Mata Gujri Mahila Mahavidyalaya, Autonomous
Jabalpur

SYLLABUS PRESCRIBED FOR THE

B.C.A.
FIRST & SECOND SEMESTER

(Academic Session 2014-15& onwards)

Published by:

Registrar

Mata Gujri Mahila Mahavidyalaya, Autonomous
Jabalpur
### SYLLABUS
BACHLOR OF COMPUTER APPLICATION (BCA)
FIRST SEMESTER

<table>
<thead>
<tr>
<th>S. NO.</th>
<th>SUBJECT NAME</th>
<th>EXAMINATIONS SCHEME</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>1BCA1 Fundamental of Computers</td>
<td>Dur. Hrs. 3  Max. Marks 100  Main Mark 40</td>
</tr>
<tr>
<td>2.</td>
<td>1BCA2 Operating System (Dos, Windows and Unix)</td>
<td>Dur. Hrs. 3  Max. Marks 100  Main Mark 40</td>
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<tr>
<td>3.</td>
<td>1BCA3 Mathematical Foundation</td>
<td>Dur. Hrs. 3  Max. Marks 100  Main Mark 40</td>
</tr>
<tr>
<td>4.</td>
<td>1BCA4 Programming In C</td>
<td>Dur. Hrs. 3  Max. Marks 100  Main Mark 40</td>
</tr>
<tr>
<td>5.</td>
<td>1BCA5 Communicative English</td>
<td>Dur. Hrs. 3  Max. Marks 100  Main Mark 40</td>
</tr>
<tr>
<td>6.</td>
<td>1BCA6 Computer Lab-I (Prog. In C, MS Office)</td>
<td>Dur. Hrs. 3  Max. Marks 100  Main Mark 50</td>
</tr>
<tr>
<td>7.</td>
<td>1BCA7 Internal Assessment &amp; Term Work</td>
<td>Dur. Hrs. 3  Max. Marks 100  Main Mark 50</td>
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### SECOND SEMESTER

<table>
<thead>
<tr>
<th>S. NO.</th>
<th>SUBJECT NAME</th>
<th>EXAMINATIONS SCHEME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2BCA1 Computers System Architecture</td>
<td>Dur. Hrs. 3  Max. Marks 100  Main Mark 40</td>
</tr>
<tr>
<td>2.</td>
<td>2BCA2 Visual Basic</td>
<td>Dur. Hrs. 3  Max. Marks 100  Main Mark 40</td>
</tr>
<tr>
<td>3.</td>
<td>2BCA3 Data Structure &amp; Algorithms</td>
<td>Dur. Hrs. 3  Max. Marks 100  Main Mark 40</td>
</tr>
<tr>
<td>4.</td>
<td>2BCA4 Cyber Security</td>
<td>Dur. Hrs. 3  Max. Marks 100  Main Mark 40</td>
</tr>
<tr>
<td>5.</td>
<td>2BCA5 Numerical Methods &amp; Analysis</td>
<td>Dur. Hrs. 3  Max. Marks 100  Main Mark 40</td>
</tr>
<tr>
<td>6.</td>
<td>2BCA6 Internal Assessment &amp; Term Work</td>
<td>Dur. Hrs. 3  Max. Marks 100  Main Mark 50</td>
</tr>
<tr>
<td>7.</td>
<td>2BCA7 Computer Lab-II (DS, VB)</td>
<td>Dur. Hrs. 3  Max. Marks 100  Main Mark 50</td>
</tr>
</tbody>
</table>
UNIT-1: COMPUTER INTRODUCTION TO COMPUTER-
Computer system characterization & capabilities. Speed, Accuracy, Reliability, Memory Capability, Repeatability.
COMPUTER HARDWARE & SOFTWARE: Block Diagram of a Computer, Different Types of Software’s.
TYPES OF COMPUTER: Analog Digital & Hybrid, General and Special Purpose Computers.

UNIT-II: COMPUTER ORGANIZATION
INTRODUCTION TO INPUT DEVICES: Categorizing Input Hardware, Keyboard, Direct Entry-card Reader, Scanners, Devices- O.M.R. Character Scanner, Character Readers, MICR, Smart Cards, Voice Input Devices, Pointing Devices-Mouse, Light Pen.

UNIT-III DATA PROCESSING: DATA, Data Processing system, Storing Data, Processing data.
CENTRAL PROCESSING UNIT: The Microprocessor Control Unit, A L. U., Register, Buses Main Memory, Main Memory (RAM) for Microcomputers, Read-only Memory.

UNIT-IV: COMPUTER SOFTWARES
SYSTEM SOFTWARES System Software Versus Application Software, Type of System. Software’s, Introduction Types of Operating System Programs, Boooting Loader, Diagnostic Tests, Operating system executive, BIOS, Utility Programs, File Maintenance, Language processors, Assembler, Compiler And Interpreter.

UNIT – V
COMPUTER LANGAGES : Computer Programming Languages, Types of Programming Languages, Generations of programming Languages Development Low Level Versus High Level Language, Machine Code (or Machine Language) Advantages of using Machine Code, Disadvantages of using
Machine Code, Assembly Language, Assembler, Advantages of Assembly Languages, Limitations of Assembly Languages. The Need for Assembly Languages.


TEXT BOOKS:

Books:
1. Computer Fundamentals By P.K. Sinha
2. O’ Level Module 1 by V.K. Jain
3. O’ Level Mode Simple By Satish Jain
4. Essential of IT (Hindi Medium) – Pragya Publication

Note: There Shall be Ten Questions in the question paper, Two questions from each unit. The student will have to Attempt five questions, selecting one question from each unit.
UNIT-1: (DOS)
Introduction - History & Version of Dos.
Dos basics-Physical structure of disk, drive name, FAT, file & directory structure and naming rules,
Booting process, DOS system files.
Dos Commands – Internal – Dire, MD, CD, RD, COPY, DEL, REN, VOL, DATE, TIME CLS, PATH, TYPE.
External- CHKDSK, XCOPY, PRINT, DISKCOPY, DISCOMP, DOSKEY, TREE, MOVE, LABEL,
APPEND, FORMAT, SORT, FDISK, BACKUP, EDIT, MODE, ATTRIB HELP, SYS.

UNIT-II: (WINDOWS 95/98)
Hardware requirements of Windows, Windows concepts, features, windows structure,
Desktop, Taskbar, Start Menu, My Computer, Recycle bin.
Windows Accessories: Calculator, Notepad, Paint, WordPad, Character map.
Windows Explorer: Creating folders and other Explorer facilities.
Entertainment, CD Player, DVD Player, Media Player, Sound Recorder, Volume Control.

UNIT- III
An overview of UNIX and historical perspective, understanding UNIX commands arguments, options and filename, Combining commands, Entering a command before previous command has finished (pg. 1-38).

UNIT-IV
General purpose utilities – cal, data, cal, who, try, uname, password, lock, ehco, bc, time, spell, ispell, file, system, ordinary files, directory files, device files, special files pathname, mkdir, rmdir, ls(with options), cd (pg.41-67).

UNIT-V
Handling ordinary files displaying and creating files, copying, deleting, renaming files,
pattern matching, painting a files, line, word and character counting, comparing two files, finding what is common.
The shell, sh command pattern matching (wild cards), Quoting redirection (pg.69-93).

TEXT BOOKS:
1. Annurag Seetha, Introductions to Computers and information Technology, RAM Prasad & Sons, Bhopal (UNIT-1)
2. Rajeev Mathur, Learning Window98 step by step, BPB Publication. (UNIT-II)
REFERENCE BOOKS-
1. Rajiv Mathur, Quick Reference DOS 6.2 Galagotia Publication.
2. Alan Simpsor, Easy Guide to Windows, BPB.

1 BCA 3: MATHEMATICAL FOUNDATIONS
Time: 3 Hrs
Max. Marks: 100
Min. Marks: 40


UNIT-III ELEMENTARY DIFERENTIATION:

UNIT-IV ELEMENTARY INTEGRATION:
Anti-derivative, indefinite integral, definite integral, Fundamental rules of integration, Standard formulae, Integration by substitution, Extended forms of fundamental formulae, Some important integrals, integration by parts.

BOOKS:
2. A Text books of Elementary calculus By D.C. Agrawal, Thakur & Harikishan.
3. A Text Book of Vector Calculus & Geometry By D.C. Agrawal.
5. Calculus : By Thakur & Harikishan.

Note: The shall be ten question in the question paper two question from each unit. The students will have to attempt five question, selecting one questions from each unit.

1 BCA 4: PROGRAMMING IN C

Time : 3 Hrs

Max. Marks-100
Min. Marks - 40

UNIT-I: Introduction, Data Types and operators identifiers and keywords, constants, types of operators, type conversion, writing a C-Program, variable declaration, C-Statements, Input and Output functions (pg 1-38)

UNIT-II: Control statement, conditional expressions if statement, if-else statement, case and switch statement, loop-statements: For loop, while loop, do while loop, Break, continue and go to statements (pg.39-69)

UNIT-III: Functions and program structure, Function definition, Type of functions, local and global variables, scope of variable, multifunction programs, Recursive functions. (pg.70-98)

UNIT-IV: Arrays Notation and declaration, initialization, multidimensional and character arrays, pointers, Declarations, Pointer arithmetic, pointers and functions. (pg.99-142)

UNIT-V: Preprocessors and macros, Header files (brief introductions only), structures, Declarations, initialization and use of structures in a C-Program function and structures, Array of structures Arrays within a structures. Unions. (pg.159-161, 168-169, 197-220, 230-233)

Text Book:

Reference Books:
3. Shridhar B. Dandin, Programming – Pragya Publication (Hindi Medium)
UNIT-1: COMPREHENSION

Comprehension includes understanding the language by reading and listing for that some interesting current passages of poems will be given to the student Individually or in Group and they are allowed to Read in the class by giving sufficient time. Then the comprehension will be tested checked by formulations various questionnaire in different ways such as objective type, Fill in the Blanks or small answer question Similarly the passages or poems will be read out in the class and the Question shall be asked Verbally to evaluate level of Comprehension. This would be to enhance their listening capability: Listening Comprehension: Talks. Reports, Poems.

UNIT-II SECTION: B WRITING SKILLS

In this section the student will be exposed to various Techniques of writing such as paragraph. Report composition, Diary Entry, Application and letters. This count temporary Indian writing on culturally familiar topics and would promote inferential and Analytical learning apart from literary application.

B-1 PARAGRAPH WRITING

1. Objective
2. Introduction
3. The topic sentence
4. Developing the topic
5. Coherence Transitional devices.

B-2 COMPOSITION WRITING:

1. Objective
2. Introduction
3. A Model Composition for study
4. Type of Composition

1. Expository
2. Argumentative
UNIT-III

B-3 NOTE MAKING TALKING

1. Objective
2. Introduction
3. How to read
4. Specimen notes
5. Reduction devices
6. Heading and Subordinate points

UNIT-IV

B-4 REPORT WRITING

1. Reporting Events
2. Reporting Interviews

UNIT-V: FUNCTIONAL GRAMMER

Grammar will be taught in a functional, integrated and informal way giving stress more on the usage rather than defining them. Maximum possible exercises will be given.

CORRECT USAGE: Parts of speech, Agreement of the verb with the subject, Subject and predicate.

TRANSFORMATION OF SENTENCES: Interchange of Active and passive voice, Interchange of affirmative and negative sentences, Interchange of Exclamative and assertive sentences, interchange of parts of Speech.

BOOK:
1. English Grammar by Wren & Martin
2. The Most Common Mistakes in English Usage the Addition by Thoms Ellat.
LIST OF PROGRAMS
1. Write a program to print digits of entered number in reverse order.

2. Write a program to print sum of two matrices.

3. Write a program to print subtraction of two matrices.

4. Write a program to print multiplication of two matrices.

5. Write a program to demonstrate concept of structure.

6. Prepare a program for finding the root of a Quadratic Equation.

7. Prepare a program for Marksheet.

8. Prepare a programme for finding the sum of given matrices of order m x n

9. Prepare a programme for finding the multiplication of given matrices of order m x n

10. Write a program to generate even/odd series from 1 to 100.

11. Write a program to find area of a circle, rectangle, square using case.

12. Write a program to check whether a given number is even or odd.

13. Write a program whether a given number is prime or not.

14. Write a program for call by value and call by reference.

15. Write a recursive program to calculate factorial of a given number.

16. Write a program to generate a series
    \[1 + 1/1! + 2/2! + 3/3! + \cdots + n/n!\]

17. Write a program to create a pyramid structure

*  
**  
***  
****  

18. Write a program to create a pyramid structure
    \[1 \ 
    12 \ 
    123\]
19. Write a program to create a pyramid structure:
   1
   1 2
   1 2 3
   1 2 3 4

20. Write a program to reverse a string.

21. Write a program to find whether a given string is PALINDROME or not.

22. Write a program to input 10 numbers add it and find it's average.

23. Write a program to generate series:
    \[ 1 + \frac{1}{1!} + \frac{1}{2!} + \frac{1}{3!} \ldots + \frac{1}{n!} \]

24. Write a program to print table of any number.

25. Write a program to print Fibonacci series

26. Write a program to find length of string without using function.

27. Write a program to perform all arithmetic operations using case statement.

28. Write a program to check entered number is Armstrong or not.

29. Write a program to print following pyramid structure:
    1
    1 2
    1 2 3
    1 2 3 4

30. Write a program to print following pyramid structure:
    1
    2 3
    4 5 6
    7 8 9 10
SECOND SEMESTER

2-BCA-1 COMPUTER SYSTEM ARCHITECTURE

Time : 3 Hrs               Max. Marks-100
Min. Marks -  40


UNIT-II : DIGITAL LOGIC CIRCUITS : Logic gates, AND,OR,NOT,GATE & their truth tables, NOR NAND & XOR gates. BOOLEAN ALGEBRA : Demorgan’s theorem.
COMBINATIONAL & SEQUENTIAL CIRCUITS : Half address full address, full subtractor, Flip-Flops-RS, & T Flip-Flops, Shift registers RAM AND ROM.


UNIT-V : MEMORY ORGANISATION : Auxiliary memory, Magnetic drum, Disk & Tape Semiconductor memories, Memory Hierarchy, Associative memory, Virtual memory, Address space & memory space, Address Mapping, Page table, Page replacement, Cache memory, Hit Ratio, Mapping techniques, Writing into cache.

BOOK : Computer System Architecture by : M. MORRIES MANO

NOTE : There shall be ten question in the questions paper, two questions from each unit. The student will have to attempt five questions selecting one question from each unit.
UNIT-I: IDE OF VB- Project Explorer, Toolbox, Properties window, Form Designing, Form Layout, Immediate Window, Visual Development and Event-Driven Programming, Event Driven Programming Methods and Events Concept of VB Project. Type of VB Project Creating Forms and Code Modules, Running the Application, showing and Hiding, Controlling one Forms within another.

UNIT-II: Variables- Declaring Variables, Type of Variables Scope and Lifetime of Variables, Constants, Arrays Type of Array, Control Array, Dynamic Array, Collections, Procedures – Subroutine. Functions, Control Flow Statements and Conditional Statements, Loop Statements, Designing Menus and Popup Menus, Using Standard Modules.


2. A Mansoor , Visual Basic- Pragya Publication (Hindi Medium)

Note : There Shall be Ten Questions in the question paper, Two questions from each unit. The student will have to Attempt five question, Selecting one question from each unit.
UNIT-I: INTRODUCTION TO DATA STRUCTURE: The concept of Data structure, Abstract Data structure. Analysis of Algorithm, The concept of List. STACKS AND QUEUES: Introduction to stacks & primitive operations on stack, Stack as an abstract Data type, Multiple stack, Stacks applications: Infix, Post Fix, prefix and recursion, Introduction to queues, primitive operation on the queues, Queue as abstract Data type, Circular queue, Dequeue, Priority queue.

UNIT-II: LINKED LIST: Introduction to the linked list of stacks, The linked list of queue, Header nodes, Doubly linked list, Circular linked list, Stacks and queues as a circular linked list, Application of linked list.


TABLES & GRAPHS: Hash table, Collision resolution techniques, Introduction to graph definition, Terminology, Directed undirected & weighted graph, Representation of graphs, Graph traversals: Depth first & Breach. First search, Spanning trees, Minimum spanning tree Application of graphs.

BOOKS:
1. FUNDAMENTAL OF DATA STRUCTURE: By S. Shahney & E. Horowitch
2. DATA STRUCTURE: By Trembly & Sorrenson.
3. DATA STRUCTURE USING: PASCAL: By Trannenbaum & Augenstein.
4. DATA STRUCTURE: By Lipschuists (Scheme’s Outline Series McGraw Hill Publication)
5. Introduction to Data Structure by Shridhar B. Dandin – Pragya Publication (Hindi Medium)

NOTE: There shall be ten question in the questions paper, two questions from each unit. The student will have to attempt five questions selecting one question from each unit.
2-BCA-4 CYBER SECURITY

Time : 3 Hrs

Max. Marks-100
Min. Marks - 40

UNIT I

Cyber crime, :Introduction, Definatation( cyberspace ,cyber squatting, cyber punk, cyber warfare and cyber terrorism ) cyber crime & information security , Cyber criminals , Classifications of cyber crime :- Email, spoofing , spamming cyber defamation , internet time theft, salami attack, data diddling , forgery , web jacking , news group spam, online frauds, pornographic offences , s/w piracy, computer sabotage, email bombs, Usenet s newsgroups ,computer intrusions, password sniffing, credit card frauds, identity theft.

UNIT II

cyber Offenses: Introduction (Hackers, crackers, Phrasing ,war dialer , patriot hacking) Categories of cyber crime, How Criminals plan the attacks, Reconnaissance, passive attacks ,Active attacks, Scanning the gathered information, attacks (gaining and maintaining the system access , social engineering , classification , cyber stalking, cyber café& cyber crimes , Botnets, Attacks vectors .

