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UNIVERSITY OF MADRAS  
INSTITUTE OF DISTANCE EDUCATION  
CERTIFICATE COURSE IN COMPUTER APPLICATIONS - (One year)

Under Choice Based Credits System  
(With effect from the academic year 2023-2024)

SCHEME OF EXAMINATION

PAPER	SUBJECTS	CREDIT	MAX. MARKS		TOTAL
			INT.	EXT.	
Paper – I	Information Technology ✓	4	25	75	100
Paper – II	Digital Logic Fundamentals	4	25	75	100
Paper – III	Practical – I – PC Software Laboratory ✓	2	40	60	100
Paper – IV	Database Management Systems	4	25	75	100
Paper – V	Web Technology ✓	4	25	75	100
Paper – VI	Practical II – Web Technology Lab	2	40	60	100

CREDIT DISTRIBUTION

Course Component	No. of Paper x Credit(s)	Total
Theory Paper	4 x 4	16
Practical Paper	2 x 2	04
<b>Total</b>		<b>20</b>

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## **PAPER – I: INFORMATION TECHNOLOGY**

**Unit – I Data and Information:** Data and Information: Types of data simple model of a Computer - Desktop Computer, Acquisition of numbers and textual data: Introduction - Input units - internal representation of numeric data, representation of characters in computers

**Unit – II Acquiring graphical data:** introduction - Acquisition of textual data, pictures - Storage format for pictures - Image acquisition with digital camera. Acquiring audio data - Acquisition of video - processing and displaying textual data.

**Unit – III Data Storage:** Introduction - Memory cell - RAM, ROM, Floppy Disk Drive, CD ROM - Central Processing Unit - Output Devices.

**Unit – IV Computer software - Computer networks - Data organization.** Some Internet applications - Email - WWW - Information Browsing Service - Information retrieved from World Wide Web - Audio on internet.

**Unit – V Business information system:** Introduction - Types of information needed by organization - Use of computer in business. Social Impacts of Information Technology

### **TEXT BOOKS**

1. V. Rajaraman, "Introduction to Information Technology", Prentice Hall of India, 2006.
2. Education, "IT Tools and Applications", Macmillan India Ltd., 2004.
3. S.K. Sarkar & A.K. Gupta, "Element of Computer Science", S. Chand & Co., 2002.
4. Ajoy Kumar Ray & Tinku Acharya, "Information Technology - Principles and Application", Prentice Hall of India, 2004.

## PAPER II: DIGITAL LOGIC FUNDAMENTALS

**Unit - I:** Fundamentals of computers – Characteristics of computers – Computer Language – Operating Systems – Generation of Computers.

**Unit - II:** Number systems - Conversion from one number system to another - compliments - Binary codes - Binary logic - Logic gates - Truth tables.

**Unit - III:** Boolean Algebra - Axioms - Truth table simplification of Boolean function – map method (upto 5 Variables) - Mc-Clausky tabulation method

**Unit - IV:** Sequential logic – RS, JK, D and T Flip flops - Registers –Shift Registers – Counters – Ripple Counters – Synchronous Counter – Design of Counters

**Unit - V:** Adders – Subtractors – Decoders – Encoders – Multiplexer - Demultiplexer – Design of Circuits using decoders/Multiplexers – ROM – PLA – Designing circuits using ROM/PLA

### TEXT BOOKS

1. M.M. Mano, Digital Logic and Computer Design, Pearson Education .
2. V.Rajaraman,2002, Fundamentals of Computers, Third Edition,PHI, New Delhi.
3. T.C.Bartee,1991,Computer Architecture and logical Design, McGraw Hill.

