

**COMPUTER SCIENCE
HIMACHAL PRADESH UNIVERSITY**

SCHEME & SYLLABUS

**IN THE SUBJECT OF COMPUTER SCIENCE FOR B. Sc. WITH MAJOR IN COMPUTER
SCIENCE AND MINOR ELECTIVE IN COMPUTER SCIENCE (2013-2014 onwards)**

(A) Structure of Major in Computer Science (Minimum Credits to be Earned=56)

Semester	Course Code	Course Type	Course Name	Credit(s)/week	Cumulated Credits Category-wise
I (Odd)		Compulsory Course I	To be Selected from the list of Compulsory Courses	3	Compulsory 6 6 Core – 8 Elective 6 8 GI & H 6 2 Total 6 24
		Compulsory Course II (Skill Based)	To be Selected from the list of Compulsory Courses (Skill Based)	3	
	BSCCSC0101	Major Core Course I	Computer Fundamentals	4	
	BSCCSC0102	Major Core Course II	P C Software	2	
		Minor Elective Course I (a)	To be Selected from the list for Minor Elective Subject other than Computer Science	4	
		Minor Elective Course I (b)	To be Selected from the list for Minor Elective Subject other than Computer Science	4	
	BSCCSC0102(P)	Major Core Lab Course II	PC Software Lab 1	2	
		GI and H Course I	To be Selected from the list GI and Hobby Courses	2	
II (Even)		Compulsory Course III	To be Selected from the list of Compulsory Courses	3	Compulsory 6 6 (12) Core – 8 (16) Elective 6 8 (16) GI & H 6 2 (4) Total 24 (48)
		Compulsory Course IV (Skill Based)	To be Selected from the list of Compulsory Courses (Skill Based)	3	
	BSCCSC0203	Major Core Course III	Computer Organization & Architecture	4	
	BSCCSC0204	Major Core Course IV	Programming in C	2	
		Minor Elective Course II (a)	To be Selected from the list for Minor Elective Subject other than Computer Science	4	
		Minor Elective Course II (b)	To be Selected from the list for Minor Elective Subject other than Computer Science	4	

Semester	Course Code	Course Type	Course Name	Credit(s)/week	Cumulated Credits Category-wise
	BSCCSC0204(P)	Major Core Lab Course IV	C Programming Lab II	2	
		GI and H Course II	To be Selected from the list GI and Hobby Courses	2	
III (Odd)		Compulsory Course V	To be Selected from the list of Compulsory Courses	3	Compulsory 6 6 (18) (Complete) Core – 8 (24) Elective 6 8 (24) GI & H 6 2 (6) (Complete) Total 24 (72)
		Compulsory Course VI	To be Selected from the list of Compulsory Courses (Skill Based)	3	
	BSCCSC0305	Major Core Course V	System Analysis & Design	4	
	BSCCSC0306	Major Core Course VI	Data Base Management System	3	
		Minor Elective Course III (a)	To be Selected from the list for Minor Elective Subject other than Computer Science	3	
		Minor Elective Course III(b)	To be Selected from the list for Minor Elective Subject other than Computer Science	3	
	BSCCSC0306(P)	Major Core Lab Course VI	Data Base Management System Lab III	1	
	GI and H Course III	To be Selected from the list GI and Hobby Courses	2		
IV (Even)	BSCCSC0407	Major Core Course VII	Operating System	4	Core – 8 (32) Elective 6 8 ((32) Core / Elective (additional) - 4 Total 20 (92)
	BSCCSC0408	Major Core Course VIII	Data Structure	3	
		Minor Elective Course IV (a)	To be Selected from the list for Minor Elective Subject other than Computer Science	4	
		Minor Elective Course IV (b)	To be Selected from the list for Minor Elective Subject other than Computer Science	4	
	BSCCSC0408(P)	Major Core Lab Course VIII	Data Structure Lab IV	1	
		Core / Elective Course (Additional)*		4	
V (Odd)	BSCCSC0509	Major Core Course IX	Software Engineering	4	Core – 12 (44) Elective 6 8 (40) (Complete) Core / Elective (additional) 6 4(8)
	BSCCSC0510	Major Core Course X	Management Information System	4	
	BSCCSC0511	Major Core Course XI	Object Oriented Programming with C++	2	

Semester	Course Code	Course Type	Course Name	Credit(s)/week	Cumulated Credits Category-wise
		Minor Elective Course V(a)	To be Selected from the list for Minor Elective Subject other than Computer Science	4	Total 24 (116)
		Minor Elective Course V(b)	To be Selected from the list for Minor Elective Subject other than Computer Science	4	
	BSCCSC0511(P)	Major Core Lab Course XI	Object Oriented Programming with C++ Lab V	2	
		Core / Elective Course (Additional)*	Any one of the Additional or open elective courses	4	
VI (Even)	BSCCSC0612	Major Core Course XII	Fundamental of Networking	4	Core – 12 (56) Core / Elective (additional) 6 28 Total 32 (148)
	BSCCSC0613	Major Core Course XIII	Multimedia Technology	4	
	BSCCSC0614	Major Core lab Course XIV	Project Development	4	

***Additional Elective Courses offered by Computer Science Department (can be chosen for earning credits over and above 56 Major subject credits, 40 Minor elective credits, 9 (Min.) Compulsory course credits and 1 (Min.) 3G I&H Course credits i.e. total 106 credits; for getting B.Sc. Degree a learner has to earn a minimum of 120 credits.)**

Semester	Course Code	Course Type	Course Name	Credit(s)/week	Cumulated Credits Category-wise
V/VI	BSCCSC0615	Core / Elective Course (Additional)*	Digital Electronics	4	
V/VI	BSCCSC0616	Core / Elective Course (Additional)*	Artificial Intelligence	4	
V/VI	BSCCSC0617	Core / Elective Course (Additional)*	Internet Technology	2	
	BSCCSC0617(P)		Internet Technology Lab	2	
V/VI	BSCCSC0618	Core / Elective Course (Additional)*	Programming with JAVA	2	
	BSCCSC0618(P)		Programming with JAVA Lab	2	
V/VI	BSCCSC0619	Core / Elective Course	Computer Graphics	4	

