SCHEME OF EXAMINATION

Paper no.	Title of Paper/s	Maximum Marks		Maximum Marks	Minimum Passing Marks
		Theory	Practical		
1.	आधार पाठ्यक्रम–हिन्दी भाषा	75	--	75	26
2.	Foundation Course- English Language	75	--	75	26
3.	Computer Organization and Architecture	100	--	100	33
4.	Software Engineering	100	--	100	33
5.	Database Design and RDBMS (Oracle)	100	--	100	33
6.	Web Technology	100	--	100	33
7.	Numerical Analysis	100	--	100	33
8.	Lab-1 RDBMS & Web Technology	--	75	75	25
9.	Lab-2 Minor Project	--	75	75	25
	Total Marks	**650**	**150**	**800**	
	Grand Total Marks of BCA- I, II & III			**2400**	

आधार पाठ्यक्रम
हिन्दी भाषा
प्रथम प्रश्नपत्र

पूर्णांक–75

(बी.ए, / बी.एससी, / बी.एच.एससी, / बी.कॉम. तृतीय वर्ष के पुनरीक्षित एकीकृत आधार पाठ्यक्रम और पाठ्य सामग्री का संयोजन)

!! सम्प्रेषण कौशल, हिन्दी भाषा और सामान्य ज्ञान!!

आधार पाठ्यक्रम की संरचना और अनिवार्य पाठ्य पुस्तक–हिन्दी भाषा एवं समसमायिकी– का संयोजन इस तरह किया गया है कि सामान्य ज्ञान की विषय–वस्तु विकासशील देशों की समस्याओं के माध्यम और साथ–साथ हिन्दी भाषा का ज्ञान और उसमें सम्प्रेषण कौशल अर्जित किया जा सके। इसी प्रयोजन से व्याकरण की अन्तर्वस्तु को विविध विधाओं की संकलित रचनाओं और सामान्य ज्ञान की पाठ्य सामग्री के साथ अन्तर्गुम्फित किया गया है। अध्ययन–अध्यापन के लिए पूरी पुस्तक की पाठ्य सामग्री है। और अभ्यास के लिये विस्तृत प्रश्नावली है। यह प्रश्नपत्र भाषा का है। अतः पाठ्य सामग्री का व्याख्यात्मक या आलोचनात्मक अध्ययन अपेक्षित नहीं है। पाठ्यक्रम और पाठ्य सामग्री का संयोजन निम्नलिखित पांच इकाइयों में किया जाता है। प्रत्येक इकाई को दो भागों में विभक्त किया गया है।

इकाई–1 (क) भारत माताः सुमित्रानंदन पंत, परशुराम की प्रतीज्ञाः रामधारी सिंह दिनकर, बहुत बड़ा सवालः मोहन राकेश, संस्कृति और राष्ट्रीय एकीकरणः योगेश अटल।
(ख) कथन की शैलियाँः रचनागत उदाहरण और प्रयोग।

इकाई–2 (क) विकासशील देशों की समस्यायें, विकासात्मक पुनर्विचार, और प्रौद्योगिकी एवं नगरीकरण।
(ख) विभिन्न संरचनाएं।

इकाई–3 (क) आधुनिक तकनीकी सभ्यता, प्र्यावरण प्रदूषण तथा धरणीय विकास
(ख) कार्यालयीन पत्र और आलेख।

इकाई–4 (क) जनसंख्याः भारत के संदर्भ और गरीबी तथा बेरोजगारी।
(ख) अनुवाद।

इकाई–5 (क) ऊर्जा और शक्तिमानता का अर्थशास्त्र।
(ख) घटनाओं, समारोहों आदि का प्रतिवेदन और विभिन्न प्रकार के निमंत्रण–पत्र।

