Syllabus of

B.Sc. (Information Technology)

Part II (Semester-II)

COMPUTER SCIENCE BOARD

Prepared by Dr. S.B. Kishor

Chairman, Computer Science Board

GONDWANA UNIVERSITY,

GADCHIROLI

SESSION 2013-2014

B.Sc. (IT) - II (Semester – II)

Paper-1 : Event Driven Programming with Visual Basic

Paper-2 : Data Structures

Paper-3 : Principal of Multimedia

Paper-4 : PC Maintenance and Troubleshooting

Paper- 5 : Practical – I based on Paper 1 and 2

Paper 6 : Practical – II based on Paper3 and 4

B.Sc. (I.T.) – II
SEMESTER - II
Paper – I: Event Driven Programming with Visual Basic
(4BIT1) (Marks-80)

UNIT-I: Introduction to Visual Basic

Integrated Development Environment (IDE) – Features, Event Driven Programming,

Programming Constructs: Data Types, Variable, Constant, Operator, System Defined Function, Dialog Box and Creating User Interface

Control flow statement: if-then, select-case, for-next, while...Wend, do-loop statement. With...End, DoEvent.

UNIT-II: VB Control and Procedure

Visual Basic Control: Form, Label, Textbox, Frame, Checkbox, Option Button, ListBox, ComboBox, Timer, Scrollbar, Picture, Image, File Controls, Artwork Control

ActiveX Control: Tab Strip, Status Bar, Slider, Month View, DTPicker, Rich Text Box, Common Dialog

Procedure: Types of Procedure, Subroutine, Function, Module

UNIT-III: Menu, Interface and Array

Menu Editor, Creating Menus, Utility features provided by Menu Editor, Modifying Menu at Run Time, Pop-Up Menu, Creating Toolbar using Image List

Interface: SDI, MDI.

Array: One Dimensional Array, Built-in Array Function, For...Each Loop, Arrays Types.

UNIT-IV: ActiveX Data Object

Data & ADODC Control, Connecting ADODC to Bound Control, Use of ADO Object, ADO Architecture, ADO Object Methods for Editing, Updating and Searching

Data Environment, Data Report,

Debugging and Error Handling: Types of Error, Debugging, Handling Run Time Error.

Books:

1) Evangelos Petroutsos ,"Mastering Visual Basic 6 ", BPB, 2005 ISBN-81-7635-269-1.
2) Moel Jerke,"Complete Reference Visual Basic 6", TMH, 2004, ISBN -0-07-463666-9.
1) Steve Brown,"Visual Basic 6.0 Complete", Complete Idiot's Books, ISBN 978-0789718129

References:

1) Peter Norton's ,"Visual Basic 6.0" ,SAMS tec-Media,2006,ISBN-81-7635-150-4
2) Michael Halvorson, " Learn Visual Basic 6.0 Now",PHI, ISBN 0-7356-0729-X
3) Michael Vine ,"Visual Basic Programming – For Absolute Beginner", PHI, ISBN: 0761535535
4) Dr. S. B. Kishor, "Front End Development", Das Ganu, ISBN : 978-93-81660-06-5
5) Paul Sheriff ,"Teaches Visual Basic 6",PHI,ISBN-978-8120315624

B.Sc. (I.T) – II
SEMESTER - II
Paper II: Data Structures
(4BIT2) (Marks-80)

UNIT 1: Introduction to Data Structures

Data Structure and Algorithms: Introduction, Data Structures, Fundamentals of DS, Operations on Data Structure.

Arrays: Introduction, Types of Arrays, Memory/Storage Representation of One and Two Dimensional Array, Multidimensional Array, Declaration of Array

Sorting- Definition of Sorting, Comparison of Sorting Method, Insertion Sort, Selection Sort, Merging.

Searching- Definition**,** Type of Searching (Binary Search, Linear Search)

UNIT 2: Stacks and Queue

Stacks: Introduction and Definition, Application of Stack, Various Representation of Stack, Operation on Stack (Push and Pop) Hierarchy of Operation, Representation of Arithmetic Expression (Infix, Postfix, Prefix) Multiple Stack.

