multilevel Gate Network, Conversion to NAND-NAND and NOR-NOR Gate Networks
UNITVI: TOPICS	Arithmetic Circuits (5L) Half Adder, Full Adder, Half Subtractor, Full Subtractor, Carry Look Ahead Adder, 4-Bit Parallel Adder
UNITVII: TOPICS	Combinational Circuits (5L) Basic 2-input and 4-input multiplexer, Demultiplexer, Basic binary decoder, BCD to binary converters, Binary to Gray code converters, Gray code to binary converters, Encoder
UNITVIII: TOPICS	Sequential Circuits (5L) Introduction to sequential circuit, Latch, SR Flip Flop, D Flip Flop, T Flip Flop, JK Flip Flop, Master Slave Flip

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	Flop
UNITIX: TOPICS	Basics of Counters (2L) Asynchronous (Ripple or serial) counter, Synchronous (parallel) counter
UNIT X: TOPICS	Basics of Registers (3L) SISO, SIPO, PISO, PIPO, Universal Registers

Suggested Books:

1. Digital Circuit & Design, Salivahan, VIKAS
 2. Digital Design, M. Morris. Mano & Michael D. Ciletti, PEARSON
 3. Fundamentals of Digital Circuits; Anand Kumar; PHI
 4. Digital Electronics; Tokheim; TMH
 5. Digital Electronics; S. Rangnekar; ISTE/EXCEL
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PAPER NAME: Computer Networks

UNITI: TOPICS	Data Transmission Basic Concepts and Terminology: Data Communication Model, Communication Tasks, Parallel & Serial Transmission, Transmission Models, Transmission Channel, Data Rate, Bandwidth Signal Encoding Schemes, Data Compression, Transmission Impairments, Layering and Design Issues, OSI Model, Services and Standards.
UNITII: TOPICS	Computer Network: Network Topology, Performance of Network, Network Classification, Advantages & Disadvantages of Network, Transmission Media (guided and unguided), Network Architecture, OSI Reference Model, TCP/IP, SNA and DNA.
UNITIII: TOPICS	Data Line Devices: Modems, DSL, ADSL, Multiplexer and Different Multiplexing Techniques: (FDM, TDM).
UNITIV: TOPICS	Data Link Layer: Need for Data Link Control, Frame Design Consideration, Flow Control & Error Control (Flow control mechanism, Error Detection and Correction techniques) Data Link Layer Protocol, HDLC.
UNITV: TOPICS	Network Layer: Routing, Congestion control, Internetworking principles, Internet Protocols (IPv4 packet format, Hierarchical addressing sub netting, ARP, PPP), Bridges, Routers.
UNITVI: TOPICS	Physical Layer: Function and interface, physical layer standard, null modem.
UNITVII: TOPICS	Local Area Network: Definition of LAN, LAN topologies, Layered architecture of LAN, MAC, IEEE standard. Ethernet LAN, CSMA, CSMA/ CD, Token passing LAN.
UNITVIII: TOPICS	Network Security: Security Requirement, Data encryption strategies, authentication protocols, Firewalls.
UNITIX: TOPICS	Basic Applications: Telnet, FTP, NFS, SMTP, SNMP and HTTP.

Suggested Books:

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1. B. Fourauzan, “Data Communications and Networking”, 4th Edition, Tata McGraw-Hill
2. William Stallings- Data & Communications, 6th Edition, Pearson Education
3. Tanenbaum- Computer Networks, 3rd Edition, PHI, New Delhi.

SEMESTER: II

PAPER NAME: Data Security Awareness

Course content	Importance of Security Data and Account Security Passwords Networking and Mobile Security Malware Social Engineering
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Suggested Books:

- 1.

