

Diploma in E-Commerce (A04)
(Dec. 2014)

	Subject	Topics	Total Duration	Theory	Practical
Sem - I					
A04-01	Internet Fundamentals & E-Business, SEO, Payment Gateway Steps.	Basics of Internet Concepts, E-Commerce Framework, E-Commerce Security Issue, Introduction to WAP. SEO, Payment Gateway Steps.	20	20	--
A04-02	E-Web Publishing & Scripting (Client Side Scripting)	HTML using Frontpage, DHTML, Introduction to XML Scripting Using Java / VB	100	40	60
A04-03	Web Graphics & Multimedia Development	Adobe Photoshop & CorelDraw	60	20	40
A04-04	Networking & Communication Technology	Networking Basics, Installing & Configuring the Network with Win 2003/2008 Server Administration tools	100	60	40
	Total (Hrs)		280	140	140
Sem - II					
A04-05	RDBMS	RDBMS using MySQL	100	45	55
A04-06	Application Programming	Programming using C#.net	100	40	60
A04-07	Web Application Development using Java Programming (Server Side Scripting)	Basics of OOPs concepts & C++, Core Java programming using J2EE Framework, Java Applets & Swings, JDBC, Java Servlets, Java Beans, Introduction to JSP, EJB	100	40	60
A04-08	Project Work	Using Web / Application Development with Case Study on Payment Gateway	20	-	20
	Total (Hrs)		320	125	195

Module Code: A04- 01

Module Name: Internet Fundamentals and E-Business

Topics- Basics of Internet Concepts, E-Commerce Framework-Commerce Security Issue, Introduction to WAP

Theory-20

INTERNET

What is Internet: How does it work.

What you can do in Internet: Send E-mail, subscribe to news group or mailing list, on line shopping Access to huge amount of data stored on computers that make up the Internet.

Getting Connected: What is needed to get connected Modem, Account with ISP, Internet service Provider.

What is ISDN: Integrated services Digital Network?

What is Modem: How it works, three types of modems: External Card Modem, Internal Modem, U.S. Robotics etc.: Baud rate: Internal, External, **SENDING & RECEIVING E-Mail:** What is E-mail? How to decipher an E-mail address, How to send e-mail, Attaching a document: receiving e-mail, storing e-mail addresses, **DOWNLOADING files, Files type: Image files:** jpg, gif, tif, bmp., ped:**Audio:** com, exe, bat, compressed files and text files. **World Wide Web WWW:** What is WWW: Web Pages: **Can be used for:** Commercial Activity, Research, Personal Interest: Web Browsers: NetScape, IE.

WAP

INTRODUCING WAP: - What is WAP, Importance & Benefits of WAP, History of WAP, WAP Architecture, WAP Services, Why WAP, Future of WAP.

BASICS OF A GOOD WAP APPLICATION: - WAP Micro browsers, Generic WML Interface, Application design process, common design mistakes.

THE USER INTERFACE:- User interface basics, Low bandwidth, Small Screen size, Text Entry, Using the Cache, Types of WML cards, The Back button.

WAP DEVELOPMENT TOOLS & SOFTWARE: Editors & emulators, Software Developer Kits and Integrated Development Environments, Converting Images, Specification of Well defined WBMP types. **DATABASE DRIVEN WAP:-** Active Server Pages, ASP & WAP, The ASP Object Model, Activex Objects, Physically Connecting To Database, Querying The Database, Using The Returned Data, Tidying Up.

E-COMMERCE

Basics: Defining E-commerce, Essential Elements of E-commerce, Significance in Modern Business, Relationship between EDI & E-Commerce, Important Principles of E-Commerce, Future of E-Commerce, Mobile Commerce.

E-Business: What is E-Business? Fundamental of E-Business, How to Start E- Business? Rules of: E-Business Netiquette, Formulation of E- Business, How to Start E-Business Strategy, Uses.

E-Commerce Terminologies E-mailing & E-Commerce: Concept of E-mail, How it promotes the business?

Electronics Payment System: What is Electronics Payment System? Features, Cash-Like Payment Systems, Cheque-Like Payment Systems, which Electronic Payment System is best? Major Issues in Electronics Payment Systems.

Electronic Data Interchange (EDI): What is EDI? Origin of EDI, Who Uses EDI? How EDI Works? How to use EDI. Comparing EDI & Internet, How Does EDI differ from Traditional Purchasing methods? What are EDI Standard Formats? How we successfully Implement EDI in our Company? One can use Internet & WWW for EDI, VAN & EDI.

Search Engine Optimization(SEO) -What is SEO, Need of SEO,How search engine operates(crawling and indexing), Interaction with search engines,Search engine marketing,keyword research,link signals,effect of usability and content on search engine ranking,search engine protocols,metrics for SEO

Payment Gateway-Payment Gateway in e-commerce,Woking of Payment Gateway,Payment Gateway, integration, payment processor vs Payment Gateway, Examples of Payment Gateways in India

WWW & E-Commerce: Importance of a Domain Name, Features of a Good Domain Name, What is a Domain Name? What makes a Good Domain Name? Benefits of having your own Domain name, Guide for Setting, Profitable Web Site, How to Sell your Products on the web?