		(Additional)*			
V/VI	BSCCSC0620	Core / Elective	Programming Using Visual Basic	2	
	BSCCSC0620(P)	Course (Additional)*	Programming Using Visual Basic Lab	2	

***Open Elective Courses offered by Computer Science Department**

Semester	Course Code	Course Type	Course Name	Credit(s)/ week	Cumulated Credits Category- wise
V/VI	BSCCSC0617	Core / Elective Course (Additional)*	Internet Technology	2	
	BSCCSC0617(P)		Internet Technology Lab	2	
V/VI	BSCCSC0102	Core / Elective Course (Additional)*	PC Software	2	
	BSCCSC0102(P)		PC Software Lab	2	

General Interest Courses Offered by Computer Science Department

Semester	Course Code	Course Type	Course Name	Credit(s)/ week	Cumulated Credits Category- wise
I/II/III	BSCCSC**21	GI/H	Introduction to Window Operating System	2	
I/II/III	BSCCSC**22	GI/H	e-Commerce	2	
I/II/III	BSCCSC**23	GI/H	Cyber Law	2	

(B) Structure of Minor Elective in Computer Science for other than Major Computer Science Students (Minimum Credits to be Earned=20). Other than Computer Science Major learner can do Double major by earning 34 more credits over and above 20 credits of Minor Elective.

List of Minor electives in Computer Science

Semester	Course Code	Course Name	Course Name	Credit(s)/ week	Cumulated Credits Category- wise
I/II/III/IV/V	BSCCSC0101	Minor Elective Course I (a)	Computer Fundamental	4	
	BSCCSC0102	Minor Elective Course II (a)	PC Software	2	
	BSCCSC0102(P)	Minor Elective Lab Course II (a)	PC Software Lab	2	

Semester	Course Code	Course Name	Course Name	Credit(s)/ week	Cumulated Credits Category- wise
	BSCCSC0204 BSCCSC0204(P)	Minor Elective Course III (a) Minor Elective Lab Course III(a)	Programming in C C Programming Lab III	2 2	
	BSCCSC0306 BSCCSC0306(P)	Minor Elective Course IV (a) Minor Elective Course IV (a)	Data Base Management System Data Base Management System Lab	3 1	
	BSCCSC0407	Minor Elective Course V (a)	Operating System	4	

Compulsory (Skill Based) Course based on "spokentutorial.org" based on National Mission of Education through Information and Communication Technology (NMEICT), MHRD, Government of India.

Semester	Course Code	Course Type	Course Name	Credit(s)/ week	Cumulated Credits Category- wise
I/II/III	BSCCSC**24 BSCCSC**24(P)	Compulsory Course (Skill Based)	C	2 1	
I/II/III	BSCCSC**25 BSCCSC**25(P)	Compulsory Course (Skill Based)	Python	2 1	
I/II/III	BSCCSC**26 BSCCSC**26(P)	Compulsory Course (Skill Based)	PHP & MySQL	2 1	
I/II/III	BSCCSC**27 BSCCSC**27(P)	Compulsory Course (Skill Based)	Scilab	2 1	

BSCCSC0101- Computer Fundamentals

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UNIT-I

Introduction: Characteristics of Computers, Evolution of computers, Capabilities and limitations of computers, Generations of computers, Types of computers (micro, mini, main frame, supercomputers), Block diagram of computer, Basic components of a computer system- Input unit, output unit, Arithmetic logic Unit, Control unit, Central Processing Unit, Instruction set, registers, processor speed, type of processors, Memory- main memory organization, main memory capacity, RAM, ROM, EPROM, PROM, cache memory, PCs specifications.

UNIT-II

Input devices: Keyboard, Pointing Devices-mouse, Touch Screens, Joystick, Electronic pen, Trackball, Scanning Devices-Optical Scanners, OCR, OMR, Bar Code Readers, MICR, Digitizer, Electronic card reader, Image Capturing Devices-Digital Cameras.

Output devices: Monitors, CRT/LCD/TFT, Printers, Dot matrix, Inkjet, Laser, Plotters, Drum, Flatbed, Screen image projector.

Secondary Storage Devices: Magnetic Tape, Magnetic Disks-Hard Disk, Floppy Disks, Optical Disks, CD, VCD, CD-R, CD-RW, DVD, Solid State Storage-Flash Memory, USB Drives.

UNIT-III

Computer Software: Software, its Need, Types of software-System software, Application software, System software-operating system, utility program, programming languages, assemblers, compilers and interpreter, introduction to operation system for PCs-DOS, windows, linux, file allocation table (FAT & FAT32), files & directory structure and its naming rules.

UNIT-IV

Programming languages-machine, assembly, high level, 4GL, their merits and demerits, application software and its types – word-processing, spreadsheet, presentation graphics, Data Base Management Software, Characteristics, Uses and examples and area of application of each of them, Virus working, feature, types of viruses, virus detection, prevention and cure.

Text & Reference books:

1. Pradeep K. Sinha, Priti Sinha, "Computer Fundamentals". BPB Publications.
2. Rajaraman, V., "Fundamental of Computers". Prentice Hall India, New Delhi.

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5-10 parts, out of the entire syllabus. In all, five questions are to be attempted.

BSCCSC0102- PC Software

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UNIT -I

DOS commands: (internal (DIR, DATE, TIME, CLS, CD, RD, MD, PATH, TYPE, DEL, ECHO, COPY, REN, PROMPT, VOL, VER), external (ATTRIB, CHKDSK, DISKCOPY, DISKCOMP, XCOPY, TREE, DELTREE, DOSKEY, FORMAT, FIND, SORT, FDISK, MORE, SYS)), Concept of files & directories, Wild card characters, Redirection operators.

Windows 7: Definition, Benefits, Features & uses of Windows 7, Control panel, Accessories, Task bar, My computer uses, Recycle bin.

UNIT -II

Office 2007: Elements, Introduction to Office 2007, Customizing the Office Environment, Managing Files in Office, Text Tools, Drawing and Graphics Tools.

Word Processing: Definition, Benefits, Features & uses of Word 2007, Menus, Toolbars, Cursor control keys, Short cut keys, Hot keys, Editing Text, Document Formatting, Reusable formatting with Styles and Templates, File handling (opening, creating, saving, printing, editing), Formatting text, Find and replace, Tables and Columns, Advanced Page Layout in Word, Automating Information with Fields, Managing Long Documents, Spell check, Thesaurus, File protection, Mail Merge, Labels, and Envelopes, Macros.