PAPER NAME: Computer Architecture

UNITI: TOPICS:	1.Number Systems – decimal, binary, octal, hexadecimal, alphanumeric representation, 2.Complements – 1’s complement, 2’ complement, 9’s complement, 10’ complement, (r-1)’s complement, r’s complement, 3. Fixed point representation – Integer representation, arithmetic addition, arithmetic subtraction, overflow, decimal fixed-point representation, 4. Floating point representation, 5. IEEE 754 floating point representation
UNITII: TOPICS:	Computer arithmetic (5L) 1. Addition algorithm of sign magnitude numbers, 2. Subtraction algorithm of sign magnitude numbers, 3. Addition algorithms of signed 2’s complement data, 4. Subtraction algorithms of signed 2’s complement data, 5. Multiplication algorithm, Booth’s algorithm, 6. Division algorithm
UNITIII: TOPICS	Register transfer and micro-operations (5L) 1. Register transfer language, 2. Register transfer, 3. Bus system for registers, 4. Memory transfers– memory read, memory write, 5. Micro operations – register transfer micro-operations, arithmeticmicro operations, logic micro operations, shift micro operations, 6. Binary adder, binary adder, subtractor, binary incrementer, arithmetic circuit for arithmetic micro operations, 7. One stage logiccircuit, 8. Selective set, Selective complement, Selective clear, Mask, Insert, Clear
UNITIV: TOPICS	Basic Computer organization and design (4L) 1. Instruction codes, 2. Direct address, Indirect address & Effective address, 3. List of basiccomputer registers, 4. Computer instructions: memory reference, register reference & input – outputinstructions, 5. Block diagram & brief idea of control unit of basic computer, 6. Instruction cycle
UNITV:	Micro programmed control (2L)

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TOPICS	1. Control memory, 2. Address sequencing, 3. Micro program examples
UNITVI: TOPICS	Central processing unit (5L) 1. General register organization, 2. Stack organization, Register stack, Memory stack, Stackoperations – push & pop, 3. Evaluation of arithmetic expression using stack, 4. Instruction format, 5.Types of CPU organization (single accumulator, general register & stack organization) & example oftheir instructions, 6. Three, two, one & zero address instruction, 7. Definition and example of datatransfer, data manipulation & program control instructions, 8. Basic idea of different typesofinterrupts (external, internal & software interrupts), 9. Difference between RISC & CISC
UNITVII: TOPICS	Pipeline and vector processing (3L) 1. Parallel processing, 2. Flynn’s classification, 3. Pipelining, Example of pipeline, space timedigram, speedup, 4. Basic idea of arithmetic pipeline, example of floating point addition/ subtractionusing pipeline
UNITVIII: TOPICS	Input – output organization (6L) 1. Peripheral devices, 2. Input – output interface, 3. Isolated I/O, Memory mapped I/O, 4.Asynchronous data transfer: strobe & handshaking, 5. Programmed I/O, 6. Interrupt initiated I/O, 7.Basic idea of DMA & DMAC 8. Input – output processor
UNITIX: TOPICS	Memory organization (6L) 1. Memory hierarchy, 2. Main memory definition, types of main memory, types of RAM, ROM,difference between SRAM & DRAM, 3. Cache memory, Cache memory mapping – Direct,Associative, Set Associative, 4. CAM, hardware organization of CAM, 5. Virtual memory, mappingusing pages, page fault, mapping using segments, TLB, 6. Auxiliary memory, diagrammaticrepresentation of magnetic disk & hard disk drive, 7. Definitions of seek time, rotational delay,access time, transfer time, latency

Suggested Books:

1. Computer System Architecture, M. Morris Mano, PEARSON
2. Computer Organization & Architecture –Designing For Performance, William Stallings, PEARSON
3. Computer Architecture & Organisation, J.P. Hayes, TATA MCGRAW HILL
4. Computer Organization and Architecture, T. K. Ghosh, TATA MCGRAW-HILL
5. Computer Architecture, BehroozParhami, OXFORD UNIVERSITY PRESS

PAPER NAME: Linear Algebra and Ordinary Differential Equations

UNIT I (10 lectures)

Matrix Algebra- Introduction & definition, properties of matrix, special type of matrices, arithmetic of matrices, symmetric & skew-symmetric matrices, orthogonal matrices, singular and non-singular matrices with their properties, Trace of a matrix, Eigen value and Eigen vector computation, Inverse of a matrix and related properties, numerical problems solving.

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UNIT II (10 lectures)

Differential Calculus: Review of limit, continuity and differentiability, L-Hospital rule, Leibnitz rule, successive differentiation, Rolle's theorem, Mean value theorem, Taylor series expansion, Function of several variables, Euler's theorem on homogeneous function, Partial differentiation, Jacobian, Maxima and Minimum of functions of one and two variables.

UNIT III (10 lectures)

Integral Calculus: Review of integration and definite integral. Differentiation under integral sign, double integral, change of order of integration, transformation of variables. Beta and Gamma functions: properties and relationship between them.