UNIT III


UNIT IV

Tools & Methods used in cyber crime : Proxy servers & Anonymizers, Phishing ,password cracking :online attacks, offline attacks ,strong , random & weak password, Key loggers & spy wares , virus and worms , Trojans Horses and Backdoors , stenography , Dos & ddo attacks , sql injections ,buffer overflow , Attacks on wireless networks.

UNIT V

The Legal perspectives , computer security laws , need o cyber law , Th Indian IT ACT :cyber crime and punishment , cyber law.
UNIT-I: COMPUTER ARITHMETIC: Binary number system. Octal & Hexadecimal system, Floating point Arithmetic, Transcendental and polynomial equations, Direct & Indirect methods, fixed point Iteration methods, Regula falsi method.


UNIT-V: NUMERICAL DIFFERENTIATION AND INTEGRATION: Methods based on interpolation methods based on finite differences operators Newton colts. Method Trapezoidal rule and simpson’s rule.

BOOKS:


2. NUMERICAL ALGORITHMS BY E.V. KRISHNAMURTHY and S.K.SEN EAST-WEST PARES Ltd. 1986.

3. DISCRETE MATHEMATICS – D.C. AGARWAL, H.K. PATHAK. 1986

NOTE: There shall be ten question in the questions paper, two questions from each unit. The student will have to attempt five questions selecting one question from each unit.
LIST OF PRACTICALS(Vb)

1. WAP to add the two integers.
2. WAP to subtract the two integers
3. WAP to create the table of no 2
4. WAP to create the table of any given no
5. WAP to display the even nos
6. WAP to display the odd Nos
7. WAP to create the marksheet
8. WAP to generate the cash memo of bookshop
9. WAP to change the color of form control.
10. WAP to change the font color of textbox
11. WAP to change the back color of text box using scroll bar
12. WAP to set the font style using check box
13. WAP to print the first 10 integers
14. WAP to add the items in list box at run time
15. WAP to display the pictures using combo box control
16. WAP to display the current time and date
17. WAP to store the marks of 10 students using data control
18. WAP to store the data of students using ado control.
19. WAP to add picture in picture box
20. WAP using check box and radio buttons
LIST OF PROGRAMS (D S)

1) Write a program to find the factorial of a given no using Recursion.
2) Write a program to check whether entered string is palindrome or not.
3) Write a program for finding the sum of given matrices of order m x n.
4) Write a program for finding the multiplication of given matrices of order m x n.
5) Write a program for bubble sorting.
6) Write a program for linear search.
7) Write a program for Binary Search.
8) Write a program for selection sorting.
9) Write a program for Quick sorting.
10) Write a program for Insertion sorting.
11) Write a program to print Fibonacci series using recursion.
12) Write a program to perform insertion and deletion operation in the stack.
13) Write a program to perform insertion and deletion operation in the Queue using Static Implementation.
14) Write a program to Perform Insertion and Deletion operation in Queue using Dynamic Implementation.
15) Write a program to Insert a Node at the beginning in singly Linklist.
16) Write a program to Insert a Node at the Middle in Singly Linklist.
17) Write a Program to Insert a Node at the Last in Singly Linklist.
18) Write a Program to Delete a Node from the Begining in Singly Linklist.
19) write a Program to Delete a Node from the Middle in the Singly Link list.
20) Write a Program to Delete a Node from the last in the Singly Link list.
21) Write a program to traverse all the nodes in Singly Link List.
22) Write a Program to Insert a Node in the Beginning in the Circular Linklist.
23) Write a Program to Insert a Node at the last circular Link list.
24) Write a Program to perform all the insertion operations in the singly link list Using Switch Case.
25) Write a Program to perform all the deletion operations in the Singly link list Using Switch Case.
26) Write a Program to Count the no of Nodes in Binary Tree.
27) Write a program to Evaluate postfix Operation.
28) Write a Program to convert Infix operation to Postfix Operation.
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SYLLABUS PRESCRIBED FOR THE

B.C.A.

THIRD & FOURTH

SEMESTER

(Academic Session 2014-15 & onwards)

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# BACHELOR OF COMPUTER APPLICATION (BCA) SYLLABUS
SECOND YEAR EXMINATION, 2010-2011 AND ONWARDS

## THIRD SEMESTER

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<th>S. NO.</th>
<th>SUBJECT NAME</th>
<th>EXAMINATIONS SCHEME</th>
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<tr>
<td>1. 3BCA1</td>
<td>Database Management System</td>
<td>3 Hrs. 100 Marks 40 Main Mark</td>
</tr>
<tr>
<td>2. 3BCA2</td>
<td>OOPS &amp; Programming In C ++</td>
<td>3 Hrs. 100 Marks 40 Main Mark</td>
</tr>
<tr>
<td>3. 3BCA3</td>
<td>Application Programming in FoxPro</td>
<td>3 Hrs. 100 Marks 40 Main Mark</td>
</tr>
<tr>
<td>4. 3BCA4</td>
<td>Principal of management</td>
<td>3 Hrs. 100 Marks 40 Main Mark</td>
</tr>
<tr>
<td>5. 3BCA5</td>
<td>Internal Assessment &amp; Term work</td>
<td>3 Hrs. 100 Marks 50 Main Mark</td>
</tr>
<tr>
<td>6. 3BCA6</td>
<td>Computer Lab-III-A (C++)</td>
<td>3 Hrs. 100 Marks 50 Main Mark</td>
</tr>
<tr>
<td>7. 3BCA7</td>
<td>Computer Lab-III-B (FoxPro)</td>
<td>3 Hrs. 100 Marks 50 Main Mark</td>
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## FOURTH SEMESTER

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<tr>
<td>1. 4BCA1</td>
<td>VB.NET</td>
<td>3 Hrs. 100 Marks 40 Main Mark</td>
</tr>
<tr>
<td>2. 4BCA2</td>
<td>Computerized Financial Management(Tally)</td>
<td>3 Hrs. 100 Marks 40 Main Mark</td>
</tr>
<tr>
<td>3. 4BCA3</td>
<td>Theory of Operating Systems</td>
<td>3 Hrs. 100 Marks 40 Main Mark</td>
</tr>
<tr>
<td>4. 4BCA4</td>
<td>System Analysis &amp; Design Management Information System</td>
<td>3 Hrs. 100 Marks 40 Main Mark</td>
</tr>
<tr>
<td>5. 4BCA5</td>
<td>Internal Assessment &amp; Term Work</td>
<td>3 Hrs. 100 Marks 50 Main Mark</td>
</tr>
<tr>
<td>6. 4BCA6</td>
<td>Computer Lab. IV-A (VB.Net &amp; TALLY)</td>
<td>3 Hrs. 100 Marks 50 Main Mark</td>
</tr>
<tr>
<td>7. 4BCA7</td>
<td>MINOR PROJECT (Vb.net)</td>
<td>3 Hrs. 100 Marks 50 Main Mark</td>
</tr>
</tbody>
</table>
3 BCA-I : DATA BASE MANAGEMENT SYSTEM

Time : 3 Hrs               Max. Marks-100
Min. Marks - 40


UNIT-IV RELATIONAL DATABASE DESIGN : Relational Algebra, Traditional Set Operations, Attribute Name for Derived Relations, Special Relational Operations, Relational Calculus, Type-Oriented Relational Calculus, Further Normalization. Functional Dependence, First, Second and Third Normal Forms, Relations with More than One Candidate Key, Good and Bad Decompositions, Fourth Normal form Fifth Normal Form.

UNIT-V : THE HIERARCHICAL APPROACH : The Architecture of An 'IMS System, Background, Architecture, IMS Data Structure, Physical Database, The Database Description, Hierarchical Sequence, IMS Data Manipulation, Defining the program communication Block (PCB). The LL/I Examples, Constructing the Segment search Argument, using more than one PCB.


BOOKS :
1. AN INTRODUCTION TO DATABASE SYSTEM (3rd ED.) By : C.J.DATE.
2. DATABASE SYSTEMN CONCEPTS (2nd ED.) By : C.J. DATE.
3. AN INTRODUCTION TO DATABASE SYSTEM By : BIP . DESAI.

Note : There Shall be Ten Questions in the question paper, Two questions from each unit. The student will have to Attempt five question, Selecting one question from each unit.
UNIT-1: PRINCIPLES OF OBJECT ORIENTED PROGRAMMING:

UNIT-II: TOKENS EXPRESSIONS AND CONTROL STRUCTURES:
Introduction, Tokens, Keywords, Identifiers Basis Data Types, User Defined Data Types, Derived Data Types Symbolic Constants, Type Compatibility, Declaration of Variables, Dynamic Initialization of Variables, Dynamic Initialization of Variables, Reference Variables, Operators Memory Management Operators, Manipulators, Type Cast Operator, Expressions and Implicit Conversions, Operator, Overloading, Control Structures.

FUNCTION ++ : The Main Function Prototyping, Call by Reference, Return by reference, Inline Functions, Default Arguments, const Arguments, Function Overloading, Friend and Virtual Functions.

UNIT-III: CLASSES AND OBJECTS:
‘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 A class, Memory Allocation for Objects, Static Data Members, Static Member functions, Arrays of Objects As Function Arguments.

UNIT –IV: CONSTRUCTIORS AND DESTRUCTORS:
Introduction, Constructors, Parameterized Constructors, Multiple Constructors in a class with default Arguments, Dynamic Initialization of Objects, Copy Constructor, Constructors, Constructing, Two-Dimensional Arrays, Destructors.

OPERATORS OVERLOADING AND TYPE CONVERSIONS:

UNIT –V: INHERITANCE : EXTENDING CLASSES:
Introduction Defining Derived Classes, Single Inheritance, Making A Private Member Inheritable, Multiple Inheritance, Multilevel Inheritance, Heirarchical Inheritance, Hybrid Inheritance.

POINTERS VIRTUAL FUNCTIONS AND POLYMORPHISM:
Introduction, Pointers Operations, to objects, This pointer, Pointers to derived classes, virtual functions, pure Virtual Functions, Managing Console I/O Operations, C++ Streams, C++ Stream Classes, Unformatted I/O Operations, Formatted console I/O
Managing Output with manipulators.

**BOOKS :**
1. OBJECT-ORIENTED PROGRAMMING WITH C++ By E. BALAGURUSAMY

2. OBJECT-ORIENTED PROGRAMMING WITH C++ By NABAJYOTI BABKAKATI SAMS PHI. PVT.LTD.

3. Object Oriented Prog. With ANSI & Turbo C++ by Ashok N. Kamthane (Pearson Education)

4. Insight into OOP & C++ by Ekta Gupta (Pragya Publication, Hindi Medium)

**Note:** There Shall be Ten Questions in the question paper, Two questions from each unit. The student will have to Attempt five question, Selecting one question from each unit
LIST OF PRACTICALS

1. Write a program to find average of 3 numbers.

2. Write a program to find biggest among 3 numbers.

3. Write a menu driven program (Switch case) to perform arithmetic operations.

4. Write a program to check whether entered number is Prime or not.

5. Write a program to check whether entered number is even or odd.

6. Write a program for addition of two matrixes.

7. Write a program for multiplication of two matrixes.

8. Write a program to find transpose of a matrix.

9. Write a program to print:
   *
   **
   ***

10. Write a program to print:
    ***
    **
    *

11. Write a program to print:
    1
    2 2
    3 3 3

12. Write a program to print:
    1
    2 3
    4 5 6

13. Write a program to check whether entered string is palindrome or not.

14. Write a program to print Fibonacci series.

15. Write a program to find factorial of a given number.

16. Write a program to demonstrate use of static data member.
17. Write a program to demonstrate use of a static member function.

18. Write a program to create array of objects.

19. Write a program to demonstrate use of friend function.

20. Write a program to illustrate use of copy constructor.

21. Write a program to demonstrate constructor overloading.

22. Write a program to illustrate use of destructor.

23. Write a program to overload a unary operator.

24. Write a program to overload a binary operator.

25. Write a program to demonstrate single Inheritance.

26. Write a program to demonstrate multiple Inheritance.

27. Write a program to demonstrate multilevel Inheritance.

28. Write a program to demonstrate hierarchical inheritance.

29. Write a program to demonstrate hybrid Inheritance.

30. Write a program to demonstrate the use of function overloading.

31. Write a program to demonstrate the use of inline member function.

32. Write a program to demonstrate the use of parameterized constructor.
3 BCA-3 : APPLICATION PROGRAMMING IN FOXPRO

Time : 3 Hrs               Max. Marks-100
Min. Marks -  40

UNIT-1 : GETTING STARTED :
Loading Foxpro, Exploring the Foxpro Menu System, Creating A Database File, Entering Records in a Database File, Listing Contents of a Database file Using Options with list, Closing a Database file with Close DATABASE, Adding more Records with APPEND Searching for Specific Records with LIST Creating Database file with CREATE, Defining the Default Drive and Directory, Quiting, Foxpro, Other field Types.

VIEWING AND EDITING DATA :

MODIFY STRUCTURE MEMO FIELD AND FILE UTILITIES :
Modifying the Structure of a Database File, using the Memo Field to Store a Long Text, Entering Data in Memo Field, Listing Memo Field, File Utilities in Foxpro.

UNIT-II: SORTING AND INDEXING DATABASE FILES :
What is sorting ? Sorting information with SORT, Using options with SORT, Sorting on Multiple fields  Sorting using sort dialog Box, Disadvantages of using SORT, What is Indexing ? Using the INDEX, Command, creating Index files with index dialog box. Creating Index files on multiple fields, Command Index file and Structural compound Index file, Creating Index in descending order, Creating Page, while defining. Structure to SORT or INDEX Database ? Finding information with SEEK, Rushmore technology.

UNIT-III: MEMORY VAREABLES DATA IS TIME FUNCTIONS AND KEYBORD MACHOS :
What is a Memory Variable? Creating and using memory variables, Creating array memory variables, Using array, saving and restoring memory variables, Displaying and manipulating information with Controlling Printer with? Time & date functions and commands, Data arithmetic, Converting defining function keys, Using and using Keyboard Macros, Creating and using Keyboard Macros

MATHEMATICAL COMMANDS AND FUNCTIONS :
Arithmetic operations, Mathematical functions, Mathematical commands, Other Foxpro functions.

PROGRAMMING WITH FOXPRO:
What is a program (Command) file? Creating a program file, running a program (Command) file, Creating program file with Modify Command, Using DO WHILE- ENDDO, Editing a program file, Using FoxPro in interactive Manner, Making decisions with IF-ENDIF, Using Scan-Endscan, Using for End for, Handling multiple options with DO CASE ENDCASE, Using TEXT ENDTEXT, Executing commands from other, command files, Macro Substitution.
UNIT –IV: ERROR CONDITIONS PROGRAM DEBUGGING AILS:
Error conditions command mode, Error conditions while executing a program. Locating errors before running a program. Common error massages, Error debugging commands and techniques. Automatic documentation with Fox Doc.

MULTIPLE DATA FILES:
Concept of Multiple database files, Opening multiple database files, Linking Database with Set Relation, What is relation? Updating information with UPDATE, Appending records from other files (APPEND FROM) Copying records to other files (COPY TO) Copying structure of a database file, Joining two database files with Join, Relational Query by Example and SO.

UNIT-V: PRINTING REPORTS AND LABELS:
Features of FoxPro report, Creating a Quick report, Saving the report format, Generating a report, Previewing a report, Printing a report, Using the report, Dialog box to get report, Designing a custom report, Additional features of report. Using TOTAL to consolidate database file designing Mailing address labels displaying and printing labels.

ALIGNING CUSTOM SCREENS:
The @ commands, Displaying data with the @ command, inputting data with @ Get drawing and clearing box with @ command and @ Edit, Using options with @ Say-Get and read, Clearing screen with @ command, Drawing and Clearing box with @ command, Advanced features of @ Say command, Using PICTURE AND FUNCTION with @ GET, Designing a custom screen using @ command, Validating GET variables, What are UDF and procedure file? Using a UDF with @ GET valid, Designing screen with screen builder R (CREATE SCREEN).

Using the generated screen file, Designing a custom screen with CREATE SCREEN, Additional features of screen builder, advanced feature of screen.

BOOK:
1. FOXPRO MALE SIMPLE : By R.K. TAXALI.
2. FoxPro by A Mansoor (Pragya Publication – Hindi Medium)

Note: There Shall be Ten Questions in the question paper, Two questions from each unit. The student will have to Attempt five questions, selecting one question from each unit.
LIST OF PRACTICALS

- Write a program to find whether entered number is prime or not.
- Write a program to check that given number is palindrome or not.
- Write a program to find out factorial of a given number.
- Write a program to print Fibonacci series.
- Write a program to print table of a given number.
- Write a program to find sum of cube of even numbers from 1 to 10.
- Write a program to find biggest element in 1-D array.
- Write a program to print digits of a number in reverse order.
- Write a menu driven program to demo do case
- Write a program to print following format:
  
  1
  2  3
  4  5  6

- Write a program for matrix multiplication
- Write a program for transpose of a matrix
- Write a program to print Unit matrix.
- Write a program to print following format:
  
  1
  1  2
  1  2  3

- Write a program to print following format:
  
  1
  2  2
  3  3  3

- Simple Foxpro programs & commands.
- Programs to handle report & labels.
3 BCA-4 : Principles of Management

Max. Marks-100
Min. Marks - 40

Unit-I-Introduction –Nature and Development of Management-Meaning, Definition and theories of management, Importance of Management, Management is a science or an art, Social responsibility of Management, Principles of management and function of management.

Organization- Definition, Structure and theories, types of organization, delegation of authority, centralization and decentralization.

Unit-II- Planning and forecasting–Introduction, definition, Objectives of planning, Nature purpose and importance of planning, Process of planning, types of plans, MBO (Management by objective).


Unit-III-Control and Direction- Meaning, definition, characteristics or nature, principles of control, Importance and principles of direction, Meaning and process of controlling, importance limitations budgets and budgetary control.

Motivation-Meaning definition, characteristics objectives, types of motivation, theory of motivation.

Leadership - Introduction-Meaning, Definition, characteristics, functions and theories of leadership.

Unit-IV-Human Resource management- Meaning Definition, Importance, function and scope.

