



**BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI – 620 024**  
**P.G.D.C.A.**

**SUBJECT OF STUDY AND SCHEME OF EXAMINATION**

**(For the candidates to be admitted from the academic year 2011-2012 onwards)**

Title	Instructi on Hours	Practical Hours	Exam Hours	Marks		Total
				IA	UE	
<b>Semester – I</b>						
Paper – I – Digital Computer Fundamentals	7	-	3	25	75	100
Paper – II – Programming in C	7	-	3	25	75	100
Paper – III – Operating Systems	7	-	3	25	75	100
Paper – IV – C Programming Lab	-	5	3	40	60	100
Paper – V – Operating Systems Lab	-	4	3	40	60	100
<b>Semester – II</b>						
Paper – VI – Electronic Accounting	7	-	3	25	75	100
Paper – VII – Data Base System	7	-	3	25	75	100
Paper – VIII – Desktop Publishing	7	-	3	25	75	100
Paper – IX – Desktop Publishing Lab	-	5	3	40	60	100
Paper – X – Accounting Packages Lab	-	4	4	40	60	100

The Internal and External Marks to be awarded for any **Practical Course** is **40 & 60** respectively and for **Theory course**, it is **25 & 75** respectively for MCA, M.Sc (CS), M.Sc (IT) & PGDCA.

## **PAPER I – DIGITAL COMPUTER FUNDAMENTALS**

### **UNIT: I**

Number Systems and Codes: Binary, Octal and Hexadecimal number systems – conversion between number systems – binary arithmetic- Binary codes – BCD arithmetic.

### **UNIT: II**

Boolean Algebra and Logic Gates: AND, OR, NOT, NAND, NOR, XOR and XNOR gates - Truth tables Applications of XOR Gate Fundamentals of Boolean Algebra – Boolean Functions Minterms and Maxterms – Laws and theorems of Boolean Algebra – Demorgan’s theorems – The Universal Building blocks – NAND & NOR gates as universal Building Blocks.

### **UNIT : III**

Simplification of Boolean Expressions : Canonical SOP and POS forms – Algebraic Simplification – Karnaugh Maps – SOP & POS Simplification – NAND / NOR implementation of Boolean expressions – Don’tcare, conditions – Overlapping groups, eliminating redundant groups. Combinational Logic circuits : Half and Full Adders – Half and Full subtractors – BCD adder – parallel binary adder – Multiplexer & Demultiplexer – Encoder & Decoder.

### **UNIT: IV**

Sequential Logic circuits: NAND latch – SR, flipflop – JK flipflop – Edge triggering – PRESET and CLEAR inputs, Shift Register, Universal Shift register – Asynchronous and Synchronous counters – BCD counter.

### **UNIT: V**

Memory Elements: Random Access Memory – DRAM – ROM – Magnetic Disk Memories – Magnetic Tape – Magnetic Bubble and CD Memories – Optical Disk – Digital Tape – Cache Memory.

### **Text Book (s)**

1. Meena K, “Principles of Digital Electronics”, PMI, I Edition.
2. Thomas Bartee C, “Digital Computer Fundamentals”, TMH, III Edition.

### **References**

1. Malvino and Leech, “Digital Principles and Applications”, TMH.

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## **PAPER II – PROGRAMMING IN C**

### **Unit I**

C Language Fundamentals : Program Structure – Identifiers – Data types – Integer – float – double – char – Constants – variables – Operators and Expressions – Managing Input and Output Operations.

### **Unit II**

C Control Structural : Decision making with IF statement – IF.....ELSE statement – Nester IF.....ELSE statement – FOR statement – DO.....WHILE statement – WHILE.....DO statement – GOTO statement – SWITCH statement.

### **Unit III**

C functions : Mathematical functions – sin – cos – tan – asin – acos – atan – sqrt – pow – log – string functions – Strcpy – stroat – strcmp – strlen – strlwr –strupr and User – defined functions.

### **Unit IV**

Arrays and Structures : Arrays, Definition, Declaration, Entering values in – Manipulating arrays – examining and passing an array. Structures : Definition – assigning structure variable – assigning initial values – using a structures – structure arrays – structures and functions.