UNIT IV (10 lectures)

Differential Equations: Exact differential equations, integrating factors, change of variables, Total differential equations, Differential equations of first order and first degree, Differential equations of first order but not of first degree, Equations solvable for x, y, q, Equations of the first degree in x and y, Clairaut's equations. Higher Order Differential Equations: Linear differential equations of order n, Homogeneous and non-homogeneous linear differential equations of order n with constant coefficients.

SUGGESTED READING:

- Lay David C: Linear Algebra and its Applications, Addison Wesley, 2000.
- Schaum's Outlines: Linear Algebra, Tata McGraw-Hill Edition, 3rd Edition, 2006.
- Searle S.R: Matrix Algebra Useful for Statistics. John Wiley & Sons., 1982.
- Gorakh Prasad: Differential Calculus, Pothishala Pvt. Ltd., Allahabad (14th Edition - 1997).
- Gorakh Prasad: Integral Calculus, Pothishala Pvt. Ltd., Allahabad (14th Edition - 2000).
- David C. Lay: Linear Algebra and Its Applications, 3rd Edn, Pearson Education, Asia.

SEMESTER: III

PAPER NAME: Computer Peripherals & Maintenance

UNITI: TOPICS:	<ul style="list-style-type: none">• Introduction & Definition of Computer• Block Diagram of computer• Classification of computer• Characteristics of Computers• What is Language?• Types of Languages and language translators.• History and Generation of computers, Memory -• Bits, Bytes, KB, MB, GB, TB, PB, EB, ZB, YB, Brontope• byte, Geope Byte. Etc• Computer Software, Types of Software with Ex.
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	(System/Application/Utility S/W <ul style="list-style-type: none"> • Computer Hardware, Intro. to Hardware components of computer
UNITII: TOPICS:	<ul style="list-style-type: none"> • Identifying the Important Hardware Components of PC. i.e., CPU, Motherboard, RAM, HDD, ODD, • SMPS, K/B, Mouse, Monitor etc • Functions of above said components
UNITIII: TOPICS	<ul style="list-style-type: none"> • Tools and equipment like brush, screwdriver, air blower, voltage tester and pliers required for servicing computer
UNITIV: TOPICS	<ul style="list-style-type: none"> • About SMPS • Types of SMPS • Power stored in UPS • Components and Circuits inside the SMPS Unit

Suggested Books:

PAPER NAME: Operating System & System Programming

UNITI: TOPICS	Introduction (3L) Importance of OS, Basic concepts and terminology, Types of OS, Different views, Journey of a command execution, Design and implementation of OS
UNITII: TOPICS	Process (10L) Concept and views, OS view of processes, OS services for process management, Scheduling algorithms, Performance evaluation; Inter-process communication and synchronization, Mutual exclusion, Semaphores, Hardware support for mutual exclusion, Queuing implementation of semaphores, Classical problem of concurrent programming, Critical region and conditional critical region, Monitors, Messages, Deadlocks
UNITIII: TOPICS	Storage Management (8L) Memory Management- Backward, Swapping, Contiguous Memory Allocation, Paging, Segmentation, Segmentation with Paging.
UNITIV: TOPICS	File-System Interface and Implementation (6L) File Concept, Access Methods, Directory Structure, Protection, File-System Structure, File-System Implementation, Directory Implementation; Allocation Methods, Free-Space Management.
UNITV: TOPICS	Mass-Storage Structure (4L) Disk Structure; Disk Scheduling; Disk Management; Swap-Space Management
UNITVI: TOPICS	Assemblers: Elements of Assembly Language Programming, Design of the Assembler, Assembler Design Criteria, Types of Assemblers, Two-Pass Assemblers, One-Pass Assemblers, Single pass Assembler for Intel x86 , Algorithm of Single Pass Assembler, Multi-Pass Assemblers
UNITVII: TOPICS	Compilers: Causes of Large Semantic Gap, Binding and Binding Times, Data Structure used in Compiling, Scope Rules, Memory Allocation, Compilation of Expression, Compilation of Control Structure, Code Optimization

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Suggested Books:

1. Operating Systems, Galvin, John Wiley
2. Operating Systems, Milankovic, TMH
3. An Introduction to Operating System, Bhatt, PHI
4. Modern Operating System, Tannenbaum, PHI
5. Guide to Operating Systems, Palmer, VIKAS
6. Operating Systems, Prasad, Scitech

