SCHEME OF EXAMINATION 2020-2021

BCA PART- I

Subject Code	Subject Paper	Theory Marks		Internal Marks		Teaching Load per Week		
						L	T	P
		Max. (A)	Min. (B)	Max. (C)	Min. (D)			
BCA101	Discrete Mathematics	80	27	20	8	4	2	-
BCA102	Computer Fundamentals	80	27	20	8	4	2	-
BCA103	Programming in 'C' language	80	27	20	8	4	2	-
BCA104	PC Software and Multimedia	80	27	20	8	4	2	-
BCA105	Web Technology and E-Commerce	80	27	20	8	4	2	-
BCA106	Communication skills	80	27	20	8	4	2	-
BCA107	LAB I: Programming Lab in 'C'	100	50	40	16	-	-	3x2
BCA108	LAB II: PC Software Lab	100	50	40	16	-	-	2x2
BCA109	LAB III: Web Technology Lab	100	50	20	8	-	-	1x2
TOTAL		780	312	220	88			
GRAND TOTAL	(PAPER + INTERNAL)	**(A+C) 1000**		**(B+D)** 400				

- Student will have to pass individually in all theory, practical and sessional.

BCA - 101
DISCRETE MATHEMATICS

Max Marks: 80 **Min Marks: 27**

NOTE: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculator is allowed not scientific calculator.

UNIT - I

Recall of statements and logical connectives, tautologies and contradictions, logical equivalence, algebra of propositions quantifiers, existential quantifiers and universal quantifiers.

UNIT – II

Boolean algebra and its properties, algebra of propositions as an example, De Morgan's Laws, partial order relations g.l.b., l.u.b. Algebra of electric circuits and its applications. Design of simple automatic control system.

UNIT - III

Boolean functions - disjunctive and conjugative normal forms. Boolean's expansion theorem, fundamental forms. Many terminal Networks.

UNIT – IV

Arbitrary Cartesian product of sets. Equivalence relations, partition of sets, injective, surjective, bijective maps, binary operations, countable, uncountable sets.

UNIT – V

Basic Concept of Graph Theory, Sub graphs, Trees and their properties, Binary Trees, Spanning Trees, Directed Trees, Planar graphs, Euler Circuit, Hamiltonian Graph. Chromatic number.

TEXT BOOKS:

1. Boolean Algebra and its Application, J.E. Whitesitt, Courier Corporation.
2. Concepts of Modern Mathematics, P.L. Bhatnagar, Van Nostrand Reinhold Company.
3. Discrete Mathematics, Babu Ram, Pearson.
4. Graph theory and its applications, NarsinghDeo, Dover publication.
5. A TextBook of Discrete Mathematics, Swapan Kumar Sarkar, S.chand.
6. Elements of Discrete Mathematics, C.L.Liu, Tata McGraw Hill, Second Edition.

BCA - 102
COMPUTER FUNDAMENTALS

Max Marks: 80 **Min Marks: 27**

NOTE: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculator is allowed not scientific calculator.

UNIT - I Introduction to Computers

Computer system: characteristics and capabilities. Computer Hardware and Software: Block Diagram of a Computer, Different Data Processing: Data, Data Processing System, Storing Data, Processing Data. Types of Computers: Analogue, Digital, Hybrid, General and Special Purpose Computers. Generation of Computers. Computer Systems: Micros, Minis & Main-frames. Limitations of Micro Computer.**Number systems:** Decimal Number system, Binary number system, Octal & Hexadecimal number system, 1's&2's complement **Codes:** ASCII, EBCDI Codes, Gray code & BCD. **Logic Gates:** AND, OR, NOT GATES and their Truth tables, NOR, NAND & XOR gates

UNIT - II Computer Peripherals

Introduction to Input Devices: Categorizing Input Hardware, Keyboard, Direct Entry – Card Readers, Scanning Devices – O.M.R., Character Readers, Thumb Scanner, MICR, Smart Cards, Voice Input Devices, Pointing Devices – Mouse, Light Pen, Touch Screen. **Computer Output:** Output Fundamentals, Hardcopy Output Devices, Impact Printers, Non-Impact Printers, Plotters, Computer output Microfilm/Microfiche (COM) systems, Softcopy Output Devices, Cathode Ray Tube, Flat Screen Technologies, Projectors, Speakers.

UNIT - III Basic Components & Storage

Central Processing Unit: The Microprocessor, control unit, A.L.U., Registers, Buses, Main Memory, Main Memory (RAM) for microcomputers, Read Only Memory(ROM). **Storage Devices:** Storage Fundamentals, Primary and Secondary Storage, Data Storage and Retrieval Methods – Sequential, Direct & Indexed Sequential, Tape Storage and Retrieval Methods Tape storage Devices, characteristics and limitations, Direct access Storage and Microcomputers - Hard Disks, Disk Cartridges, Direct Access Storage Devices for large Computer systems, Mass storage systems and Optical Disks, CD ROM.

UNIT - IV Computer Software & Languages

System Software: System software Vs. Application Software, Types of System Software, Introduction and Types of Operating Systems. Boot Loader, Diagnostic Programs, BIOS, Utility Programs. **Application Software:** Microcomputer Software, Interacting with the System, Trends in PC software, Types of Application Software, Difference between Program and Packages. **Computer Languages:** Definition, Generations of computer languages, Types of Languages, Language Processors: Assembler, Interpreter, Compiler, Linker and Loader. Programming constructs, Algorithm & flowchart.

UNIT - V Introduction to MS DOS & Windows

Introduction to DOS: History and versions of DOS. Fundamentals of DOS: Physical Structure of the Disk, Compatibility of drives, Disks & DOS versions, Preparing Disks for use, Device Names. Getting Started with DOS: Booting Process (DOS, Windows, Unix), System Files and Command.com, Internal DOS Files & Directories, Elementary External DOS Commands, Creating a Batch Files, Additional Commands.

Microsoft Windows: Operating system-Definition &functions, basics of Windows. Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders. Control panel–display properties, adding and removing software and hardware, setting date and time, screen saver and appearance. Using windows accessories.

TEXT BOOKS:

1. Computer Fundamentals, P. K. Sinha, BPB Publications, Sixth Edition.
2. Introduction to Information Technology, V. Rajaraman, PHI, Second Edition.
3. Fundamental of Information Technology, ChetanShrivastava, Kalyani Publishers.
4. Computers Today, Suresh K Basandra, Galgotia Publications.