मूल्यांकन योजनाः प्रत्येक इकाई से एक–एक प्रश्न पूछा जायेगा। प्रत्येक प्रश्न में आंतरिक विकल्प होगा। प्रत्येक प्रश्न के 15 अंक होंगे। प्रत्येक इकाई दो–दो खंड क्रमशः 'क' और 'ख' में) विभक्त है, इसलिए प्रत्येक प्रश्न के भी दो भाग, (क्रमशः 'क' और 'ख') होंगे। 'क' का अर्थात पाठ एवं सामान्य ज्ञान से संबद्ध प्रश्न के अंक 8 एवं 'ख' अर्थात भाषा एवं सम्प्रेषण कौशल से संबद्ध प्रश्न के अंक 7 होंगे। इस प्रकार पूरे प्रश्न पत्र के पूर्णांक 75 होंगे।

FOUNDATION COURSE
PAPER-II
ENGLISH LANGUAGE

M.M. 75

The question paper for B.A./B.Sc./B.Com./B.H.Sc. III Foundation course, English Language and General Answers shall comprise the following items :
Five question to be attempted, each carrying 3 marks.

UNIT-I	Essay type answer in about 200 words. 5 essay type question to be asked three to be attempted.	15
UNIT-II	Essay writing.	10
UNIT-III	Precise writing.	10
UNIT-IV	(a) Reading comprehension of an unseen passage	05
	(b) Vocabulary based on text	10
UNIT-V	Grammar Advanced Exercises	25

Note:
Question on unit I and IV (b) shall be asked from the prescribed text. Which will comprise of popular create writing and the following items. Minimum needs housing and transport Geo-economic profile of M.P. communication Educate and culture. Women and Worm in Empowerment Development, management of change, physical quality of life. War and human survival, the question of human social value survival, the question of human social value, new Economics philosophy Recent Liberalization Method) Decoration decentralisation (with reference to 73, 74 constitutional Amendment.

PAPER-III
COMPUTER ORGANIZATION AND ARCHITECTURE

Unit-I

Top Level Organization:

Computer function, Difference between program compilation and Program Execution, Programs and Data, Data Representation, Computer Organization: Registers and Memory, Computer Arithmetic: Integer and Floating point arithmetic, Instructions, Machine instructions, Types of operands, Instruction Types, Instruction format, Instruction Execution, A Simple Machine instruction cycle, Instructions Mnemonics and Syntax, Instruction set, Addressing Mode, Type of Addressing Mode.

Unit-II

Internal Organization and Design:

Instruction Set Architecture, Architecture Space, Architecture Examples, Binary Arithmetic, ALU Design, Overflow, Floating Point Arithmetic, Processor Design: Introduction, Simple Design, Multi Cycle Approach, Processor Design Micro programmed Control, Processor Design Exception Handling, Processor Activities, Controller Design: Micro programmed and Hardwired, Typical Micro Instructions, Micro-Operations, Hardwired Implementation, Micro programmed Control: Microinstruction Sequencing, Microinstruction execution, Application of Microprogramming.

Unit-Ill

Classification and Uni-processor Architecture:

Classification of Computer, Flynn's Classification, Classification of computer on the basis of speed, size, capacity, generation etc., Types of Parallel Computer, Pipeline technique, Different Types of Pipelining, Instruction Pipeline, RISC & CISC Pipeline, Pipeline hazards, Vector Processing, Array Processor.

Unit-IV

Memory Organization:

Memory Hierarchy: Basic Idea, Main Memory: RAM & ROM chip, Auxillary Memory, Advanced DRAM Organization, Cache Memory: Cache Memory Principles, Elements of Cache Design, Cache operation, Cache Organization, Pentium 4 and PowerPC Cache Organization, Type of Cache Coherence, Virtual Memory: Basic Idea, Theory, Implementation of Virtual Memory.

Unit-V

I/O Organization and Multi-Processor Architecture

External Devices, I/O Modules, Input / Output Subsystem: Introduction, Interfaces and buses, I/O Operations, Designing I/O Systems, Programmed I/O , Interrupt Driven I/O , OMA : Direct Memory Access, Device Service Routines, Input-Output Processor, Tightly Coupled MIMD Architecture: Shared Memory and Message Passing Architecture with examples.