Module Code: A04- 02

Module Name: E-Web Publishing & Scripting (Client Side Scripting)

Topics- HTML using Frontpage, DHTML, Introduction to XML Scripting Using Java / VB

Theory-40
Practical -60

HTML

Document Formatting system-HTML elements-Tag rules-Basic HTML elements (Address element, Anchor element, Base element, Block quote element, Bold face and Italics element, Cite element, code element, List and Term element, Direction element.

Emphasis element, Heading element, Image element, IsIndex element, keyboard element, Line-Break element, Link element, MENU element, Meta-Information element, Paragraph element, Preformatted element, Rule element, Sample element, Strong element, HMP and Listing elements, Tele Type element – Characters, words and paragraphs – Fragment Identifiers – HTML forms – Forms element – Form data gathering (INPUT CHECKBOX, INPUT IMAGE, INPUT PASSWORD, INPUT RADIO, INPUT, RESET, SELECT, INPUT SUBMIT, TEXT AREA) – Public Text Identifiers (Address, Applet, Area, Base, Big, Body, Caption, Center, Cite, Code, DD, DL, DT, DFN, DIR, DIV, EM, FONT, FORM, HI through H6 head, HR, IMG, INPUT, ISINDEX, KBD, L1, LINK, MAP, MENU, META, OL, OPTION, PARAM, PRE, SAMP, SCRIPT, SELECT, SMALL, STRIKE, STRONG, STYLE, SUB, SUP, TABLE, TD, TEXT, AREA, TEXT FLOW, TH AND TD, TITLE, TR, TT and UL elements) – Attributes (ACTION, ALIGN, ALINK, BACKGROUND, COMPACT, ENCTYPE, FACE, HEIGHT, HREF, EQUIV, MAXLENGTH, METHOD, MULTIPLE, NAME, NOSHADE, PROMPT, REL, REV, ROWS, ROWSPAN, SELECTED, SIZE, SRC, TEXT, TITLE, TYPE, USEMAP, href:\

DHTML

DHTML AND STYLE SHEETS: Defining Styles; Elements of Style; Linking a Style Sheet to an HTML Document; In-line Styles; External Style Sheets; Internal Style Sheets; Multiple Styles.

XML

XML Basics: The History Of XML;The Origins Of XML; Comparison Of XML And Html, Components of XML;

Anatomy Of An XML Document : A Sample XML Document; XML Declaration; The Root Element; An Empty Element; Attributes, Markup Delimiters; Element Mark Up; Attribute Mark Up; Naming Rules; Character References; Predefined Entities; Entity References; Cdata Sections; Processing Instructions.

Creating Wellformed And Valid Documents : XML And Structured Information; Document Type Declaration ; Wellformed And Valid Document; DTD And Validation; Internal DTD Subset ;External DTD; Developing The DTD ; Elements And Attributes Of DTDs; More About Elements; Empty Element; Element-Only Element; Mixed Elements; Any Element; More About Attributes; String Attributes; Enumerated Attributes; Tokenised Attributes; Creating A Valid Document From A DTD;

Styling XML with CSS: Cascading Style Sheet, XML, CSS And Web Browsers; Specifying CSS Properties; Classes; Id Attributes; Embedding CSS In XML

Rendering XML with XSL: Comparing XSL And CSS; Template Rules; The Default Template Rules; Formatting Objects; Layout Formatting Objects And Content Formatting Objects; Exploring XSL Style Sheets; Xslt Template Constructs

VB SCRIPT

Difference between Visual Basic and VB Script, Adding Script to Documents, Working with Numbers, Strings, Date & Time and Arrays, If. Then Else, loops, select case, Error Trapping, Getting message across, Confirming user action, Working with scripts, working with documents, Working with forms, Validation of data (text, numbers, date), Validate list selections, Multimedia Techniques: Creating and displaying graphic images, loading graphics in background, Displaying a Marquee Text, Playing Audio/Video files.

JAVA SCRIPT

JAVA Script variables, Operators, Text input, reserved words, constructors, functions, objects, events and Interact with forms - [Displaying moving graphics -Display graphics files, Arrays- Vectors-generating color-JAVA Soft-JAVA Report-JAVA Newsgroup]-Control Structures: If expression, Switch statement, For loop, while loop, Do loop, Continue and Break Statements, some graphics library-Multitasking Applets -Passing parameters to your applet-Basic Abstract Windows toolkit (AWT)-Protecting Classes and methods-Modifiers, Class Security and Packages, Excepts-Threads - Applications, File-Handling and Data Structures.

Module Code: A04- 03**Module Name:** Web Graphics & Multimedia Development**Topics-** Adobe Photo shop and CorelDraw**Theory - 20****Practical-40****DESK TOP PUBLISHING TOOLS:****ADOBE PHOTOSHOP**