PAPER NAME: Electronic Instruments and Measurements

UNIT I: TOPICS	Philosophy of Measurement & Analog Measurement of Electrical Quantities: Unit & dimensions, standards, Errors, Characteristics of Instruments and measurement system, basics of statistical analysis. PMMC instrument, DC ammeter, DC voltmeter, Ohm meter, Moving Iron instrument, Electrodynamic Wattmeter, errors and remedies, Three Phase Wattmeter, Power in three phase system, Energy meter
UNIT II: TOPICS	Measurement: Instrument Transformer: Instrument Transformer and their applications in the extension of instrument range, Introduction to measurement of speed, frequency and power factor.
UNIT III: TOPICS	Measurement of Parameters: Different methods of measuring low, medium and high resistances, measurement of inductance & capacitance with the help of AC Bridges- Wheatstone, Kelvin, Maxwell, Hay's, Anderson, Owen, Heaviside, Campbell, Schering, Wien bridges, Wagner Earthing device, Q Meter.
UNIT IV: TOPICS	AC Potentiometer & Magnetic Measurement: Polar type & Co-ordinate type AC potentiometers, application of AC Potentiometers in electrical measurement. Ballistic Galvanometer, Flux meter.
UNIT V: TOPICS	Digital Measurement of Electrical Quantities & Cathode Ray Oscilloscope: Concept of digital measurement, Digital voltmeter, Frequency meter, Power Analyzer and Harmonics Analyzer, Electronic, Multimeter. CRT, wave form display, time base, dual trace oscilloscope, Measurement of voltage, frequency and phase by CRO, Oscilloscope probes, Sampling Oscilloscope, DSO, DSO applications.

Suggested Books:

SEMESTER: IV

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PAPER NAME: Microprocessors I

UNIT I: TOPICS	Semiconductor Memories: Development of semiconductor memory, internal structure and decoding, memory read and write timing diagrams, MROM, ROM, EPROM, EEPROM, DRAM
UNIT II: TOPICS	Introduction of Microcomputer System: CPU, I/O devices, clock, memory, bussed architecture, tristate logic, address bus, data bus and control bus.
UNIT III: TOPICS	Architecture of 8-bit Microprocessor: Intel 8085A microprocessor, Pin description and internal architecture.
UNIT IV: TOPICS	Operation and Control of Microprocessor: Timing and control unit, op-code fetch machine cycle, memory read/write machine cycles, I/O read/write machine cycles, interrupt acknowledge machine cycle, state transition diagram.
UNIT V: TOPICS	Instruction Set: Addressing modes; Data transfer, arithmetic, logical, branch, stack and machine control groups of instruction set, macro-RTL and micro RTL flow chart of few typical instructions; Unspecified flags and instructions.
UNIT VI: TOPICS	Assembly Language Programming: Assembler directives, simple examples; Subroutines, parameter passing to subroutines

Suggested Books:

PAPER NAME: Programming in C

UNIT I: TOPICS	Overview of C: History of C, Importance of C, Structure of a C Program. Elements of C: C character set, identifiers and keywords, Data types, Constants and Variables, Assignment statement, Symbolic constant. Input/output: Unformatted & formatted I/O function in C, Input functions viz. scanf(), getch(), getche(), getchar(), gets(), output functions viz. printf(), putchar(), puts().
UNIT II: TOPICS	Operators & Expression: Arithmetic, relational, logical, bitwise, unary, assignment, conditional operators and special operators. Arithmetic expressions, evaluation of arithmetic expression, type casting and conversion, operator hierarchy & associativity. Decision making & branching: Decision making with IF statement, IF-ELSE statement, Nested IF statement, ELSE-IF ladder, switch statement, goto statement
UNIT III: TOPICS	Decision making & looping: For, while, and do-while loop, jumps in loops, break, continue statement. Functions: Definition, prototype, passing parameters, recursion. The C Preprocessor.
UNIT IV: TOPICS	Storage classes in C: auto, extern, register and static storage class, their scope, storage, & lifetime. Arrays: Definition, types, initialization, processing an array, passing arrays to functions,

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	Strings & arrays. Pointers: Pointers and address, Pointers and function arguments, Pointers and arrays, Address arithmetic, Character pointer arrays, Pointers and functions, Pointer arrays, Pointers to pointers, Multidimensional arrays, initialization of pointer arrays, Pointer vs. Multi-dimensional arrays, Command-line arguments, Pointer to functions.
UNITV: TOPICS	Structures and I/O: Basic of structures, Structures and functions, Arrays of structures, Pointers to structures, Self- referential structures, Table lookup, Type of, unions and bit-fields. Input and Output: Standard input and output, formatted output-Print, Variable length argument lists, File access, File descriptor, Low level I/O- Read and Write, Open, Create, Close.