Text Books: 1. Computer System Architecture, M. Morris Mano, PHI Pearson Edu.
2. Computer Organization, C Hamacher, Z Vranesic, SafwatZaky, McGraw Hill.
3. Computer Architecture and Organization, J. P. Hayes, Tata McGraw-Hill.

Reference Books: 1. Structured Computer Organization, A. S. Tanenbaum, Pearson Edu.
2. Fundamentals of Computer Organization, P. Dandamudi , Springer.
3. Computer Organization and Architecture, William Stallings, Pearson/PHI.
4. Computer Organization and Design ,D.A.Paterson & John L. Hennessy, Elsevier.
5. Computer Architecture and Organization, M. Murdoccaand V. Heuring, Wiley India.

PAPER-IV
SOFTWARE ENGINEERING

UNIT I

Software Process Models:

The Evolving role of Software, Software - The changing Nature of Software, Legacy software, A generic view of process, layered Technology, Process Framework, The Capability Maturity Model Integration (CMMI), Process Assessment, Personal and Team Process Models, Product and Process, Process Models, Waterfall Model, Incremental Process Model, RAD Model, Evolutionary Process Models, Prototyping, Spiral Model, Concurrent Development Model, Specialized Process Models, Unified Process.

UNIT II

Requirement Engineering:

Software Engineering Practice, communication Practice, Planning practice Modelling practice, Construction Practice, Deployment. Requirements Engineering, Requirements Engineering tasks, initiating the requirements Engineering Process- Eliciting Requirements Developing Use cases, Building the Analysis Models, Elements of the Analysis Model, Analysis pattern, Negotiating Requirements, Validating Requirements.

Unit Ill

Analysis Modelling:

Requirements Analysis, Analysis Modelling approaches, data modelling concepts, Object oriented Analysis, Scenario based modelling, Flow oriented Modelling, Class based modelling, creating a behavior model.

Unit IV

Design & Testing:

Design Engineering, Design process, Design Quality, Design model, User interface Design Testing strategies, Testing Tactics, strategies Issues for conventional and object oriented software, validation testing, system testing, Art of debugging, Project management

Unit V

Quality & Maintenance:

Software evolution, Verification and Validation, Critical Systems Validation, Metrics for Process, Project and Product, Quality Management, Process Improvement, Risk Management Configuration Management, Software Cost Estimation

Text Books:

1. Fundamentals of Software Engineering, Rajib Mall, PHI Learning Pvt. Ltd.
2. Software Engineering, Ian Sommerville, Pearson Education Inc., New Delhi.
3. Software Engineering: A Practitioner's Approach, Roger S. Pressman, Tata McGraw-Hill
4. Software Project Management, Walker Royce, Pearson Education.

Reference Books:

1. Software Engineering, Shari L, Joanne M. Atlee, Pearson Education, Inc. New Delhi.
2. Software Engineering, Pankaj Jalote, Wiley India Pvt. Ltd., New Delhi.
3. Software Engineering, Dines Bjørner, Springer India Pvt. Ltd., New Delhi.

PAPER-V
INTRODUCTION TO RDBMS (ORACLE)

UNIT-I

Overview of database management system

Database, Definition of DBMS, Purpose of Database System, Data abstraction, Instances and Schema, Data Independence, Data administration roles, Different kinds of DBMS users, Data Dictionary, Data base languages- DDL, DML, DCL Data Models The Relational approach, The Network approach, The Hierarchical approach, DBMS storage structure and access method.

UNIT-II

Entity-relationship model:

Entity - Relationship model as a tool for conceptual design-entities attributes and relationships. ER diagrams; Concept of keys: candidate key, primary key, alternate key, foreign key; Strong and weak entities, Case studies of ER modelling Generalization; specialization and aggregation. Converting an ER model into relational Schema.