Coordination - Meaning and definition, importance of coordination, techniques of coordination.

Communication-Meaning and definition, importance of communication in Management, types of communication.

Unit-V- Information presentation and reporting Principles and Types of report

MIS- Definition, structure of MIS, role of MIS in organization. Brief introduction to Project Planning and management and its tools/techniques-Gantt chart, PERT/CPM.

Entrepreneurship-Meaning and definition, Qualities for entrepreneur, EDP-meaning and definition, determinants of entrepreneurship, entrepreneurship development programs.

Text Books-
1. S. C. Saxena- Sahitya Bhavan Publication
2. Principles and practice of management by C.B.Gupta

Reference Books-
1. Principles of Management- Peter F.Drcuker.
SEMESTER – IV

4 BCA-1 : Programming with VB.NET

Max. Marks-100
Min. Marks -  40

Unit –I
The Environment: Editor Tab, Format Tab, General Tab, Docking Tab, Visual Development & event Driven Programming- Methods and Events.

Unit – II
The VB.Net Language-Variables, Declaring Variables, Data type of Variables, Variables Declaration, Scope & Life Time of a variables, Constant, Arrays, Types of Arrays, Control Array, Collections, Subroutines, Functions, Passing variable number of Argument , Optional Argument, Returning value from functions.
Control Flow statements: Conditional statement, Loop statement, MSGBOX & Input Box.

Unit – III
Working with Forms: Loading, showing and hiding forms, Controlling One from within another.
GUI Programming with Windows Form: Text Box, Label, Button, List Box, Combo Box, Checkbox, Picture box, Radio Button, Panel, Scroll bar, Timer, List view, Tree view, Tool bar, Status Bar there properties, Methods and Events, Open File Dialog, Save FileDialog, FontDialog, Color Dialog, Print Dialog, Link Label.


Unit- IV
Object Oriented Programming, Classes and Objects, Fields Properties, Methods and Events, Constructor, Inheritance, Access Specified: Public, Private, Protected, Overloading, My Base & My Class Keywords.

Overview of OLE, Accessing the WIN32 API from VB.Net, CO Methodology, advantage of COM+, COM & .Net, Create User Control, Register user Control, Access com components in .net application.

Unit – V
Database programming with ADO.Net-Overview of ADO, from ADO to ADO.Net, Accessing Data using Server Explorer, Creating Connections, Command, Data Adapter and Data Set with OLEDB and SQLDB. Display Data on data bound, Display data on data grid.

Text & Reference Books:

1. VB.net Programming Black Box by Steven Holzner- Dreamtech Publication
LIST OF PRACTICALS

1. WAP to add the two integers.
2. WAP to subtract the two integers.
3. WAP to multiply the integers using function.
4. Create a function to display the message hello on the text box.
5. Create the function addition to add the two nos.
6. Create the function sub to subtract the two nos.
7. WAP to change the color of form control at run time.
8. WAP to add the item in listbox control at run time.
9. WAP to transfer the item from one listbox to combo box at run time.
10. WAP to display the image on form control at run time.
11. Design the menu for the following:- Color: -Red, Green, Blue
    Exit: -Yes, No.
12. WAP to display hello message in textbox control.
13. Design the student database for Sname, rollno, class and result and connect the datagrid control.
14. Write the steps for creating a table employee with eid, ename, department, basic in access and store the records in database using database connectivity.
15. WAP to design the tool bar in vb.net.
4 BCA-2: COMPUTER FINANCIAL MANAGEMENT

Time: 3 Hrs
Max. Marks-100
Min. Marks - 40


UNIT-IV: Pay roll department, Preparation of pay roll. Preparation of wage record, Inventory account and store record.

UNIT-V: Inventory or stock control and cost accounting, Department demand and supply method of stock control Classification and condition of material report on material handling. Discuss computer methods.

Practical Knowledge of computer accounting through Tally/ Ex/ Winca.

BOOKS :
1. COMPUTERISED FINANCIAL ACCOUNTING By SINGH & SINGH.

2. A TO Z COMPUTER ACCOUNTS By GOYAL.

3. COMPUTERISED ACCOUNTING By P.H. BAWSET.

4. Financial Accounting with Tally by Dr. Mukti Jain –Pragya Publication (Hindi Medium)

Note : There Shall be Ten Questions in the question paper, Two questions from each unit. The student will have to Attempt five question, Selecting one question from each unit.
UNIT-I : OPERATING SYSTEM BASICS :

UNIT-II : PROCESS MANAGEMENT :

UNIT-III : PROCESS SYNCHRONIZATION :

UNIT-IV : STORAGE MANAGEMENT :
Background, Logical Versus Physical Address Space, Swapping, Contiguous Allocation Paging Segmentation, Segmentation with Paging Virtual Memory, Demand Paging Performance of Demand Paging Page Replacement, Page- Replacements Algorithms, Allocation of Frames, Inrushing, Other Considerations, Demand Segmentation.

UNIT-V : FILE SYSTEM INTERFACE :

BOOK :
1. OPERATING SYSTEM CONCEPTS By SILBERCHATZ & GALVIN.
2. Operating System By Gaurav Sharma (Pragya Publication- Hindi Medium)

Note :
There Shall be Ten Questions in the question paper, Two questions from each unit. The student will have to Attempt five question, Selecting one question from each unit.


UNIT-IV: Management Information System: Introduction, what is MIS, characteristics of an MIS, the primary function, the MIS through the organization, a system of users and machine, Reporting capabilities- Principles of reporting’. Summarization of information, Report presentation mode, Types of Reports, Need for an MIS – Pitfalls in designing an MIS, Designing an effective MIS-Data Banks/Bases, determinants of value of information, Uses of Information- Users of Information within the organization, Users of information, Outside the Organization Function Reporting System, Characteristics of information flow.


TEXT BOOKS:
3. A. Mansoor, System analysis & Design, Pragya Publication (Hindi Medium)

REFERENCE BOOKS:
& Sons, 1\textsuperscript{st} Edition (1989)


**Note:** There Shall be Ten Questions in the question paper, Two questions from each unit. The student will have to Attempt five question, Selecting one question from each unit.
Mata Gujri Mahila Mahavidyalaya, Autonomous
Jabalpur

SYLLABUS PRESCRIBED FOR THE

B.C.A.

FIFTH & SIXTH

SEMESTER

(Academic Session 2014-15 & onwards)

Published by:

Registrar

Mata Gujri Mahila Mahavidyalaya, Autonomous
Jabalpur
# BACHLOR OF COMPUTER APPLICATION (BCA) SYLLABUS

## FIFTH SEMESTER

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## SIXTH SEMESTER

6BCA1

Major Project Dissertation-400 MARKS

Viva Voce-100 MARKS

Total-500 MARKS
UNIT-I: Needs and Advantages – Network, Types-server based, peer, Hybrid Server Types Network Topology – Bus, Star, Ring, Star bus, Star ring, Mesh, Network Protocols Hardware protocol, Software protocols, Selecting and designing the network for an organization.

UNIT-II: Signal Transmission-Digital signaling, Analog. Signaling Bit synchronization, Baseboard and Broadband transmission, Network Media types – properties & specialties, comparative study, Network adapters working principals configuration and selection.

UNIT-III: OSL, IEEE 802 AND TCP/IP model, Comparison between CSI & TCP/IP, Ethernet working principal, 10 & 100 MBPS Ethernet, Token Ring-working principal, cabling, Hubs, FDDI, Apple talk & ARC net-working and their components, Network Scaling- No of computers, distance, software, speed Special Acquirements.


UNIT-V: Various Sever & Clients Hardware & Software. Overview of Internet: Internet & TCP/IP, Internet addressing, Concepts of ISP, Concept of URL addresses, Hypertext Concepts & WWW,FTP,NNTP, Email, SMTP. Internet security: Internet security issues, Embedded & software based firewall, Data Encryption Digital Signatures.

TEXT BOOKS :

REFERENCE BOOKS :
UNIT-I: - HTML – CONCEPT Of Hypertext, Versions of HTML, elements of HTML, Head & Body Sections, Building of HTML documents, Inserting text, Images, Hyperlinks, Background & Colour controls, Different HTML tags, Table layout and presentation, Use of front size and attributes. List types and its tags, Use of Frames and Forms in web pages, ASP & html FORMS.

Web forms, Web form controls-server controls, client controls. Adding controls to a web form, Buttons, Text box, Labels, Check box, Radio Buttons, List box, Adding controls at run time, Running a web application, Creating a multiform web project.
Form Validation: Client side validation, server side validation,
Validation Control:-Required Field Comparison Range, Calendar Control, Ad rotator Control, Internet Explorer Control.

UNIT- III : - Overview of ADO.NET, from ADO to ADO.NET, ADO.NET Architecture, Accessing Data using Data Adapter and Datasets, using command and data reader, binding data to data bind controls, displaying data in data grid.

UNIT- IV :- Web Services:- Introduction, State Management- View State, Session State, Application State.
SOAP, Web service description language, building and consuming a web service.
Web Application deployment Caching.
Threading concepts, Creating threads in .NET, managing threads, Thread Synchronization.
Security features of .NET, Role based security and Code access security, permissions.

UNIT-V : - Overview of C# and .NET, similarities and differences from JAVA, Structure of C# program.
Language features: Type system, boxing and unboxing, flow controls, classes, interfaces, Serializations and Persistence, Serializing an object, Desterilizing an object.
Delegates, Reflection.

TEXTBOOKS:-
1. The Complete Reference ASP.NET By Mathew Macdonald-TMH.
3. VB.NET Programming Black Box by Steven Holzer- Dreamtech Publication.
4. Introduction to .NET framework – Wrox publication.
5. ASP.NET Unleashed.
6. C# programming- Wrox Publication
5BCA6 Computer lab V A(Asp.Net & Java)

LIST OF PRACTICALS

1. Explain grid view control in ASP.Net.
2. Explain textbox and button controls in asp.net.
3. Explain dropdown list control in asp.net.
4. Explain web service in asp.net.
5. Explain the connectivity in asp.net with sqlserver with proper database.
6. Explain html tags with examples.
7. Write a program in asp.net to add two numbers using visual basic.
8. Write a program in asp.net to swap two numbers.
9. Write a suitable code in html to create a table in asp.net.
10. Write a program for displaying messages in different headings formats.
11. Elaborate radio button control with example in html.
12. Write a program in html for pull down and list box control.
13. Write a program in html to design a form.
14. Write a program in html designing frames.
15. Write a program in asp.net using text button and label controls.
17. Explain any three validation controls in asp.net with codes and examples.
18. Write a program for displaying simple message.
19. Write a program for concatenating two strings (Example first and last names)
20. Write a program to check whether the entered number is palindrome or not.
21. Write a program # to check whether the entered number is even or odd.

22. Write a program # using for each loop.

23. Write a program # for adding first 10 numbers using for loop.

24. Write a program # for finding factorial of a given number using do-while loop.

25. Write a program # for printing your names 10 times.

26. Write a program # to explain switch case.

27. Write a program # to find reverse of a given number.

28. Explain asp.net basic controls with examples any two.

29. Write a program in asp.net to swap two numbers.

30. Write a suitable code in html to create a table in asp.net.

31. Write a program for displaying messages in different headings formats.

32. Elaborate radio button control with example in html.

33. Write a program in html for pull down and list box control.

34. Write a program in html to design a form.

35. Write a program in asp.net using text button and label controls.

36. Explain any three validation controls in asp.net with codes and examples.

37. Write a program # for concatenating two strings . (Example first and last names)

38. Write a program # to check whether the entered number is palindrome or not.

39. Write a program # to check whether the entered number is even or odd.

40. Write a program # for adding first 10 numbers using for loop.

41. Write a program # for finding factorial of a given number using do-while loop.

42. Write a program # for printing your names 10 times.

43. Write a program # to explain switch case.

44. Write a program # to find reverse of a given number.

45. Explain asp.net basic controls with examples any two.
WAP in java to calculate of diagonal elements.

WAP in java to print unit matrix.

WAP in java to demonstrate creation of threads.

WAP in java to demonstrate interface.

WAP in java to demonstrate multiple interface defining interface.

WAP in java to demonstrate packages.

WAP in java to demonstrate applets.

WAP in java to perform multiplication of two matrix.

Write a menu driven program using switch in java.

WAP in java to demonstrate multi threading.

WAP in java to calculate sum of upper triangular elements of matrix.

WAP in java to calculate sum of lower triangular elements of matrix.

WAP in java to print digits of number in reverse order.

WAP in java to check entered number is Armstrong or not.

WAP in java to perform addition of matrix.

WAP in java to perform subtraction of matrix.

WAP in java to print table of any number in proper format.

WAP in java to print following format.

*  
* * *
* * * *
* *  *  *
* *   *
* *

WAP in java of swing using Action Listener.

WAP in java to demonstrate labels and text field.

WAP in java to demonstrate checkbox.

WAP in java to demonstrate Mouse Motion Listener

WAP in java to demonstrate event handling

OVERVIEW OF JAVA LANGUAGE: Introduction, Simple Java program, Memory Java in application with two classes, Java program structure, Java statements, Implementing a Java program, Java virtual machine, Command Line arguments, Programming style, Constants & Variables, Data types, Declaration of variables, Giving values to variables. Scope of variable, Symbolic constants, type casting getting values of variables, standard default values, Arithmetic operators, relational operators, Logical operators, Assignment operators, Increment and decrement operators, Conditional operators. Bitwise operators, Special operators, Arithmetic Expressions. Evaluation of expressions. Precedence of arithmetic operators. Type conversations in expiration. Operators Precedence and Associatively, mathematical functions.


UNIT-III: CLASSES OBJECTS AND METHODS: Defining a class, adding variable and methods, creating objects, Accessing class members, Constructors, Methods overloading, Static members, Nesting of methods, inheritance extending a class, overriding methods, Final Classes, Fonalizer methods, Abstract methods and classes, Visibility control.

ARRAYS STRAINS AND VECTORS: Array one dimensional arrays, Creating an array, Two dimensional arrays, strings, Vectors, wrapper classes, Defining interfaces. Extending interfaces. Implementing interfaces, Accessing interfaces variables, System packages, Using system package, Naming conventions, creating packages, Accessing package, Using a package, Adding a class to a package, Hiding classes.


UNIT-V: APPLET PROGRAMMING: Local and remote applets, How applets differ form applications, preparing to write Applets, Building, applet code, applet life cycle, Creating an Executable applet, Lesigning a wet page, Applets tag.

Adding applets to HTML File, Running the applet, More about applets tags, passing parameters to applets, Aligning the display, More about HTML tags, Displaying Numerical values, Setting input from the User.

BOOKS:
1. Programming With Java A primer By : E. Balagruswamy.
2. Peter Nortons Guide To Java Programming By : Techmedia Publication.

NOTE: There shall be ten question in the questions paper, two questions from each unit. The student will have to attempt five questions selecting one question from each unit.

**INTERACTIVE SQL**: Invoking SQL Plus, Data Manipulation in DBMS. One Oracle Data Types. Operating a table Insertion of Data into tables. Updating the contents of a table. Deletion operations. The many faces of the select command Modifying the structure of tables, Removing/Deleting/Dropping tables.

**DATA CONSTRAINTS**: Column level and table level constraints NULL value concepts primary key concepts. Unique key concepts, Default value concepts. The Foreign key references constraint, CHECK integrity constraints. Defining different constraints on the table Defining integrity constraints in the ALTER TABLE COMMAND.

UNIT-II: **COMPUTATIONS IN EXPRESSION LISTS USED TO SELECT DATA**

Logical operators, Range searching, Pattern matching. Oracle functions. Grouping data from tables in SQL. Manipulating data’s in SQL.

**JOINS**: Joining multiple tables (Equi joins) Joining a table to itself (Self Joins). Sub queries. Using the Union. Intersect and Minus clause. Indexes.

UNIT-III: **VIEWS**: Creating of views, Renaming the column of a view, Using views Selection a Data set from a view, Updateable views, Destroying a view, Granting permission, permission on objects created by the User. Granting permission using GRANT statement, object privileges, with grant option Referencing a Table belonging to another User. Granting permission to Users when the grantor has been giver. GRANT permission. Revoking the permissions given PL/SQL : Introduction : Performance, Performance improvement, portability, PL/SQL Data types, What PL/SQL can do for programming. The PL/SQL execution environment.


UNIT-IV: **STORED PROCEDURES**: What are procedures, Where do procedures, How Oracle creates a procedure, How Oracle Executes procedures, Advantage of procedures, Syntax for creating stored procedure, An application using a procedure, Deleting a stored procedure.

**STORED FUNCTIONS**: What are functions, where do functions reside, How Oracle creates a function, How Oracle Executes a function, advantages of functions, Syntax for creating a stored function, an application using a function, Deleting a stored function.

**DATABASE TRIGGERS**: Introduction, use of Database Triggers, How to apply database triggers, types of Triggers, Syntax for creating trigger, deleting a trigger.

UNIT-V **WORKING WITH FORMS**

**BASIC CONCEPTS**: Application development in forms, Forms, Module.

**USING THE FORMS DESIGNER**: Creating a form, Generating and running a form.

**MASTER FORM**: Product master data entry screen, Triggers, The behavior of an oracle form in a Commercial Application.
BOOKS:

1. ORACLE DEVELOPER 2000- By Dvan Dayross, BPB Publications.
2. THE ORACLE BOOK : By Liebschuty, BPB Publications.
3. ORACLE BEGINERS GUIDE : By Michael Abbey & Michael J. Corey Data Micro Hill.

NOTE: There shall be ten question in the questions paper, two questions from each unit. The student will have to attempt five questions selecting one question from each unit.
5BCA7 COMPUTER LAB V B (ORACLE)

LIST OF PRACTICALS

Waq To Insert Some New Records In Emp Table.

Waq To List The Number Of Employees Whose Name Is Not ‘Ford’, ‘Jams’ Or ‘Jones.

Waq To List The Name And Salary And Sort Them In Descending Order Of Their Salary

Write Pl/Sql Code To Add Two No.