### **Unit V**

Pointers and File Operations : Understanding pointers – pointers and functions – File operations : Understanding files – declaring a file – Opening a file – closing a file – input and output functions – formatted input and output – working with structures adding data to a file – reading and printing a disk file.

### **Text Book:**

“Programming in C” – E.Balagurusamy, Tata McGraw Hill, 2000

### **Reference Book :**

“Programming Using The C Language” - R.C. Hutchison & S.B. Just, McGraw Hill, 1988.

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## **PAPER III – OPERATING SYSTEMS**

### **Unit I**

Operating Systems Objectives and functions – Operating System and User / Computer Interface, Operating System as a Resource Manager : Evaluation of Operating Systems – Serial Processing, Sample Batch Systems, Multi Programmed Batch Systems, Time Sharing Systems.

### **Unit II**

Process Description, Process Control – Processes and Threads. Concurrency – Principles of Concurrency, Mutual Exclusion – Deadlock – Deadlock Prevention, Deadlock Detection, Deadlock Avoidance.

### **Unit III**

Memory Management – Memory Management Requirements – Fixed Partitioning, Placement algorithm, Relocation in a Paging System – Sample Segmentation. Virtual Memory – Paging – Segmentation – Combined Paging and Segmentation.

### **Unit IV**

Scheduling – Types of scheduling, scheduling algorithms, scheduling criteria, FIFO.

### **Unit – V**

File Management – Files, File Management Systems, File System Architecture, Functions of File Management File Directories – File sharing – Secondary Storage Management – File Allocation.

### **Text Books :**

1. “Operating Systems”, William Stallings, Second edition, Maxwell McMillan, International Editions, 1997.
2. “Operating Systems – A Design Oriented Approach”, Charles Crowley, IRWIN Publications Chicago, 1997.

### **Reference Books :**

1. “An Introduction to Operating Systems”, Dental H.M., Addison Wesley Publishing Co., 1998.
2. “Operating system Concepts”, Silberschatz A.Perterson J.L., Galvian P. Third Edition, Addison Wesley Publishing Co., 1999

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## **PAPER IV – C PROGRAMMING LAB**

1. Solution of a Quadratic Equation.
2. Sum of Series (Sine, Cosine & Exponential)
3. Ascending and Descending order of numbers using Arrays Print smallest & Largest number also.
4. Sorting of names in Alphabetical Order.
5. Matrix Manipulation – using functions.
6. Compute factorial & Print Fibonacci sequence using recursion.
7. String Manipulation without using built in string functions
  - (i) Length of the string
  - (ii) compare and copy strings
  - (iii) check for palindrome
  - (iv) counting characters, words & lines in text. (use pointers)
8. Sequential File Processing using structures
  - (i) Payroll Generation
  - (ii) Marklist preparation
9. Command Line Arguments used to copy a file to another file.

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## **PAPER V – OPERATING SYSTEMS LAB**

1. Creating, inserting, updating, appending, deleting, removing tables and records in SQL.
2. Use of commit, rollback, savepoint and locks in SQL.
3. Use of UNION, INTERSECTION and other built in operators on tables.
4. Use of cursors to filter rows of a table
5. Creating and manipulating views.
6. Use of queries, sub queries and join to locate rows.
7. Assertions and triggers
8. Sorting tables using keys.
9. Basic DOS commands for file creation, display, removal, displaying, contents of directories, navigating directories, creating & removing directories, copying and renaming files, creating batch files.
10. Basic UNIX commands – ls,
11. Simple shell programming
  - (i) Biggest of two numbers
  - (ii) Check for odd/ even number
  - (iii) Fibonacci series
  - (iv) Check for prime number.

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## **PAPER VI – ELECTRONIC ACCOUNTING**

### **UNIT I :**

Fundamentals of computerized accounting – Computerized accounting vs manual accounting – Architecture and customization of Tally – Features of Tally – Configuration of Tally – Tally screens and menus – Creation of company – Creating Groups – editing and deleting groups.

### **UNIT II :**

Creation of ledgers – Editing and deleting ledgers – Introduction to vouchers – Vouchers entry – Payment vouchers – Receipt vouchers – sales vouchers – Purchase vouchers – Contra vouchers – Journal vouchers – Editing and deleting vouchers.