UNIT-III

Structured Query Language Relational Algebra

Select, project, cross product different types of joins (inner join, outer joins, self join); set operations, Simple and complex queries using relational algebra. Integrity constraints: Not null, unique, check, primary key, foreign key.

UNIT-IV

Relational Database Design

Normalization concept in logical model; Pitfalls in database design, update anomalies: Functional dependencies, Join dependencies, Normal forms (1NF, 2NF, 3NF). Boyce Code Normal form, Decomposition, Multi-Valued Dependencies, 4NF, 5NF.

UNIT-V

INTRODUCTION TO ORACLE

Introduction to Commercial database query language, SQL & its environment. SQL as a data definition language- creating tables, altering tables, drop tables. SQL as data manipulation language- Inserting, Deleting, Retrieving and updating data in a table. SQL as query language. Introduction to SQL constructs (SELECT ... FROM, WHERE ... GROUP BY ... HAVING ... ORDERBY ...) Temporary tables, Nested queries

Text Books:

1. Fundamentals of Database Systems, R Elmasri & S B. Navathe, Pearson Education.
2. Database Systems Concepts, A Silberschatz, H F. Korth & S. Sudarshan, McGraw-Hill.
3. Fundamentals of Database Management Systems, Mark L. Gillenson, Wiley India Pvt.
4. Introduction To Database Systems, C.J.Date, Longman, Pearson Education

Reference Books:

1. Database Systems: A Complete Book, Molina, Ullman, J. Widom, Pearson Education.
2. Database Systems: Design, Implementation, and Management, Peter Rob & Carlos Coronel, CENGAGE Learning India Pvt. Ltd., New Delhi.
3. Database Systems Using Oracle, Nilesh Shah, PHI Learning Pvt. Ltd., New Delhi.
4. Database Management Systems, R Ramakrishnan, J Gehrke, McGraw-Hill Education
5. Database Development and Management, Lee Chao, Auerbach Publications.

PAPER-VI
WEB TECHNOLOGY

Unit-I
Introduction
Introduction to web, protocols governing the web, web development strategies, Web applications, Introduction to Web Publishing: Introduction, Domain Name Registration, choosing a web host and signing up for an Account, web hosting, web design and development, Testing web site, uploading web pages.

Unit-II
HTML
Introduction, Basic formatting tags: heading, paragraph, line break, bold, italic, underline, superscript, subscript, font and image. Different attributes like align, colour bgcolor, font face, border, size. Navigation Links using anchor tag: internal, external, mail and image links, Link to different web pages and sections. Lists: ordered, unordered and definition, Table tag, HTML Form controls: form, text, password, text area, button, checkbox, radio button, select box, hidden controls, Frameset and frames

Unit-III
Cascading Style Sheet (CSS) and JAVA Script
Usefulness of Style Sheets, Creating Style sheets, Classes and Pseudo Classes, CSS Tags, Background, Font, Text, Position etc.
JavaScript: Overview, Syntax & Conventions, Variables, Expression, Branching & Looping, Function, Array, Objects, Events & Document Object model, Alerts, prompts and conforms.

Unit-IV
PHP
Introduction to PHP, Server side scripting, Role of Web Server software, including files, comments, variables and scope, echo and print, Operators: Logical, Comparison and Conditional operators, Branching statements, Loops, break and continue PHP functions. Passing information between pages, HTTP GET and POST method, String functions: strlen, strops, strstr, strcmp, substr, str_replace, string case, Array constructs: array(),list() and foreach(), PHP advanced functions: Header , Session, Cookie, Object Oriented Programming using PHP: class, object, constructor, destructor and inheritance.

Unit-V
MySQL
Features of MySQL, data types, Introduction to SQL commands-SELECT, DELETE, UPDATE, INSERT, PHP functions for MySQL operations: mysql_connect, mysql_select_db, mysql_query, mysql_fetch_row, mysql_fetch_array, mysql_fetch_object, mysql_result, Insertion and Deletion of data using PHP, Displaying data from MYSQL in webpage.