Queues: Introduction, Applications of Queue, Various Representations of Queue, Operation on Queue, Concept of Deque, Priority Queues and Circular Queue.

UNIT 3: Recursion and Link List

Recursion: Introduction, Recursion Properties, Applications of Recursion (Factorial, Addition of Two Number, Power of a Number, Fibonacci Series, Multiplication of Two Number, Tower of Hanoi), Advantages and Disadvantages of Recursion.

Linked List: Introduction, Dynamic Memory Management and Definition of Linked List, Applications of Linked List and Representation of Linked List, Memory Allocation, Garbage Collection and Free List, Operations on Linked List Inserting, Removing, Searching, Sorting, Merging Nodes from a List, Concept of Double Linked List.

UNIT 4: Tree and Graphs

Trees: Introduction**,** Definition of Trees, Binary Tree, Type of Binary Tree, Operation on Binary Tree, Traversal of Binary Tree, Binary Search Tree (BST), Expression Trees, Memory Representation of Binary Tree, Threaded Binary Tree, AVL Tree, B-Tree.

Graphs: Definition of Graph, Various Terminology Used in Graph, Sequential Representation of Graph, Path Matrix, Spanning Tree, and Minimum Spanning Tree (Kruskal Algorithm, PRIM'S Algorithm), Traversing a Graph.

Books:

1) Lipschutz Schaum's, "Data Structure", Outline Series,TMH, ISBN-0-07-060168-2.
2) Dr. S.B. Kishor, "Data Structure", Das Ganu, ISBN : 978-81-921757-4-4
3) D. Samanta, "Classical Data Structure", PHI, ISBN: 8120318749

References:

1) Tenenbaum," Data Structures Using C and C++", Second Edition, PHI, ISBN-81317-0328-2
2) Deshpande and Kakade, "C and Data Structure", Dramatic Publication, ISBN-81-7722424-7.

B.Sc. (I.T.) – II
SEMESTER - II
Paper -III: Principal of Multimedia
(4BIT3)(Marks-80)

UNIT I: Multimedia in use

Multimedia in use:-Introduction to multimedia, Definition, Elements of multimedia, Need of multimedia, Users of multimedia, Applications of multimedia, Benefits of using multimedia, (Training, Sales, Communication, Medicine), Problems with multimedia (Investment costs, Technical Barriers, Social & Psychological barriers, Legal problems) **System Components:-** Converging technologies, functions & subsystems (Input, Development & Output)
Development Tools:-Developing applications, Commercial Tools, Standards.

UNIT-II: Images, Audio, Video

Images:-Image & Application Image Capture, Compression (Introduction, Text Conversion, Vectorisation, Image compression), standards (standards for encoding images, standards for compression bitonal images, JPEG, Fractals for compression)
Audio:-Audio application, Audio Capture (Music & Voice in computer), Compression,
Standards (Audiovisual telephony & Application) **Video:-**video application, video capture
(Converting video for the computer, creating videos on the Desktop, Real-Time video), television (Broadcast TV and video standards, high definition television (HDTV), compression, Standards (Audiovisual telephony & Application), proprietary compression (Digital Video Interactive, Other proprietary, techniques)

Unit -III: Adobe Photoshop

Introduction to Adobe Photoshop CS3 , Working With Layers , Making Selections ,Incorporating Color Techniques , Placing Type In An Image ,Using Painting Tools ,Working With Special Layer Functions ,Creating Special Effects With Filters , Enhancing Specific Selections, Adjusting Colors ,Using Clipping Groups, Paths,& Shapes ,Transforming Type ,Liquefying An Image , Performing Image Surgery , Annotating and Automating An Image

Unit – IV: Macromedia Flash

Introduction and How Flash Software Works, Steps to Do A Flash Movie, Basic Functions, Opening and Closing Files, Flash Windows, Window Control, Creating Objects, Drawing In Flash, Drawing Toolbar, Line Tool, Oval Tool, Rectangle Tool. Animation: Elements of Animation, Motion Twinning, Shape Twinning.