Waq To List The Details Of Employees Whose Name Is Starts From ‘A’

Waq To Delete All Records From Emp Table

Waq To Insert Values In 3 Fields.

Write Pl/Sql Code To Print Table Of Entered No.

Waq To List The Student Name Having ‘D’ As Second Character.

Waq To List The Name And Salary And Sort Them In Descending Order Of Their Salary

Write Pl/Sql Code To Calulate Total Salary Of Emp No 100

Write Pl/Sql Code To Find Greatest Among Two No.

Waq To List The Name And Salary And Sort Them In Descending Order Of Their Salary

Write Pl/Sql Code To Find Greatest Among 3 No.

Waq In Employee Table Find All The Manager Who Earns Between 1000 And 2000.
Display Record Of Employee Who Have Salary Between 1000 And 2000.
List The Name Salary And Department Number Of The Employee And Order Them By Their Salary In Descending Order.

Write A Code In Pl/Sql To Print Nos From 1 To 10

In Employee Table Change The City Of Employee From Existing One To New One.
Add A Column Salary Of Datatype ‘Number’ & Having Size ‘5’ With Default Value 1000.
Waq To Find The Employee Who Earns The Lowest Salary In Each Department.Display In Ascending Order Of Salary.

Write A Code In Pl/Sql To Add ,Subtract, Multiply And Divide 2 No According To Choice.
List The Employee Who Earns Maximum Salary In Their Department. Find The Name Of All Employee Who Works For ‘First Bank Corporation’. Display The Record Of Employee Whose Name Start With ‘S’ & Age Is Greater Than 18.

Find The Name, Street & City Of Residence Of All Employee Who Works For ‘Fbc’
Waq To Find The Employee Who Earns The Lowest Salary In Each Department. Display In Ascending Order Of Salary.
Waq To Update The Salary Of Employee Number 1902 To Rs 10,000

Write A PL/SQL Code To Add 3 Nos

Waq To Find The Name, Street And City Of All Employee Who Works For ‘Fbc’ And Who Earn More Than 1000.

Waq To Increase The Salary By 2000 And Rename The Column As “Newsalary”

Waq To Find The Name, Street And City Of All Employee Who Works For ‘Fbc’ And Who Earn More Than 1000.

Write PL/SQL Code To Subtract 2 Nos.

Waq To Find Total Of Salaries Of All Employees From Emp Table

Waq To Decrease The Salary Of Emp From 5000 And Rename Column As ‘Newsalary’

List The Employee Number Of Employee Who Belong To Department 10,20.

List The Employee No Of Employees Who Earn Greater Than 2000
Insert New Field Called Category In Emp Table.
Display Different Jobs In Departments 20,30

List The Names Of Employees Having Two ‘Aa’ In The Name
Print The Name, Emp No, Sal Of Employees In Emp Table.
List The Names Of Employees Who Do The Job Of Clerks Or Salesman.

List The Jobs Common To Department No 10 & 20.

Waq To Find Total Of Salaries Of All Employees From Emp Table

Waq To Update The Salary Of Employee Number 1902 To Rs 10,000

Write A PL/SQL Block To Check Whether Entered Year Is A Leap Year Or Not.
Create A User Defined Procedure To Find Number Of Vowels In A Given Word.

Write A PL/SQL Block To Find Factorial Of Any Given Number.

Write A PL/SQL Block To Create A Trigger For Update Or Insert On Ename Field Of Emp Table. The Trigger Will Make The Entries Of Ename Field In Uppercase.
Write The Steps To Create A Form.

Create A Procedure That Accepts Two Numbers And Return Addition, Subtraction, Multiplication & Division Of Two Numbers. (Local Procedure)
Write A PL/SQL Block For Creating A Cursor In Which The Salary Of Employees Of Deptno--20 Is Increased By 0.05. When Such Raise Is Given, The Record For The Same Should Be Maintained In Emp.Raise Table With Fields Empno, Date & Actualraise.
Write A PL/SQL Block To Print Fibonacci Series
0 1 1 2 3 5 8….

Write A PL/SQL Block That First Insert A Record In An Emp Table. Increase The Salaries Of Blake & Clark By Rs. 2000 & Rs. 1500. Then Check To See That Total Salary Does Not Exceed Rs. 20,000. If The Total Salary Is Greater Than 20,000 Then Undo The Updates Made To The Salaries Of Blake & Clark.
Emp Table:-

<table>
<thead>
<tr>
<th>Empno</th>
<th>Emp_Name</th>
<th>Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>E001</td>
<td>Harry</td>
<td>5000</td>
</tr>
<tr>
<td>E002</td>
<td>Blake</td>
<td>1000</td>
</tr>
<tr>
<td>E003</td>
<td>Jack</td>
<td>5000</td>
</tr>
<tr>
<td>E004</td>
<td>Clark</td>
<td>1000</td>
</tr>
</tbody>
</table>

Create A User Defined Procedure To Find Number Of Vowels In A Given Word.
Write A PL/SQL Block That First Insert A Record In An Emp Table. Increase The Salaries Of Blake & Clark By Rs. 2000 & Rs. 1500. Then Check To See That Total Salary Does Not Exceed Rs. 20,000. If The Total Salary Is Greater Than 20,000 Then Undo The Updates Made To The Salaries Of Blake & Clark.

Write A PL/SQL Block To Find HCF Of Two Positive Numbers

Write A PL/SQL Block To Calculate Sum Of Digits

583 = 5 + 8 + 3 = 16

Create The Table Client_Master

<table>
<thead>
<tr>
<th>Fieldname</th>
<th>Datatype</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client_No</td>
<td>Varchar2</td>
<td>6</td>
</tr>
<tr>
<td>Name</td>
<td>Varchar2</td>
<td>20</td>
</tr>
<tr>
<td>Address</td>
<td>Varchar2</td>
<td>30</td>
</tr>
<tr>
<td>City</td>
<td>Varchar2</td>
<td>10</td>
</tr>
<tr>
<td>Phone</td>
<td>Number</td>
<td>10</td>
</tr>
</tbody>
</table>

1) Enter 5 Records
2) Find Out The Names Of All The Clients.
3) Retrieve The Entire Content Of Client_Master Table.
4) List All The Clients Who Are Located In Bombay.
5) Change The City Of Client_No ‘C005’ To Bombay.
6) Add A Column ‘Salary’ Of Datatype ‘Number’ And Size 5 To Client_Master Table.

Write The Steps To Create A Form.
NOTE:- Students has to work on live project
Mata Gujri Mahila Mahavidyalaya, Autonomous
Jabalpur

SYLLABUS PRESCRIBED FOR THE

B.Sc (Computer Science)
SEMESTER

(Academic Session 2014-15 & onwards)

Published by:
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Mata Gujri Mahila Mahavidyalaya, Autonomous
Jabalpur
SYLLABUS FOR COMPUTER SCIENCE  
(From Session 2014-15 & onwards)

**B.Sc Semester - I**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Subject</th>
<th>Max. Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fundamentals of comp.&amp; programming Techniques</td>
<td>85</td>
</tr>
<tr>
<td>2</td>
<td>CCE</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td><strong>Total Marks</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td>3</td>
<td>Practical</td>
<td>50</td>
</tr>
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</table>

**B.Sc Semester - II**

<table>
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<tr>
<th>S.No.</th>
<th>Subject</th>
<th>Max. Marks</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>C Programing &amp; DBMS</td>
<td>85</td>
</tr>
<tr>
<td>2</td>
<td>CCE</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td><strong>Total Marks</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td>3</td>
<td>Practical</td>
<td>50</td>
</tr>
</tbody>
</table>

**B.Sc Semester - III**
### B.Sc Semester - IV

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Subject</th>
<th>Max. Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Oops and programming ++ &amp; Foxpro</td>
<td>85</td>
</tr>
<tr>
<td>2</td>
<td>CCE</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td><strong>Total Marks</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td>3</td>
<td>Practical</td>
<td>50</td>
</tr>
</tbody>
</table>

### B.Sc Semester - V

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Subject</th>
<th>Max. Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Data Structure &amp; SAD/MIS</td>
<td>85</td>
</tr>
<tr>
<td>2</td>
<td>CCE</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td><strong>Total Marks</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td>3</td>
<td>Practical</td>
<td></td>
</tr>
</tbody>
</table>
### B.Sc Semester - VI

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Subject</th>
<th>Max. Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Java Programming &amp; Oracle</td>
<td>85</td>
</tr>
<tr>
<td>2</td>
<td>CCE</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td><strong>Total Marks</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td>3</td>
<td>Practical</td>
<td>50</td>
</tr>
</tbody>
</table>

#### B.Sc.- Semester – I (Computer Science)

**CS – 101 : Fundamentals of Computer and Programming techniques**

<table>
<thead>
<tr>
<th>Max.Marks</th>
<th>Practical</th>
<th>CCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>50</td>
<td>15</td>
</tr>
</tbody>
</table>

**UNIT - I**

What is computer, evolution of computer, their classification and Generations.
**Number System:** Binary Number System, Decimal Number System, Octal Number System, Hexadecimal Number System, Conversion - Binary to Decimal, Octal and Hexadecimal number and vice versa

**Input Devices:** Keyboard, Mouse, Light Pen, Touch Screen, Joystick, Scanner, OCR, OMR, MICR, Bar Code Reader

**Output Devices:** Monitor, Printers, Plotters.

**Processing Unit:** Control Unit, Arithmetic Logic Unit

**Primary Memory:** RAM & types of RAM, ROM and types of ROM, Cache Memory.

**Secondary Memory:** Magnetic Tape, Floppy Disk, Hard Disk, CD, DVD, Pen Drive.

**UNIT -II**

**Introduction to Software -System Software, Application software**

Introduction to MSDOS, Booting Process:

Dos Commands – Internal – Dir, MD, CD, RD, COPY, DEL, REN, VOL, DATE, TIME CLS, PATH, TYPE.

External- CHKDSK, XCOPY, PRINT, DISKCOPY, DISCOMP, DOSKEY, TREE, MOVE, LABEL, APPEND, FORMAT, SORT, FDISK, BACKUP, EDIT, MODE, ATTRIB.

**UNIT - III**

**Introduction to Windows XP**

Desktop, Icons, Window, creating folders & shortcut

MS Word :- Introduction to MS-Word, Parts of MS-Word Windows( Title Bar, Menu Bar, Tool Bar, Ruler, Status Area) Creating New Documents, Opening an Existing Document, Find and Replacing, Moving & Copying Text, Page Setup.


**UNIT - IV**

**MS Excel**

Introduction and area of use; concepts of Workbook & Worksheets; Use of Formulas, Calculations & Functions; Cell Formatting including Borders & Shading; Working with Different Chart Types; Printing of Workbook & Worksheets.

**MS PowerPoint**

Introduction & area of use; Creating a New Presentation; Different views of slide; Transition effects & other animation effects; Presentation of a Slide Show; Printing Presentations.

**UNIT – V**

Algorithm, Flowchart, Introduction to Development of Program in QBASIC, Constants and Variables, Expressions, Jumping, Branching and Looping. Subscribed Variable, Single and Double Subscripted variable.

**TEXT BOOK:**

Office XP: BPB publication

Programming in Basic : E. Balaguruswamy, TMHPublication

**Reference Books:**


Computers Today by Vasandhara, Galgotia Publication

Dos Quick Reference by Rajeev Mathur, Galgotia Pub.

Fundamentals of IT. By Chetan Sharma

Windows XP BPB pub.

Basic Programming- GotFried – Schyam Series

Office XP: BPB publication
B.Sc. Semester – I (Computer Science)
List of Practicals
1. Prepare a program in BASIC for finding the root of a Quadratic Equation in all condition.
2. Prepare a program in Basic for Marksheet.
3. Prepare a programme in Basic for finding the sum of given matrices of order m x n
4. Prepare a programme in Basic for finding the multiplication of given matrices of order m x n
5. Write a program to generate even/odd series from 1 to 100.
6. Write a program to find area of a circle, rectangle, square using case.
7. Write a program to check whether a given number is even or odd.
8. Write a program whether a given number is prime or not.
9. Write a program in BASIC to calculate factorial of a given number.
10. The marks obtained by a student in 5 different subjects are input through the keyboard. The student gets a division as per the following rules:
Percent above or equal to 60 = First Division.
Percent between 50 and 59 = Second Division
Percent between 40 and 49 = Third Division
Percent less than 40 = Fail
11. Write a program to calculate the division obtained by the student.
12. Write a program using structure to enter details of a student.
13. Write a program using structure to enter details of 5 employees.
14. Write a program to generate a series
1+1/1!+2/2!+3/3!+----------+n/n!
15. Write a program to create a pyramid structure
   *
   **
   ***
   ****
16. Write a program to create a pyramid structure
    1
    12
    123
    1234
17. Write a program to create a pyramid structure
    1
    22
    333
    4444
18. Write a program to input 10 numbers add it and find it’s average.
19. DOS internal and External Commands
UNIT-I
Overview of C Language: History of C Language, Feature of C Language, structure of C program, A Simple C program, Compiling a C program, Compiler & interpreters, Character set , Keywords, Constants, Variables , Type declaration, Types of Output function and Input function, Basic data types, Hierarchy of operators, arithmetic operators, Unary operators, Relational and logical operators, increment and decrement operators, conditional operator, bit-wise operators, assignment operators, Expressions, type casting.
Control statement, conditional expressions if statement, if-else statement, switch and case statement, loop-statements: For loop, while loop, do while loop, Break, continue and go to statements. Writing programs using conditional expression.

UNIT-II
Functions : Introduction to Functions, Function Declaration and Prototypes, Function Definition, Concept of function-parameters and how they are passed, storage classes- extern, auto, register, static, scope rules, Recursion function, Writing Programs using recursive and non-Recursive functions.

UNIT- III
Pointers : Definition and use of pointers, address operator, pointer variable, pointer-arithmetic. Arrays and Strings: Single and Multi dimensional arrays - Character Array as strings - Functions of Strings, Writing C programs using arrays for strings manipulation 
Structures and Unions : Declaring and using Structures-operations on Structures-arrays of structures ,Unions , Difference between Union and structure.

UNIT –IV

UNIT –V
TEXT BOOKS: “Programming ’ by E. Balaguruswamy, TMH pub.
“Data Base Management System” by Leon and Leon, Vikas Publication.

REFERENCE BOOK:
Let us C by Yashavant Kanatkar, BPB Publication.
Programming with C by Gottfries, TMH pub.
“Data Base System Concept” by Henry F. Korth.
“An Introduction to Data Base System” by Bip . Desai.
“Data Base Management System by – James Martin
“An Introduction to Data Base System” by C.J. Date.
List of Practicals

1. Prepare a program for finding the root of a Quadratic Equation in all condition.

2. Prepare a program for Marksheet.

3. Prepare a programme for finding the sum of given matrices of order m x n

4. Prepare a programme for finding the multiplication of given matrices of order m x n

5. Write a program for bubble sorting.

6. Write a program for linear search.

7. Write a program to generate even/odd series from 1 to 100.

8. Write a program to find area of a circle, rectangle, square using case.

9. Write a program to check whether a given number is even or odd.

10. Write a program whether a given number is prime or not.

11. Write a program to enter a character and find that whether a given character is Vowel or not using case.

12. Write a program for call by value and call by reference.

13. Write a recursive program to calculate factorial of a given number.

14. Write a program to enter basic salary of a employee, if the salary is greater than 25000 then TA is 9% of Basic, DA is 8% of Basic, HRA is 10% of Basic & PF is 12% of Basic. Otherwise TA is 7% of Basic, DA is 4% of Basic, HRA is 5% of Basic & PF is 6% of Basic. Calculate its net salary.

15. The marks obtained by a student in 5 different subjects are input through the keyboard. The student gets a division as per the following rules:
   - Percent above or equal to 60 = First Division.
   - Percent between 50 and 59 = Second Division.
   - Percent between 40 and 49 = Third Division.
   - Percent less than 40 = Fail.
   Write a program to calculate the division obtained by the student.

16. Write a program using structure to enter details of a student.

17. Write a program using structure to enter details of 5 employees.

18. Write a program to generate a series
   \[1/1!+1/2!+2/3!+3/4!+\cdots+n/n!\]

19. Write a program to create a pyramid structure

   *
   **
   ***
   ****

20. Write a program to create a pyramid structure
   
   1
   12
   123
   1234

21. Write a program to create a pyramid structure
    
    1
22. Write a program to reverse a string.

23. Write a program to find whether a given string is PALINDROME or not.

24. Write a program to input 10 numbers add it and find it’s average.

25. Write a program to generate series
1+1/2!+1/3!+----------+1/n!
B.Sc. Third Semester  
Subject: Computer Science  
CS 301: OOPS and Programming ++ & FoxPro  
Max.Marks – 85  
Practical-50  
CCE-15  

Unit-I- Principles of Object Oriented Programming:  

Unit-II- Classes and Objects:  
Specifying A Class, Defining member Functions, A C++ Program with class, making An Outside Function. Inline, nesting Allocation for Objects, Static Data members, Static Members functions, Arrays of Objects As Function Arguments. Constructers, Parameterized Constructors, Copy Constructor, Destructors, friend function.  

Unit - III Inheritance & Polymorphism  

Unit-IV- Getting Started:  
FoxPro Menu system, Creating & handling a Database File, Viewing and Editing Data, Modify Structure Memo Field and File Utilities, Sorting And Indexing Database Files, Memory Variables, Macros, Mathematical Command and Functions, Programming With FoxPro, Error Conditions Program Debugging Ails.  

Unit-V- Multiple Data files & Reports:  
Concept of multiple database files, Handling multiple database files, copying records to other files (Copy To) copying structure of a database file, joining two database files with Join, Relational Query by Example and SO.  
Report Generation, Dialog box to get report. Designing a custom report, Additional features of report, using TOTAL to consolidate file designing Mailing address labels displaying and printing labels.  