Text Book:

1. Xavier, C, "Web Technology and Design", New Age International.
2. Ivan Bayross, "HTML, DHTML, Java Script, Perl & CGI", BPB Publication.
3. Ramesh Bangia, "Internet and Web Design", New Age International.
4. Ullman, "PHP for the Web: Visual Quick Start Guide", Pearson Education.
5. Jim Converse & Joyce Park, "PHP & MySQL Bible", Wiley India Publication "Internet and Internet Engineering", Daniel Minoli, TMH.
6. Chuckmusiano & Bill Kenndy, O Reilly, HTML The Definite Guide"
7. Joseph Schmuller, Dynamic HTML, BPB, 2000.

PAPER-VII
NUMERICAL ANALYSIS

UNIT-I

Algebric Equations

Solution of Polynomial and Transcendental Algebraic Equations: Bisection method, Regulafalsi method & Newton's method, Solution of Cubic & Biquadrate Equation, Complex roots of polynomial equations.

UNIT- II

Simultaneous Equations

Simultaneous Equations and Matrix, Gauss-Jordan method, Cholesky's method, Reduction to lower or upper Triangular forms, Inversion of matrix, method of partitioning, Characteristics equation of matrix, Power methods, Eigen values of matrix, Transformation to diagonal forms.

UNIT - III

Curve-Fitting

Curve-Fitting from Observed Data Divided difference table for evenly or unevenly spaced data, polynomial curve-fitting - Newton's, Gauss and Languages form of interpolation and Divided Differences, method of least square for polynomials,.

UNIT - IV

Numerical Differentiation and Integration

Numerical Differentiation and Integration, Forward and Backward differential operators, Newton - cotes integration formula: Trapezoidal Rule, Simpson's Rule, Boole's Rule, Weddle Rule, Legendre's rule, method of weighted coefficients.

UNIT - V

Solution of Differential Equations

Solution of Differential Equations, Numerical Solution of ordinary differential equations, one step method, Taylor's Series, Predictor- Corrector Method, Euler's Method, Runga-Kutta Method, Milne's method.

Text Books:

1. Garewal B.S., "Numerical methods", Khanna Publication.
2. Gupta & Mallic, "Numerical Methods", Krishna Prakashan.
3. Hamming R.W., "Numerical Methods for scientist & Engineers", McGraw Hill.
4. Conle S.D., "Elementary numerical analysis Carl De Boor", International Book Company London.
5. Jain M.K., "Numerical methods for Science and Engineering" lyengar S.R.K. Calculations (John Willey & Sons).

LAB-I
RDBMS & WEB TECHNOLOGY
Practical as per syllabi of theoretical paper.

The break-up of marks for Third Year Practical will be as under :			
Sr. No.	Argument	Maximum Marks	Minimum Passing Marks
1.	Lab Record	15	
2.	Viva-voce	20	
3.	Program Development and Execution	40	
	Total Marks	75	25

BCA PART-III
LAB-II
Minor Project

The break-up of marks for Project will be as under :			
Sr. No.	Argument	Maximum Marks	Minimum Passing Marks
1.	Project Report	25	
2.	Viva-voce/ Presentation	25	
3.	Project Execution	50	
Total Marks		100	50

YEAR WISE PLAN
PGDCA

S.N.	Subject Name	End Semester Examination Maximum Marks	End Semester Examination Minimum Passing Marks
1.	Fundamentals of Computer and Information Technology	100	40
2.	PC- Packages and Computerized Accounting System	100	40
3.	Data Communication and Computer Network	100	40
4.	Programming using 'C' & C++	100	40
5.	Relational Database Management System (Oracle)	100	40
6.	System Analysis & Design	100	40
7.	PC Package and Tally ERP Lab	50	17
8.	C,C++ and Oracle Lab	50	17
9.	Project	100	40

PAPER-I
FUNDAMENTALS OF COMPUTER & INFORMATION TECHNOLOGY

UNIT- I

Introduction to Computer and Information Technology: Brief history of development of computer & generations of computer, Computer system characteristics. Capabilities and limitations block diagram of computer. Types of computer-Analog, Hybrid, digital, micro, mini, mainframe, super computer. Personal computer, types of PCs desktop, laptop, notebook, palmtop etc. Number system Data representation in computers, Number system of computers binary, octal, hexadecimal, representation & their conversion, Coding system ASCII, BCD, EDCDIC etc.