Books :

1) Judith Jeffcoate, "Multimedia in Practice", Pearson Education, ISBN-81-317-0715-6.
2) "Photoshop In Easy Steps", Kogent Learning Solution, Dream Tech ISBN : 978-93-5004-078-2
3) Bonnie Blake ,"Flash In Easy Steps ", Dream Tech ISBN : 81-7722-451-4

References:

1) Mark Elsom – Cook, "Principles of Interactive Multimedia", TMH, ISBN-0-07-058752-3.

B.Sc. (IT) – II
SEMESTER - II
Paper- IV: PC Maintenance & Troubleshooting
(4BIT4) (Marks-80)

Unit I: Preventive Maintenance

Introduction, Need, Tools, Materials. Procedures : Active Hardware Maintenance, Active Software Maintenance, Passive Maintenance Procedures, Heat and Temperature Control, Dust and Pollution Control, Ventilation Control, EMI Electrostatic Discharge Control, Humidity and Corrosion Control, Shock and Vibration Control, Preventive Maintenance Schedule. BIOS and CMOS, Working with the BIOS Setup Program.

Unit II: CPU and Monitor

History & Study of Different Types of CPUs, Terminology Used with CPU, Data Processing Inside CPU, RAM & ROM, Different Types of ROM, Virtual Memory, Installing and Removing Memory. Video Cards and Monitors, Display Resolution, Features, Video Driver, CRTs Working, LCDs Working, Monitor Resolution, Interfacing, Refresh Rate, Monitor Driver, Adjusting Display Settings in Windows

Unit III: Study of Drives

Study of Different Types of Drives, Hard Drive Interfaces- IDE, SCSI, SATA Hard Drive Performance, Installing Hard Drives, Partitioning, Disk Formatting, Common Hard Drive Problems. Installation of Operating System and Software: Installing Video Card: Testing, Plug in the Video Card, Providing Power to Motherboard, Testing. Installing The CD Rom Drive , Installing Key Board and Mouse, Installing Sound Card, Installing Modem, Installing the Motherboard , Installing the Power Supply, Attaching Add-on Cards, Installing the Drives Testing, Parallel and Serial Port Connection, Front Panel Indicators and Speakers,

Unit IV: Study of Printer, Formatting and Trouble Shooting

Printer Features, Printer Performance, Print Quality, Print Speed, Printer Types, Fruiter Working, Installation of Printer Driver, Cleaning a Printer, Common Printer Problems.
Formatting: Formatting PC, Backup of Data Before Formatting, System Restore, Precautions for Formatting, Role of Technician
Trouble Shooting: Introduction-Types of PC Faults-Solid Faults-Intermittent Faults-Developing Strategy. Diagnostic and Repair Tools - Diagnostic Software Tools- Diagnostic Hardware Tools, Advanced Testing Tools-Hand Tools for Service Engineers-Disassembling PC. Troubleshooting Display Problems, Memory Troubleshooting, Power Supply Testing and Problems Troubleshooting. Cleaning and Trouble Shooting of Keyboards, Mouse, Front Panel Indicators and Speakers Troubleshooting.

Books:

1. Fundamentals of Computers - Raja Raman (Prentice Hall of India)), ISBN 81-203-2581-8
2. Basics of Computer Hardware - BPB Pub
3. Troubleshooting Your Pcs for Dummies 3rd Edition – Dan Gookin, Willey Publishing Inc. ISBN : 9780470230770

B.Sc. (I.T) – II
SEMESTER - II
Practical - I: Event Driven Programming with Visual Basic
(4BIT5)

1) Design a form to accept First, Middle and Last Name and display the full name (Concatenate three text box) on Label when user clicks on Command Button.
2) Design an application that gives five choices of colors. Design an application to choose any one color using option button and change the Fore Color of Textbox.
3) Write an application to add and remove the name of city from combo box
4) Design a VB screen, to display current time in digital format continuously after every one second and change the background color of form.
5) Build the application, which marquee the caption of Form
6) Build the application, to convert the Fahrenheit temperature selected through scrollbar value into corresponding temperature is Celsius.
7) Build a application that collects marks for five different subjects. Calculate total, If total is >= 500 display message" You are allowed" otherwise display "You are not allowed."
8) A book stall gives discount on the books as per the following conditions,