Books:  
1. Object Oriented Programming with C++ by E. Balaguruswamy.  
4. Insight into OOP and C++ by Ekta Gupta (Pragya Publication, Hindi medium).  
5. FOXPRO MAKE SIMPLE by R.K.TAXALI  
6. FoxPro by a Mansoor (Pragya Publication)
**LIST OF PRACTICALS**

33. Write a program to find average of 3 numbers.

34. Write a program to find biggest among 3 numbers.

35. Write a menu driven program (Switch case) to perform arithmetic operations.

36. Write a program to check whether entered number is Prime or not.

37. Write a program to check whether entered number is even or odd.

38. Write a program for addition of two matrixes.

39. Write a program for multiplication of two matrixes.

40. Write a program to find transpose of a matrix.

41. Write a program to print:
   *
   **
   ***

42. Write a program to print:
   ***
   **
   *
   *

43. Write a program to print:
    1
    2 2
    3 3 3

44. Write a program to print:
    1
    2 3
    4 5 6

45. Write a program to check whether entered string is palindrome or not.

46. Write a program to print Fibonacci series.

47. Write a program to find factorial of a given number.

48. Write a program to demonstrate use of static data member.

49. Write a program to demonstrate use of a static member function.

50. Write a program to create array of objects.

51. Write a program to demonstrate use of friend function.

52. Write a program to illustrate use of copy constructor.
53. Write a program to demonstrate constructor overloading.
54. Write a program to illustrate use of destructor.
55. Write a program to overload a unary operator.
56. Write a program to overload a binary operator.
57. Write a program to demonstrate single Inheritance.
58. Write a program to demonstrate multiple Inheritance.
59. Write a program to demonstrate multilevel Inheritance.
60. Write a program to demonstrate hierarchical inheritance.
61. Write a program to demonstrate hybrid Inheritance.
62. Write a program to demonstrate the use of function overloading.
63. Write a program to demonstrate the use of inline member function.
64. Write a program to demonstrate the use of parameterized constructor.
65. Simple Foxpro programs & commands.
66. Programs to handle report & labels.
B.Sc. Fourth Semester  
CS-401: Subject: Data Structure and SAD/MIS

Max. Marks – 85  
Practical-50  
CCE-15

Unit-I introduction to Data Structure: The concept of Data structure, Abstract Data structure. Analysis of algorithm, The concept of List. STACK and Queues: Introduction to stacks and primitive operations on stack, Stack as an abstract Data type, Multiple stack applications: infix on the queue as abstract Data type, Circular queue, Dequeue, Priority queue.

Unit-II-Linked List:  
Introduction to the linked list of stacks. The linked list of queue, Header nodes. Doubly linked list, Circular linked list, Stacks and queues as a circular linked list, Application of linked list. 

Trees: Binary trees, Tree representation as array and linked list Binary tree representations, Traversal ob binary trees: in order, Preorder and post order, Application of binary trees. Threaded binary tree, B-tree and Height balanced tree, Binary tree, counting binary trees.


Unit- IV- The system Concept & Planning: Definition, characteristics of a system: Organization, interaction. Interdependence, Integration, Central Objective, Elements of a system and types of systems, man-made information system. The Development Life Cycle, Considerations for candidate systems, Prototyping. The Role of system Analyst.

System Planning and Initial Investigation, Information gathering tools, system Analysis, The tools of system Analysis(DFD, Data Dictionary, Decision Tree and Structured English), System performance definition, Description of output, Steps in feasibility analysis, Feasibility Report, Cost/Benefit Analysis: Data Analysis, Cost/Benefit Analysis, The system proposal.


Text Books-
3. A. Mansoor, System Analysis and Design, Pragya Publication (Hindi Medium)
Reference Books:
1. Fundamental of Data structure: By S.Shahney and E.Horowithch.
2. Data Structure: By Trembly and Sorrendon.
5. Data Structure: By shridhar B.Dandin (Pragya Publication)

LIST OF PRACTICALS
1) Write a program in c to find the factorial of a given no using Recursion.

2) Write a program in c to check whether entered string is palindrome or not.

3) Write a program in C for finding the sum of given matrices of order m x n .

4) Write a program in C for finding the multiplication of given matrices of order m x n .

5) Write a program in C for bubble sorting.

6) Write a program in C for linear search.

7) Write a program in C for Binary Search.

8) write a program in C for selection sorting,

9) Write a program in C for Quick sorting.

10) Write a program in C for Insertion sorting.

11) Write a program in C to print fibonacci series using recursion.

12) Write a program in C to perform insertion and deletion operation in the stack.

13) Write a program in C to perform insertion and deletion operation in the Queue using Static Implementation.
14) Write a program in C to Perform Insertion and Deletion operation in Queue using Dynamic Implementation.

15) Write a program in C to Insert a Node at the beginning in singly Linklist.
16) Write a program in C to Insert a Node at the Middle in Singly Linklist.

17) Write a Program in C to Insert a Node at the Last in Singly Linklist.

18) Write a Program in C to Delete a Node from the Begining in Singly Linklist.

19) write a Program in C to Delete a Node from the Middle in the Singly Link list.

20) Write a Program in C to Delete a Node from the last in the Singly Link list.

21) Write a program in C to traverse all the nodes in Singly Link List.

22) Write a Program in C to Insert a Node in the Beginning in the Circular Linklist.

23) Write a Program in C to Insert a Node at the last in Circular Link list.

24) Write a Program in C to perform all the insertion operations in the singly link list Using Switch Case.

25) Write a Program in C to perform all the deletion operations in the Singly link list Using Switch Case.

26) Write a Program in C to Count the no of Nodes in Binary Tree.
27) Write a program in C to Evaluate postfix Operation.

28) Write a Program in C to convert Infix operation to Postfix Operation.
B.Sc. Fifth Semester
CS-501: Operating system & Programming with VB.NET

UNIT I
What is an Operating system, Operating system concept, Process, files, the shell, System calls, system calls for process management, signaling, operating system structure, file management.

UNIT II
Introduction to process- the process models, implementation of process, threads, process scheduling – Round robin, priority, shortest job first and real time scheduling.

UNIT III
Deadlocks- principles of deadlocks, Basic memory management, file system management, directories, file structure, file access.

UNIT IV

UNIT V

Text & Reference Books:

VB.net Programming Black Box by Steven Holzner- Dreamtech Publication
Mastering VB.Net by Evangelos Petroutsos- BPB Publication.
MSDN.MicroSoft.Com/Net
VB.Net Programming, Pragya Publication (Hindi Medium)
LIST OF PRACTICALS
1 WAP to add the two integers.

2 WAP to subtract the two integers

3 WAP to multiply the integers using function multi.

4 Create a function disp to display the message hello on the text box.

5 Create the function addition to add the two nos.

6 Create the function sub to subtract the two nos

7 WAP to change the color of form control at run time.

8 WAP to add the item in listbox control at run time.

9 WAP to transfer the item from one listbox to combo box at run time.

10 WAP to display the image on form control at run time.

11 Design the menu for the following:- Color: -Red, Green, Blue
   Exit: -Yes, No.

12 WAP to display hello message in textbox control.

13 Design the student database for Sname, rollno, class and result and connect the datagrid control.

14 Write the steps for creating a table employee with eid, ename, department, basic in access and store the records in database using database connectivity.

15 WAP to design the tool bar in vb.net.
B.Sc VI Semester
CS:601-Java Programming & Oracle

Max.Marks –85
Practical-50
CCE-15

Unit – I
Java history & features, How java differs from C & C++, Java statements, Implementing java program, Data types, constants & variables, scope of variables, type casting, operators, evolution of expressions, decision & branching statements.

Unit – II
Defining a class, creating objects, constructors, methods overloading, inheritance, extending a class, overriding methods, Final classes, abstract methods & classes, arrays, strings, vectors, wrapper classes, interfaces, using system packages, user defined packages.

Unit – III
Threads, Thread life cycle, synchronization, implementing the runnable interface, applet, applet life cycle, applet programming, how applet differ from applications, adding applet to html file, HTML tags, displaying numerical values, setting input from the user, JDBC

Unit – IV

Unit – V

Text Books:–
1. Programming with Java A Primer by : E. Balaguruswamy.
2. Ivan Bayross, “SQL, PL/SQL”.

Reference Books:–
2. Liebschuty, “The Oracle Book”.
LIST OF PRACTICALS
WAP in java to calculate of diagonal elements.

WAP in java to print unit matrix.

WAP in java to demonstrate creation of threads.

WAP in java to demonstrate interface.

WAP in java to demonstrate multiple interface defining interface.

WAP in java to demonstrate packages.

WAP in java to demonstrate applets.

WAP in java to perform multiplication of two matrix.

Write a menu driven program using switch in java.

WAP in java to demonstrate multi threading.

WAP in java to calculate sum of upper triangular elements of matrix.

WAP in java to calculate sum of lower triangular elements of matrix.

WAP in java to print digits of number in reverse order.

WAP in java to check entered number is Armstrong or not.

WAP in java to perform addition of matrix.

WAP in java to perform subtraction of matrix.

WAP in java to print table of any number in proper format.

WAP in java to print following format.
*  
*    *  
*   *    *  
*  *    *    *  
*  *    *  
*    *  
*  
*
WAP in java of swing using Action Listener.

WAP in java to demonstrate labels and text field.

WAP in java to demonstrate checkbox

WAP in java to demonstrate Mouse Motion Listener

WAP in java to demonstrate event handling

WAP in java to demonstrate grid layout.

WAP in java to demonstrate buttons

WAP in java to demonstrate Choice Control.

Waq To Insert Some New Records In Emp Table.

Waq To List The Number Of Employees Whose Name Is Not ‘Ford’, ‘Jams’ Or ‘Jones,

Waq To List The Name And Salary And Sort Them In Descending Order Of Their Salary

Write Pl/Sql Code To Add Two No.

Waq To List The Details Of Employees Whose Name Is Starts From ‘A’

Waq To Delete All Records From Emp Table

Waq To Insert Values In 3 Fields.

Write Pl/Sql Code To Print Table Of Entered No.

Waq To List The Student Name Having ‘D’ As Second Character.

Waq To List The Name And Salary And Sort Them In Descending Order Of Their Salary

Write Pl/Sql Code To Calulate Total Salary Of Emp No 100

Write Pl/Sql Code To Find Greatest Among Two No.

Waq To List The Name And Salary And Sort Them In Descending Order Of Their Salary

Write Pl/Sql Code To Find Greatest Among 3 No.

Waq In Employee Table Find All The Manager Who Earns Between 1000 And 2000.
Display Record Of Employee Who Have Salary Between 1000 And 2000.
List The Name Salary And Department Number Of The Employee And Order Them By Their Salary In Descending Order.

Write A Code In Pl/Sql To Print Nos From 1 To 10
In Employee Table Change The City Of Employee From Existing One To New One.
Add A Column Salary Of Datatype ‘Number’ & Having Size ‘5’ With Default Value 1000.
Waq To Find The Employee Who Earns The Lowest Salary In Each Department.Display In Ascending
Order Of Salary.

Write A Code In Pl/Sql To Add,Subtract, Multiply And Divide 2 No According To Choice.

List The Employee Who Earns Maximum Salary In Their Department.Find The Name Of All Employee
Who Works For ‘First Bank Corporation’.Display The Record Of Employee Whose Name Start With
‘S’ & Age Is Greater Than 18.

Find The Name,Street & City Of Residence Of All Employee Who Works For ‘Fbc’
Waq To Find The Employee Who Earns The Lowest Salary In Each Department.Display In Ascending
Order Of Salary.
Waq To Update The Salary Of Employee Number 1902 To Rs 10,000

Write A Pl/Sql Code To Add 3 Nos

Waq To Find The Name,Street And City Of All Employee Who Works For ‘Fbc’ And Who Earn More
Than 1000.

Waq To Increase The Salary By 2000 And Rename The Column As “Newsalary”

Waq To Find The Name,Street And City Of All Employee Who Works For ‘Fbc’ And Who Earn More
Than 1000.

Write Pl/Sql Code To Subtract 2 Nos.

Waq To Find Total Of Salaries Of All Employees From Emp Table
Waq To Decrease The Salary Of Emp From 5000 And Rename Column As ‘Newsalary’

List The Employee Number Of Employee Who Belone To Department 10,20.

List Themployee No Of Employees Who Earn Greater Than 2000
Insert New Field Called Category In Emp Table.
Display Different Jobs In Departments 20,30

List The Names Of Employees Having Two ‘Aa’ In The Name
Print The Name , Emp No, Sal Of Employees In Emp Table.
List The Names Of Employees Who Do The Job Of Clerks Or Salesman.

List The Jobs Common To Department No 10 & 20.

Waq To Find Total Of Salaries Of All Employees From Emp Table
Waq To Update The Salary Of Employee Number 1902 To Rs 10,000

Write A Pl/Sql Block To Check Whether Entered Year Is A Leap Year Or Not.
Create A User Defined Procedure To Find Number Of Vowels In A Given Word.
Write A Pl/Sql Block To Find Factorial Of Any Given Number.

Write A Pl/Sql Block To Create A Trigger For Update Or Insert On Ename Field Of Emp Table. The Trigger Will Make The Entries Of Ename Field In Uppercase.

Write The Steps To Create A Form.

Create A Procedure That Accepts Two Numbers And Return Addition, Subtraction, Multiplication & Division Of Two Numbers. (Local Procedure)
Write The Steps To Create A Report.

Write A Pl/Sql Block For Creating A Cursor In Which The Salary Of Employees Of Deptno--20 Is Increased By 0.05. When Such Raise Is Given, The Record For The Same Should Be Maintained In Emp_Raise Table With Fields Empno, Date & Actualraise.

Write A Pl/Sql Block To Print Fibnoccai Series
0 1 2 3 5 8…

Write A Pl/Sql Block That First Insert A Record In An Emp Table. Increase The Salaries Of Blake & Clark By Rs. 2000 & Rs.1500. Then Check To See That Total Salary Doesnot Exceed Rs.20,000. If The Total Salary Is Greater Than 20,000 Then Undo The Updates Made To The Salaries Of Blake & Clark.

Emp Table:–

<table>
<thead>
<tr>
<th>Empno</th>
<th>Emp_Name</th>
<th>Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>E001</td>
<td>Harry</td>
<td>5000</td>
</tr>
<tr>
<td>E002</td>
<td>Blake</td>
<td>1000</td>
</tr>
<tr>
<td>E003</td>
<td>Jack</td>
<td>5000</td>
</tr>
<tr>
<td>E004</td>
<td>Clark</td>
<td>1000</td>
</tr>
</tbody>
</table>

Write The Steps To Create A Form.

Create A User Defined Procedure To Find Number Of Vowels In A Given Word.

Write A Pl/Sql Block That First Insert A Record In An Emp Table. Increase The Salaries Of Blake & Clark By Rs. 2000 & Rs.1500. Then Check To See That Total Salary Doesnot Exceed Rs.20,000. If The Total Salary Is Greater Than 20,000 Then Undo The Updates Made To The Salaries Of Blake & Clark.

Write A Pl/Sql Block To Find Hcf Of Two Positive Numbers

Write A Pl/Sql Block To Calculate Sum Of Digits
583 = 5+8+3= 16

Create The Table Client_Master

<table>
<thead>
<tr>
<th>Fieldname</th>
<th>Datatype</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client_No</td>
<td>Varchar2</td>
<td>6</td>
</tr>
<tr>
<td>Name</td>
<td>Varchar2</td>
<td>20</td>
</tr>
<tr>
<td>Address</td>
<td>Varchar2</td>
<td>30</td>
</tr>
<tr>
<td>City</td>
<td>Varchar2</td>
<td>10</td>
</tr>
<tr>
<td>Phone</td>
<td>Number</td>
<td>10</td>
</tr>
</tbody>
</table>
7) Enter 5 Records
8) Find Out The Names Of All The Clients.
9) Retrieve The Entire Content Of Client_Master Table.
10) List All The Clients Who Are Located In Bombay.
11) Change The City Of Client_No ‘C005’ To Bombay.
12) Add A Column ‘Salary’ Of Datatype ‘Number’ And Size 5 To Client_Master Table.
# SYLLABUS FOR COMPUTER APPLICATION (OPTIONAL GROUP)

## B.Com. Semester - I and Semester – II

(From Session 2014-15 & onwards)

### SEMESTER - I

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Subject</th>
<th>Max. Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Computer fundamentals &amp; operating system</td>
<td>85</td>
</tr>
<tr>
<td>2</td>
<td>CCE</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td><strong>Total Marks</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

### SEMESTER - II

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Subject</th>
<th>Max. Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PC Package</td>
<td>50</td>
</tr>
<tr>
<td>2</td>
<td>Practical</td>
<td>35</td>
</tr>
<tr>
<td>3</td>
<td>CCE</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td><strong>Total Marks</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
B.Com. – Semester I
Paper Title:- Computer Fundamentals And Operating system

Max Marks 85
CCE-15

Unit-I
What is computer, evolution of Computers, their classification & limitations, Generation of Computers in modern Society, Characteristics and Types of desktop, Laptop, Notebook, Palmtop, Workstation. Block diagram of computer processing system,, CPU( Control Unit, ALU Register) Introduction to number systems( Binary, Octal & Hexa decimal) character codes (BCD, EBCDIC ASCII), Introduction to software and types of software.

Unit-II

Unit-III
Memory-Primary (RAM, Dynamic and Static RAM, ROM,PROM,EPROM, EEPROM, Cache, Virtual, Extended and Expanded) and Secondary Memory (Floppy disk and Hard Disk with details of cluster,FAT, track) Power supply and Distribution. Storage Devices-Function of storage devices-Magnetic Tape, Hard disk Drives, Pen Drives, Floppy Disk, CD, VCD, CDR, CD-RW, DVD,DVD-RW.

Unit-IV
What is an operating System, Types of operating system with examples single user (MS- DOS) and Mulit-user (UNIX) Functions of operating systems-Memory management, CPU Management, File management, I/O Device Management, Data Management, time sharing, Security, Communication. Wild cards, relative and absolute path, Booting System (ROM BIOS,POST, io.sys msdos.sys, Autoexes.bat Configuration systems, Commands.Com)Internal and External Commands with syntax, Internal Commands-CLS, DATE, TIME MD, CD, RD, DEL PROMPT, TYPE, COPYCON, DIR, REN, DELETE, COPY, External Commands, CHKDSK, Scandisk, Mem, Attrib, X-copy, Disk-copy, Disk-comp, Backup, Restore etc.