Suggested Books:

1. Programming with C, Gottfried, TMH
2. Practical C Programming, Oualline, SPD/O'REILLY
3. Let us C-Yashwant Kanetkar.
4. Programming in C- Ashok N Kamthane
5. The C Programming Lang., Pearson Ecl – Dennis Ritchie.

PAPER NAME: Computer hardware maintenance Motherboard, Basic Troubleshooting

UNITI: TOPICS	Hardware Basics: Basic terms, concepts, and functions of system modules (System board, firmware, storage devices, monitor, boot process, ports). CMOS and BIOS, Overview of system components, Motherboard: definition, Components/connections in motherboard, Knowing mother board of PC, Identifying types of motherboard, SMPS: Circuit diagrams and pin assignments, working of SMPS Input and load requirements.
UNITII: TOPICS	Memory Module and Hard disk: Features of different types memory modules, Reading memory error messages, adding RAM, Tips on installing memory chips, Static and handling precautions. Disk structure: Cylinders, heads, platters, tracks and sectors, structure of a disk, hard disk controllers. Types of interface controller and drives. Hard disk software installation: Physical formatting, partitioning, high level formatting, Hard disk installation
UNITIII: TOPICS	Input / Output Devices: Keyboard : Keyboard and Mouse operation, Key switches, Common faults and diagnostics, Scanner: Working Principle, Types and Fault finding, CDROM drive:- CD drives mechanism installation of CD drive, Monitors: Display basics, Display adapter cards, VGA and super VGA, Failure, Troubleshooting and Elimination, Printer: Types, Interfaces, Parts, Working Principle and Connection to Computers.
UNITIV: TOPICS	Troubleshooting and Preventive Maintenance: Troubleshooting basics, Troubleshooting by visual Inspection, Preventative Maintenance, Using Preventative Maintenance Tools, POST :

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	Functions, Test Sequence, Error messages, Troubleshooting Procedures and Preventative Maintenance: Identifying Troubleshooting Tools, Hardware tools, Diagnostic software, Materials and equipment, Software utilities, Maintaining Environmental Controls, Ventilation and airflow, Humidity and liquids, Dirt and dust, Power, UPS, and suppressors, Completing Maintenance Tasks, Case and components, Power supplies
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Suggested Books:

SEMESTER: V

PAPER NAME: Microprocessors II

UNITI: TOPICS	Interfacing: Interfacing of memory chips, address allocation technique and decoding; Interfacing of I/O devices, LEDs and toggle-switches as examples, memory mapped and isolated I/O structure; Input/Output techniques: CPU initiated unconditional and conditional I/O transfer, device initiated interrupt I/O transfer.
UNITII: TOPICS	Interrupts: Interrupt structure of 8085A microprocessor, processing of vectored and non vectored interrupts, latency time and response time; Handling multiple interrupts
UNITIII: TOPICS	Programmable Peripheral Interface: Intel 8255, pin configuration, internal structure of a port bit, modes of operation, bit SET/RESET feature, programming; ADC and DAC chips and their interfacing.
UNITIV: TOPICS	Programmable Interval Timer: Intel 8253, pin configuration, internal block diagram of counter and modes of operation, counter read methods, programming, READ-BACK command of Intel 8254.

Suggested Books:

PAPER NAME: Linux Administration

UNITI: TOPICS	Introduction to Unix & Linux History of Unix & Linux Basic Concepts of Operating Systems, Kernel, shell and file system structure Basic Concepts of Linux Basic Commands of Linux Advanced Linux Commands
UNITII: TOPICS	Installation of Linux Interactive Installation Kickstart Installation Network based Installation
UNITIII: TOPICS	Startup and Shutdown scripts Boot Sequence Kernel Initialization INIT Process
UNITIV: TOPICS	Software Package Administration