## **PAPER III: PRACTICAL –I: PC SOFTWARE LAB**

### **MSWORD**

1. Text Manipulations.
2. Usage of Numbering, Bullets, Footer and Headers.
3. Usage of Spell check, and Find & Replace.
4. Text Formatting.
5. Picture insertion and alignment.
6. Creation of documents, using templates.
7. Creation templates
8. Mail Merge Concepts
9. Copying Text & Pictures from Excel

### **MS-EXCEL**

10. Cell Editing
11. Usage of Formulae and Built-in Functions
12. File Manipulations
13. Data Sorting (both number and alphabets)
14. Worksheet Preparation
15. Drawing Graphs
16. Usage of Auto Formatting

### **POWER POINT**

17. Inserting Clip arts and Pictures
18. Frame movements of the above
19. Insertion of new slides
20. Preparation of Organisation Charts
21. Presentation using Wizards
22. Usage of design templates

## PAPER IV: DATABASE MANAGEMENT SYSTEMS

**Unit - I:** Advantages and Components of a Database Management Systems – Feasibility Study – Class Diagrams – Data Types – Events – Normal Forms – Integrity – Converting ClassDiagrams to Normalized Tables – Data Dictionary.

**Unit - II:** Query Basics – Computation Using Queries – Subtotals and GROUP BY Command – Queries with Multiple Tables – Subqueries – Joins – DDL & DML – Testing Queries

**Unit - III:** Effective Design of Forms and Reports – Form Layout – Creating Forms – Graphical Objects – Reports – Procedural Languages – Data on Forms – Programs to Retrieve and Save Data – Error Handling.

**Unit – IV:** Power of Application Structure – User Interface Features – Transaction – Forms Events – Custom Reports – Distributing Application – Table Operations – Data Storage Methods – Storing Data Columns – Data Clustering and Partitioning.

**Unit – V:** Database Administration – Development Stages – Application Types – Backup and Recovery – Security and Privacy – Distributed Databases – Client/Server Databases – Web as a Client/Server System – Objects – Object Oriented Databases – Integrated Applications.

### TEXT BOOKS

1. G. V. Post – Database Management Systems Designing and Building Business Application – McGraw Hill International edition – 1999.
2. Raghu Ramakrishnan – Database Management Systems – WCB/McGraw Hill – 1998.
3. C.J. Date – An Introduction to Database Systems – 7<sup>th</sup> Edition – Addison Wesley -2000.

## PAPER – V: WEB TECHNOLOGY

**Unit – I:** Internet basic - Introduction to HTML - HTML tags – HTML Style tags-Lists- Creating Links-Linking documents –External Links-Internal Links.

**Unit – II:** Frames-Graphics to HTML Doc- Adding sound formats-Video formats-multimedia formats to web pages-HTML Forms-Style Sheets- Properties of Style Sheets - CSSI's advantages and Limitations.

**Unit – III:** DHTML-XML-Introducing XML-XML Basics- Basics Active Server Pages- Intrinsic ASP Objects- Response Object-Request Object-Application and Server Objects-The Session Object.

**Unit – IV:** Writing Server-side code - Introduction to VBScript – Scripting Languages Vs. Other Computer Languages-ASP Scripting Options - Getting started with VB Script – Introduction to Java Script- Advantages of JavaScript- Java Script syntax – Data type- Variable-Array-Operator& Expression-Looping Constructor Function-Dialog Box. JavaScript document object model.

**Unit – V:** Introduction - Object in HTML - Event Handling - Window object – Document object-Browser object-Form object-Navigator object-Screen object-Building object-User defined object.

### TEXT BOOKS

1. Bayross,2000,WebEnableCommercial Application Development Using HTML, DHTML, JavaScript, Perl CGI ,BPB Publications.
2. HathleenKalata-Internet Programming with VBScript and Java Script,Thomsonearning.
3. Mike McGrath,XMLHarnessthe Power of XML in easy steps, Dream tech Publications
4. J. Jaworski, 1999, Mastering JavaScript, BPB Publications
5. T.A.Powell,2002,Complete Reference HTML,TMH, New Delhi.

## **PAPER - VI: WEB TECHNOLOGY LAB**

1. Write a script to design a web page using HTML Tags.
2. Write a script to create a webpage with Hyperlink using HTML Tags.
3. Write a program to calculate Payroll Processing using script.
4. Write a script to create DHTML Pages.
5. Write a program to calculate Factorial using Function in script.
6. Write a program for String Manipulation Using VB Script.
7. Write a program to Create Calculator using script.
8. Write a program to Create Prompt with image Using Java-Script