BCA - 103
PROGRAMMING IN 'C' LANGUAGE

Max Marks: 80 **Min Marks: 27**

NOTE: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculator is allowed not scientific calculator.

UNIT-I

Fundamentals of C Programming: Overview of C: History of 'C', Structure of 'C' program. Keywords, Tokens, Data types, Constants, Literals and Variables, Operators and Expressions: Arithmetic operators, Relational operator, Logical operators, Expressions, Operator: operator precedence and associatively, Type casting, Console I/O formatting, Unformatted I/O functions: getch(), getchar, getche(), getc(), putc(), putchar().

UNIT- II

Control Constructs: If-else, conditional operators, switch and break, nested conditional branching statements, loops: do while, while, for, Nested loops, break and continue, goto and label, exit function.

Functions: Definition, function components: Function arguments, return value, function call statement, function prototype, Types of function, Scope and lifetime of variable, Call by value and call by reference. Function using arrays, function with command line argument. User defined function: maths and character functions, Recursive function.

UNIT-III

Array: Array declaration, One and Two dimensional numeric and character arrays, Multidimensional arrays.

String: String declaration, initialization, string manipulation with/without using library function.

Structure, Union and Enum - Structure: Basics, declaring structure and structure variable, typedef statement, array of structure, array within structure, Nested structure; passing structure to function, function returning structure. **Union**: basics, declaring union and union variable, **Enum**: declaring enum and enum variable.

UNIT- IV

Pointer: Definition of pointer, Pointer declaration, Using & and * operators. Void pointer, Pointer to pointer, Pointer in math expression, Pointer arithmetic, Pointer comparison, Dynamic memory allocation functions – malloc, calloc, realloc and free, Pointer vs. Array, Array of pointer, Pointer to array, Pointers to function, Function returning pointer, Passing function as Argument to function, Pointer to structure, Dynamic array of structure through pointer to structure.

UNIT-V

File Handling and Miscellaneous Features: File handling: file pointer, File accessing functions: fopen, fclose, fputc, fgetc, fprintf, fscanf, fread, fwrite,beof, fflush, rewind, fseek, ferror. File handling through command line argument. Introduction to C preprocessor #include, #define, Conditional compilation directives: #if, #else, #elif, #endif, #ifndef etc.

TEXT BOOKS:

1. Programming in ANSI C, E Balagurusamy, Tata McGraw-Hill, Third Edition.
2. Let Us C, YashwantKanetkar, Infinity Science Press, Eighth Edition.
3. Mastering C, K R Venugopal,Tata McGraw-Hill.
4. The C Programming Language, Brian W. Kernighan, Dennis M. Ritchie, Prentice Hall, Second Edition.
5. Applications Programming in ANSI C, R. Johnsonbaugh , Martin Kalin, Macmillan, Second Edition.
6. The Spirit of C, Mullish Cooper, Jaico publishing House.
7. How to solve it by Computer, R.G.Dromey, Pearson Education.

BCA - 104
PC SOFTWARE AND MULTIMEDIA

Max Marks: 80 **Min Marks: 27**

NOTE: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculator is allowed not scientific calculator.

UNIT - I Using Office with MS-Word

Introduction to word processing software and it's features, Creating new document, Saving documents, Opening and printing documents. **Home Tab:** Setting fonts, Paragraph settings, Various styles (Normal, No spacing, Heading1, Heading2, Title, Strong), Find & replace, Format painter, Copy paste and paste special. **Insert Tab:** Pages, Tables, pictures, clipart, shapes, header & footer, word art, equation and symbols. **Page Layout Tab:** Page setup, page Background, Paragraph (indent and spacing). **Mailing Tab:** Create envelops and Labels, Mail merge. **Review Tab:** Spelling and grammar check, New comment, Protect document, **View Tab:** Document views, Zoom, Window (New window, Split, Switch window).

UNIT – II Working with MS-Excel

Introducing Excel, Use of excel sheet, Creating new sheet, Saving, Opening, and printing workbook. **Home Tab:** Font, Alignment, Number, Styles and cells and editing, Conditional Formatting. **Insert Tab:** Table, Charts (column chart, Pie chart, Bar chart, Line chart) and Texts (header & footer, word art, signature line). **Page Layout Tab** :Page setup options, Scale to fit(width, height, scale). **Formulas Tab** :Autosum (sum, average, min, max), logical(IF, and ,or ,not ,true, false), Math &trig (sin, cos, tan, ceiling, floor, fact, mod, log), watch window. **Data Tab** : Get external data from MS Access, Sort and filter options , Data validation, Group and ungroup. **Review Tab:** Protect sheet, Protect workbook, Share workbook. **View Tab:** Page breaks, Page layout, Freezing panes, Split and hide.

UNIT – III Working with MS-PowerPoint

Introducing power point, Use of power point presentation, Creating new slides saving, Opening and printing.**Home Tab:** New slide, Layout, Reset, Delete, Setting text direction, Align text, Convert to smart art, Drawing options. **Insert Tab:** Table, picture, clipart, photo album, smart art, shapes and chart, movie and sound, hyperlink and action, text box , word art, object. **Design Tab:** Page setup options, slide orientation, applying various themes, selecting background style and formatting it. **Animations Tab:** Custom animation for entrance, exit and emphasis, applying slide transition, setting transition speed and sound, animation on rehears timing. **Slide show &view Tab:** Start slid show options, setup options. **View tab:** Presentation views, colours and window option.

UNIT – IV Working with MS-Access

Front end and back end of application, Introduction to DBMS, Features of DBMS, Creating blank databases, Saving it in accdb format. Defining data types in ms access. **Home Tab:** Datasheet view, design vew, pivot chart view, pivot table view, sort and filter options. **Create Tab** : Creating tables, Creating reports, Query wizard. **External Data Tab** : importing data from access and excel sheet, exporting data to excel and ms word. **Datasheet Tab:** Relationships, Fields and columns options, Data type and formatting options.

UNIT – V Animations and Graphics

Basic Concept of 2D/3D Animation, Principle of animation, application of Multimedia, Hardware & software resources requirement for animation, introduction of various file formats (.mpeg, .gif, .jpeg, .mp4, .tif, .flv). **Creating a new movie in flash** :Get set Up, Input Text, Animate Text, drawing and painting with tools, brush,create basic shapes like Oval, Rectangle&Polystar Tools, tools working with object & filing the object, Transformation, object properties dialog box, creating layers motion tweeing, shape tweeing , mask layers, basic action scripts, importing sound through Flash.