- The Basics- New Page; The Toolbox (Selection Tools; Painting Tools; Path, Type and Shape Tools, Viewing Tools); Tool Options Bar; What's on the Menus (File and Edit Menu, The Image Menu, The Layer Menu, The Select Menu, The Filter Menu, The View Menu, The Window Menu, The Help Menu); Setting Preferences.
- Opening and Saving- Working with Files (Opening Files, Using the Browser, Importing a File); Saving Your Work (Reducing File Size, Choosing a Format); Undoing and Redoing.
- Selection Modes: The Selection Tools (Rectangular and Elliptical Marquees, Lasso, The Polygonal Lasso Tool, The Magnetic Lasso, Magic Wand); The Selection Menu (Feather, Modifying Selections); Selecting Large Areas; Cutting the Copying; Cropping.
- Transformations: Resizing (Resizing an Image, Resizing a Canvas, Resizing a Selection); Rotating (Rotate 180 Degrees and 90 Degrees Clockwise or Counterclockwise, Rotate by Degrees, Rotate a Selection, Free Transformations); Flipping; Selection Transformations (Skewing Selections, Distorting Selections, Changing the Perspective of a Selection).
- Color Modes and Color Models: Color Models (RGB Model, CMYK Model); The Modes and Models of Color (Bitmap and Grayscale, RGB, CMYK, Converting between Modes).
- Adjusting Color: Adjusting by Eye with Variations (Adjusting Shadows, Midtones, Highlights, and Saturation, Saving and Loading Corrections); Making other Adjustments (Adjusting with the Brightness/Contrast Dialog Box, Adjusting with the Hue/Saturation Dialog Box, Adjusting with the Curves Dialog Box, Adjusting with the Levels Dialog Box); Adjustment Layers.
- Paintbrushes and Art Tools: The Brushes Palette (Brush Options Dialog Box, Brush Options); Brushes (The Air Brush, The Brush, The History Brush, The Art History Brush, The Eraser, The Pencil).
- Digital Painting: Foreground and Background Colors; Selecting Colors (The Color Picker, The Color Palette, The Swatches Palette, The Eyedropper Tool); The Blending Modes.
- Moving Paint: The Smudges (Using the Smudge Tool, Setting Smudge Options); Focus Tools (The Blur Tool, The Sharpen Tool); The Toning Tools (Dodge and Burn Tools, Sponging);
- Advanced Painting Techniques: Simulating Different Media (Watercolors, Pencil and Colored Pencil, Chalk and Charcoals).
- Layers : Using the Layer Palette (Reordering Layers, Hiding and Showing Layers, Removing Layers); Working with Multiple Layers (Opacity, Layer Blending Modes, Linking Layers, Layers Sets, Merging Layers, Transferring Layered Images to Image Ready, Layer Effects).
- Using Masks: Applying Masks, Using Quick Masks, Layer Masks (Editing Layer Masks, Removing the Layer Masks, Making Layer Masks visible with Channels).
- Paths: Creating Paths (Paths via Selection, Path via Pen Tool); Editing Paths (The Path Tools, The Basic Path Techniques); Using Paths (Turning Paths into Selection, Filling a Path, Stroking a Path, Using the Vector Mask Tools).

- Filters that Improve Your Picture: Sharpen Filters (Sharpen, Sharpen More, Sharpen Edges, Unsharp Mask); Blur Filter (Blur, Blur More, Gaussian Blur, Radial Blur, Smart Blur, Motion Blur); Fading Filters.
- Filters to Make Your Picture Artistic : Artistic Filters (Colored Pencil, Cutout, Dry Brush, Film Grain, Fresco, Neon Glow, Paint Daubs, Palette Knife and Plastic Wrap, Poster Edges, Rough Pastels, Smudge Stick, Sponge, Under Painting, Watercolor); Brush Strokes (Accented Edges, Angled Strokes and Crosshatch, Dark Strokes, Ink Outlines, spatter, Sprayed Strokes, Sumi-e); Sketch Filters (Bas Relief, Chalk and Charcoal, Charcoal, Chrome, Conte Crayon, Graphic Pen and Halftone Pattern, Note Subject Code and Plaster, Photocopy, Reticulation, Stamp and Torn Edges, Water Subject Code).
- Filters to Distort and Other Funky Effects: Distort Filters (Diffuse Glow, Displace, Glass and Ocean Ripple, Pinch, Spherize, and ZigZag, Sheer, Twirl); Pixelate Filters (Crystallize, Pointillism and Mosaic); Stylize (find Edges, Glowing Edges and Trace Contour, Wind, Emboss); Combining Filters (Texturizer, Rough Pastels and Film Grain).
- Adding Type to Pictures: The Type Tools (The Character Palette, The Paragraph Palette); Setting Type; Creating Drop Shadows (Variation: Shadows on Backgrounds); Cutting and Filling Type; Adding Glows; Creating Bevel and Emboss Effects (Metallic Type); Warping Text; Checking your Spelling Special Effects and Useful Tricks: Glows; Lighting Effects; Reflections; Extracting Selections; Notepad; Contact Sheets and Picture Packages (Contact Sheets, Picture Packages); Working Efficiently (Tool Presets) Photoshop Plug-Ins and Add-Ons : Where to get plug-Ins; How to Install Plug-Ins; Alien Skin's Eye Candy (Splat); Genuine Fractals; Andromeda.
- Compositing: Sources for Images; Making One Picture from Two; Realistic Composites, Replacing a Background; Composites from Nothing.
- Photo Repair – Black and White: Easy Fixes; Using the Eye-Dropper; Using the Clone Stamp; Healing Brush and Patch Tools; Cleaning Up a Picture Step by Step; Applying Tints (Dutones, Hand-Tinted Photos); Vignetting.
- Photo Repair – Color: Color Retouching (Fixing Red Eye, Drag and Drop Repairs, Editing a Picture); Removing (Putting back What Was Never There).
- Printing: Choosing a Printer (Inkjet Printers, Laser Printers, Dye-Sublimation Printers, Thermal Wax Printers, Image setters); Preparing to Print; Printing the Page; Preparing the Image (Working Spaces, Color Management Policies, Conversion Options); Subject Codes.
- Photoshop for the Web : Jumping into Image Ready; File Formats and File Size (JPEG (Joint Photographic Expert's Group), GIF (Graphics Interchange Format), PNG (Portable Network Graphics)); Preparing Backgrounds; Building Animations; Web Photo Gallery; Creating Slices; Creating a Rollover Effect; Preparing Text for the Web; Making Pages Load Faster.