UNIT- II

INPUT/OUTPUT devices: keyboard, mouse, monitor, trackball, joystick, digitizing table, scanners, digital cameras, MICR, OCR, OMR, Bar-code reader, Voice recognition, light pen, touch screen, devices, printer, plotter.

UNIT- III

Storage device: Data storage and retrieval methods-sequential, direct and index sequential- various storage devices-magnetic tape, magnetic disks, cartridge tape, data drives hard disk drives, floppy disks, optical disks-CD, VCD, CDR, CDRW, DVD.

UNIT- IV

Computer software: types of software, system software, application software, operating system, utility program, assemblers, compilers and interpreter. Operating system functions, Types batch, single user, multi user, multiprogramming, multiprocessing, Programming languages, machine, assembly, high level, 4GL, their merits and demerits. Computer virus –types of virus, virus detection & prevention virus on network.

UNIT- V

Data Communication & networks: analog and digital signals, modulations, amplitude modular (am), frequency modulation (fm), phase modulation (pm), communication process, direction of transmission flow, simplex, half duplex, full duplex. Types of network LAN, WAN, MAN etc, Topologies of LAN ring, bus star, mesh and tree topologies, communication protocols TCP/IP protocol suit. Communication channels media twisted, coaxial fiber optic, serial and parallel communication, Network operating system (NOS), bridges, hub, routers, repeater and gateways. Modem working and characteristics. Types of connections- dialup leased lines, ISDN, broadband.

Text & Reference Books:

01. Computer fundamentals, P.K. Sinha, BPB
02. Computer today by S.K. Basandra Galgotia Publications.
03. Fundamentals of information by Axexos Leon & Mathews Leon, Vikas Publishing House, New Delhi

PAPER-II
PC PACKAGES & COMPUTERIZED ACCOUNTING SYSTEM

UNIT- I

Fundamental of DOS & Windows: Fundamental of DOS booting process, internal and external commands, creating and executing batch files and directories creating text files. Introduction to windows features, various versions of windows, origin of windows parts of windows screen types and anatomy of windows using.

UNIT- II

Introduction to word processing (MS-word): Advantages of word processing, editing a file using paragraphs, bullets, indentation, ect. Formatting features, printing the documents, it includes paper-size, margins, header and footer, page no., using macros. Advance word processing, header and footers. Finding text, mail merge and other application, mathematical calculations, table handing.

UNIT- III

Introduction to spread sheet (MS-Excel): Definition and advantages of electronic worksheet, working of spread sheet, range and related operations. Setting saving and retrieving work sheet file, inserting deleting coping & moving of data cells, inserting and deleting rows & columns, protecting cell printing a worksheet, erasing a worksheet, graphs, creation, types of graphs creating a chart sheet 3D column charts, moving and changing the size of chart, printing the chart.

UNIT- IV

Introduction to Powerpoint (MS- Powerpoint): Creating a presentation, inserting/deleting slides, different slide views, editing slides,. Slide transition & editing special effects inserting sound, picture, chart, organization chart.

UNIT- V

Accounting software Tally ERP 9: Basic principles of double entry accounting system, creating new company security controls, groups, ledger, voucher type, modifying, new company, voucher entry, generating profit & loss account, trial balance and balance sheet, backup & restore.