TEXT BOOKS:

1. Microsoft Office 2007 fundamentals, L Story, D Walls.
2. MS Office, S. S. Shrivastava, Firewall Media.
3. Office 2000 made easy, Alan Neibauer, Tata McGraw Hill.
4. FLASHMX Bible, Robert Reinhart.
5. Sams Teach Yourself Macromedia Flash 8 in 24 Hours, Phillip Kerman.
6. How to do everything with Macromedia, Bonnie Blake, DougSahlin.
7. Multimedia Making it works, Tay Vaughan, Tata Mcgraw Hills

BCA – 105
WEB TECHNOLOGY AND E-COMMERCE

Max Marks: 80 **Min Marks: 27**

NOTE: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculator is allowed not scientific calculator.

UNIT - I Internet

Introducing Internet: History, Evolution, Internet applications, Intranet, WWW, Emergence of Web, Web page, Web Site, Web Servers, Web Browser, Search Engine, URL, DNS, Internet Connection, Internet Service Provider, Web Design Strategies. HTTP, FTP, SMTP, TELNET. Internet services: Email concept, Sending and receiving secure Email, Voice and Video Conferencing, Web Based chat services, Chat Services, Internet Messaging, Internet Relay Chat, NewsGroup.

UNIT - II Introducing HTML Document Structure

Introduction, HtmlVersion, The<!DOCTYPE>Element, <HTML>Element, <Head>Element,<Title> element, <body> element. Creating headings on a web pages: Aligning the headings, creating list, Working with Links: Creating a Hyperlinks, Setting the Hyperlink Colours, Linking Different sections of A web page, Creating Paragraph, Working with Images: Inserting image on a web page, Display Alternate Text for an image, Adding a Border to an Image, Aligning an Image ,Using Images as Links, Working with Tables: Creating a Table, Specifying a Caption To a Table, Adding a Table Heading, Setting the table Border, Aligning a Table And cell content, Changing background colour of a table, Setting Cell Padding and Cell Spacing, Spanning Rows and Columns, Working with Frames: Creating a Frame, Creating Vertical and Horizontal Frames, Setting the Frame Border Thickness, Applying Hyperlink Targets to a Frame.

UNIT - III HTML Forms, HTML Controls and CSS

Creating an HTML Form, Specifying the Action URL and Method to Send the Form, Using the HTML Controls.

CSS: Introducing Cascading Style Sheets, Inline Styles, External Style Sheets, Internal Style Sheets, Style Classes, Multiple Styles.

UNIT - IV DHTML AND JAVASCRIPT

Introducing DHTML, Introducing JavaScript, Client-Side Benefits of using JavaScript over VB Script, Embedding JavaScript in an HTML Page, Handling Events, Using Variables in JavaScript, Using Array in JavaScript, Creating Objects in JavaScript, Using Operators, Working with Control Flow Statements, Working with Functions.

Unit – V Introduction to E Commerce

Definition of E-commerce, The scope of E-commerce, Definition, Internet and its impact on traditional businesses, E-payment System, Security threats with E-commerce. Types of E-commerce: Business-to-Business (B2B), Business-to-Consumer (B2C), Business-to-Business-to-Consumer (B2B2C), Consumer-to-Consumer (C2C), E-market, Future of E-market.

TEXT BOOKS:

1. Web Technologies, HTML, JAVASCRIPT, PHP, JAVA, JSP, ASP.NET, XML and Ajax, Black Book, Dream Tech Press.
2. Internet, The Complete Reference Millennium Edition Margaret Levine Young, Doug Muder.
3. The Complete Reference, HTML and CSS, Thomas A. Powell, McGrawHill.
4. JavaScript The Complete Reference,Thomas Powell, Fritz Schenider, McGrawHill, Third Edition
5. Introduction To HTML, KamleshN.Agrawal , O.P. Vyas , P.A.Agrawal.
6. Web Technology and Design, Xavier,C, New Age International.
7. Web Technology, A Developer Perspective, Gopalan and Akilandeshwari, PHI.
8. HTML, DHTML, JavaScript, Perl and CGI, Ivan Bayros, BPB Publication.
9. Internet and Web Design, Ramesh Bangia , New Age International.
10. Business on the net, Kamlesh N. Agarawala, AmitLal&DeekshaAgarawal, Macmillan India Ltd.

BCA – 106
COMMUNICATION SKILLS

Max Marks: 80 **Min Marks: 27**

NOTE: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculator is allowed not scientific calculator.

UNIT - I

Vocabulary, knowledge of at least one thousand words with their spelling, Meanings and usage. Phrases.

UNIT - II

Structure of sentences: Simple, Complex and Compound. Clauses and Subordinate clauses.

UNIT - III

The tenses and aspects. The modal, The gerund, The participle, The infinitive.

UNIT - IV

Transformation of sentences:

1. Interchange of Active and Passive Voice.
2. Interchange of Affirmative and Negative Sentences.
3. Interchange of Explanative and Assertive Sentences.
4. Interchange of interrogative and Assertive Sentences.
5. Direct and Indirect Speech.

UNIT - V

Practical application of grammar. Practice in talks, Conversation and writing. Report writing. Writing of applications, Letter writings, Description of events.

TEXT BOOKS:

1. Living English Structure, W.S. Allen.
2. A Practical English Grammar, Thomson and Martinet.

Bridge course for BCA (Only For Non mathematics Students)

Max Marks: 50 **Min Marks: 17**

Note: Fundamentals of the topics are to be dealt to enable the students to understand thetopics. The Question Paper setter is advised to prepare unit-wise question with the provision ofinternal choice.. Only Simple calculator is allowed not scientific.

UNIT -I
Algebra
Partial fractions, Arithmetic Progression & Geometric Progression.Determinants and matrices,Inverse matrix.

UNIT-II
Permutation combination, method of induction, Binomial Theorem for positive integral index.And any index (without proof), Exponential and logarithmic series.

UNIT-III
Trigonometry
Measurement of angles, Trigonometric ratios, simple formula, compound angles, Trigonometricratios of multiple and sub multiple angles. Height and Distance, Inverse Function.

UNIT-IV
Geometry
Locus, Cartesian coordinate system, Distance formula, Section formula, Slope of a straight linevarious forms, Angle between two lines, pair of straight lines, parabole, ellipse andhyperbola.

UNIT-V
Statistics
Frequency Distribution, Measures of central tendency, Mean. Median, Mode, G.M., H.M., Interquartile range, Mean deviation, Standard deviation.