CORELDRAW

- **Introduction:** Brief history, Features of CorelDraw, CorelDraw Graphics suite, Corel Draw versions, minimum system requirements
- **Opening CorelDraw-**Exploring CorelDraw window, Corel Draw menus, setting up the page, Moving Around the Current Page, Viewing Modes, Inserting and Deleting Pages, Changing Page
- **Customizing Options-**Using Multiple Workspaces, Customizing the Toolbars, Using Shortcuts, Saving Defaults, Setting File Backups
- **Object Creation And Manipulation-**Drawing and Shaping Tools, Using the Freehand Tool, Drawing Lines and Polylines, Drawing Freehand Polygons, Drawing Perfect Shapes, Reshaping Lines and Polylines, Drawing Curves, Reshaping Curves, Drawing Rectangles, Drawing Circles
- **Selecting & Manipulating Objects-**Selecting and Deselecting Objects, Moving Objects, Copying and Deleting Objects, Deleting Objects, Sizing Objects

- **Transforming Objects**-Mirroring Objects, Rotating and Skewing Objects, Using Transform Docker
- **Outlining & Filling Objects**- Eyedropper and Paint bucket Tools, The Outline Tool, Choosing Outline Thickness, Choosing Outline Color, Using Fill Tool, Uniform Fill, Fountain Fill, Pattern Fill, Interactive Mesh fill, Copying Attributes, Setting Outline and Fill Defaults
- **Arranging Objects**-Arranging Objects, Grouping and Ungrouping Objects, Using Guidelines, Using Dynamic Guides, Using Snap To, Aligning Objects, Group and Child Objects, Combining and Breaking Objects, Welding Objects, Using Intersection, Using Trim
- **Using Layers**- About Layers, Editing Layers, Setting Up a Master Layer, Moving, Copying, and Locking Layers, Reordering Layers, Using the Object Manager
- **Special Effects**-Drawing With the Artistic Media Tool, Shaping an Object with an Envelope, Extruding an Object, Blending Two Objects, Using the Lens Effect, Adding Perspectives, Using Power Clips, Applying Contours, Applying Drop Shadows, Using Interactive Fills, Applying Distortions, Using Interactive Transparencies, Applying Mesh Fills
- **Working with Text**-The Text Tool, Creating Artistic Text, Editing Text, Formatting Text, Setting Text Options, Creating Paragraph Text, Choosing Paragraph Options, Setting Indents Using the Ruler, Importing Text, Using the Spell Checker, Importing and Sizing Paragraph Text, Flowing Text Between Frame, Formatting Paragraph Frames, Wrapping Paragraph Text Around Objects, Applying Drop Caps, Typing Text Into Objects
- **Special Text Effects**-Fitting Text to a Path, Converting Text to Curves, Creating Blended Text Shadows, Jumpy Text, Neon Text, Glowing Text, Chrome Text, Bevel Text, Creating Enveloped Text
- **Playing with colors**-Text Implementing Color Management, Creating Custom Color Palettes, Choosing a Color Using Color Harmonies, Applying Colors Using the Color Docker, Automatically Creating Color Styles, mixing of colors
- **Using Symbols and Clipart**-Inserting Text Symbols, Adding Clipart, Modifying Clipart
- **Working With Bitmaps**-What is a Bitmap, Importing Bitmap Options, Adjusting Color, Hiding Certain Colors in a Bitmap, Applying Special Bitmap Effects, Creating Web Images, Advanced GIF Options
- **Special Page Layouts**-Creating a Greeting Card, Print Previewing the Layout, Creating Labels
- **Printing**-Print Options, Print Previewing
- **Exporting Drawings**-Exporting to Graphic Formats, Copy and Pasting Into Other Applications
- **Using Styles and Templates**-About Styles and Templates, Creating a Style, Applying a Style, Copying Properties
- **Using Corel Trace**- Types of Graphic Formats, About Corel Trace, Tracing Images, Importing Traced Files into CorelDraw, Special Trace Effects
- **Using Corel R.A.V.E.**- About Corel RAVE, Playing sample RAVE animations, Performing the five steps necessary to create RAVE animations, Working with the Timeline Docker, Tweening objects to create animation, Exporting to Macromedia Flash format, Publishing to the web Create web rollovers, Inserting hyperlinks, Creating sprites and adding behaviors, Creating interactive movies

Module Code: A04- 04

Module Name: Networking and Communication Technology

Topics- Networking Basics, Installing & Configuring the Network with Windows 2008

Theory- 60

Practical-- 40

CONCEPTS OF NETWORKING

Methods of Data Communication: Data Communication, Communication Channels, (Twisted Pair wire, Radiowaves, Microwaves, Optical fibres) Digital Vs Analog Data Transmission, Serial Vs Parallel data transmission.

Communication Protocols: Synchronous Vs Asynchronous Data transmission, Baud, bandwidth, Simplex, Half-duplex, Duplex data Communication, IPX, TCP/IP.

Modems & Multiplexers & Front-end processing Networking: LAN's & WAN's incentive for installing LAN's. TOPOLOGIES, Star, Ring, Bus (Ethernet), Hybrid.