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	Installing and deleting software packages Querying and updating software packages
UNIT V: TOPICS	Network Information Service (NIS) Basics of NIS Configuring NIS master server, slave server and client Creating NIS users
UNIT VI: TOPICS	DNS with Bind Basis of Internet Basic of DNS and BIND Configuring DNS primary server, and secondary servers Configuring DNS for multiple domains and sub domains Configuring various clients (Windows& Linux)
UNIT VII: TOPICS	Mail Server(SMTP,POP3,IMAP) Basics of Mail servers Configuring SMTP services Configuring POP3/IMAP service on Linux Integrating Antivirus and Antispam.
UNIT VIII: TOPICS	Proxy Server (Squid) Basics of proxy services Configuring proxy services Creating ACL's for controlling access to internet

Suggested Books:

PAPER NAME: Internet and Web Technologies

UNIT I: TOPICS	Web Essentials: Clients, Servers, and Communication. The Internet-Basic Internet Protocols The WorldWide Web-HTTP request message-response message-Web Clients Web Servers-Case Study. MarkupLanguages: XHTML.An Introduction to HTML History-Versions-Basic XHTML Syntax and SemanticsSome Fundamental HTML Elements-Relative URLs-Lists-tables-Frames-Forms-XML Creating HTML Documents CaseStudy.
UNIT II: TOPICS	Style Sheets: CSS-Introduction to Cascading Style Sheets-Features-Core Syntax-Style Sheets and HTMLStyle Rle Cascading and Inheritance-Text Properties-Box Model Normal Flow Box Layout-Beyond theNormal Flow-Other Properties-Case Study. Client- Side Programming: The JavaScript Language-Historyand Versions Introduction JavaScript in Perspective-Syntax Variables and Data Types-StatementsOperators- Literals-Functions-Objects-Arrays-Built-in Objects-JavaScript Debuggers.
UNIT III: TOPICS	Host Objects : Browsers and the DOM-Introduction to the Document Object Model DOM History andLevels-Intrinsic Event Handling-Modifying Element Style-The Document Tree-DOM Event HandlingAccommodating Noncompliant Browsers Properties of window-Case Study. Server-Side Programming: Java Servlets- Architecture -Overview-A Servlet-Generating Dynamic Content-Life Cycle-ParameterData-Sessions-Cookies- URL Rewriting-Other Capabilities-Data Storage Servelets and Concurrency-CaseStudy- Related Technologies.
UNIT IV: TOPICS	Representing Web Data: XML-Documents and Vocabularies-Versions and Declaration -NamespacesJavaScript and XML: Ajax-DOM based XML processing Event-oriented Parsing: SAX-TransformingXML Documents-Selecting XML Data:XPath-Template



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	based Transformations: XSLT-DisplayingXML Documents in Browsers-Case Study-Related Technologies. Separating Programming andPresentation: JSP Technology Introduction-JSP and Servlets-Running JSP Applications Basic JSPJavaBeans Classes and JSP-Tag Libraries and Files-Support for the Model-View-Controller ParadigmCase Study-Related Technologies.
UNIT V: TOPICS	Web Services: JAX-RPC-Concepts-Writing a Java Web Service-Writing a Java Web Service ClientDescribing Web Services: WSDL- Representing Data Types: XML Schema-Communicating ObjectData: SOAP Related Technologies-Software Installation-Storing Java Objects as Files-Databases and Java Servlets.

Suggested Books:

1. Jeffrey C.Jackson, "Web Technologies--A Computer Science Perspective", Pearson Education, 2006.
2. Robert. W. Sebesta, "Programming the World Wide Web", Fourth Edition, Pearson Education, 2007.
3. Deitel, Deitel, Goldberg, "Internet & World Wide Web How To Program", Third Edition, Pearson Education, 2006.
4. Marty Hall and Larry Brown,"Core Web Programming" Second Edition, Volume I and II, Pearson Education, 2001.

PAPER NAME: Fault Diagnosis:

Types of faults and different tasks of Fault Diagnosis and Implementation - Different approaches to FDD: Model free and Model based approaches. Classification of Fault and Disturbances- Different issues involved in FDD- Typical applications. Analytical Redundancy Concepts: Introduction- Mathematical representation of Fault and Disturbances: Additive and Multiplicative types – Residual Generation: Detection, Isolation, Computational and stability properties – Design of Residual generator – Residual specification and Implementation. Design of Structured Residuals: Introduction Residual structure of single fault Isolation: Structural and Canonical structures- Residual Structure of Multiple fault Isolation: Diagonal and Full Row canonical concepts – Introduction to parity equation implementation and alternative representation. Design of Directional structured Residuals: Introduction – Directional Specifications: Directional specification with and without disturbances – Parity Equation Implementation – Linearly dependent column. Advanced level issues and design involved in FDD: Introduction of Residual generation of parametric fault – Robustness Issues –Statistical Testing of Residual generators – Application of Neural and Fuzzy logic schemes in FDD – Case study.