TEXT BOOKS:
Mathematic (class XI and XII), R.D.SHARMA
YOUGBODH Mathematics, (class XI and XII)

BCA-107 - LAB I: Programming Lab in 'C'

1 **Scheme of Examination:-**
Practical examination will be two programs and a project demonstration. It will be of 3 hours duration. All programs should be with flowchart & algorithms. The distribution of practical marks will be as follows

Program 1	-	20
Program 2	-	20
Program 3	-	20
Viva	-	25
[Practical Copy + Internal Record]	-	15
Total	-	**100**

2 Practical file should contain printed programs with name of author, date, path of program, unit no. and printed output.
3 In every program there should be comment for each coded line or block of code
4 All the following programs or a similar type of programs should be prepared

List of Practical

INPUT AND OUTPUT, FORMATTING

1. Write a program in which you declare variable of all data types supported by C language. Get input from user and print the value of each variable with alignment left, right and column width 10. For real numbers print their values with two digits right to the decimal.

LOOPS, DECISIONS

2. Write program to print all combination of 1 2 3.
3. Write program to generate following pattern

a)
```
A B C D E F G
A B C   E F G
A B       F G
A           G
```

b)
```
1
1 2
1 2 3
1 2 3 4
```

c)
```
      *
    *   *
  *   *   *
```

d)
```
      1
    1 2 1
  1 3 3 1
1 4 6 4 1
```

4. Write main function using switch...case, if...else and loops which when called asks pattern type; if user enters 11 then first pattern is generated using for loop. If user enters 12 then first pattern is generated using while loop. If user enters 13 then first pattern is generated using do-while loop. If user enters 21 then a second pattern is generated using for loop and so on.
5. Write program to display number 1 to 10 in octal, decimal and hexadecimal system.

6. Write program to display number from one number system to another number system. The program must ask for the number system in which you will input integer value then the program must ask the number system in which you will want output of the input number after that you have to input the number in specified number system and program will give the output according to number system for output you mentioned.
7. Write a program to perform following tasks using switch...case, loops, and conditional operator (as and when necessary).

   a) Find factorial of a number
   b) Print fibonacci series up to n terms and its sum.
   c) Print sin series up to n terms and its sum.
   d) Print exponential series up to n terms and its sum.
   e) Print prime numbers up n terms.
   f) Print whether a given year is leap or not.
8. Write program no. 6 but use library function to perform above tasks.

ARRAY

9. Create a single program to perform following tasks using switch, if..else, loop and single dimension character array without using library function:

   a) To reverse the string.
   b) To count the number of characters in string.
   c) To copy the one string to other string;
   d) To find whether a given string is palindrome or not.
   e) To count no. of vowels, consonants in each word of a sentence and no. of punctuation in sentence.
   f) To arrange the alphabets of a string in ascending order.
10. Create a single program to perform following tasks using switch, if..else, loop and single dimension integer array:

    a) Sort the elements.
    c) Search for presence of particular value in array element using linear search.
    d) Search for presence of particular value in array element using binary search.
11. Write a program that read the afternoon day temperature for each day of the month and then report the month average temperature as well as the days on which hottest and coolest days occurred.
12. Create a single program to perform following tasks using switch, if..else, loop and double dimension integer array of size 3x3:

    a) Addition of two matrix.
    b) Subtraction of two matrix.
    c) Multiplication of two matrix.
    d) Inverse of matrix.
    e) Transpose of matrix.
    f) Sum of diagonal elements
13. Create a single program to perform following tasks using switch, if..else, loop and double dimension character array of size 5x40:

    a) Sorting of string.
    b) Finding the largest string.
    c) Finding the smallest string.
    c) Searching for presence of a string in array.

FUNCTIONS

14. Write program using the function power (a, b) to calculate the value of a raised to b.
15. Write program to demonstrate difference between static and auto variable.
16. Write program to demonstrate difference between local and global variable.
17. Write a program to perform following tasks using switch...case, loops and function.

    a) Find factorial of a number
    b) Print Fibonacci series up to n terms and its sum.
    c) Print Sin series up to n terms and its sum.
    d) Print exponential series up to n terms and its sum.
18. Write a program to perform following tasks using switch...case, loops and **recursive** function.

    a) Find factorial of a number
    b) Print Fibonacci series up to n terms and its sum.
    c) Print Sin series up to n terms and its sum.
    d) Print exponential series up to n terms and its sum.
    e) Print natural series up to n terms and its sum
19. Write a function to accept 10 characters and display whether each input character is digit, uppercase letter or lower case letter.

Array & Function

20. Create a single program to perform following tasks using switch, if..else, loop, function and double dimension integer array of size 3x3:

    a) Addition of two matrix.
    b) Subtraction of two matrix.
    c) Multiplication of two matrix.
    d) Inverse of matrix.
    e) Transpose of matrix.
21. Create a single program to perform following tasks using switch, if..else, loop, user defined function and single dimension character array:

    a) To reverse the string.
    b) To count the number of characters in string.
    c) To copy the one string to other string;
    d) To find whether a given string is palindrome or not.
    e) To count no. of vowels, consonant in each word of a sentence and no, of punctuations in sentence.
22. Create a single program to perform following tasks using switch, if..else, loop, function and single dimension integer array:

    a) Sort the elements.
    b) Find largest element and smallest element.
    c) Search for presence of particular value in array element using linear search.
    d) Search for presence of particular value in array element using binary search.
23. Create a single program to perform following tasks using switch, if..else, loop, function and double dimension character array of size 5x40:

    a) Sorting of string
    b) Finding the largest string, lexicographically.
    c) Finding the smallest string, lexicographically.
    c) Searching for presence of string in array.

STRUCTURE & UNION

24. Create a structure Student having data members to store roll number, name of student, name of three subjects, max marks, min marks, obtained marks. Declare a structure variable of student. Provide facilities to input data in data members and display result of student.

25. Create a structure Date with data member's dd, mm, yy (to store date). Create another structure Employee with data members to hold name of employee, employee id and date of joining (date of joining will be hold by variable of structure Date which appears as data member in Employee Structure). Store data of an employee and print the same.

26. Create a structure Student having data members to store roll number, name of student, name of three subjects, max marks, min marks, obtained marks. Declare array of structure to hold data of 3 students. Provide facilities to display result of all students. Provide facility to display result of specific student whose roll number is given.

27. Write program to create structure complex having data members to store real and imaginary part. Provide following facilities:

    a) Add two complex nos. using structure variables.
    b) Subtract two complex nos. using structure variables.
    c) Multiply two complex nos. using structure variables.
    d) Divide two complex nos. structure variables.

Use structure as argument to function and function returning structure.