UNIT -III

Spreadsheets: Definition, Benefits, Features & Uses of MS Excel 2007, Menus, Toolbars, Worksheets, Formatting Worksheets and Restricting Data, Calculating with Formulas and Functions, Ranges, Auto fill, Data (sort, filter, validation, subtotal), Viewing and Manipulating Data with charts and PivotTables, Print, Goal seek, Scenario, Macros, Creating Excel Databases.

UNIT -IV

Presentations: Definition, Benefits, Features & Uses of PowerPoint, Menus, Toolbars, Creating and Editing Slides, Adding graphics, Multimedia, and Special Effects to Slides, Insert (picture, slide, text), Master slide, Views, Animation, Action buttons, Macros.

Text & Reference Books:

1. Jennifer Ackerman Kettell, Guy Hart-Davis, Curt Simmons, "Microsoft Office 2007: The Complete Reference", Tata McGraw Hill.
2. Biswaroop Roy Choudhary, "Computer course", Fusion Books.

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5-10 parts, out of the entire syllabus. In all, five questions are to be attempted.

BSCCSC0203- Computer Organization and Architecture

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UNIT -I

Data representation: number systems, decimal to binary, octal and hexadecimal conversion and vice versa, binary coded decimal numbers, hamming code for error detection, alphanumeric codes, arithmetic operations, binary addition and subtraction, addition/subtraction of numbers in 1's and 2's complement notation for binary numbers and 9's and 10's complement notation for decimal numbers, binary multiplication and division.

UNIT-II

Register Transfer Language: Register transfer, Bus and Memory transfer (three-stage bus buffers, memory transfer), arithmetic micro-operations Logic micro-operation (list op logic micro-operations, hardware implementation), shift micro-operations (hardware implementation), arithmetic logic shift unit, instruction codes (stored program organization, indirect address), computer registers (common bus register).

UNIT-III

Computer instructions (instruction set completeness), timing and control, instruction cycle (fetch and decode, types of instruction, register-reference instructions), Micro programmed control, control memory, addressing sequencing (conditional branching, mapping of instructions, subroutine) Central Processing Unit: Introduction, general register organization (control word, examples of micro-operations), stack organization (register stack, memory stack, reverse polish notation, evaluation of arithmetic expressions),

UNIT-IV

Instruction formats (three-address instructions, two address instructions, one-address instructions), addressing modes.

Input Output Organization: Introduction to peripheral devices, input output interface (I/O bus and interface modules, I/O versus memory bus, isolated versus memory-mapped I/O), asynchronous data transfer (strobe control, handshaking).

Text and reference books:

1. M.Morris Mano, "Computer System Architecture" 3rd edition, PHI.
2. V. Rajaraman, T. Radhakrishanan, "An Introduction to Digital Design", PHI
3. J.P.Hays, "Computer Organization and Architecture", McGraw Hill.

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5-10 parts, out of the entire syllabus. In all, five questions are to be attempted.

BSCCSC0204 - Programming in C

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UNIT-I

Introductory Concepts: Introduction to computers, Computer characteristics, modes of operation, Types of programming languages, Introduction to C, some simple C programs, Desirable program characteristics.

C Fundamentals: C character Set, Identifiers and keywords, data types, constants, variables and arrays, Declarations, expressions, statements, Symbolic constants.

UNIT-II

Operators and expressions: Arithmetic operators, unary operator, Relational and logical operators, assignment operators, conditional operators, Library Functions.

Data Input and Output: Preliminaries, single character input, single character output, Entering input data, writing output data, the gets and puts function.

Preparing and Running a Complete C Program: Planning a program, Writing a C program, entering the program into the compiler, compiling and executing the program, error diagnosis, debugging techniques.

UNIT-III

Control Statements: Preliminaries, Branching, Looping, Nested control statements, switch statement, break statement, The continue statement, The goto statement, The comma operator.

Arrays: Defining an array, processing an array, passing arrays to functions, Multidimensional arrays, Arrays and strings.

UNIT-IV

Functions: Defining a function, accessing a function, function prototypes, passing arguments to a function, recursion.

Pointers: Fundamentals, Pointer declarations, Passing pointers to the functions, pointers and one dimensional array, dynamic memory allocation, Operations on pointers, arrays of pointers.

Text & Reference Books:

1. Byron Gottfried, "Programming with C", Schaum's Outlines, Tata McGraw Hill.
2. Mullis Cooper, "Spirit of C": Jacob Publications.
3. Yashwant Kanetkar, "Let us C": BPB.
4. Kerningham B.W. & Ritchie D. M., "The C Programming Language": PHI.

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5-10 parts, out of the entire syllabus. In all, five questions are to be attempted.

BSCCSC0305- System Analysis and Design

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UNIT -I

Overview of System Analysis and Design: Business System concepts, System development life cycle, Project Selection, Feasibility Analysis, Design, Limitation, testing and evaluation.

Initial Investigation: Sources of Requests, User / Analyst interaction, Qualities of a System Analyst.

UNIT -II

Feasibility studies: Introduction, Technical, Operational, Behavioral and Economic feasibilities, cost and benefit analysis.

UNIT -III

System requirement specification and analysis: Fact finding techniques, Data Flow Diagrams, Data Dictionaries, process organization and interaction, Decision Analysis, Decision Trees and Tables, Top down and bottom up variance, Audit trails.

UNIT -IV

Detail Design: Modularization, module specification, file design, system development involving databases.

System Control and Quality Assurance: Design objectives reliability and maintenance, software design and documentation tools, unit and integration testing, testing practice and plans, system control.

Text & Reference Books:

1. Awad, "System Analysis Design", Galgotia Publishing, Delhi.
2. Jamas, A.S., "Analysis and design of information systems", Mc Graw Hill.
3. Luteberg, M., Golkuhl, G and Hilsson, A, "Information System Development a Systematic Approach", PHI.
4. Leeson N., "System Analysis and Design", Science Research Associates, 1985.
5. Samprive, P.C., "System analysis: Definition Process and Design".