Novell Netware: Users, Groups Printers

Novell Concepts: Installing Server

Installation Overview: Installing Workstation, Setting up users, Shared Printer installation

Wan's & Electronic Mail Distributed Data Processing (DDP) Review

COMPUTER NETWORKS & COMMUNICATION TECHNOLOGY

Introduction to Computer Networking: What is networking, Computing models (Centralized computing, distributed computing, collaborative computing), types of computer networks (LAN, MAN, enterprise & global WAN), Networking elements (Network services, Networking Media & Protocols), Peer to Peer & Server centric networks.

Network Services: Common network services, File services, Print services, Message services, directory services, application services, database services, centralized vs distributed network services, Network operating systems, Centralized vs distributed file services.

Transmission Media: Common computer network transmission media, cable media, twisted pair cable, coaxial cable, fibre optic cable, discussing the cable media w.r.t parameters (cost, ease of installation, capacity, attenuation, EMI), benefits & consideration for using different cable media, Wireless media (radio waves, microwaves, infrared), discussing the wireless media w.r.t parameters (frequency range, cost, ease of installation, capacity, attenuation, EMI), benefits & consideration for using different wireless media.

Network Connectivity Hardware: Transmission media connectors, network interface boards, Modems, Repeaters, Hubs (active hub, passive hub, intelligent hub), Bridges, Multiplexers, Routers.

OSI Physical Layer: Need for communication rules, Models & layers, OSI Model & Layers, Physical layer, point to point & multipoint connections, Physical topologies (Bus, star, ring, mesh & cellular), Digital signaling (Current state & state transition methods), Asynchronous & Synchronous bit synchronization, Broadband & baseband bandwidth, Multiplexing (FDM, TDM & STDM)

OSI Data Link Layer: Purpose of data link layer, Logical topology (Bus, ring, Media access methods (contentions, token passing & polling), Physical device addressing, Transmission synchronization (asynchronous, synchronous, isochronous), Flow control (static window & dynamic window) & error control.

OSI Network Layer: Logical network address, service address, switching (circuit switching, message switching, packet switching, datagram packet switching, virtual circuit packet switching), Route

discovery methods (distance vector & link state), Route selection (static & dynamic), Connection services (unacknowledged connectionless, connection oriented, acknowledged connectionless), Error control, Packet sequence control, Gateway services.

OSI Transport Layer: Functions of transport layer, address/name resolution, addressing (connection identifier & transaction identifier methods), segment development, segment sequencing, error control & end-to-end flow control.

OSI Presentation Layer: Functions of presentation layer, Translation types (Bit order byte order, character code, file syntax), Public key & private key encryption.

OSI Application layer: Functions of transport layer, Network services, Service advertisement (active & passive), Service using methods (OS call interception, remote operation, collaborative).

DATA COMMUNICATIONS: Multiplexing, Signaling, Encoding & Decoding, Error Detection & Recovery, Flow Control, Sliding Window, Congestion Management.

COMMUNICATION NETWORKS: Introduction to networking, OSI Model for Networking, Internet, ATM, Network Components (Cables, Hubs, Bridges, Switches, Routers), Network Topologies, Shared Medium, Peer to Peer, Hybrid Technology.

NETWORK TECHNOLOGIES: Local Area Network Technologies, Ethernet Technologies, Ethernet Versions, Token Ring Technologies, Wide Area Network Technologies (Frame Relay, SMDS, ISDN, SONET, PPP, HDLC, LLC), Wireless Networks (Radio Frequencies, Microwave Frequencies, Infrared Waves).

MULTIPLE ACCESS : Design Issues, Distributed & Centralized Design, Circuit Mode & Packet Mode Design, Implementation Issues, Performance Considerations, Base Technology (FDMA, TDMA, CDMA, Centralized Access, Circuit Mode Access, Poling or Packet Mode Access, Reservation Based Access), Distributed Access (decentralized polling, CSMA, CSMA/CA, CSMA/CD, Busy Tone Multiple Access & Multiple Access Collision Avoidance, Token Passing, ALOHA, Slotted ALOHA, Reservation ALOHA), Hardware Addressing

SWITCHING : Circuit Switching (Time Division switching, Space division switching, time space switching, time space time switching), Packet Switching (Port Mappers, Blocking, ATM Switching, Switching Fabric (Crossbar, Broadcast, Switching Fabric Elements), Bridges (Transparent bridges, Spanning Tree Algorithm, Virtual LANS), Switches.

NAMING & ADDRESSING: Hierarchical Naming, Addressing, Telephone Networks, Internet, IPv4, Subnetting Ipv4 Networks, Private Networks, Asynchronous Transfer Mode, Name Resolution, Address Resolution Protocol (Arp), RARP

ROUTING: Routing Information, Routing Protocols, Hierarchical Routing, Multicast Routing.

SERVICES & APPLICATIONS: File transfer protocol, TFTP, Domain Name System, DHCP, SNMP, Electronic Mail, WWW, HTML, HTTP, RPC & Middleware.

SECURITY: Threats, Encryption/Decryption, Firewalls, IP Security, Web Security, E-Mail Security.