POINTER

28. Define union Emp having data members:-one integer, one float and one single dimension character array. Declare a union variable in main and test the union variable.

29. Define an enumDays_of_Week members of which will be days of week. Declare an enum variable in main and test it.

30. Write a program of swapping two numbers and demonstrates call by value and call by reference.

31. Write program to sort strings using pointer exchange.

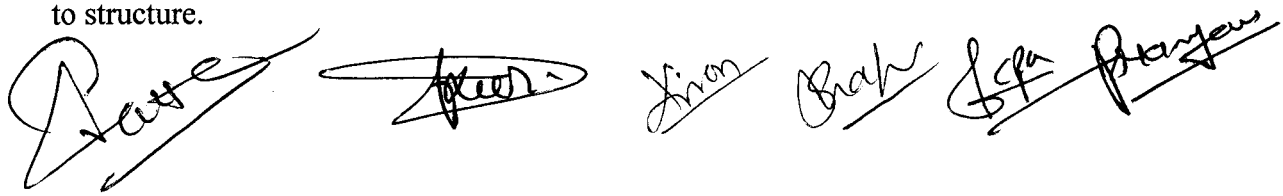
32. Write a program in c using pointer and function to receive a string and a character as argument and return the no. of occurrences of this character in the string.

33. Create a program having pointer to void to store address of integer variable then print value of integer variable using pointer to void. Perform the same operation for float variable.

34. Write program to find biggest number among three numbers using pointer and function.

35. Write program to Create a structure Employee having data members to store name of employee, employee id, salary. Use Pointer to structure to store data of employee and print the stored data-using pointer to structure.

36. Write program to Create a structure Employee having data members to store name of employee, employee id, salary. Use Pointer to structure to simulate dynamic array of structure store data of n employees and print the stored data of n employees using pointer to structure.



37. Write a program to sort a single dimension array of integers of n elements simulated by pointer to integer. Use function for sorting the dynamic array.
38. Write a program to sum elements of a double dimension array of integers of m rows and n columns simulated by pointer to pointer to integer. Use function for sum the elements of the dynamic array.
39. Write program to demonstrate difference between character array and pointer to character.
40. Write program to demonstrate difference between constant pointer and pointer to constant.
41. Write program to demonstrate pointer arithmetic.
42. write program to demonstrate function-returning pointer.
43. Write program using self-referential pointer to structure to create and print the linked list, data structure.

BCA-108 - LAB II: PC Software Lab

1. Scheme of Examination: -

Practical examination will be of 3 hours duration. The distribution of practical marks is as follows:

Program 1 (MS-Office)	-	15
Program 2 (MS-Office)	-	15
Program 3 (MS-Office)	-	15
Program 4 (Multimedia)	-	15
Viva-Voice	-	25
[Practical Copy + Internal Record]	-	15
Total	-	**100**

2 In every program there should be comment for each coded line or block of code.

3 Practical file should contain printed programs with name of author, date, path of program, unit no. and printed output.

4 All the following programs or a similar type of programs should be prepared.

List of Practical

MS- WORD

File New, Open, Save, Cut, Copy, Paste, Drag Drop, Bullets and Numbering, Undo, Redo, Find, Replace, Paragraph Formatting, Character Formatting and Page Formatting.

1. Open a document. Type the following text and perform the tasks as instructed below:-

Working with Word Processor

As already mentioned, a word processor is a package that processes textual matter and creates organized and flawless documents. In addition to it a word processor not only remote all the limitations of typewriter but also offers various useful features that cannot be even dreamt of with typewriter.

Also if same textual matter is to be reproduced with minor changes, retyping the only option in typewriters.

The word processing (and word processor) originated way back in 1964 when special typewriters. Magnetic Tape Selectric typewriters (MIST) were launched by IBM (International Business Machines).

(i) Insert the following text after the first paragraph

The main components of a word processing system are listed below:

a. Computer

b. Printer

c. A word processing software

(ii) Save the document as Word1.doc

(iii) Move the second paragraph to the end of the document. Using darg& drop.

(iv) Move the second paragraph in the end of the document using cut, paste operations.

(v) Undo the above actions.

(vi) Now use Redo actions
(vii) Go to the End of the document (in one step)
(viii) Go to the Beginning of document (in one step)
(ix) Insert page break before the third paragraph.
(x) Search the word "computer: in your document with options Match case, find whole words only.
(xi) Replace the word "typewriters" with "word processor"
(xii) Undo the above action
(xiii) Remove All page breaks from your document
(xiv) Change the magnification of your document to different percentages using zoom features.
(xv) Format the above written paragraphs and give the options as follows:
- Alignment justified
- Indentation: left 0.2 right:0.2
- Spacing: before 6 pt. after: 6 pt.
- Special: first line by : 0.4"
- Line spacing 1.5 lines.

(xvi) Set the default tab stop to 0.3"
(xvii) Set the margins to 1.25
(xviii) Format the page using
a. Left margin:0.5, right margin: 0.5
b. Top margin:1.5, bottom margin: 0.5
c. Gutter Margin: 1indentation: left 0.2 right: 0.2
d. Header Margin: 0.5

(xix) Format the each occurrence of group of words 'Word Processor' as bold, italic, under line and small caps using find and replace with formatting options.
(xx) Align the heading to Center and make it bold, underlined and italicized.

File New, Open, Save, Find, Replace, Paragraph Formatting, Character Formatting and Page Formatting.

2. Type the text as show below and perform the tasks as directed:

Computers
COMPUTER is an electronic device that processes data and gives meaningful information. Computers are being used in almost all the fields today
EXPERT SYSTEMS
HUMAN THINKING AND ARTIFICAL INTELLIGENCE
Can computer think?
AI at work Today: Natural Language programs and Expert Systems.
THE IMPACT OF COMPUTERS ON PEOPLE
The Positive Impact
The Potential Dangers
THE IMPACT OF COMPUTERS ON ORGANIZATIONS
The information Processing Industry
The Positive impact on Using Organizations
The Potential Dangers for Using Organizations

1. Search for the word 'Computer' in the entire document. All the occurrences of the given word are to be searched irrespective of the case.