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5-10 parts, out of the entire syllabus. In all, five questions are to be attempted.

BSCCSC0306 - Data Base Management System

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UNIT-I

Introduction To Database Concepts: Data Modeling for a Database, Fields, Records and Files, Abstraction and Data Integration, Database Architecture, Users, Structure of DBMS, Advantages and Disadvantages of DBMS.

Data Models: Entity, Attribute, Relationship, Data Model Classifications, File based, Traditional, Semantic, Entity-Relationship Model.

UNIT-II

File Organization: Operation on files, Sequential Files, Index-Sequential Files, Types of Indexes, Implicit, limit, multilevel, Direct Files, Indexing using B-Tree Structure.

Relational Model: Relational Database- Relational Algebra, Relational Calculus.

UNIT-III

Relational Database Design: Relational Scheme and Relational Design, Functional Dependency, Normal forms (First, Second, Third, Boyce Code), Decomposition and dependency preservation, Multi-valued dependency.

UNIT-IV

MS Access: Tables (Creation/Design structure, Data Entry), Primary keys, Foreign Keys Master-Detail Table, Query (Select, Make-Table, Update, Append, Delete) Form (Modal, Modeless), Relationships Report (Creation of a simple report from a table and from a query).

Text & Reference Books:

1. Elmasri And Navathe, "Fundamentals of Database Systems", Benjamin/Cummings Publishing Co. Inc.
2. Bipin C. Desai, "An Introduction to Database Management System".
3. Users Reference Manuals Of Ms Access.
4. Date, C.J., "An Introduction to Database System", Narosa Publishing House.

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5-10 parts, out of the entire syllabus. In all, five questions are to be attempted.

BSCCSC0407 - Operating System

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4 0 0

UNIT -I

Operating System Concepts: Operating System Classification- Simple Monitor, Multi Programming, Time Sharing, Real Time Systems, Multiprocessor Systems, Batch Processing, Single User, Multi User, Operating System Functions and Characteristics.

UNIT -II

Processor Management: Process Overview, Process States, Process State Transitions, Process Control Block, Operations On Processes, Suspend And Resume, Interrupt Processing, Scheduling Algorithms, Multiple Processor Scheduling.

UNIT -III

Deadlock: Deadlock Problem, Deadlock, Deadlock Characterization, Necessary Conditions, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery From Deadlock.

UNIT -IV

Memory Management: Partition, Paging, Segmentation, Types Of Memory Management Scheme, Bare Machine, Resident Monitor, Swapping, Multiple Partition, Virtual Memory, Demand Paging.

Text & Reference Books:

1. James L. Peterson And Abraham Silberschatz, "Operating System Concepts", Addison Wesley Publishing Company.
2. H.M.Deitel, "Operating Systems", Addison Wesley Publishing Company.
3. A.M.Lister, "Fundamentals Of Operating Systems", Macmillan Publishers Ltd.

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5-10 parts, out of the entire syllabus. In all, five questions are to be attempted.

BSCSC0408 - Data Structures

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UNIT-I

Preliminaries: Concept & notation, common operation on data structures, algorithm complexity, time-space trade off between algorithm, physical & logical representation of different data structures. Arrays: Arrays defined, representing arrays in memory, Various operation (traversal, insertion, deletion), Multidimensional arrays, Sequential allocation, Address calculation.

UNIT-II

Linked List: Definition, type (linear, circular, doubly linked, inverted), representing linked lists in memory, advantages of using linked list over arrays, various operations on Linked list (traversal, insertion, deletion).

UNIT-III

Stacks: Definition & concepts of stack structure, Implementation of stacks, Operation on stacks (push & pop), Application of stacks (converting arithmetic expression from infix notation to polish and their subsequent evaluation), quick sort technique to sort an array, recursion). Queue: Definition & concept of queues, implementation of queue, operation on queues (insert & delete), circular queue.

UNIT-IV

Trees Structures: Tree, Binary Trees, Tree Traversal Algorithms (Pre-Order, In-Order, Post-Order), Threaded Trees, Binary Search Trees. Sorting & Searching: Selection sort, Bubble sort, Quick sort, Binary search, Linear search and their complexity.

Text & Reference Books:

1. Jean Paul Tremblay & Paul G. Sorenson: An Introduction to Data Structures with Applications: Tata McGraw Hill.
2. Aaron M. Tenenbaum, Yedidyah Langsam, Moshe J. Augenstein: Data Structures using C: PHI.

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5-10 parts, out of the entire syllabus. In all, five questions are to be attempted.

BSCSC0509 – Software Engineering

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UNIT – I

Software engineering: Evolving Role of Software, Software Engineering, Changing nature of Software, Software Myths, Terminologies, Role of management in software development Software Process and desired Characteristics.

UNIT – II

Software Life Cycle Models: Build & Fix Model, Water Fall Model, Incremental Process Model, Evolutionary Process Models, Unified Process, Comparison of Models, Other Software Processes, Selection of a Model.

UNIT – III

Software Requirements Analysis & Specifications: Requirements Engineering, Types of Requirements, Feasibility Studies, Requirements Elicitation, Requirements Analysis Documentation, Validation and Management.

UNIT – IV

Software Architecture: Its Role, Views, Component & Connector View and its architecture style, Architecture Vs Design, Deployment View & Performance Analysis, Documentation, Evaluation.

Function Oriented Design: Design principles, Module level Concepts, Notation & Specification, Structured Design Methodology, Verification

Text & Reference Books:

1. Pankaj Jalote, “An Integrated Approach to Software Engineering”, 3rd Edition, Narosa Publishing House, 2005.
2. K.K. Aggrawal and Yogesh Singh, “Software Engineering”, 3rd Edition, New Age International (P) Ltd, 2008.
3. Pressman, R.S., “Software Engineering – A Practitioner's Approach”, 3rd Edition, McGraw Hills, 2008.
4. Mall Rajib, “Fundamentals of Software Engineering”, PHI, New Delhi, 2005.

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5-10 parts, out of the entire syllabus. In all, five questions are to be attempted.

BSCCSC0510- Management Information System

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UNIT -I

Management Information System: Definition, Meaning and Role of Management Information System Introduction, Definition, System's Approach, Pitfalls in Management Information Systems.
Development of Organizational Theory: Management & Organizational Behaviour, Management, Information & System Approach.