Unit-V

Reference Books
1- Windows Based Computer Courses, Gurvinder Singh ,English
2- Fundamentals of Information Technology, Chetan Srivastave,English
3- Fundamentals of Computer, Rajaraman,English
4- Fundamentals of Computer, A Mansoor (pragya) Hindi/English
SEMESTER SYSTEM SYLLABUS

B.Com. – Semester II
Paper Title:- PC Package

Max Marks :-50
CCE-15
Practical-35

Unit - I


UNIT – II


UNIT – III


UNIT – IV

Introduction to MS-POWERPOINT, PowerPoint elements templates, Wizards, Views & Color Schemes, Exploring PowerPoint Menu, Adding Text, Adding Title, Adding Text Area, Resizing text boxes, Adding and starting a New Slide, Slide Transition effects & other animation effects, Starting a Slide Show, Saving Presentation, Printing Slide, Display of Slide Show.

UNIT – V

Introduction to Pagemaker, Title Bar, Menu Bar, Tool Box, Preparation of documents using Pagemaker, Master Page, Page Setup, Margin, Ruler & Guides, Formatting fonts & Character Sets, Drop Cap, Speak Check & find and replace, Various types of palette (Color, Control, Style), Various types of printers used in Pagemaker.

Reference Books:-

1. Windows based Computer Courses- Gurvinder Singh, English
2. PC Software – Nitin K.Naik, Hindi
3. MS Office 2000 – A. Mansoor, Hindi/ English (Pragya Publication)
4. Pagemaker – Rajeshwar Shukla, Hindi/ English (Pragya Publication)
SYLLABUS FOR COMPUTER APPLICATION (OPTIONAL GROUP)

**B.Com. Semester - III and Semester – IV**
(From Session 2014-15 & onwards)

**SEMESTER - III**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Subject</th>
<th>Max. Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Programming in C++</td>
<td>85</td>
</tr>
<tr>
<td>2</td>
<td>CCE</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td><strong>Total Marks</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

**SEMESTER - IV**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Subject</th>
<th>Max. Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Realational Database Management System</td>
<td>50</td>
</tr>
<tr>
<td>2</td>
<td>Practical</td>
<td>35</td>
</tr>
<tr>
<td>3</td>
<td>CCE</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td><strong>Total Marks</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
UNIT - I
Algorithms for Problem Solving Flowchart, Flowchart Symbols, Rules of
Flowcharting, example of flowchart, what is programming, modular programming, procedure
oriented programming,
Object oriented programming concept: Class, Object, Data abstraction &
Encapsulation, Inheritance, Polymorphism & Message Passing, Benefits of OOPS.

UNIT - II
Programming ++ - Structure of C++ Programme, Elements of C++ Tokens, identifiers,
data types ++, Constants and its types Standard input and standard output Statements output – cout, Use of << and >> operators
Control Structure ++ (Sequence Selection and Iteration), Structured datatypes ++
arrays, What is Function, recursive function, Inline Function.

UNIT – III
Structure of class, declaration of class, member function, declaring function outside of
class, Constructors, default constructor, constructor overloading, Destructors, Friend
function, polymorphism - Virtual Function, this pointer. Create program using class.

UNIT – IV
What is function Overloading, rules for function overloading, function Operator
overloading - Rules for Operator overloading, Overloading Unary Operator, Overloading Binary
Operator, overloading assignment operator Pointers: Declaration and Initialization of Pointers

UNIT – V
Inheritance: Introduction, types of derivation – public, private, protected inheritance.
Types of Inheritance (Simple, Multilevel, Multiple, Heirarchical and Hybrid). Create program
using inheritance.

Reference Books -
• Programming ++ - Balaguruswami, English
• Programming with C++ (2\textsuperscript{nd}) – D. Ravi Chandran
• C++ Programming - Hemant Kumar Goyal, H
LIST OF PRACTICALS

- Write a program to find average of 3 numbers.
- Write a program to find biggest among 3 numbers.
- Write a menu driven program (Switch case) to perform arithmetic operations.
- Write a program to check whether entered number is Prime or not.
- Write a program to check whether entered number is even or odd.
- Write a program for addition of two matrixes.
- Write a program for multiplication of two matrixes.
- Write a program to find transpose of a matrix.
- Write a program to print:
  - *
  - *
  - *
- Write a program to print:
  - *
  - *
  - *
- Write a program to print:
  - 1
  - 2 2
  - 3 3 3
- Write a program to print:
  - 1
  - 2 3
  - 4 5 6
- Write a program to check whether entered string is palindrome or not.
- Write a program to print Fibonacci series.
- Write a program to find factorial of a given number.
- Write a program to demonstrate use of static data member.
- Write a program to demonstrate use of a static member function.
- Write a program to create array of objects.
• Write a program to demonstrate use of friend function.
• Write a program to illustrate use of copy constructor.
• Write a program to demonstrate constructor overloading.
• Write a program to illustrate use of destructor.
• Write a program to overload a unary operator.
• Write a program to overload a binary operator.
• Write a program to demonstrate single Inheritance.
• Write a program to demonstrate multiple Inheritance.
• Write a program to demonstrate multilevel Inheritance.
• Write a program to demonstrate hierarchical inheritance.
• Write a program to demonstrate hybrid Inheritance.
• Write a program to demonstrate the use of function overloading.
• Write a program to demonstrate the use of inline member function.
• Write a program to demonstrate the use of parameterized constructor.
• Write a program to Check whether entered string is palindrome or not.
UNIT - I
Introduction to Data Base, Database files, records & fields, problems with manual database, using computers for database, categorization of DBMS systems (Networks, Hierarchical & Relational databases, what is RDBMS, Application of RDBMS system, Advantages and limitations over DBMS,

UNIT - II
Definition of CODD’s rules, Important components-database manager, DDL, DML, DCL, query processor, data dictionary, concept of entities, attributes & relationships, ER diagrams, basic concept associated with Normal forms.

UNIT - III
Introduction to ORACLE, oracle architecture and product history, Introduction to SQL, SQL operators, data types DDL commands (create table, alter table, drop table, create view, rename, create index) DML commands of SQL, (select distinct, select from where, select from where order by, select group by clause, select group by having clause, insert into, update, delete) DCL commands of SQL (Rollback, revoke, grant).

UNIT - IV
SQL aggregate functions (sum, avg, max, min, count) SQL Character functions (Lower, upper, length, substr, RPAD, LPAD) SQL arithmetic functions (Round, trunc, sqrt, mod, abs, sine) conversion functions and other miscellaneous functions. Joining Multiple Tables (equi joins), Joining a table to itself (self join), subqueries union, intersects and minus clause.

UNIT - V
Report using SQL plus (specifying column heading, formatting columns char formats, break, inserting spaces after every row, break on multiple column with different spacing, page size, line size, pause).

Introduction of PL/SQL, PL/SQL datatypes, Using PL/SQL Blocks in the SQL*plus Environment, control statements (if-the-else, loop, while-loop, for-loop), error handling in PL/SQL, introduction to cursor handling, types of cursor (Explicit Cursor & Implicit Cursor), general cursor attributes.

Reference Books -
1. Oracle 8i - Freeman & Blomberg, English
2. Simplified approach to Oracle - Prateek Bhatia, Sanjiv Datta, Ranjit Singh
3. Oracle & Developer 2000 - Ivan Bay Rose, English
4. A to Z Oracle - Hemant Kumar Goyal, Hindi
**LIST OF PRACTICALS**

Write a pl/sql block to check whether entered year is a leap year or not.

Create a user defined procedure to find number of vowels in a given word.

Write a pl/sql block to find factorial of any given number.

Write a pl/sql block to create a trigger for update or insert on ename field of emp table. The trigger will make the entries of ename field in uppercase.

Write a pl/sql block to greater number among three numbers.

Write a pl/sql block to create a trigger for update or insert on ename field of emp table. The trigger will make the entries of ename field in uppercase.

Write a pl/sql block to find factorial of any given number.

Create a procedure that accepts two numbers and return addition, subtraction, multiplication & division of two numbers. (local procedure)

Write a pl/sql block for creating a cursor in which the salary of employees of deptno--20 is increased by 0.05. When such raise is given, the record for the same should be maintained in emp_raise table with fields empno, date & actualraise.

Write a pl/sql block to print fibnoccai series 0 1 1 2 3 5 8....

Write a pl/sql block that first insert a record in an emp table. Increase the salaries of blake & clark by rs. 2000 & rs.1500. Then check to see that total salary does not exceed rs.20,000. If the total salary is greater than 20,000 then undo the updates made to the salaries of blake & clark.

<table>
<thead>
<tr>
<th>Emp table:--</th>
<th>empno</th>
<th>emp_name</th>
<th>salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>E001</td>
<td>harry</td>
<td>5000</td>
<td></td>
</tr>
<tr>
<td>E002</td>
<td>blake</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>E003</td>
<td>jack</td>
<td>5000</td>
<td></td>
</tr>
<tr>
<td>E004</td>
<td>clark</td>
<td>1000</td>
<td></td>
</tr>
</tbody>
</table>

Write the steps to create a form.

Write a pl/sql block to create table of any number.

Write a pl/sql block to find hcf of two positive numbers

Write a pl/sql block to calculate sum of digits 583 = 5+8+3= 16

Write a pl/sql block to create a trigger for update or insert on ename field of emp table. The trigger will make the entries of ename field in uppercase.

Create the table client_master

<table>
<thead>
<tr>
<th>Fieldname</th>
<th>datatype</th>
<th>size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client_no</td>
<td>varchar2</td>
<td>6</td>
</tr>
<tr>
<td>Name</td>
<td>varchar2</td>
<td>20</td>
</tr>
<tr>
<td>Address</td>
<td>varchar2</td>
<td>30</td>
</tr>
<tr>
<td>City</td>
<td>varchar2</td>
<td>10</td>
</tr>
<tr>
<td>Phone</td>
<td>number</td>
<td>10</td>
</tr>
</tbody>
</table>
Enter 5 records
Find out the names of all the clients.
Retrieve the entire content of client_master table.
List all the clients who are located in bombay.
Change the city of client_no ‘c005’ to bombay.
Add a column “salary” of datatype ‘number’ and size 5 to Client_master table.

Write a pl/sql block to calculate sum of digits \(583 = 5+8+3= 16\)

Create a procedure that accepts two numbers and return addition, subtraction, multiplication & division of two numbers. (local procedure)

Write a pl/sql block to check whether entered year is a leap year or not.
SYLLABUS FOR COMPUTER APPLICATION (OPTIONAL GROUP)

B.Com. Semester - V and Semester –VI
(From Session 2014-15 & onwards)

SEMESTER - V

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Subject</th>
<th>Max. Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>E-Commerce and Accounting Package</td>
<td>85</td>
</tr>
<tr>
<td>2</td>
<td>CCE</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td><strong>Total Marks</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

SEMESTER - VI

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Subject</th>
<th>Max. Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Programming with VB.NET</td>
<td>40</td>
</tr>
<tr>
<td>2</td>
<td>Major Computer Project +Practical</td>
<td>50</td>
</tr>
<tr>
<td>3</td>
<td>CCE</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td><strong>Total Marks</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
B.com VSem
E-Commerce and Accounting package

Max. Marks-
CCE-15

Unit – I
Introduction to internet, web browsers, www, types of network-lan, wan,e-mail basics-working with email
how to send and receive emails, search engine.
e-commerce:-business operations-commerce practices vs traditional business practices, benefits of e-commerce to organization, consumers and society, limitation of e-commerce, management issues relating to e-commerce

Unit – II
Operations of e-commerce, credit card transaction, secure hypertext transfer protocol, electronic payment
system, secure electronic transaction, broker based service, online travel tourism services, benefits and impacts of e-commerce on travel industry, real estate market, online stock trading and its benefits, online banking and its benefits

Unit – III
Introduction to e-governance ,EDI in governance , e-government, e- governance application of the internet,
concept of government to business, business to government and citizen to government,e-governance models.

Unit- IV
Accounting information system-basic of accounting practices and preparation of final accounts, introduction
to computerized accounting information system ,distinction between manual and computerized accounting
information system, accounts payable system, accounts receivable system
Introduction to tally, creating new company ,creation of groups and accounts, making voucher entries, working with date and all menus of tally package, generation of reports, recording of inventory,

Unit – V
Basic concepts of inventory tally configuration, single and multiple user, tally screen components, mouse/keyboard conventions and key combination, switching between screen areas, quitting tally, maintaining company data, basic company details. Create/alter/select/load/close a company, chart of accounts, company features configuration
Creating group company, use of tally vault, using security control and defining different security levels, use of tally audit, back-up and restore splitting company data, export and import of data.

Text & Reference Books:
1. networking & data communication-nitin k.naik,both hindi/english
2. data communication &computer network-sanjay pahuja,English
3.e-commerce –m.k. saxena ,English
e-governance-shashi chawla,hindi
4.financial account with tally-mukti jain
B.com VI Sem
Programming with VB.NET

Unit – I
The Environment: Editor Tab, Format Tab, General Tab, Docking Tab, Visual Development & event Driven Programming- Methods and Events.

Unit – II
The VB.Net Language-Variables, Declaring Variables, Data type of Variables, Variables Declaration, Scope & Life Time of a variables, Constant, Arrays, Types of Arrays, Control Array, Collections, Subroutines, Functions, Passing variable number of Argument, Optional Argument, Returning value from functions.
Control Flow statements: Conditional statement, Loop statement, MSGBOX & Input Box.

Unit – III
Working with Forms: Loading, showing and hiding forms, Controlling One from within another.
GUI Programming with Windows Form: Text Box, Label, Button, List Box, Combo Box, Checkbox, Picture box, Radio Button, Panel, Scroll bar, Timer, List view, Tree view, Tool bar, Status Bar there properties, Methods and Events, Open File Dialog, SaveFileDialog, FontDialog, Color Dialog, Print Dialog, Link Label.

Unit- IV
Object Oriented Programming, Classes and Objects, Fields Properties, Methods and Events, Constructor, Inheritance, Access Specified: Public, Private, Protected, Overloading, My Base & My Class Keywords.
Overview of OLE, Accessing the WIN32 API from VB.Net, CO Methodology, advantage of COM+, COM & .Net, Create User Control, Register user Control, Access com components in .net application.

Unit – V
Database programming with ADO.Net-Overview of ADO, from ADO to ADO.Net, Accessing Data using Server Explorer, Creating Connections, Command, Data Adapter and Data Set with OLEDB and
SQLDB. Display Data on data bound, Display data on data grid.

**Text & Reference Boojks:**

7. VB.net Programming Black Box by Steven Holzner- Dreamtech Publication
10. MSDN.MiroSoft.Com/Net
11. [WWW.Gotdotnet.Com](http://WWW.Gotdotnet.Com)
12. VB.Net Programming , Pragya Publication (Hindi Medium)

**B.com VI Sem**

**Programming with VB.NET**

**LIST OF PRACTICALS**

1. WAP to add the two integers.
2. WAP to subtract the two integers
3. WAP to multiply the integers using function multi.
4. Create a function disp to display the message hello on the text box.
5. Create the function addition to add the two nos.
6. Create the function sub to subtract the two nos
7. WAP to change the color of form control at run time.
8. WAP to add the item in listbox control at run time.
9. WAP to transfer the item from one listbox to combo box at run time.
10. WAP to display the image on form control at run time.
11. Design the menu for the following: -
   - Color:-Red,Green ,Blue
   - Exit :-Yes,No.
12. WAP to display hello message in textbox control.
13. Design the student database for Sname, rollno, class and result and connect the datagrid control.
14. Write the steps for creating a table employee with e id,name,department,basic in access and store the records in database using database connectivity.
15. WAP to design the tool bar in vb.net.
Mata Gujri Mahila Mahavidyalaya, Autonomous
Jabalpur

SYLLABUS PRESCRIBED FOR THE

M.Sc (computer Science)

FIRST & SECOND

SEMESTER

(Academic Session 2014-15& onwards)

Published by:

Registrar

Mata Gujri Mahila Mahavidyalaya, Autonomous
Jabalpur
### SYLLABUS
#### MASTER OF COMPUTER SCIENCE

#### M.Sc  FIRST SEMESTER

<table>
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<th>PR +</th>
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<tr>
<td>101</td>
<td>Computer organization &amp; assembly language</td>
<td>40</td>
<td>25</td>
<td>10</td>
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<tr>
<td>102</td>
<td>Programming and Problem solving through c</td>
<td>40</td>
<td>25</td>
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<td>103</td>
<td>Software engineering</td>
<td>40</td>
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<td>10</td>
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<td>104</td>
<td>Numerical and Statistical analysis</td>
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<td>105</td>
<td>Communication skill &amp; job oriented program</td>
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**TOTAL:- 325**

#### M.Sc  SECOND SEMESTER

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<tr>
<td>201</td>
<td>Data and File Structure using C++</td>
<td>40</td>
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<tr>
<td>202</td>
<td>System Programming using Linux</td>
<td>40</td>
<td>25</td>
<td>10</td>
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<tr>
<td>203</td>
<td>Computer System architecture &amp; Parallel Processing</td>
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<td>-</td>
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<td>204</td>
<td>Design &amp; Analysis of Algorithms</td>
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<td>-</td>
<td>10</td>
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<td>205</td>
<td>Java Programming</td>
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**TOTAL:- 325**
M.Sc.( FirstSemester)
M.Sc.–101 Computer Organization & Assembly Language
Max. Marks-40
Pass. Marks 16

Unit-I
Basic Building Blocks of Computers: Concepts of Boolean Algebra, Logic Gates, Logic
Diagrams of Boolean Expressions, Minimization Techniques, SOP (Sum of Products)
and POS (Products of Sum) forms, Combinational Circuits, Adders, Subtractors,
Multiplexers, Decoders etc., Sequential Circuits, Flip-Flops (SR, D, JK, T), Registers
(Shift Register), Counters (Binary, up, down, Ripple).