SEMESTER: VI

PAPER NAME:Broadband Technology



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1. Fundamentals of Broadband Technology
2. Voice communication systems
3. Data communication systems
4. Broadband Network Infrastructure
5. Broadband network services
6. Video and Multimedia networking
7. Voice over IP

PAPER NAME: Telecommunication I

1. The history of telecommunications, Equipment Services and Regulations
2. Current Telecommunication equipment and services Transmission systems
3. Wireless, cellular and communications equipment
4. Computer networking and communication systems
5. Careers in Telecommunications and future trends

PAPER NAME: Information Security Management

1. The need for information security
2. Computer and network threats and risk
3. Security Policies and Procedures
4. An information security plan
5. Risk management
6. Disaster plans and recovery
7. Security implementation

PAPER NAME:Computer Forensics

1. Computer Forensics components
2. The investigators tools and facilities
3. The investigation processes
4. Recovery of information
5. Recovery of the network

PAPER NAME:Accounting Information Systems

1. Recording business transactions including cash payments, cash receipts, purchases on account,
2. sales on account and credit/debit memorandums.
3. Learning about how accounting information systems work.
4. Preparation properly classified financial statements.

PAPER NAME:Concepts of Coding

1. Basic programming
2. Drawing basics
3. Coloring

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4. Variables
5. Animation basics
6. Text
7. Functions
8. Logic and If Statements
9. Looping
10. Arrays
11. Objects
12. Object-oriented design

PAPER NAME: Database and Information Systems

UNITI: TOPICS	Database System Concepts & Architecture: Data Independence, Schemas, Instances, Database Languages, Database System Environments Data Models, Basic Structure of Oracle System, Storage Organization in Oracle.
UNITII: TOPICS	Data Modelling: Use of High –level Conceptual Data Models, ER Diagrams, Subclasses, Superclasses and Inheritance, Specialization & Generalization, Conceptual Object Modeling using UML ClassDiagrams, Knowledge Representation Concepts, Exercises.
UNITIII: TOPICS	Relational Data Model: Relational constraints, domain constraints, key constraints referential integrity Constraints, relational algebra, fundamental operations of relational algebra &theirImplementation, interdependence of operations, example queries.
UNITIV: TOPICS	ER and EER to Relational Mapping: Mapping EER model concepts to relation, tuple relational calculus, domain relationalCalculus queries.
UNITV: TOPICS	Database Design: Functional dependencies, irreducible sets of dependencies, loss less decomposition, 1st, 2 nd & 3 rd NF, dependency preservation, Boyce Codd NF, Multivalued Dependency & 4th NF, join Dependency & 5 NF, domain key normal form, restriction –union normal form,Denormalization.
UNITVI: TOPICS	Query Processing And Optimization: SQLBasicQueries in SQL, Subqueries, Retrieving a Query Plan – Table Space Span & I/O, IndexScan, Equal Unique Index Lookup, Clustered vs. Non Clustered Indexing, Index Only Scan,Methods for Joining Tables –Nested Loop Join Merge Join, Hybrid Join, Multiple table Join,Transforming Nested Queries to Joins, Object Relational SQL, Procedural SQL, Introductionto Embedded SQL.
UNITVII: TOPICS	Transaction: Schedules,Serializability, Precedence Graph, Concurrency Control Techniques,Implementation of Transaction in Programs, Cursors and Transaction, Dynamic SQL,Locking Levels of Isolation, Recovery, Checkpoints.



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PAPER NAME: Electronic Spreadsheets and Graphics

1. Working with Windows
2. Formatting a worksheet
3. Formulas and functions
4. Automating tasks
5. Analyzing list data
6. What-If analysis
7. Exchanging data
8. Customizing Excel
9. Building and editing worksheets
10. Working with charts
11. Managing workbooks
12. Using lists
13. Enhancing charts and worksheets
14. Pivot Tables
15. Shared data
16. Programming with Excel