UNIT -II

Data Processing: Operation of Manual Information System, Components of Computer System, Conversion of Manual to Computer Based Systems, Data Bank Concept, Types of Computer Based Applications.
Information System for Decision Making: Evolution of Information System, Decision Making & Management Information System.

UNIT -II

Strategic & Project Planning for Management Information System: Business Planning, Management Information System Responses, Management Information System Planning- General & Details.
Conceptual System Design: Define Problem, Set System Objective, Establish System Constraints, Determine Information Needs & Sources, Develop Alternative Conceptual Design & Documentation, Prepare the Design Report.

UNIT -IV

Detailed System Design: Aim, Project Management, Define Subsystem, Input, Output & Process Design, System Testing, Software & Hardware selection, Documentation of Detailed Design.

Text & Reference Books:

1. Robert G. Murdick, Joel E. Ross, James R. Claggett, "Information System for Modern Management".
2. Surendra Basandra, "Computers Today".

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5-10 parts, out of the entire syllabus. In all, five questions are to be attempted.

BSCCSC0511- Object Oriented Programming with C++

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UNIT-I

Object oriented programming: Need for OOP, object oriented approach, characteristics of OOP language- objects, classes, Inheritance, Reusability, Polymorphism, overloading advantage of OOP, relationship between C and C++.

Programming Basic: Basic program construction, output using cout, preprocessor directive, comments, integer variables, character variables, input with cin, Type bool, setw Manipulator, type float, type conversion, arithmetic operators, relational operators, logical operators.

UNIT-II

Loops and decision control statements: loop- for, while, do, decision-if, if-else, switch, conditional operator, other control statements- break, continue, goto.

Functions: Simple functions, passing arguments to functions, Returning values from functions, reference arguments, overloaded functions, storage classes, scope resolution operator.

UNIT-III

Arrays: Array fundamental-defining array, array elements, Accessing array elements, Initializing arrays, multidimensional arrays, passing arrays to functions, array of objects, strings-string variables, Avoiding Buffer overflow, string constants, array of strings string as class members, Standard C++ string Class.

Objects and classes: A simple class, classes and objects, specifying a class, using a class, C++ objects as physical objects, C++ objects as data types, Constructors, objects as function arguments, returning objects from functions.

UNIT-IV

Inheritance: Derived class and base class, specifying the derived class, accessing base class, members, derived class constructors, overriding member functions, class hierarchies, public and private Inheritance, levels of inheritance, multiple inheritance, Ambiguity in Multiple Inheritance, Aggregation- Classes Within Classes.

Text & Reference Books:

1. Robert Lafore, "Object-Oriented Programming in C++", Galgotia Publications.
2. B. Chandra, "Object-Oriented Programming using C++", Narosa Publications.

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5-10 parts, out of the entire syllabus. In all, five questions are to be attempted.

BSCSC0612- Fundamentals of Networking

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4 0 0

UNIT-I

Introduction to Communication Network: Computer Networks,(Need, uses, and Advantages of Computer Network), Network Models (Peer-to-Peer-Network, Server-based Network, Client-Server Network), Network components, Network Topology (Star, Ring, Bus, Mesh, Tree, Hybrid) Advantage and Disadvantage of each types, Types of Networks (LAN, MAN, WAN), Internet (Brief History, Internet Protocol and Standard .

UNIT-II

Error Detection and Correction: Types of errors (Single-bit-error, Burst-Error), Error Detection (Redundancy, Parity check, CRC, Checksum), Error correction (FEC, Hamming code, Burst error corrections), Data Communication Channel and Media, Conductive Media (Twisted-pair cable, Coaxial cable), Fiber optics (Characteristic of light, Types of Fiber optics), Wireless Transmission, (Microwaves, Infrared, Radio waves).

UNIT-III

OSI Reference Model: OSI Model, OSI Physical Layer Concepts, DLL, Network Layer, TL, SL, PL and AL Concepts. Internet model / TCP/IP Model and Protocols, Modem, DSL, Cable Modem, ISDN, Real world network (Ethernet, Ethernet operation, frame format, Ethernet characteristic, cabling and components), Token Ring and Token Bus networking Technology.

UNIT-IV

TCP/IP Protocol: Introduction, TCP/IP Protocol Suite, Internet Architecture Board, TCP/IP Protocol (TCP,UDP,IP,ARD), concept of Physical Addressing, and logical Addressing, Different Classes of IP addressing, Special IP Addressing.

Text & Reference Books:

1. Ata Elahi, Mehran Elahi, “Data, Network and Internal communication Technology”, Cengage .
2. Behrowz A. Forouzan , “Data Communication and Networking”.
3. Andrew S. Tahanbaum, “Computer Network”.

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5-10 parts, out of the entire syllabus. In all, five questions are to be attempted.

BSCCSC0613 - Multimedia Technology

L T P
4 0 0

UNIT-I

Introduction to Multimedia : Needs and areas of use, Development platforms for multimedia, Identifying Multimedia elements Text, Images, Sound, Animation and Video, Making simple Multimedia with PowerPoint. Concepts of plain & formatted text, RTF & HTML texts, Object Linking and Embedding concept.

UNIT-II

Sound: Sound and its Attributes, Mono V/S Stereo Sound, Sound Channels, Sound and its Effect In Multimedia, Analog V/S Digital Sound, Overview Of Various Sound File Formats On PC WAV, MP3.

UNIT-III

Graphics: Importance of Graphics in Multimedia, Vector and Raster Graphics, Image Capturing Methods Scanner, Digital Camera Etc. Various Attributes of Images Size, Color, Depth , Resolution etc, Various Image File Format BMP, DIB, EPS, PIC, and TIF Format Their Features and imitations, Basics of animation, Software Tools for animation.

UNIT-IV

Video: Basics of Video Analog and Digital Video, How to use video on PC. Introduction to graphics accelerator cards, Brief note on various video standards NTSC, HDTV, Introduction to video capturing Media & instrument Videodisk. Virtual Reality Terminology Head Mounts Display (HMD), Boom, Cave, Input Devices and Sensual Technology

Text & Reference Books:

1. Multimedia: Making it work (4th edition), Tay vaughan, Tata McGraw Hills.
2. Multimedia in action, James E Shuman, Vikas Publishing House.
3. Multimedia basics volume / technology, Andreas hoi zinger, firewall media (Laxmi Publications Pvt. Ltd) New Delhi.