2. In the above question note that word also searches 'computerization and 'computerisations'. Now make sure that this time Word searches only for the word 'computer' in the entire document.
3. Change the entire uppercase letter to lowercase.
4. Give a heading to the above written text 'COMPUTERS IN TODAY'S WORLD'
5. Centre aligns the Heading text Computer that appears in first line.
6. Apply outside border to entire document.
7. Apply outside border to the just heading text.
8. Change page setup according to the following specifications
   Top margin: 1.5", bottom margin: 1.5"
   Gutter: 1", left margin: 1.5"
   Right margin: 1"
   Page width: 7.5", page height: 6.5 "
   Orientation: portrait
9. Give a header 'Creations' and footer 'The school of computing'. The footer should also consist of page no's.
10. Give appropriate commands for giving different header and footers for first page and odd & even pages.
11. Save and close the document.

3. Write the following equations in MS-Word:
$4H_3PO_3=3H_3PO_4+PH_3$, $PCL_3+CL_2=PCL_5$, $(x+y)^2=x^2+y^2+2xy$

4. Write the following equations in MS-Word:
$C_2H_5OH+PCL_5=C_2H_5CL+POCL_3+HCL$, $A = \pi r^2$, $a \div b \neq 0$

5. Write the following in MS-Word:
1. Preheat the oven to 220°C.
2. Copyright ©
3. Registered ®
4. Trademark ™

6. Create the following table in MS-Word:

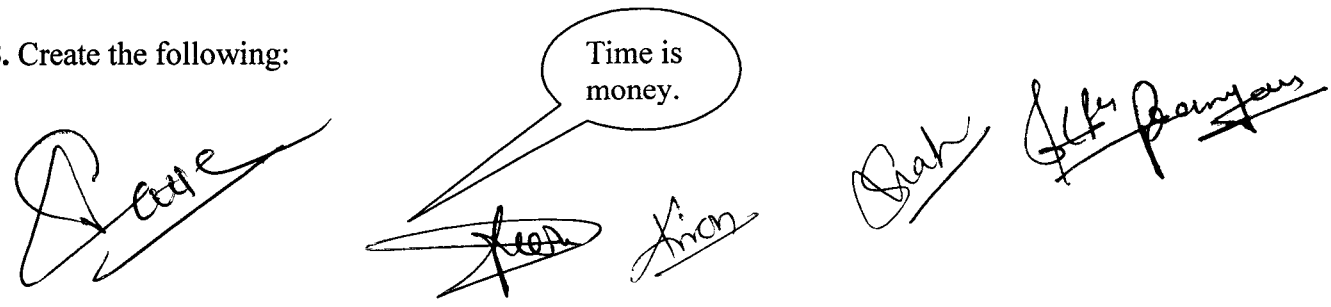
Name		Rahul	
Roll No.		101	
Subject	**Max**	**Min**	**Obtain**
Java	100	33	75
Multimedia	100	33	70

7. Create a document in MS-Word. Set the watermark as **Microsoft**. Also write the following text as formatted below:

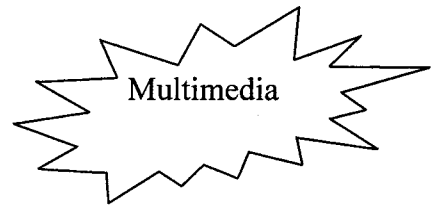
easuring programming progress by lines of code is like measuring aircraft building progress by weight.

--Bill Gates

8. Create the following:



9. Create the following:



10. Create the following table in MS-Word:

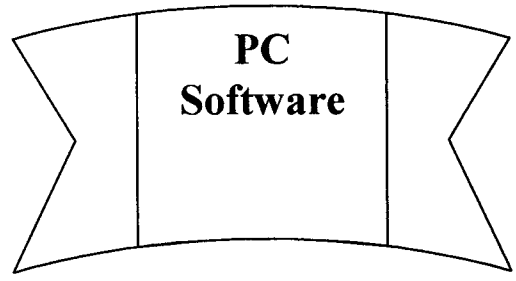
Admission 2011-2012

Course	OC	OB	MBC	SC/ST	Total
Computer Science	9	18	5	5	37
Commerce	14	25	6	5	50
Mathematics	12	20	4	4	40

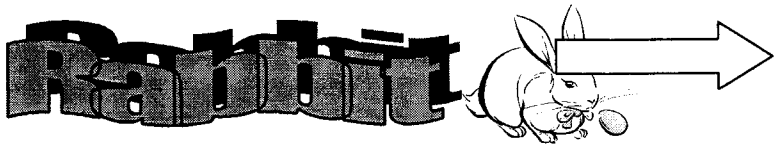
11. Create Table as shown

Car		Price
Maruti	Omni Van	200000
	Maruti 800	242000
Tata	Sumo	390000
	Sierra	447000

12. Insert the following in MS-Word.



13. Insert the following in MS-Word.



14. Write the following in MS-Word.

- This is sentencecase.
- this is lowercase.
- THIS IS UPPERCASE.
- This Is Capitalise Each Word.
- tHIS IS tOGGLEcASE.

15. Create the following list in MS-Word:

1. Actors
    1. Bruce Willis
    2. Gerard Butler
    3. Vin Diesel
2. Actress
    1. Julia Roberts
    2. Angelina Jolie
    3. Kate Winslet
    4. Cameron Diaz

16. Write the following in MS-Word:

1. Cricket Players

3. Batsman

1. Sachin Tendulkar
2. Rahul Dravid
3. VirendraSehwag

4. Bowler

a. Kumble

b. Zaheer Khan

c. Balaji

5. Spinner

a) Harbhajan

b) Kumble

c) Kartik

17. Write a letter to send invitation to your friend inviting on your birthday.
18. Create labels for your friends' address.

MS – EXCEL

1. Create the following worksheet and save the worksheet as wages.xls

PACE COMPUTERS (ATC CEDT), Govt. of India
Payroll for Employee (Temporary)

Today's date		Pay Rate :	

Worker's Name	Hired On	days Worked	Gross Wages
Kushagra	3-Mar-07		
Pradeep	4-Mar-07		
Puneet	5-Mar-07		
Rajeev	6-Mar-07		

(I) Calculate days work and gross wages

2. Create the following worksheet and save the worksheet as wages.xls

Name Basic (monthly) (Rs.)	HRA(% of basic)	DA (Rs.)	Total Salary (1997)	Bonus (Rs)	Total Salary (1998)	% (Increase)
Shirome5000	10	450		1200		
Somya9000	15	800		200		
Tanya7000	12	900		1800		

- Calculate the total salary as sum of Basic salary, HRA ,DA, for each employee for 1997
- Calculate total salary for year 1998 as sum of salary of 1997 and bonus
- Calculate % increase in salary from 1997 to 1998

3. Create a worksheet as follows

Pace computer (ATC CEDT) Govt. Of India
Payroll for employee (Permanent)