DATA COMMUNICATION AND NETWORK

Data Communication, Communication channels (Twisted pair wire, Radiowaves, Microwaves, Optical fibres) Digital Vs Analog Data transmission, Serial Vs Parallel data transmission, Synchronous Vs Asynchronous Data transmission, Baud, bandwidth, Simplex, Half-duplex, Duplex data Communication, IPX, TCP/IP **Data Modems:** Concept of modulation, Amplitude shift keying, Frequency shift keying, Phase shift keying, Quadrature PSK, Differential PSK, Multichannel Data Communication : Circuits, channels, and concept of multichanneling, PCM, Frequency division multiplexing, Time division multiplexing, CODECS, **Data Networks :** Circuit switching, Packet switching, PABX, Network topologies, **Network Protocols :** OSI model, Data link protocols, **Local networks:** Ethernet and token rings, X.25 protocol, Satellite networks, ISDN, Fibre Optic Communication : Optical source, Propagation in fibre, Light detector, FDDI-fibre distributed data

interface, **Data Communication Systems** :Fascimile (FAX), Satellite Communication, Digital telephony.

WINDOWS 2008

Installing Windows Server 2008, What Is Server Core, Hardware compatibility, Partitioning hard-disk drives, Performing a Server Core install, Installing from the network , Configuring Windows Server 2008,. TCP/IP on Windows Server 2008, TCP/IP Basics (IPv4), IP addressing, Subnetting, Obtaining IP addresses,

Gateways and routing , Dynamic Host Configuration Protocol (DHCP), Setting Up TCP/IP, Configuring TCP/IP, Understanding and Using IPv6 , Troubleshooting TCP/IP , Installing and configuring SNMP, Windows Firewall Configuration and Management, : Routing and Remote Access, Backup and Restore

Managing Users and groups -The Windows Server 2008 Account, users, Local users , group, Exploring the Users and Computers management tools , Windows Server 2008 user accounts, Account policy, Security principals and the logon authentication process , Security identifiers, SAM and LSA authentication, User Accounts in Action, Naming user accounts, Passwords, Understanding logon, Granting remote access ,Creating a user account ,Renaming user accounts, Deleting and disabling user accounts ,Copying accounts ,Group Accounts, Nesting groups, Rights and permissions, Delegating responsibility, Installing and Setting Up Printers, storage management, Primary partitions Extended partitions, Basic volumes .

Module Code: A04- 05

Module Name: MySQL

Topics- RDBMS using MySQL

Theory- 45

Practical-55

Total - 100

Overview of DBMS

An Overview of DBMS and DB Systems Architecture: Introduction to Database Management systems; Data Models; Database System Architecture; Relational Database Management systems; Candidate Key and Primary Key in a Relation; Foreign Keys; Relational Operators; Set Operations on Relations; Attribute domains and their Implementation, 12 Codd's rules for RDBMS. Characteristics of Relational DBMS

The Normalization Process: Introduction; first Normal Form; data Anomalies in 1NF Relations; Partial Dependencies; Second Normal Form; data Anomalies in 2NF Relations; Transitive Dependencies; Third Normal Form; data Anomalies in 3NF Relations;

The Entity Relationship Model: The Entity Relationship Model; Entities and Attributes; Relationships; One-One Relationships; Many-to-one Relationships; Normalizing the Model; Table instance charts.

MySQL

Introduction MySQL-Elements of MySQL and Its Environment, Installation Choices and Platforms, Using the Command-Line Interface, Using a Text Editor

Using the MySQL monitor-Starting the Monitor, The Monitor Help, Running the Monitor in Batch Mode, Loading the Sample Databases, Style, Case, and Semicolon, MySQL Monitor Program Options

Creating and Using a Database, Creating and Selecting a Database, Creating a Table, Loading Data into a Table, Retrieving Information from a Table, Selecting All Data, Selecting Particular Rows, Selecting Particular Columns, Sorting Rows, Date Calculations, Working with NULL Values, Pattern Matching, Counting Rows Using More Than one Table.

Basic SQL- The SELECT Statement and Basic Querying Techniques ,The INSERT Statement ,The DELETE Statement ,The UPDATE Statement ,Exploring Databases and Tables with SHOW and mysqlshow

Advanced Querying -Aliases ,Aggregating Data ,Advanced Joins ,Nested Queries, User Variables, Transactions and Locking ,Table Types

Doing More with MySQL- . Inserting Data Using Queries ,Loading Data from Comma-Delimited Files ,Writing Data into Comma-Delimited Files ,Creating Tables with Queries Updates and Deletes with Multiple Tables ,Replacing Data ,The EXPLAIN Statement

Managing Users and Privileges- Understanding Users and Privileges ,Creating and Using New Users ,Privileges ,The GRANT OPTION Privilege ,How Privileges Interact ,Users and Hosts ,Checking Privileges ,Revoking Privileges ,Removing Users ,Understanding and Changing Passwords ,The Default Users ,Resetting Forgotten MySQL Passwords

Backups and Recovery -Dumping a Database as SQL Statements ,Loading Data from an SQL Dump File ,mysqlhotcopy ,Scheduling Backups ,The Binary Log ,Checking and Repairing Corrupted Tables ,Re-Creating Damaged Grant Tables, Structure of the Options File.