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5-10 parts, out of the entire syllabus. In all, five questions are to be attempted.

UNIT-I

Fundamentals of semiconductor physics: Energy bands in solids- pn-junction diode depletion region, forward and reverse bias, diode as switch; Bipolar Junction Transistor, transistor configurations, bipolar junction transistor (CE configuration) as switch, Saturated and non-saturated logic, Integrated Circuits, characteristics of digital logic families-TTL, ECL, CMOS.

UNIT-II

Logic gates: AND, OR, NOT Gates and their Truth Tables, NOR, NAND & XOR gates, Boolean algebra, Basic Boolean Law's, Demorgan's theorem, Boolean function and their truth tables.

UNIT-III

MAP simplification: Minimization techniques, K-Map, Sum of Product & Product of Sum, Venn diagram. Combinational circuit.

UNIT-IV

Sequential circuits: Half adder & Full adder, BCD adder, Full Subtractor, Flip-flops-RS, D, JK, T & Master-Slave flip-flops, Shift registers, Multiplexer, Encoder, Decoder.

Text & Reference Books:

1. Rajaraman V. & Radhakrishnan, "An Introduction To Digital Computer Design", PHI.
2. Malvino & Leach, "Digital Principles & Applications", TMH Publications.
3. Jain R.P. , "Modren Digital Electronics". TMH Publications.
4. Malvino, "Digital Computer Electronics". TMH Publications.
5. Bartee T.C., "Digital Computer Fundamentals". THM Publications.

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5-10 parts, out of the entire syllabus. In all, five questions are to be attempted.

BSCCSC0616 - Artificial Intelligence

L T P
4 0 0

UNIT – I

Overview of Artificial Intelligence: Definition Of AI, The Importance Of AI, Previous Works In The History Of AI, AI And Related Fields, Problems, Problem Spaces And Search.

UNIT – II

Knowledge: General Concepts, Definition and Importance of Knowledge, Knowledge-Based Systems, Representation of Knowledge, Knowledge Organization, Knowledge Manipulation, Acquisition of Knowledge.

Structural Knowledge: Graph, Frames and Related Structures.

UNIT – III

Formalized Symbolic Logics: Syntax And Semantics for Propositional Logic, Properties of Wffs, Conversion To Clausal Form, Inference Rules, Resolution, Dealing With Inconsistencies, Truth Maintenance Systems, Symbolic Reasoning under Uncertainty, Statistical Reasoning.

UNIT – IV

Natural Language Processing: Overview of Linguistics, Grammar and Languages, Syntactic Processing, Semantic Analysis, Morphological, Discourse and Pragmatic Processing, Natural Language Generation, Natural Language Systems.

Text & Reference Books:

1. Dan W. Patterson, "Introduction to Artificial Intelligence and Expert Systems." Prentice-Hall, India.
2. A.Rich and K. Knight, "Artificial Intelligence", Tate McGraw Hill.
3. E. Charnaik And D.Mcdermott, "Introduction To Artificial Intelligence ", Addison-Wesly Publishing Company.

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5-10 parts, out of the entire syllabus. In all, five questions are to be attempted.

BSCCSC0617 - Internet Technology

L T P
2 0 2

UNIT – I

Introduction: Internet, World Wide Web, Web Browser, Web Server, Uniform Resource Locator, Multipurpose internet mail extension, Hypertext Transfer Protocol, Security.

UNIT – II

XHTML: History of HTML & XHTML, XHTML- Syntax, Document structure, Text mark-up, Images, Hypertext links, Lists, Tables, Forms, Frames.

UNIT – III

Cascading Style Sheets: Introduction, Levels of style sheets, Style specification format, Selector, Forms, Property value form, Font properties, List properties, Colour, Alignment, Box model, Background Images, & <div> tags.

UNIT – IV

XML: Introduction, Syntax, Document structure, Document type definition, Namespaces, XML schemas, Displaying raw XML documents, Displaying XML documents with CSS, XSLT style sheets, XML processor.

Text & Reference Books:

1. Robert W. Sebesta, “Programming with World Wide Web”, Pearson Education.
2. Jamsa, “Html & Web Design: Tips & Techniques”, Tata McGraw Hill.
3. Karl Barksdale, E. Shane Turner, “HTML, JavaScript, and advanced Internet technologies BASICS”, Cengage Learning.

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5-10 parts, out of the entire syllabus. In all, five questions are to be attempted.

BSCCSC0618 - Programming with JAVA

L T P
2 0 2

UNIT – I

Introduction To Object Oriented Programming: Data Abstraction, Encapsulation, Inheritance (Public, Protected And Private), Polymorphism, Information Hiding.

Java Elements: Data Types, Literal and Variables, Operators–Arithmetic, Bit-wise, Relational, Boolean Logical, Assignment, The ‘?’ Operator, Operator Precedence.

UNIT – II

Control Statements–Selection (if, switch), Iteration Statements (while, do-while, for) Jump Statements (break, continue, return), Arrays (One-dimensional, Multi-Dimensional).

UNIT – III

Introducing Classes: Class Fundamentals, Declaring Objects, Methods, Constructors, ‘This’ Keyword, Over loading Methods.

Inheritance: Inheritance Basics, Protected Members, Method Overriding, Multiple Inheritance.

UNIT – IV

Exception Handling: Fundamental, Exception Types, Uncaught Exceptions, Try And Catch, Dealing With Exceptions (try, throw, throws, finally).

Text Book:

1. Patrick Naughten & Herbert Schildt, “The Complete Reference Java”, Seventh Edition, Tata McGraw Hill.

Reference Books:

1. Gilbert, Stephan D. And William B. Hccarthy, “Object Oriented Programming in Java”, 1997, The Waite Group Press.
2. Mary Compoine And Kathy Walrath, “The Java Turtorial”, Addison-Wesley, 1996.
3. Horstmann, Cay S. And Gary Cornell, “Core Java 1.1: Fundamentals”, Addison – Wesley, 1997.