Empcode	name	Doj	salary	bonus	net salary
E001	Meenu	3-Mar-95	5000		
E002	Manoj	4-Mar-06	4000		
E003	Preeti	3-Mar-95	4800		
E004	Sumita	6-Mar-07	7500		

i. allow bonus 8000 to employee having service >2 year other vise allow bonus 3000
ii. find net salary as sum of bonus and salary

4.create the worksheet as follows

Roll No	Name	English	Maths	Total	Average	Division
101	Kushagra	95	99			
102	Ajay	92	95			
103	Vijay	70	69			

Class Average		

i. find Total of two subject for each student
ii. find average of two subject for each student
iii. find class as average of average column
iv. find division of student as first, second, third, assume percentage of division of your own and maximum marks in each student as 100
v. Apply conditional formatting for division column, first division should be in bold, second division should be in italic and third division should be underline

1. Create macro in excel to make selected cell, bold, italic outside bordered and center across select

2. create bar chart with given data

	2001	2002	2003
Tea	19	23	25
Coffee	22	24	22
Sugar	45	40	45

(I) Provide heading production detail
(II) Provide z axis title; lacks metric tone
(III) Provide x axis title year

3. Create a table with column heading as shown below and using form perform data entry of records.

Zone	Department	Employee	Salary
West	Marketing	Mukesh	10500
East	Sales	Rahul	20000
South	Marketing	Suresh	5500
North	Marketing	Anju	25000
South	Sales	Neeraj	8000
North	Sales	Ajay	8000
South	Marketing	Mahesh	7500
West	Sales	Rajesh	4500

i. Sort the data according to Zone then by Department
ii. Use group and outline feature to show & hide details

8. Create a table with column heading as shown below and using form perform data entry of records.

Zone	Department	Employee	Salary
West	Marketing	Mukesh	10500
East	Sales	Rahul	20000
South	Marketing	Suresh	5500
North	Marketing	Anju	25000
South	Sales	Neeraj	8000
North	Sales	Ajay	8000
South	Marketing	Mahesh	7500
West	Sales	Rajesh	4500

(I) Use filter command to show records having zone: West
(II) Use filter command to show records having zone: West and salary less than 5000
(III) Use filter command to show records having salary greater than 10000

9. Create pivot table using Data of exercise 8

1. Suppose a database exists in ms-access you are required to import the data. How will you?

11. Create a able using feature

Principle	1500
Rate	4%
Time	5

300	3	4	5
1%	45	60	75
2%	90	120	150
3%	135	180	225

12. Using goal seek feature find out the interest rate it must be to earn interest 500
Principle 1500
Rate 4%
Time 5
Interest 300

MS-Access

Q.1. Create the following table in MS-Access:

Field Name	**Data Type**	**Description**
ContactID	AutoNumber	Primary Key
ContactType	Text 50	Type of contact (Wholesale, dealer, other)
Name	Text 50	Contact's first name
Company	Text 50	The Contact's employer
Address	Text 50	Contact's address
City	Text 50	Contact's city
State	Text 50	Contact's state
ZipCode	Text 50	Contact's zip code
Phone	Text 50	Contact's phone
Fax	Text 50	Contact's fax
E-Mail	Text 100	Contact's e-mail address
WebSite	Text 100	Contact's Web address
LastSalesDate	Date/Time	The most recent date the contact purchased something
DiscountPercent	Number	The customary discount provided to the customer
Notes	Memo	Notes and observations regarding this customer
Active	Yes/No	Whether the customer is still buying or selling products

Q.2. Create the following tables in MS-Access with the refential integrity-foreign key:

1. tblProducts
Primary Key - ProductID

ProductID	Description	Category	Quantity	Cost	RetailPrice	ProductNumber	SalePrice	Taxable

2. tblSalesLineItems
Primary Key - SalesLineItemID

SalesLineItemID	InvoiceNumber	ProductID	ProductNumber	Quantity	Description	Price	Disc

3. tblSales
Primary Key – InvoiceNumber

InvoiceNumber	SaleDate	InvoiceDate	Buyer	PaymentMethod	TaxLocation	TaxRate

MS PowerPoint

Q 1 Create a PPT of Atleast 10 Slides with one slide for comparison, one slide displaying a chart with the table.
Q 2 Create a PPT presentation use rehearse timing for the slide show
Q 3 Create PPT presentation slide import sound and video clips.
Q 4 Create PPT presentation with hyperlinking.
Q 5 Create PPT presentation and apply themes and transitions.

FLASH LIST OF PRACTICALS

Q.1. Draw the following shapes neatly in Flash and convert them in symbols. Also apply different transformations like scale, rotate, skew, skip etc.

1. Fish	2. Palm Tree
3. Swan	4. Teddy Bear
5. Tree	6. Santa Claus
7. House	8. Car
9. Ballon	10. Boat

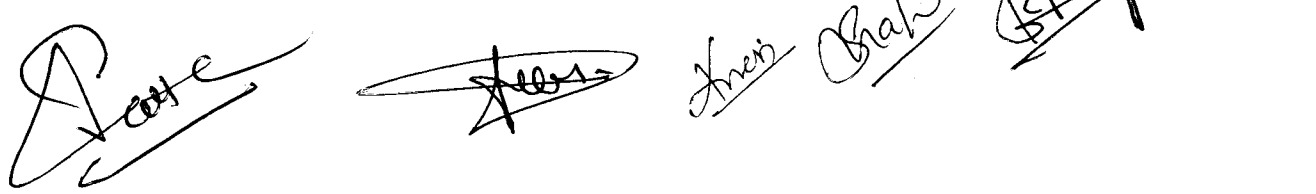
Q.2. Create a Flash movie to draw the symbol of an animal and apply motion between.
Q.3. Create a Flash movie to create a minimum of five layers (Water, fish, bubbles, plants etc) of an aquarium and apply motion between.
Q.4. Create a Flash movie to create mask.
Q.5. Create a Flash movie to create Fade In/Fade Out in four pictures.
Q.6. Create a Flash movie to create the symbol of a wheel and scale and rotate it.
Q.7. Create a flash movie to create growing circles.
Q.8. Create hand writing in Flash.
Q.9. Create a Flash movie of a moving car with rotating wheels.
Q.10. Transform a circle into a square using shape tween.
Q.11. Create a Flash movie to import text from MS-Word and apply different transformations.
Q.12. Create a Flash movie to demonstrate onion skin markers.
Q.13. Create a Flash movie to create ripple effect.
Q.14. Create a Flash movie to demonstrate motion guide.
Q.15. Create a Flash movie of a sheep climbing a mountain using layers. Tehe scenery should contain mountain, river, trees, clouds, birds, sheep etc.