Text & Reference Books:

01. Comdex Computer Course Kit (Windows 7 with office 2010), Gupta vikas, Dreamtech Publication.
02. Mastering MS Office 2000, Professional Edition by Courter, BPB Publication.
03. MS Office 2000 Training Guide by Maria, BPB Publication.
04. PC Software, Ravi Taxalli, BPB
05. Computer Fundamental by P.K. Sinha
06. Financial Accounting with Tally 9.001 edition by Vikas Gupta.
07. Mastering Tally ... ERP 9 By A.K. Nandhani.

PAPER-III
DATA COMMUNICATION & COMPUTER NETWORK

UNIT- I

Introduction to Data Communication– Network models, protocols and architecture, standards organizations, line configuration, topology, transmission mode, classification of networks, OSI reference model, TCP/IP model.

UNIT- II

Analog and digital signals, Data encoding, parallel and serial transmission, modems, transmission media: guided media, unguided media, transmission impairment, performance, Synchronous and asynchronous transmission.

UNIT- III

Multiplexing, LLC, error detection and correction, flow control, HDLC, LANs- applications, architecture, Ethernet, 802.3 LANs, token ring, FDDI, IEEE 802.6, circuit switching, packet switching, message switching, connection oriented and connectionless services.

UNIT- IV

Principles of internetworking– connection– oriented, connectionless, Routing concepts, routing algorithms– distance-vector routing, link state routing, shortest path routing. Congestion control, QOS, internetworking, network devices.

UNIT- V

Network security requirements and attacks, public key and private key encryption and digital signatures, digital certificate, firewalls, IDS (Intrusion Detection System)

Text & Reference Books:

01. Computer networks– A.S. Tanenbaum. PHI
02. Data communication and networking – Behrous A. Forouzan. TMH

PAPER-IV
SYSTEM ANALYSIS AND DESIGN

UNIT- I

The system concept: characteristics, elements and types of a system, the system development life cycle, considerations, for candidate systems prototyping. The role of system analyst.

UNIT- II

System planning and initial investigation: Information Gathering, information gathering tools. Structured analysis, the tools of structured analysis (DFD, Data Dictionary, Decision tree and Pseudo codes Decision Tables), PROS and CONS of each tool, system performance definition description of outputs, feasibility study. Cost/ Benefit analysis, Data analysis, Cost/ Benefit analysis, the system proposal.

UNIT- III

Stages of system design: Design methodologies, development activities, input design, output design forms design, types of forms, basics of form design layout considerations and forms control.

UNIT- IV

File structure: File organization, objectives of database, data structure, system testing and quality assurance, why system testing, what do we test for, the test plan quality assurance, trends in testing, role of data processing auditor, training and documentation.

UNIT- V

Implementing and software maintenance: conversion combating resistance to change, post implementation review, software maintenance, hardware/software selection and the computer contract, suppliers, procedure for hardware/software selection, financial considerations in selection, the computer contract system security disaster recovery planning.

Text & Reference Books:

01. System analysis and design, Elias M. Awad, Galgotia Publication (P) Ltd.
02. System analysis and design, International Ed. Perry Edwards, McGraw Hill Pub.

PAPER-V
PROGRAMMING IN C & C++

UNIT- I

Introduction to “C” Language: Fundamentals, simple I/O statements, reading and writing, data types constants, variable, operators & expressions, library function, control statements, if-else, while, do-while, goto, for statements switch, break, looping statements, functions recursion, arrays, multidimensional arrays, strings & pointers.

UNIT- II

Programming in C++, functions, class, object, constructor and destructor: Call by reference, call by value, return by reference, inline function, constant argument, function overloading, static member function, static data member,. Classes: implementing class, classes and members, accessing class members, implementing class methods, array of object, friend function. Constructor & destructors: parameterized constructor, multiple constructor, constructor with default argument, copy constructor, destructor.

UNIT- III

Operator overloading & type casting: Operator overloading, unary operator overloading, binary operator overloading, manipulates string using operator overloading, type conversions: basic to class, class to basic, class to class.

UNIT- IV

Inheritance, virtual function: single inheritance, multilevel inheritance, multiple inheritance, hybrid inheritance, hierarchical inheritance, virtual base class, abstract class.