Module Code : A04- 06

Module Name : Application Programming

Topics- Programming with C#.NET

Theory-40
Practical-60
Total-100

C#.NET

- **Overview of C#** - Evolution of C#, features of c#, Benefits of changing over to c#,Differences between C++ and C#
- **.NET Framework and platform** - Overview of the .NET platform,.NET components,.NET framework-Common language Runtime, Unified programming Classes, Active server pages. NET, Assemblies-Private and shared
- **Introduction to C#** - General structure of a C# program, The main method, Name space declaration, Interactive Input/Output, Arguments in main method, command line arguments, runtime arguments
- **C# Basics** - Value types, default constructors, struct types, Struct modifiers, Struct interfaces, enumeration types, Enum modifiers, reference types, class types, object type, string type, interface types, delegate types, ,Boxing and unboxing, array types, variables and parameters, Operands, Statements, expressions, operators, Directives
- **Classes** - C# classes, Objects, creating classes, using an object's member functions, Static Methods and new operator, creating an object, different types of class members ,inheritance,Accessspecifiers(Private,Public,Protected,package),cleaning up unused objects, garbage collector, class library
- **Methods** – Structure of a method, Method overloading, implementing methods, Exception handling,Try and Catch
- **Statements** – Selection statements, Switch statement, Loops, jump statement, Break, continue, Goto, return statement
- **Abstract and Base classes** – Abstract modifier, abstract classes, virtual methods, base classes, introduction to .NET base classes. For each statement
- **Arrays and Strings** – Array types based on dimensions, passing arrays as parameter, declaring array, initializing array, creating array arrays as objects, System. Array type, Array members, array Covariance, array list, out and ref, String operations, converting objects to strings, String Builder, String formatting in .NET
- **Attributes**-Attributes, creating custom attributes, attribute parameters, Reflecting on attributes, Interfaces, Delegates, Delegate types, Delegate Instantiation, Multicast Delegates, Delegates vs Interfaces ,Namespaces, Types of namespaces, Assemblies, versioning, uses of versioning
- **File handling** – File and Folder operations, listing files in a folder, copying and deleting files, reading/writing text files and binary files
- **Exceptions and error handling in C#**- Common exception classes, statements(Try, Catch, Throw, Checked and Unchecked, Lock, Using,), Hierchical Structure of Exception, Passing Exception to Caller, user defined exception class, Types of Exception handlers, The Exception object, Error handling using Exceptions
- **Data handling in C#**-ADO, Introduction to Data Access with ADO.NET, Components of ADO.NET, Connecting to database, Accessing data with ADO. NET, Programming architecture, Dataset Namespace, Connecting objects, Table Mappings, Databases, Accessing data with ADO.NET, Connecting to databases, Building .NET Applications, Security permissions in C#, Printing in C#

Module Code: A04- 07

Module Name: Web Application Development using Java Programming (Server Side Scripting)

Topics- Basics of OOPs concepts & C++, Core Java programming using J2EE Framework, Java Applets & Swings, JDBC, Java Servlets, Java Beans, Introduction to JSP, EJB

Theory-40
Practical-60
Total-100

OBJECT ORIENTED PROGRAMMING SYSTEM (OOP's)

OOPS: What is oops, Need, Scope of oops.

Basics: Basic Building Blocks Object, Message, Methods Concept of Class, Properties of Class and advantages of using Classes.

Encapsulation and Inheritance: Encapsulation, Abstraction and Information hiding Inheritance, Sub classes and Super Classes, abstract classes, Multiple inheritance.

OOPS Concepts: Modularity, Typing, Persisting, Concurrency, Polymorphism.

Language Supporting OOPS Concepts: C++, JAVA

Programming Using C++

Introduction to object oriented programming, characteristics of object programming languages.

Overview of C++: Characters and string literals, variables, objects and their declarations, operators.

Principles of Object-Oriented Programming: Software Crisis; Software Evolution; A Look at Procedure-Oriented Programming; Object Oriented Programming Paradigm; Basic Concepts of Object-Oriented Programming; Benefits of OOP; Object Oriented Languages; Applications of OOP.

Beginning with C++: What is C++?, Applications of C++, Character and string literals, object and their declarations, operators, A Simple C++ Program, More C++ Statements, An Example with Class; Structure of C++ Program, Creating the Source File, Compiling and Linking.

Tokens, Expressions and Control Structures: Introduction; Tokens; Keywords; Identifiers; Basic Data Types; User-Defined Data Types; Derived Data Types; Symbolic Constants; Type Compatibility; Declaration of Variables; Dynamic Initialization of Variables; Reference Variables; Operators in C++; Scope Resolution Operator; Member Dereferencing Operators; Memory Management Operators; Manipulators; Type Case Operator; Expressions and Implicit Conversions; Operator Overloading; Operator Precedence; Control Structures.

Functions in C++: Introduction; The Main Function; Function Prototyping; Call by Reference; Inline Functions; Default Arguments; const Arguments; Function Overloading; Friend and Virtual Functions.

Statements: Simple statements, conditional statements, compound conditions, book lean, expressions, nested conditions, switch statements, Type Conversion.

Loops and Iterations: While statement, do... while, for, break, continue.

Functions: Library functions, user defined functions, declaration and definitions, local variables and functions, function types, passing by reference, passing by constant reference, scope of functions, overloading.

Overloading: Overloading the assignment operator, arithmetic operator, relational operators, and increment and decrement operators, conversion operators. String classes, composition and

inheritance, stream I/O templates. Elements of Visual C++, working with forms, communicating with other applications, class libraries.

Arrays: Defining arrays, array elements, initializing and processing arrays, passing arrays to functions, sorting and searching arrays, type definitions, multidimensional arrays.