Unit-II
Basic Computer Organization: - Block Diagram, Evolution of Computer Systems,
Classification of Computers, Data Representation in Computers Binary, Octal &
Hexadecimal numbering systems and their inter-conversion, Fixed Point and Floating
representation of numbers, Complements, Alphanumeric Representation, Binary codes-
BCD, EBCDIC, Gray, Parity, Error detection and correction codes.

Unit-III:
Memory Organization:- Types and Organizations, Memory Hierarchy, Semiconductor
Main Memory RAM, ROM, Memory Connection to CPU, Auxiliary Memory (Magnetic
disks, Magnetic Tapes, RAID etc.), Associative Memory (Hardware Organization, Match
Logic, Read/write Operation), Cache Memory( Associative, Direct, Set-Associative
Mapping), Virtual Memory (Address Space and Memory Space) Optical Memories (CD-
ROM, WROM, DVD-ROM etc.).

Unit-IV:
I/O Organization & Overview of 8086 CPU:- Commonly used Peripheral Devices, Input-
Output Interface, Input-Output Techniques (Programmed Input/output, Interrupt driven
Input/output, Direct Memory Access), Input-Output Processor (IOP). Introduction to
Microprocessor Architecture of 8086/8088 Microprocessor, Software model of 8086/8088 Microprocessor,
CPU Registers, Addressing Modes & Instruction Format sof 8086/8088.

Unit-V:
Introduction to 8086/8088 Programming:- Program Structure of 8086/8088 Assembly
Language Program, Format of Assembler Instruction, The Instruction set of 8086/8088,
Data Transfer, Arithmetic, Logic, Shift and Rotate Instructions. Flag Control Instructions,
Compare Instructions, Jump Instructions, Subroutines and Subroutine-Handling
Instructions, The Loop and Loop-Handling Instructions, String and String-Handling
Instructions. Use of Assembly language, Instructions for specific programs for typical
problems like table search, subroutines, Symbolic and Numeric Manipulations and I/O.

Text Books:
1. M. Moris Mano : Computer System Architecture, PHI
2. Watter A. Triebel and Avtar Singh: 8088 and 8086 Microprocessors Programming, Interfacing Software, Hardware & Application, PHI.

Reference Books:
2. Andrew S. Tanenbaum: Structure Computer Organization, PHI.
3. Albert Paul Malvino: Digital Principles, TMH.
7. Peter Norton: Assembly Language for the PC, PHI
M.Sc. –102 Programming and Problem Solving through C++  

Max. Marks 40  
Pass. Marks 16


UNIT-II:-Introduction to C language, variable and arithmetic expressions, symbolic constants Declaration, Arithmetic operators, Relational and logical operators, type conversion, Increment and decrement operators, Bitwise operators, Assignment operators and expressions conditional expressions, precedence and order of evaluation on, C control statement, Simple exercises.

UNIT-III:-C functions, Basics of function and functions returning Non integers, external variables, scope Rules, Header files Static variables. Register variable, Block structure initialization, Recursion, Pointers and addresses arithmetic, multidimensional arrays, initialization of pointer arrays command line arguments, pointers to functions.

UNIT-IV :-Basics of structures, structure and functions, Arrays of structure, pointers to structure self-referential structure, Table look-up Typed if, unions Bitfields, input and output, formatted output, print I/O formatted, input scanf file access error Handling stderr and exit, line input and output.

UNIT-V:-working with files: Introduction classes for file stream operations, opening and closing files detecting end of file, file pointers and manipulators sequential input and output operations, updating and handling during file operations

Text Books:
1. How to solve it by Computer by R.G. Dromey (P.H.II),1994
2. C Programming Language Dennis Ritchie IInded. (P.H.I),1994
UNIT-I:
Software Processes: Processes projects and products, Component software processes, characteristics of a software process, software Development Process, project management process, software configuration management process, software configuration management process, process management process.
Software requirement Analysis and Specification: Software requirement, need for SRS, requirement process, problem analysis, analysis issues. Informal approach, structured analysis, object oriented modeling, other modeling approaches, prototyping, requirements specification, characteristics of an SRS, component of an SRS, specification languages, structure of requirement document validation requirement reviews, other method metrics, size measures, quality metrics.

UNIT-II:
Planning Software Project:- Cost estimation, uncertainties in cost estimation, building cost estimation models, on size estimation, COCOMO model, project scheduling, average duration estimation, project scheduling and milestones, staffing and personnel planning, rayleigh curve, personnel plan, team structure, software configuration management plans, quality assurance plans, verification and validation, project monitoring plans, risk management.

UNIT-III
Function Oriented Design:- Design principles, coupling, cohesion, design notation and specification, structured design methodology, verification, network metrics, stability metrics, information flow metrics Software Testing.

UNIT-IV
Testing Methods: Software testing fundamentals, test case design, white box testing, control structure testing, black-box testing, testing for specialized environments. Software Testing Strategies: A Strategic Approach to software testing, strategic issues, unit testing, validation testing, system testing, the art of debugging.

UNIT-V
Re-Engineering: Software re-engineering, software maintenance, a software reengineering process model, reverse engineering, reverse engineering user interfaces, restructuring, code restructuring, data restructuring, forward engineering the economics of reengineering.
Client/Server software Engineering: The structure of client/server systems, software engineering for c/s systems, analysis modeling issues, design for C/S systems, testing issues. Computer-Aided software Engineering: What is case, building blocks for case, a taxonomy of case tools, integrate case environments, the integration architecture, the case repository.

Text Books:

Reference Books:
2. Poyce, Software Project Management, Addison-Wesly.
Unit-I: Probability Distributions and Statistical Inference.
Testing of single and two mean z and T-tests for variables. Chi-square for independence of two attributes (mXn) table & goodness of fit. F test for homogeneity of two variances.

**Unit-II: Correlation and Regression Analysis.**


**Unit-III:**
Floating point arithmetic, errors, Solution of algebraic and transcendental equations, Newton Raphson and Muller method for real and complex roots, Bairstrow method, rate of Convergence, Eigen values and Eigen vectors; Jacobi and House hold method.

**Unit-IV:**

**Unit-V:**

**Text Books:**

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**M.Sc. – 105 Communication Skill & Job oriented Training Program**

**Max. Marks 40**

**Pass. Marks 16**

**Unit-I: Fundaments of Communication (OHP & PPP):**
Definitions, importance, forms of communication, process of communication, channels, barriers and strategies to overcome barriers of communication.
Listening (PPP): Def, Importance, Benefits, barriers, approaches, be a better listener, exercises and cases.

Unit-II: Advance Communication (PPP and Exercises on handouts)
Why communication? Art of communication, V3 communication, Key elements of IP communication, Quizzes, exercises and cases/incidents for practice.

Unit-III: Group Discussions: (PPP)
Definitions, importance, process, points to be borne in mind while participating, Dos and Don’ts.
Practice – if time permits or to be covered in PDP.
Interview (PPP)
Types of, Points to be borne in mind as an interviewer or an Interviewee, commonly asked questions, Dos and Don’ts.
Practice – if time permits or to be covered in PDP.

Unit-IV: Transactional Analysis: (PPP)
Transactional analysis, Johari Window, FIRO-B (PPP).

Unit-V: Written Communication:
Report writing, documentation, business correspondence, preparation of manuals and project reports

Text Books:
1. OB by Fred Luthans
2. OB by Stiphen P. Robbins

Reference Books:
4. Decker Bert(), “The Art of Communication”.

M.Sc. – 201 Data and File Structure using C++
Max. Marks 40
Pass. Marks 16

Unit-I
Information and its storage representation, nature of information, transmission of information, storage of information, primitive data structure, operations on data structure, integer, real numbers, character information, logical and pointer information,
representation and manipulation, storage representation of string manipulation application, text handing analysis.

Unit-II
Linear Data structure and their sequential representation, Non- primitive data structures, storage structure for arrays, stacks, definition and operations on stacks, application of stack, recursion, polish expressions and their manipulation, Queues, operations on queues, simulation, priority queues, linked storage representation, pointers and linked allocation, linked linear lists, operations on linked lists, circulatory linked list, doubly links list, application of linked lists, polynomial manipulation, linked dictionary, multiple precision arithmetic.

Unit-III
Nonlinear Data structures: Trees, definitions and concepts of general trees and binary trees, representation of binary trees, binary tree representation of general tree, binary tree traversal, Threaded binary trees, operation on binary trees, application of trees, binary search trees, evaluation of binary search trees, AVL trees, B.B. trees, M. Way search trees and B-trees and B-trees, B* trees,(Chapter 8,9,11,12 from Data Management and file Processing by E.S. Lomis) graphs and their representation, matrix representation, list structure, other representation of graphs, Breadth first search, depth first search, application of graphs, dynamic storage management.

Unit-IV
Sorting and Searching : Notation and concepts, selection sort, bubble sort, merge sort, tree sorts, partition exchange sort, radix sort, address calculation method, Summary of Sorting methods, Searching Haah-table method, Hasning functions, Collision resolution techniques, external sorting, run list sorting, polyphase sorting, oscillating sorting, sorting on disks, generating extended initial runs.

Unit-V
File Structure : Magnetic tapes, drums, disks, Mass storage devices and their characteristics, record organization, sequential file structure and processing of fixed sequential files (ISAM, direct files, structure and processing, external searching, multilist organization, inverted list organization, controlled list Length, cellular partitioned structures, maintenance of multilist, inverted list, maintenance of constrained list and cellular structures.

Text Books:
2. E.S. Loomis : Data Management and File Processing, P.H.I.

Reference Books:
M.Sc. - 202 System Programming using Linux

Max. Marks 40
Pass. Marks 16

Unit-I
What is system software, Components of s/w, evolution of s/w, Translators and Loaders, Assemblers, Assembly process, Design of two pass assemblers, Macros and Macro processor.

Unit-II
Loading, Linking and Relocation, linking and loading Schemes, program relocatability, overview of Linkage editing schemes, A linkage editor for IBM PC, object Module format, Design of linkage editor, linking for program overlays.

Unit-III
The Arrival of Linux, the Spirit of linux the strengths of linux, linux and Unix history, linux distribution, System specific information, linux Command information, Installing linux, Running a Linux System, Networking overview, Linux Networking.

Unit-IV
Using graphical Systems with Linux. The shell and text files, the Shell prompt, functions of shell, different type of shells, Entering command, The shell start-up process, Customizing shell, Using Text Editors text processing.

Unit-V

Text Books:
1. Guide to Linux Installation and Administration by Nicholas Wells
2. Linux Administration Handbook by Evi Nemeth, Trent R. Hein.
3. Linux Complete by Grant Taylor, BPB Publication.
M.Sc. – 203 Computer System Architecture and Parallel Processing

Max. Marks 40
Pass. Marks 16

Unit-I
Central Processing Unit: General Register organization, Stack Organization, Register stack, Memory stack, Reverse Polish Notation Evaluation of Arithmetic Expressions, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program Control, Subroutine Call and Return, Program Interrupt, Types of Interrupts Reduced Instruction Set Computer (RISC), Characteristics of RISC/CISC.

Unit-II

Unit-III

Unit-IV
Pipeline and vector processing: Principles of linear pipelining, General Consideration in pipelining, Arithmetic Pipeline, Instruction Pipeline & RISC Pipeline with examples, Vector Processing, Matrix Multiplication, Memory Interleaving, Supercomputers, Attached Array processor and SIMD Array processor.

Unit-V

Text Books:
1. M. Moris Mano: Computer System Architecture, PHI
M.Sc. - 204 Design and Analysis of Algorithms

Max. Marks 40
Pass. Marks 16

Unit-I

Unit-II
Analysis of Algorithm-simple example, well known Sorting Algorithms Best-Case and Worst –Case Analysis, Analysis of Non-Recursive Control structure, Recursive Constructs, Solving Recurrences, Average Case & Amoritized Analysis, Recursive algorithms(Tower of Hanoi, Permutations).

Unit-III
Design Techniques: Divide and Conquer- Control abstraction binary search, merge sort, Quick sort, Strassen’s matrix multiplication, Exponentiation.

Unit-IV
Graph algorithms: Examples, Traversing Trees, DFS, BFS & Minimax principle, Topological sort, strongly connected component, minimal spanning tree, Kruskal and prims algorithm, Dijkstra’s Algorithm, all paths shortest paths, Floyd-Marshall algorithm, Flow networks.

Unit-V
Models for Executing algorithms: Regular Expressions, Regular language, Finite Automata. Formal Language & Grammer, CFG, PDA. Turning machine Formal definition and example, Instantaneous Description and Transition Diagram.

Text Books:
2. Ellis Sahni, Computer Algorithms, Galgotia.

Reference Books:
M.Sc. - 205 Java Programming

Unit-I
Understanding the Internet, What in the Internet, How TCP/IP makes the Internet work, who runs the Internet, Overview of the Internet, Services like E-mail, WWW, FTP, Telnet etc. Domain Name System (DNS), Simple Network Management, Protocols (SNMP), Internet security, Cryptography, Public-key algorithms, Authentication Protocols, Digital Signature, Multimedia, Audio, Video, Data Compression.

Unit-II
Java History, Java features, How Java differs from C and C++, Java and Internet, Java and WWW, Hardware and Software requirements, Java environments, Simple Java Program, Java Program Structure, Java Tokens, Java statements, Implementations a Java Program, Java virtual machine, Constants, variables and data types.

Unit-III
Operations and expressions, Arithmetic, Relational, Logical, Bit-Wise operators, operator precedence and Associability various control flow statement like if….else, switch while, do, for etc. classes object and methods, Inheritance extending a Class, Visibility control, Arrays strings and vectors.

Unit-IV
Interfaces, Multiple inheritance defining Interface, extending Interfaces, Implementing Interfaces, Accessing Interface variables, Java API Packages, Naming Conventions, Creating packages, Accessing a package, Adding a class to a package, Hiding classes. Multi threaded programming, Creating threads, extending thread class, life cycle of a Thread, Thread exception, Thread priority.

Unit-V
Exceptions, execution Handling in Java, Applet programming, Applet life Cycle, creating executable Applet, Applet Tag, Running an applet, passing parameters to applet, Graphics programming, GUI Concepts in Java, managing Input/Output files in Java.

Text Books:
2. Computer Networks By A.S. Tanenbaum, P.H.I.

Reference Books:
3. Hareliy Hahn Teacher the Internets, 1999 By Harley Hahn, P.H.I.
### M.Sc THIRD SEMESTER

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<td>301</td>
<td>Cloud Computing</td>
<td>40</td>
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<tr>
<td>302</td>
<td>RDBMS(SQL programming with oracle)</td>
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<td>303</td>
<td>Advance java programming</td>
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<td>304</td>
<td>Principles of compiler design</td>
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<td>Computer Graphics (with multimedia)</td>
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**TOTAL:- 325**

### M.Sc FOURTH SEMESTER

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<td>Data Warehousing &amp; data Mining</td>
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<td>Computer Network</td>
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<td>Object oriented modelling &amp; Design using UML</td>
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<td>Minor Project on Java/. Net Technology</td>
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**TOTAL:- 325**
M.Sc.301: Cloud Computing

Max. Marks 40
Pass. Marks 16

Unit-I
Introduction: Historical development, Vision of Cloud Computing, Characteristics of cloud computing as per NIST, Cloud computing reference model, Cloud computing environments, Cloud services requirements, Cloud and dynamic infrastructure, Cloud Adoption and rudiments. Overview of cloud applications: ECG Analysis in the cloud, Protein structure prediction, Gene Expression Data Analysis, Satellite Image Processing, CRM and ERP, Social networking.

Unit-II

Unit-III
Cloud Management & Virtualization Technology: Resiliency, Provisioning, Asset management, Concepts of Map reduce, Cloud Governance, High Availability and Disaster Recovery. Virtualization: Fundamental concepts of compute, storage, networking, desktop and application virtualization. Virtualization benefits, server virtualization, Block and file level storage virtualization. Hypervisor management software, Infrastructure Requirements, Virtual LAN (VLAN) and Virtual SAN (VSAN) and their benefits.

Unit-IV

Unit-V

Recommended Text Books:
UNIT-I
INTRODUCTION: - Advantages of DBMS approach, various views of data, data independence, Schema & sub-schema, Primary concepts of data models, Database languages, Transaction management, Database administrator & uses, data dictionary, Overall system architecture. ER MODEL: - Basic concept, Design issues, Mapping constraints, Keys, ER diagram, weak & strong entity sets, specialization & generalization, aggregation, inheritance, design of ER schema, Reduction of ER schema to tables.

UNIT –II
DOMAIN RELATIONS & KEYS :- Domains, Relations, Kinds of relation, relational databases, various types of keys, candidate, primary, alternate & foreign Keys. RELATIONAL ALGEBRA & SQL :- The structure, relation algebra with extended operations, Modification of database, idea of relational calculus, Basic structure of SQL, set operation, Aggregate function, Null values, Nested subqueries, Derived relations, views modification of database, Join relations, DDL & SQL.

UNIT– III
FUNCTIONAL DEPENDENCIES & NORMALIZATION: Base definitions, Trivial & non-Trivial dependencies, Closure set of dependencies & of attributes, Irreducible set of dependencies, introduction to normalization, Non-loss decomposition, FD diagram of I, II & III NF, Dependencies prevention, BCNF, Multi-valued dependencies prevention’s, BCNF, Multi-valued dependencies & ANF, Join dependencies & 4 NF.
DATABASE INTEGRITY :- General idea, Integrity rules, Domain rules, Attribute rules, Relation rules, Database rule, assertions, triggers, Integrity & SQL.

UNIT –IV
DISTRIBUTED DATABASES :- Basic idea, distributed data storage, Data replication, Data Fragmentation, horizontal, vertical & mixed fragmentation. EMERGING TRENDS IN DBMS :- Object – Oriented database- Basic idea & the model Object structures Object, Class, inheritance, multiple object identity, Data warehousing terminology, definitions, characteristics, Data mining & its overview, Database on www, multimedia database difference with conventional DBMS, issues, similarity based retrieval continuous media data, multimedia data formats, video servers.