Note: In each theory paper, nine questions are to be set. Two questions are to set from each Unit and candidate is required to attempt one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5-10 parts, out of the entire syllabus. In all, five questions are to be attempted.

BSCCSC0619 - Computer Graphics

L T P
4 0 0

UNIT – I

Introduction: Definition Of Computer Graphics And Its Applications, Video Display Devices, Raster Scan Displays, Random Scan Displays, Color CRT Monitors, Direct View Storage Tubes, Flat Panel Displays. Input Devices: Keyboard, Mouse, Trackball and Spaceball, Joysticks, Digitizers, Image Scanners, Touch Panels, Light Pens, Voice Systems.

UNIT – II

Output Primitives: Line Drawing Algorithms (DDA, Bresenhaus's), Circle Generating Algorithm(Midpoint Circle Drawing Algorithm), Ellipse Generating Algorithm, Midpoint Ellipse Generating Algorithm, Character Generation.

UNIT – III

2D Transformations: Translation, Rotation, Scaling, Reflection, Shear, Composite Transformation-Translation, Rotations, Scaling.

UNIT – IV

Two Dimensional Viewing: Window-To-Viewport Coordinate Transformation, Clipping Operations, Point Clipping, Line Clipping(Cohen-Sutherland Line Clipping, Liang-Barsky Line Clipping), Polygon Clipping(Sutherland-Hodgeman Polygon Clipping, Weiler-Atherton Polygon Clipping).

Text & Reference Books:

1. Donald Hearn & M. Pauline Baker, "Computer Graphics." Prentice Hall India.
2. F. S. Hill Jr., "Computer Graphics", Macmillan Publishing Company.
3. David F. Rogers, "Procedural Elements for Computer Graphics", Tata MacGraw Hill.

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5-10 parts, out of the entire syllabus. In all, five questions are to be attempted.

BSCCSC0620 - Programming in Visual Basic

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2	0	2

UNIT – I

Visual Basic Overview: Creating a project in visual basic the parts of a visual basic project, visual basic programming conventions-variable scope prefixes, variable prefixes, control prefixes menu and constant prefixes, best coding practices in visual Basic- program design language, coding to get the most from visual basic.

UNIT – II

Visual Basic Language: Declaring constants, variable selecting variable types, converting between data types, setting variable scope, verifying data types declaring arrays and dynamic arrays,

Declaring subroutines, functions, preserving variable values between calls to their procedures, Handling strings, operators and operator precedence, if-else statements, select case, switch () and choose, Looping.

UNIT – III

Managing forms in Visual Basic: The parts of a form the part of an MDI form Adding toolbar, status bar to the forms, working with multiple form loading, showing and hiding forms, setting the start up form, arrays of forms.

Coordinating data between MDI child from visual basic menus, command buttons, check boxes, List boxes and combo boxes, scroll bars and sliders, picture boxes and Image control.

UNIT – IV

File handling and file control, working with graphics, working with images, creating Active X controls and documents.

Text & Reference Books:

1. Steven Holzner, “Visual Basic 6 programming”, Black Book.
2. Anne Boehm, Mike Murach and Associates, “Murach's Visual Basic 2008”, Publisher of Professional Programming.

Note: In each theory paper, nine questions are to be set. Two questions are to set from each Unit and candidate is required to attempt one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5-10 parts, out of the entire syllabus. In all, five questions are to be attempted.

BSCCSC21 - Introduction to Windows Operating System**

L T P
2 0 0

UNIT -I

Operating System Concepts: Operating System Classification- Simple Monitor, Multi Programming, Time Sharing, Real Time Systems, Multiprocessor Systems, Batch Processing, Simple User, Multi User, Operating System Functions And Characteristics.

UNIT -II

Exploring Windows 7 Operating System - Log On to Windows 7 Operating System, Explore the Desktop, Work with Windows, Use Windows Help and Support, Turn Off Personal Computers, Customize the Start Menu, Customize the Taskbar, Personalize the Desktop, Set a Screen Saver, Add Gadgets.

UNIT -III

Managing Folders and Files- Navigate to Folders with Windows Explorer, Work with Folders and Files, Copy Data on Storage Media, Renaming files and folders, Deleting files and folders, Views.

UNIT -IV

Windows Setting- Control Panels, Setting the date and Sound, Concept of menu Using Help, Using right Button of the Mouse, Creating Short cuts, Basics of Window Setup, Notepad, Window Accessories, Device manager, System restore.

Text & Reference Books:

4. James L. Peterson And Abraham Silberschatz, "Operating System Concepts", Addison Wesley Publishing Company.

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5-10 parts, out of the entire syllabus. In all, five questions are to be attempted.

BSCCSC22- e-Commerce**

L T P
2 0 0

UNIT-I

e-Commerce: Definition, Framework, Architecture, benefits and Impact of e-Commerce, The Anatomy of e-Commerce application, e-Commerce Consumer applications, e-Commerce Organization Application, e-commerce in India, Prospects of e-Commerce.

UNIT-II

Consumer-oriented E-Commerce: Consumer-oriented applications, mercantile Process Models, consumer's perspective, Merchant's perspective. Advertising and marketing on the Internet: The new age information based marketing, Advertising on the Internet-Active or push-based advertising models, Passive or pull-based advertising models. Guidelines for Internet advertising. Online marketing process.

UNIT-III

Types of Electronic Payment System: Digital token-based electronic payment systems, smart cards and electronic payment systems, credit card-based electronic payment systems, Risk and electronic payment systems. Electronic data Interchange and its applications in business.

UNIT-IV

Securing the Business on Internet: security Policy, Procedures and Practices, transaction security, CRM, what is e-CRM, it's applications, The e-CRM marketing in India, Major Trends, Global Scenario for e-CRM, CRM utility in India.