Pointers and References: Introduction to pointers and references, objects and values, returning a reference, array and pointers, new and delete operators, pointers to pointers and functions.

Classes and Objects: Introduction; C Structures Revisited; Specifying a Class; Defining Member Functions; A C++ Program with Class; Making an Outside Function Inline; Nesting of Member Functions; Private Member Functions; Arrays Within a Class; Memory Allocation for Objects; Static Data Members; Static Member Functions; Arrays of Objects; Objects as Function Arguments; Friendly Functions; Returning Objects; const Member Functions; Pointers to Members.

Constructors and Destructors: Introduction; Constructors; Parameterized Constructors; Multiple Constructors in a Class; Constructors with Default Arguments; Dynamic Initialization of Objects; Copy Constructor; Dynamic Constructors; Constructing Two-Dimensional Arrays; Destructors.

Operator Overloading and Type Conversions: Introduction; Defining Operator Overloading; Overloading Unary Operators; Overloading Binary Operators; Overloading Binary Operators Using Friends; Manipulation of Strings Using Operators; Rules for Overloading Operators; Type Conversions.

Inheritance: Extending Classes: Introduction; Defining Derived Classes; Single Inheritance; Making a Private Member Inheritable; Multilevel Inheritance; Multiple Inheritance; Hierarchical Inheritance; Hybrid Inheritance; Virtual Base Classes; Abstract Classes; Constructors in Derived Classes; Member Classes: Nesting of Classes.

Pointers and References, Virtual Functions and Polymorphism: Introduction to pointers and references; Pointers to Objects; objects and values, returning a reference, array and pointers, new and delete operators, pointers to pointers and functions, this Pointer; Pointers to Derived Classes; Virtual Functions; Pure Virtual Functions.

Strings: Strings, string I/O arrays of strings, string related library functions.

Classes: Introduction, class declaration, constructors, access functions, copy constructor, class destructor.

Managing Console I/O Operations: Introduction; C++ Streams; C++ Stream Classes; Unformatted I/O Operations; Formatted Console I/O Operations; Managing Output with Manipulators.

Working with Files: Introduction; Classes for File Stream Operations; Opening and Closing a File; Detecting End-of-File; More About Open(): File Modes; File Pointers and Their Manipulations; Sequential Input and Output Operations; Updating a File: Random Access; Error Handling During File Operations; Command-Line Arguments.

Object-Oriented Systems Development: Introduction; Procedure-Oriented Paradigms; Procedure-Oriented Development Tools; Object-Oriented Paradigm; Object-Oriented Notations and Graphs; Steps in Object-Oriented Analysis; Steps in Object-Oriented Design; Implementation; Prototyping Paradigm; Wrapping Up.

JAVA

Fundamentals of JAVA: Computer Basics, Simple Java Programming Language, Complex Java Programming Language, Flow Controls -if and while constructs do & for loops, switch break & continue statements, Oops.

Java Programming: Java Key Features, JVM Garbage Collection Security, Classes, Packages, Java API, Java Keywords Types and Arrays, Primitive Types Identifiers Ref. Variable, Objects Types Identifiers Ref. variable, Objects and Classes - Encapsulation, Polymorphism, Inheritance Constructors, Heterogeneous Collections, Advanced language features of JAVA, Overloading,

Overriding, Abstraction, Inner classes, Wrapper classes, collection classes, Exceptions - Definitions, Handling Exceptions, Identifying common exceptions, JAVA GUI, AWT Package AWT Event Handling, Adapter Classes Layout Managers, Java Foundation Classes-Key features of JFC, Swing, JFrame, JApplet, Java Applets, Threads, Stream I/O and Files, Networking with JAVA.

ADVANCE JAVA PROGRAMMING

JDBC: Introduction to JDBC, JDBC Drivers Type, Connection, JDBC URLs, Driver Manager, Statement-Creating Executing Closing, Result Set-Data Types and Conversions, Prepared Statement, Callable Statement, Mapping SQL and Java Types, JDBC-ODBC Bridge Driver.

RMI: Distributed Applications, Introduction to RMI, Writing an RMI Server, Designing a Remote Interface, Implementing a Remote; Interface, Creating a Client Program, Compiling the Example Programs, Running the Example Programs.

Corba: Distributed Applications, CORBA-An Introduction, The OMG, CORBA Architecture, CORBA Services, CORBA Products, JAVA IDL.

Servlets: Movement to Server Side JAVA, Overview of Servlets, Common Gateway Interface (CGI), The JAVA Servlet Architecture, Generic Servlet and HTTP Servlet, The Servlet Interface, Requests and Responses, The Life Cycle of a Servlet, Retrieving Form Data in a Servlet, Session Tracking Cookies.

Java Beans: Java Beans Concepts and the Beans Development Kit. Using the Bean Box, Writing a Simple Bean Properties, Manipulating Events in the Bean Box, The Bean info interface, Bean customization, Bean Persistence.

Enterprise Java Beans (EJB): Introduction, Architecture of EJB, EJB Servers, Containers, EJB Implementation, Remote Interface of Bean, EJB Session Beans, Transactions and EJB, EJB Deployment, Writing EJB Clients.

Java Server Pages (JSP): Compare and Contrast JSP with CGI and Servlet Technologies, Develop a basic Java Server Pages, Deploy Java Servlet Pages, List JSP directives, Integrate JSP with Java Beans Components, Handle JSP exceptions, Compare two-tier and multi-tier web application architectures.