UNIT- V
NETWORK & HIERARCHICAL MODEL: Basic idea, Data structure diagram, DBTG model, implementation, Tree structure diagram, Implementation techniques, comparison of three models. TRANSACTION CONCURRENCY & RECOVERY:- Basic concept, ACID properties, Transaction state, Implementation of atomicity & durability concurrent executions, Basic idea of serializability, Basic idea of concurrency control, Basic idea of deadlock, Failure classification, storage structure - types, stable storage implementation,
data access, Recovery & Atomicity – Log based recovery, deferred database modifications, immediate database modifications, checkpoints.

**Text Books:-**
2. Arun K. Majumdar & P.Bhattacharya: Data Base Management System. TMH

**References Books:-**
3. James Martin: Principles of Database Management. PHI
4. James Martin, Computer Database organization. PHI
Introduction to Applet and Swing – Creating Applet in Java, Identifying various stages of an Applet life Cycle, various Graphic method in java, the AWT control components, the Swing component class Hierarchy, using top level swing containers, using intermediate level swing containers, using the atomic component, using the Layout Manager, Flow Layout Manager, Border Layout Manager and Grid Layout Manager.

Unit-II
Introduction to Event Handling – Identifying the source of Event, Event Listeners and Event Handlers, the Delegation Event Model, Event classes, Event Listener Interface, Action Listener interface, MouseListener Interface Adapter classes - the Mouse Adapter class, the MouseMotion Listener Interface.

Unit-III
Introduction to JDBC – What is JDBC. Database connectivity, JDBC Architecture, JDBC drivers, Using JDBC API – Loading a Driver, connecting and executing JDBC statement, Handling SQL Exceptions. Accessing Result Sets, method of Result Set interface, Methods of PreparedStatement interface, retrieving row, inserting row, Managing Database Transactions, creating and calling stored procedures in JDBC, using Metadata in JDBC.

Unit-IV
Introduction to JavaBean – javabean concept, software components and javabeans, elements of javabeans, javabean component specification, services of javabean components, types of javabean. Beans development kit, user defined javabeans, creating javabean Applet using BDK, types of javabean properties creating custom Events, Event class, EventListener, Event Handler.

Unit-V
RMI – Overview of distributed Application, Remote Method Invocation, components of RMI application, RMI architecture, RMI Packages, Distributed Garbage collection, creating Distributed application using RMI, creating remote interface, implementing remote interface, creating RMI server, creating RMI client, Running the RMI application, Transmitting files using RMI, client side cabecks.

Text Books :
1. Mastering Java2 – John Zukowski, BPB Publication
2. Java Programming – Khalid Mughal, Pearson Education.

Reference Books :
1. Advance Java Programming – Amit K. Mishra
M.Sc.-304 PRINCIPLES OF COMPILER DESIGN

MAX.MARKS: 40
PASS MARKS: 16

Unit-I
Introduction to Automata Theory: Mathematical Preliminaries: sets and relations, Graphs, language, alphabets, strings, recursive definitions, regular expressions, Finite automaton (FA), Deterministic FA (DFA), Non Deterministic FA (NDFA), Turing machine, FA with null strings, Transition graphs, FA with outputs Conversations of FA and regular expressions, Regular languages and their closure properties, pumping lemma for regular languages, Non regular languages.

Unit-II
Push down Automata Theory: Context free grammars, context free languages (CFL), Deviation trees, Chomsky normal form ambiguity in CFG, Pushdown Automata (PDA), PDA and CFL equivalence, pumping lemma for CFL, non CFL, closure properties of CFL.

Unit-III
Compiler and Translators, why do we need translators, the structure of Compiler, Lexical Analysis, Syntax analysis, Intermediate code generation, Book keeping, error handling, Finite Automata and Lexical analysis, The role of the lexical analyzer, regular expressions, finite automata, from regular expression to finite automata, minimizing the number of states of a DFA, A Language for specifying lexical analyzer, implementation of lexical analyzer using lex.

Unit-IV
Context-free grammars, derivation of parse trees, capabilities of CFGs, Parsers, shift-reduce parsing, operators precedence parsing, top-down parsing, Predictive parsing, LR parsers, The canonical collection of LR (0) items, constructing SLR parsing tables, constructing canonical LR parsing tables, constructing LALR parsing tables, Simple parsing exercises using yacc.

Unit-V
Syntax-directed translations schemes, implementation of syntax-directed translators, intermediate code, postfix notation, parse trees and syntax trees, three-address code, quadruples, and triples, translations of assignment statements, Boolean expressions, statements that alter the flow of control, cost fix translations, translation with the top-down parser. Symbol tables, the contents of symbol tables, data structures for symbol tables, representing scope information, run time storage administration, implementation of a simple stack allocation schemes, implementation of block-structured languages, storage for block-structured languages.

Text Books:

Reference Books:-
M.Sc.-305 : COMPUTER GRAPHICS (WITH MULTIMEDIA)

Max. Marks: 40
Pass. Marks: 16

Unit-I
A Brief background about applications of Computer Graphics, Overview of Graphics Systems, Video display devices, Refresh cathode ray tubes, Raser and random scan displays, colour CRT monitors, Flat panel display,s, LCDs. Design and architecture of raster scan and random scan display systems. A brief introduction to input devices and hardcopy devices. Output primitives, DDA and Bresenham’s 2D line drawing algorithms, Parallel line algorithms.

Unit-II
Midpoint circle generating algorithm, Ellipse generating algorithm, Other curves, Filled area primitives, Scan line polygon fill algorithm, Inside outside test, Boundary fill algorithm, Flood fill algorithm, Character generation, Attributes of output primitive, line and curve attributes, Character attributes.

Unit-III
Anti-aliasing, Two dimensional geometric transformations, Composite transformations, General Composite Transformations and Computational Efficiency, Other transformations, Affine transformation, Two dimensional viewing, Window to viewport coordinate transformation.

Unit-IV
Clipping operations, Cohen Sutherland line clipping, Liang Barsky line clipping, Nicholl-Lee-Nicholl line clipping, polygon clipping, Sutherland Hodgeman and Weiler-Atherton Polygon clipping, Text and curve clipping. Three dimensional concepts, Display methods, polygon surfaces, quadric surfaces and superquadrics.

Unit-V
Three dimensional Geometric and Modelling Transformations, General three dimensional rotation, Three dimensional viewing pipeline, Projections, Parallel and perspective projection, View volume and general Projective transformation, Visible Surface Detection Methods, Back Face detection, Depth Buffer Method, A buffer method, Depth sorting method.

Text Book:-
Unit I (pp 35-45, 53-72, 84-92), Unit II ( pp 97-112, 117-130, 131-133, 143-152, 163),
Unit III ( pp 171-174, 183-203, 208, 217-220), Unit IV ( pp 224-242, 244, 296-301, 305-313) Unit V (pp 407-423, 432-456, 469-480).

Reference Book:-
UNIT-I

UNIT-II

UNIT-III
Game theory, two person zero sum game, minimax (maximin) criterion, solution of games with saddle point and without saddle point, equivalence of the rectangular game and linear programming and solution by simplex method, concept of dominance, graphical method for 2 x n and m x 2 games, algebraic method for a general game, iterative method, Sequencing problems of n jobs through 2 machines, 3 machines, and n jobs through machines.

UNIT-IV
Replacement problems- replacement of items that deteriorate, with time, money value and present work factor, Replacement policy when money value changes, replacement of items that are failed completely, group replacement of items, integer programming, Nonlinear programming problem, Kuhn-Tucker conditions, graphical solution, quadratic programming, solution by Wolfe’s method.

UNIT-V
Dynamic Programming minimum path problems, problems on single additive constraint additive separable return, single multiplicative constraint additive separable return, single additive constraint multiplicative separable return, serial multistage model, Development of CPM/PERT techniques, construction of network diagram, determination of critical path, probability of completing the project by scheduled date.

Text Books:
4. Operations Research : S.D. Sharma,
M.Sc.-402 ARTIFICIAL INTELLIGENCE

UNIT-I
What is Artificial Intelligence, what is an AI technique, criteria for success, Problems, problem spaces and search, Production system, Problem characteristics, Hill-climbing, Best-First search, AO algorithm, constraint satisfaction.

UNIT-II
Natural language Processing, Introduction, overview of linguistics, Grammars and language, Basic Parsing techniques, Semantic analysis and representation, structure, Natural Language generation, Natural Language systems (Chapter 12, Dan W Paterson).

UNIT-III
Knowledge Representation Issues, Approaches to knowledge Representation, Representing simple facts in logic, computable functions and predicates, Procedural vs declarative knowledge, forward vs Backward Reasoning matching, control knowledge.

UNIT-IV
Expert systems, Rule-Based system architecture Non-production system Architecture, dealing with uncertainty, knowledge acquisition and validation, knowledge system Building tools. (Chapter 15, Dan W Patterson).

UNIT-V
Pattern Recognition, Recognition and classification process, learning classification Patterns, Recognizing and understanding speech.

Text Books:
2. Introduction to Artificial Intelligence and expert system. Dan. W. Patterson
Prentice–Hall of India.

Reference Books:
UNIT-I
Motivation, importance, Data type for Data Mining : relation Databases, Data Warehouses, Transactional databases, advanced database system and its applications, Data mining Functionalities: Concept/Class description, Association, Analysis classification & Prediction, Cluster Analysis, Outlier Analysis, Evolution Analysis, Classification of Data Mining Systems, Major Issues in Data Mining.

UNIT –II
Data Warehouse and OLAP Technology for Data Mining: Differences between Operational Database Systems and Data Warehouses, a multidimensional DataModel, Data Warehouse Architecture, Data Warehouse Architecture, Data Warehouse Implementation, Data Cube Technology.

UNIT-III
Data Preprocessing: Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation. Data Mining Primitives, Languages, and System Architectures, Concept Description: Characterization and Comparison, Analytical Characterization.

UNIT-IV
Mining Association Rules in Large Databases: Association Rule Mining: Market Basket Analysis, Basic Concepts, Mining Single-Dimensional Boolean Association Rules from Transactional Databases: the Apriori algorithm, Generating Association rules from Frequent items, Improving the efficiency of Apriory, Mining Multilevel Association Rules, Multidimensional Association Rules, Constraint-Based Association Mining.

UNIT-V
Classification & Prediction and Cluster Analysis: Issues regarding classification & prediction, Different Classification Methods, Prediction, Cluster Analysis, Major Clustering Methods, Applications & Trends in Data Mining: Data Mining Applications, currently available tools.

Text Books
2. Berson -Datawarehousing, Data Mining & DLAP, @004, TMH.
3. W.H. Inmon - Building the Datawarehouse, 3ed, Wiley India.
4. Anahory, "Data Warehousing in Real World", Pearson Education.
5. Adriaans, "Data Mining", Pearson Education.
M.Sc. –404 COMPUTER NETWORKS

UNIT-I
Users of Computer Network, Network Hardware, Network software, Protocol Hierarchies, Design issue for the layers, Interfaces and services, connection oriented and connection-less services, service primitives, the relationship of services, to protocols, Reference Models, comparison of OSI and TCP/IP Reference models, Data communication services, SMDS, X.25, Frame Relay, Broadband ISDN, ATM and comparison of services.

UNIT-II
Physical layer, Theoretical Basis for data communication, Bandwidth-limited signals. Maximum Data Rate of a Channel, Transmission media, Magnetic media, Wireless, Transmission, The telephone systems, Narrowband and Broadband ISDN and ATM, communication satellites.

UNIT-III
Data Link layer, Design issues, Services provided to the Network layer, error detection and correction, elementary data link protocols, sliding window protocols, Protocol specification and verification, Case studies, HDLC and the Data link layer in the Internet.

UNIT-IV
Network layer design issues, routing algorithms, the optimality principle, shortest path routing, Flooding, Flow-based Routing, Distance-vector and link-state routing, broadcast and Multicast Routing, Congestion control algorithms, general principles of congestion control, Traffic shaping, choke packets, load shedding, jitter control.

UNIT-V
The transport layer, The transport service, Quality at service, Transport service Primitives, Addressing establishing a connection, Releasing a connection, Flow-Control and Buffering, Multiplexing, crash Recovery, The Internet Transport protocols, TCP service model, TCP protocol, TCP segment header, TCP connection management, TCP transmission policy, TCP congestion control, TCP timer management UDP.

Text Books:
Reference Books:
UNIT-I
The object Model, the evolution of object model, elements of object model, applying the object model, Classes and Objects, Relationships among objects, the nature of a class, relationship among classes, the interplay of classes and objects, on building quality classes and objects (Chapter 2,3 from Grady Booch)

UNIT-II

UNIT-III
Design Methodology, OMT as a software engineering methodology, Analysis, overview of analysis, Problem statement, overview of system Design, Breaking a system into subsystems, identifying Concurrency, Allocating subsystems to processes and tasks, Management of data stores, Handling global resources, choosing software control implementation, Handling Boundary condition, setting trade off priorities, Common architectural frameworks.

UNIT-IV
Object Design, overview of object Design, Combining the three models, Design algorithms, Design optimization, implementation of Control adjustment of inheritance, Design of Association, object representation, Physical packaging.

UNIT-V
Implementation, from Design to implementation object-oriented style, Reusability, extensibility, Robustness, Object Oriented languages, Translating a Design into an implementation.

Text Books:
Class - B.A./B.Sc./B.Com./B.H.Sc./B.C.A.
Subject - Foundation Course
Paper Title - Paper II Basic Computer Information Technology -I
Semester – V

Max. Marks: 25

Unit I
INTRODUCTION TO COMPUTER ORGANIZATION –I

Unit II
INTRODUCTION TO COMPUTER ORGANIZATION –II
Basic components of a computer system Control Unit, ALU. Input/Output function and Characteristics, memory RAM, ROM, EPROM, PROM.

Unit III
INPUT & OUTPUT DEVICES
Input Devices: Keyboard, Mouse, Trackball, Joystick, Digitizing tablet, Scanners, Digital Camera, MICR, OCR, OMR, Bar-code Reader, Voice Recognition, Light pen, Touch Screen.

Unit IV

Unit V
INTRODUCTION TO OPERATING SYSTEM: Introduction to operating systems, its functioning and types. Basic commands of DOS & Windows operating System. Disk Operating System (DOS)
• Introduction, History and Versions of DOS.
DOS Basics
• Physical Structure of disk, Drive name, FAT, file & directory structure and naming rules, booting process, DOS system files.
DOS Commands
• Internal DIR, MD, CD, RD, Copy, DEL, REN, VOL, DATE, TIME, CLS, PATH, TYPE etc.
• External CHKDSK, SCOPE, PRINT DISKCOPY, DOSKEY, TREE, MOVE, LABEL, APPEND, FORMAT, SORT, FDISK, BACKUP, MODE, ATTRIB, HELP, SYS etc.
Unit I
Word Processing : Word
• Introduction to word Processing.
• MS Word: features, Creating, Saving and Operating Multi document windows, Editing Text selecting, Inserting, deleting moving text.
• Previewing documents, Printing document to file page. Reduce the number of pages by one.
• Formatting Documents: paragraph formats, aligning Text and Paragraph, Borders and shading, Headers and Footers, Multiple Columns.

Unit II
Introduction to Excel & Worksheet:
• Worksheet basic.
• Creating worksheet, entering data into worksheet, heading information, data text, dates, alphanumeric, values, saving & quitting worksheet.
• Opening and moving around in an existing worksheet.
• Toolbars and Menus, keyboard shortcuts.
• Working with single and multiple workbook coping, renaming, moving, adding and deleting. coping entries and moving between workbooks.
• Working with formulas & cell referencing.
• Autosum.
• Coping formulas
• Absolute & Relative addressing.

Unit III
INTRODUCTION TO POWER POINT
• Features and various versions.
• Creating presentation using Slide master and template in various colour scheme.
• Working with slides make new slide move, copy, delete, duplicate, lay outing of slide, zoom in or out of a slide.
• Editing and formatting text: Alignment, editing, inserting, deleting, selecting, formatting of text, find and replace text.

Unit IV
POWERPOINT – II
• Bullets, footer, paragraph formatting, spell checking.
• Printing presentation Print slides, notes, handouts and outlines.
• Inserting objects Drawing and Inserting objects using Clip Arts picture and charts.
• Slide sorter, slide transition effect and animation effects. Presenting the show making stand alone presentation, Pack and go wizards.

**Unit V**

Evolution, Protocol, concept, Internet, Dial-up connectivity, leased line, VSAT, Broadband, URLs, Domain names, Portals. E-mail, Pop & web based Email. Basic of sending and receiving Emails, Email & Internet Ethics, Computer virus, Antivirus software wage, Web Browsers
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<tr>
<th>S.NO.</th>
<th>EXAMINER NAME</th>
<th>ADDRESS/COLLEGE NAME</th>
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<tr>
<td>1</td>
<td>Dr. Vinod Patley</td>
<td>Pandit Ravi Shankar Shukla University, Raipur</td>
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<td>Dr. H.S. Hota</td>
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<td>Dr. Manish Taneja</td>
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<td>Thakur Devraj Singh</td>
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<td>Mr. Jitendra Shrivastava</td>
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<td>Dr. Ravindra Patel</td>
<td>MCA Dept. RGPV, Bhopal</td>
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<td>Dr. Parda Sami</td>
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<td>Dr. Sanjay Gupta</td>
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<td>Dr. Ramji Yadav</td>
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<td>Mr. Abhay Mishra</td>
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<td>Mr. Anurag Singh</td>
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<td>30</td>
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<td>Dr. Vipin Rai</td>
<td>(Management &amp; Accounts), Jabalpur College of Computer &amp; Communication, Jabalpur</td>
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<td>Mr. Raj. Mehta</td>
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<td>Mr. Naresh Chetwani</td>
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<td>65</td>
<td>Mr. Nilesh Pandey</td>
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