### **UNIT III :**

Introduction o Inventories – Creation of stock categories – Creation of stock groups – creation of stock items – Configuration and features of stock item – editing and deleting stocks – Usage of stocks in Vouchers entry. Purchase orders – stock vouchers – Sales orders – Stock vouchers

### **UNIT IV:**

Introduction to cost – creation of cost category – Creation cost centres – editing and deleting cost centres and categories – usage of cost category and cost – centres in vouchers entry – Budget and controls – Creation of budgets – Editing and deleting budgets – Generating and printing reports in detailed and condensed format.

### **UNIT V :**

Day books – Balance sheets – Trial Balance – Profit and Loss account – Ratio analysis, Cash flow statement – Fund flow statement – Cost center report – Inventory report – Bank reconciliation statement

### **Reference Books**

1. Tally 9, Dr.Mamrata Agrawal, DreamTech Press, New Delhi, 2010
2. Computerized Accounting under Tally, Deva publications.
3. Implementing Tally , K.K.Nandhani, BPB publication

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## **PAPER VII – DATA BASE SYSTEM**

### **UNIT: I** Introduction

Database system Applications – Purpose of Database Systems – view of Data – Database Languages – Relational Databases – Database Design – Object – Based and semistructured Databases – Data Storage and Querying – Transaction Management – Data Mining and Analysis – Database Architecture – Database Users and Administrators.

### **UNIT: II** Relational Databases.

Structure of Relational Databases – Fundamental Relational Algebra Operations- Aggregate Functions – Null Values – Nested subqueries – complex Queries – Views – Modification of the Database – Embedded SQL.

### **UNIT : III** SQL

Background – Data definition – basic Structure of SQL Queries – Set operations – Aggregate Functions – Null values – Nested subqueries – complex Queries – Views – Modification of the Database – Embedded SQL.

### **UNIT: IV** Database Design and E.R. Model

Overview of the Design Process – E.R Model – constraints – E.R. diagrams – Weak Entity Sets – Extended E.R. features Relational Database Design. Atomic Domains and First Normal Form – Decomposition using functional dependencies – Decomposition using Multivalued Dependencies – More Normal forms.

### **UNIT: V**

Transactions: concept – state – Atomicity – Durability – Concurrency – Serializability – Isolation. Concurrency Control: Lock Based Protocols – Timestamp Based Protocols, Validation Based Protocols – Deadlock Handling Recovery systems – Log Based Recovery – Recovery with Concurrent Transactions – Remote Backup Systems.

### **TEXT BOOK**

“Database system concepts”, Abraham Silberchatz, Henry F.Korth and S.Sudarshan, MGH International Edition, 2006.

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## **PAPER VIII – DESK TOP PUBLISHING**

### **UNIT I : FUNDAMENTALS OF COMPUTERS:**

Introduction to computers, Hardware and software – Applications of computers  
– Input devices – Output devices – Storage media – Types of software

Operating Systems – Introduction to DOS – DOS commands and tools – MS-  
Windows – Using the Desktop – Setup using Control Panel – Windows  
accessories – Files & Folder Management

Introduction to Internet – Browsers – sending and receiving e-mail – file  
downloading and uploading .

### **UNIT II: DOCUMENT SET UP :**

History of printing – types of printing - Desktop publishing: Introduction –  
Merits & Demerits – DTP and Traditional composing – cost & estimation of DTP  
Unit – Word Processing using MS-Word: Basics – text formatting – setting  
header and footer – tables, borders and shading –Special effects and image  
insertion.