No. of Books Purchased	Discount
<=5	Nil
>5 and <=10	10%
>10 and <=15	12%
> 15	20%

   Create a form as follows to calculate the Discount
9) Build the VB application that converts a number entered into the Textbox to Octal, Hexadecimal and Decimal.
10) Build the application; to accept the password within time limit say 8 second otherwise display a message time elapsed.
11) Build the application using timer for personal appointment remainder while working with computer system.
12) Evaluate following sin(x) series

    Sin(x) = x – x^3/3! + x^5/5! – x^7/7! + x^9/9! - …….
13) Build the application, to change the color of Frame using RGB function from the values that are set by 3 Scroll bars.
14) Build a Calculator application to perform basic arithmetic operation
15) Build the application, to accept the temperature of Number of days passed in the current month and determines the highest and average temperature.
16) Demonstrate the working of data bound controls
17) Create a data bound control application to perform various data operation using DAO Control. Assume Database Name and Table Name is Donor having 4 fields Donor_Number, Donor_Name, Date_of_Birth, Donor_Blood and Sex.
18) Create a data bound control application to perform various data operation using ADO Control. Assume Database Name and Table Name is Donor having 4 fields Donor_Number, Donor_Name, Date_of_Birth, Donor_Blood and Sex.
19) Write an application to divide the number by another and it must be able to handle any error that may arise during run time.

Practical - I: Data Structures

1) To delete an element from K^{th} position of Array.
2) To insert an element ITEM at K^{th} position of Array.
3) To insert an element Item in Sorted Array.
4) To implement the operation of Push, Pop and to know the status of stack.
5) An algorithm to check the status of stack.
6) To find factorial of a number using Recursion.
7) To find multiplication of two number using Recursion.
8) To simulation the game of Tower of Hanoi using recursion.
9) To implement the operation of insertion and deletion on Queue.
10) A menu driven program to implement the operation of addition, deletion, searching, traversing, reversion, sorting, counting number of nodes and at the end erasing the link list.
11) Implementation of stack using linked list.
12) Implementation of Queue using linked list.
13) To create binary search tree, traverse it and find number of leaves and total nodes in the Tree.
14) To arrange the list of number in a Sorted order using Merge Sort.
15) To arrange the list of number in the Sorted order using Quick sort.
16) To check all the element of list is in sorted order or not.
17) To search an element using sequential or linear search .At the end display time reiqured to search an element including number of comparison.
18) To search an item position in sorted list (Binary search).

B.Sc. (I.T.) – II
SEMESTER - II
Practical - II: Principle of Multimedia
(4BIT6)

1) Study of LAYERS IN FLASH
2) STUDY OF TIME LINE IN FLASH
3) Study of Transition/ Background in flash
4) Simple presentation using FLASH
5) Study of Flash plug-ins
6) Pagemakers-use of toolbox and creation of simple letterhead or identity card of your institute.
7) Pagemaker- Design of a commercial color newspaper ad related to the exhibition of educational books in the size 2 coloums x 10 cm
8) Photoshop- use of toolbox and creation of identity card of your institute.
9) Photoshop-study of toolbox and change the background colour and format the photo.
10) Coral draw-use of toolbox and creation of any greating card.

Practical -II: PC Maintenance & Troubleshooting

1) Study of various input devices.
2) To study and installation of keyboard.
3) To study and installation of mouse.
4) Study of various output devices.
5) To study the installation scanner.
6) To study the installation of printer.
7) To study the installation of multimedia.
8) Study of different operating system.
9) Study of booting process.
10) To study assembling and deassembling the PC.
11) To study of installation of configuring motherboard.
12) To study and installation of VGA adaptor.
13) To study and installation of SMPS.
14) To study the installation of software.
15) To study and installation of antivirus software
16) Procedure to cleanup Disk, Disk fragmentation
17) Things to know while purchasing the computer.