UNIT-V

Pointer & File: Pointer to object, this pointer, virtual function and pure virtual function. File: opening and close file, detecting end of the file

Text Books:

01. Let us C by Yaswant Kanetkar BPB
02. Object oriented Programming with C++, E.Blagurusamy, Tata mc Graw-Hill
03. C++ Complete reference, Herbert Schildt, TMH.
04. ANSI C programming, E.Blagurusamy, TMH

PAPER-VI
RELATIONAL DATABASE MANAGEMENT SYSTEM (ORACLE)

UNIT- I

Overview of Database Management: Data, information, data independence, database administration roles, DBMS architecture, different kinds of DBMS users importance of data dictionary, contents of data dictionary, types of database languages. Data models: network, hierarchical, relational. Introduction to distributed database, client/server databases, object-relational databases, introduction to ODBC concept

UNIT- II

Relational Model: Entity relationship model as a tool for conceptual design-entities attributes and relationships. ER diagrams; concept of keys: candidate key, primary key, alternate key, foreign key; strong and weak entities, case studies of ER modeling generalization; specialization and aggregation, Converting an ER model into relational schema. Extended ER features, introduction to UML, Representation in UML diagram.

UNIT- III

Structured Query Language (SQL): Relational Algebra: select, project, cross product different types of joins (inner join, outer joins, self join); set operations, tuple relational calculus, domain relational calculus, simple and complex queries using relational algebra, stand alone and embedded query languages, introduction to SQL constructs (SELECT...FORM, WHERE... GROUP BY... HAVING ... ORDERBY...), INSERT, DELETE, UPDATE, VIEW definition and use, temporary tables, nested queries, and correlated nested queries, integrity constrains: Not null, unique, check, primary key, foreign key, reference, triggers.

UNIT- IV

Relational database design: Normalization concept in logical model; pitfalls in database design, update anomalies: functional dependencies join dependencies, Normal forms (INF, 2NF, 3NF). Boyce code normal form, decomposition, multi-valued dependencies, 4NF, 5NF. Issues in physical design; concepts of indexes, file organization for relational tables, de-normalization, clustering of tables, clustering indexes.

UNIT- V

Introduction to Query processing and protection the database: parsing, translation, optimization, evaluation and overview of query processing. Protecting the database integrity, security and recovery, Domain constraints, referential integrity, assertion, triggers, security & authorization in SQL

Text & Reference Books:

01. Database system concept, H. Korth and A. Silberschatz,TMH
02. Data Base Management System, C.J. Date, Narosha Publication.
03. An Introduction to database systems – Bipin Desai, Galgotia Publication.
04. SQL,PL?SQL Evan Bayross (2nd edition) BPB publications.

PC Package & Tally ERP Lab
Note: Practical should be as per syllabus of theoretical papers.

C, C++ & Oracle Lab
Note: Practical should be as per syllabus of theoretical papers.

PROJECT

Note:

01. It is compulsory, that students would have group of maximum of two students and project should be done under Government sectors/ Public Sector/ Pvt. Limited S/W Company/ Software Technology park of India/ ISO 9001 certified company etc.
02. The students should not make any project under local or private institutions.
03. The students should make project themselves and project will not be copy of other project.

Steps for Live Project

01. Getting customer's requirements
02. Designs, database and business logics.
03. Developing software application project.
04. Testing and implementing the project.
05. Troubleshooting the project application after implementation.

The break-up of marks for Practical will be as under :			
Sr. No.	**Argument**	**Maximum Marks**	**Minimum Passing Marks**
1.	Lab Record	10	
2.	Viva-voce	20	
3.	Program Development & Execution	20	
Total Marks		50	17

The break-up of marks for Practical will be as under :			
Sr. No.	**Argument**	**Maximum Marks**	**Minimum Passing Marks**
1.	Project Report	25	
2.	Viva-voce/ Presentation	25	
3.	Project Execution	50	
Total Marks		100	40