### **UNIT III: TYPING AND COMPOSING PAGES :**

Typography – Managing Fonts – Measurement types for fonts, pages, lines –  
Proof reading – Page setup – House styles – Page Maker case study - Page  
Composing - different composing methods and processes – composing  
machines – Output devices – Qwark Express case study

### **UNIT IV: DOCUMENT DESIGNING:**

Graphic Reproduction – Setting tones, shadowing, highlight, contrast for  
images - Scanning principles – Types of scanners and their use – Setting  
resolution – Page design – Color types – Color selection - Preparation of  
graphics – Book preparation – Seminar presentation – Imposition techniques

### **UNIT V: FILE & PRINT MANAGEMENT**

Printing – Types of printers – Different types of file formats – ICC based color  
management – Preparation of Project work – Binding techniques – CorelDraw  
Case Study

### **TEXT BOOK:**

1. Shirish Chavan, “Rapidex DTP Course”, UNICORN Books Pvt. Ltd., 2007
2. Sanjay Saxena, “A First Course in Computers”, Vikas Publishing House, 2005

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## **PAPER IX – DESK TOP PUBLISHING LAB**

1. Use of MS-Windows for file management, and system configuration using Control panel.
2. Installation of software and use of Internet for browsing
3. Sending and Receiving e-mail and downloading files
4. Creating a document in MS-Word and formatting it using header, footer, margins, borders, shading etc.
5. Creating documents with
  - a. Tables
  - b. pictures with text wrapped around them
  - c. templates
  - d. proof corrections with proof reading marksand printing documents in different styles in MS-Word.
6. Use Adobe PageMaker for
  - a. Creating and opening publications, use of toolbox, palettes, text and graphics, templates, saving publications – create a notice for an exhibition
  - b. Tutorial positioning ruler guides, typing text, formatting graphics, creating columns, creating styles, changing typestyle and alignment, rotating and moving text and graphics, tabs, creating leaders, positioning and resizing logos. – create a tabulated invoice for a company
  - c. Constructing a publication with the following features: set-up pages, edit master pages, choosing measurement system and setup ruler, alignment, layout, page-numbers, rearrange pages, apply header/footer, import text, thread text blocks, balance columns, edit story, use frames and layers, lock objects, wrap text around graphics, crop graphics, assemble publications into a book, Proof corrections with comment. – create a story book.
7. Using a scanner, scan an illustration, line drawing or picture, configure settings, manipulate scanned images by adjusting color, tone, contrast, brightness, resolution, shadow, make color corrections, crop scanned image and manage images in folders.
8. Use Adobe Photoshop for
  - a. Create a digital image, try different resolutions, store as raster image/bitmap/vector image/graphic image. Use different file formats (JPEG, PSD, PDD, TIFF, GIF)
  - b. Understanding various tools: marquee, Rectangular/Elliptical fill, move, lasso types, Magic wand, crop, airbrush, paint brush, pencil, rubber stamp, pattern stamp, erase, paint-bucket, direct selection, path component selection, pen, custom shape, eye dropper, hand, zoom

- c. Understanding various palettes – navigator, infor, color, swatches, style, history, layers
- d. Embedding text – path, character, paragraph, foreground/background colors, default colors, switch colors,
- e. Edit image in standard/quick mask mode, display image in different modes, image manipulation –adjust contrast, brightness, hue, saturation, replace colors, rotate canvas, crop and trim
- f. Working with layers - lock layers, merge down, merge, visible, flatten image, layer sets
- g. Use of filters, views and print options.

9. Use CorelDraw for

- a. Creating a drawing, set rulers, grid, guidelines, and view document.
- b. Drawing, moving, shaping objects, lines and curves, dimension line, working with style and templates
- c. Grouping/ungrouping, locking/unlocking objects, using layers, aligning and editing objects – pattern/texture fills, editing/applying end shapes, splitting/erasing portions, positioning, moving, stretching, and rotating objects
- d. Formatting text and paragraph, creating and adding blends, envelopes, extrusions, 3D special effects, different formats and layouts, previewing, sizing and printing a job.

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## **PAPER X – Accounting Packages Lab**

1. Creation of company, Groups – Single & Multiple
2. Posting of Journal to ledger – Single & Multiple.
3. Preparation of Accounting vouchers.
4. Preparation of Trail balance.
5. Financial Statement: Trading account, profit and loss account and Balance sheet.
6. Preparation of Bank Reconciliation Statement
7. Preparation of Inventory: Stock Item, Stock Group, Stock category,
8. Preparation of VAT (Value Added Tax)
9. Inventory Voucher.
10. Preparation of TDS (Tax Deducted at Source) & Service Tax.

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