Text & Reference Books:

1. Jeffrey F.Rayport & Bernard IJaworski: Introduction to E-commerce, TMH, 2003.
2. Kalakota & Winston: Frontiers of E-commerce, Pearson Education, Mumbai, 2002.
3. David Whiteley: E-Commerce- Strategy technologies and Applications, Tata Mac-Graw Hill, New Delhi, 2000.
4. C.S.V.Murthy: E-Commerce-Concepts, Models & Strategies, Himalaya Publishing house, Mumbai, 2003.
5. Kamallesh K Bajaj & Debjani Nag: E-Commerce, the Cutting Edge of Business- Tata McGraw-Hill, New Delhi, 2002.
6. Bharat Bhaskar: Electronic Commerce, Tata Mc-Graw-Hill, New Delhi, 2003.
7. Perry: E-Commerce, Thomson Publications, New Delhi,2003.
8. Elias M.Awad: Electronic Commerce, Prentice-Hall India, New Delhi, 2002.

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BSCCSC23- Cyber Law**

L T P
2 0 0

UNIT – I

Cyber Law: Introduction, Definition, nature & Scope of Cyber Laws. Sociological Implications of Computer Science, Cyber Laws. Cyber Crimes: Definition & Kinds of Cyber Crimes. International and Foreign Developments.

UNIT – II

Common Cyber Offences: Phreaking, Internet Frauds, Hackers, Stalking, E-Mail, Security Invasion, Money Laundering, Data-Diddling, Theft of Information. Contractual Aspects: Hardware Contracts: User Requirement Specification, Negotiation, Sales & Leases, Delivery & Payment, Seller's Obligations, Buyer's Remedies.

UNIT – III

Software Contract: Selecting Software, Types of Software, What is Software, Software License, Principal Commercial Terms, Warranties, Software Maintenance. Liability: Contractual Liability, Strict Liability, Negligence, Criminal. Copyright & Patent Protection, Evidence, Protecting Confidential Information.

UNIT – IV

The Information Technology Act, 2000: Introduction: Definition, A Brief Summary of the Act. Digital Signature & Electronic Governance (Sections 3 to 10) Secure Electronic Records & Secure Digital Signatures (Sections 14 to 16).

Text and Reference Books:

1. The Information Technology Act, 2000.
2. Chris Reed (Ed.), Computer Law, 1996: Universal Law Publishing Co. Pvt. Ltd.
3. Mittal D.P., Law of Information Technology (2000): Taxmann's.

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BSCCSC24 - C**

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Unit - I

Basics of C- Introduction of C languages, Installation of gcc compiler in Linux OS.

Function, Variables in C - Tokens in C and C++, Functions in C and C++, Scope of Variables, how to define variables in the program.

Unit- II

Types of Statements in C- Introduction of Statements in C, If Statement, Else if Statement, Nested if statement, Switch Statements.

Operators and Loops in C- Operator, Types of Operators, Increment and decrement Operators, Arithmetic Operators, Relational Operators, Logical Operators, Loops

Unit - III

Arrays and Strings in C- Introduction of Arrays, How to write a Program using Arrays, Significance of Arrays, Working with 2D Arrays, String in C, String Library functions.

Unit-IV

Structures and Pointers - Introduction to Structures, Working with Structures, Introduction to Pointers, Understanding Pointers, Function Call, File handling In C.

Refer "spokentutorial.org" for online support and material.

Note: In each theory paper, nine questions are to be set. Two questions are to set from each Unit and candidate is required to attempt one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5-10 parts, out of the entire syllabus. In all, five questions are to be attempted.

BSCCSC25- Python**

L	T	P
2	0	1

Unit- I

Python- Introduction and Installation of Python, with iPython, Using plot interactively, Embellishing a plot, Saving a plot, Multiple plot. Additional features of iPython- Loading data from files, Plotting data, Other types of Plots

Unit- II

Lists – for, stings, files, Parsing data, Statistics, Arrays, Accessing parts of Arrays, Matrices.

Unit-III

Operators and Loops - Basic Datatypes and Operators, Input/Output, Conditional, Loops. Manipulating lists, Manipulating strings, Tuples, Dictionaries

Unit- IV

Functions, Modules and Scripts– Sets, functions, Advanced features of functions, Using python modules, Writing Python Scripts, Programs on Python, Testing & Debugging.

Refer "spokentutorial.org" for online support and material.

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BSCCSC26- PHP & MySQL**

L	T	P
2	0	1

Unit -I

PHP - Introduction and Installation of PHP in Linux and Windows OS, Echo Functions, Variables, If Statement, Switch statement.

Operators - Airthmetic Operators, Comparison Operators, Logical Operator.

Arrays, Multi-dimensional Array.

Unit -II

Statements and Functions, Variables - While statement, Do-while statement, For statement, Foreach Statement, Functions(basic), Functions(Advanced), GET variable, POST Variable, Embedding PHP, Common Way to display HTML, Comman Errors1 , Comman Errors 2, Comman Errors 3

Unit - III

MySQL - MySQL 1, MySQL 2, MySQL 3, MySQL 4, MySQL 5, MySQL 6, MySQL 7, MySQL 8, Simple visitor counter, String function 1, String function 2, File upload 1, File upload 2.

Unit- IV

Cookies, Images display - Cookies 1, Cookies 2, Sessions, MD5 Encryption, Sending Email 1, Sending Email 2, Sending Email 3, Displaying images from directory, User login 1, User login 2, User login 3, User password change 1, User password change 2, User password change 3, User Registration 1, User Registration 2, User Registration 3, User Registration 4, User Registration 5, User Registration 6.

Refer "spokentutorial.org" for online support and material.

Note: In each theory paper, nine questions are to be set. Two questions are to set from each Unit and candidate is required to attempt one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5-10 parts, out of the entire syllabus. In all, five questions are to be attempted.

BSCCSC27- Scilab**

L	T	P
2	0	1

Unit - I

Scilab - What is Scilab, Why we should use Scilab, Installing Scilab, Vector Operations in Scilab

Unit -II

Matrix, Scripts and Functions- Introduction, Matrix Operations in Scilab, Scripts and Functions.
Iterations and Branching- Introduction, Conditional Branching, Iterations in Scilab.

Unit-III

Plotting 2D Graphs, Ordinary Differential Equations, Polynomials and Single board heater Introduction, Polynomials, Single board heater (SBHS) overview.

Unit - IV

Interface and Xcos - SBHS Interface, Xcos Introduction.
Search Scilab Tool boxes on Web -Using Scilab Commands to solve Integration.

Refer "spokentutorial.org" for online support and material.

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