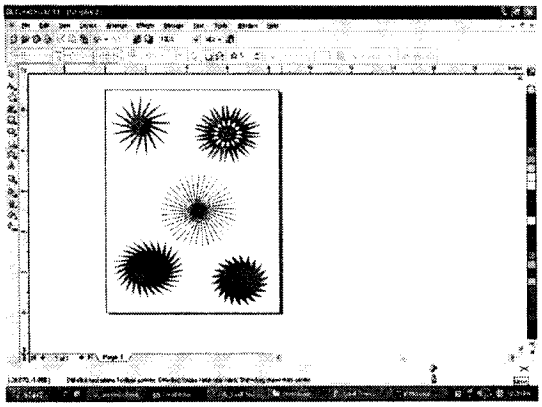
PHOTOSHOP LIST OF PRACTICALS

Q.1. Import an image in Photoshop and change its background using marquee and lasso tools.
Q.2. Import an image in Photoshop and copy it using heal brush tool.
Q.3. Import an image in Photoshop and desaturate it and recolor it.
Q.4. Use layers and filters to design an image in Photoshop. Use the flatten image as well.
Q.5. Import an image in Photoshop and desaturate it and reveal selective portions.

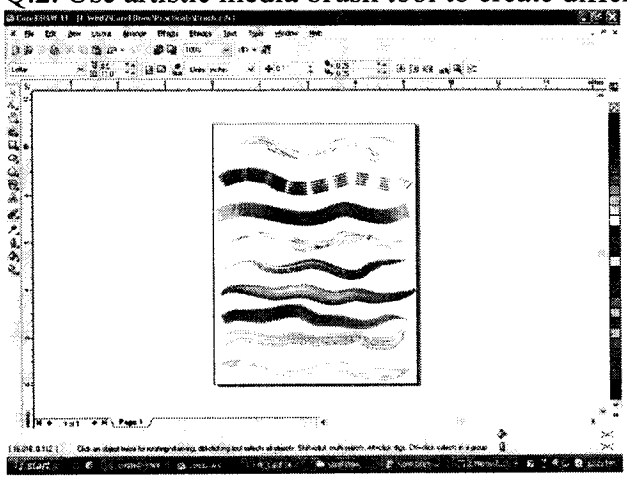
CORAL DRAW LIST OF PRACTICALS

Q1. Draw the following shapes:

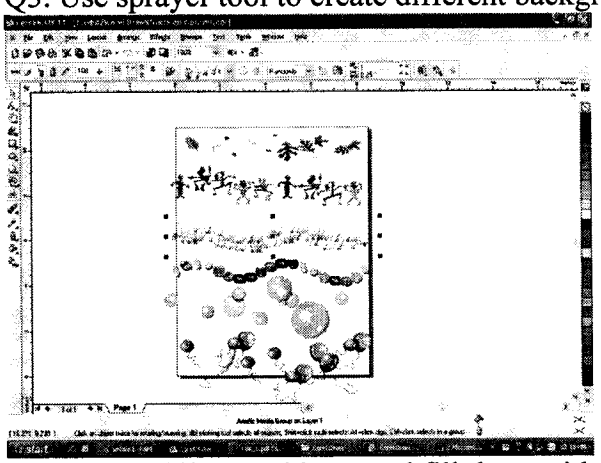




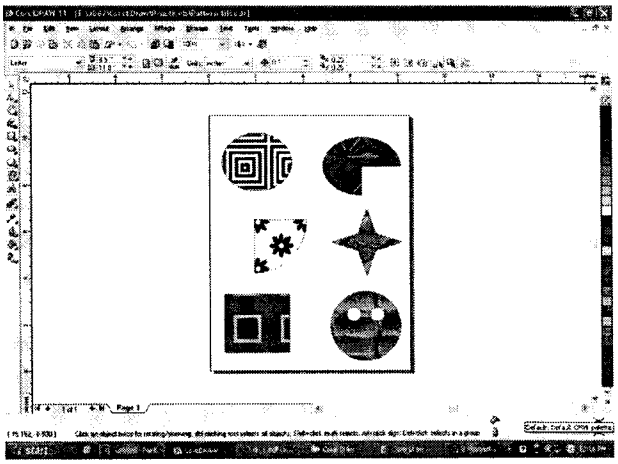
Q.2. Use artistic media brush tool to create different backgrounds.



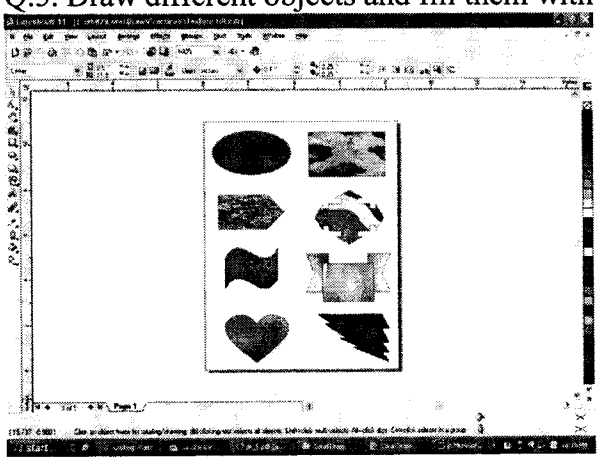
Q3. Use sprayer tool to create different backgrounds.



Q.4. Draw different objects and fill them with different patterns.



Q.5. Draw different objects and fill them with different textures.



1. Making a simple Video file (not using video file) with suitable sound file using Windows Movie Maker
2. Edit Video file, like - changing sound and adding starting and ending banner with title using Windows Movie Maker.
2. Create a .WAV file with the help of Windows sound recorder application.
3. With the help of Adobe Image Ready create attractive .GIF image.
4. Create & save MP4 files using appropriate software.
5. Create & save MP3 files using appropriate software.
6. Insert sound clips in webpage using Front Page application Software.

BCA-109 - LAB III: Web Technology Lab

1. Scheme of Examination:-

Practical examination will be of 3 hours duration. The distribution of practical marks will be as follows

Program 1	-	20
Program 2	-	20
Program 3	-	20
Viva	-	25
[Practical Copy + Internal Record]	-	15
Total	-	**100**

2. In every program there should be comment for each coded line or block of code
3. Practical file should contain printed programs with name of author, date, path of program, unit no. and printed output.
4. All the following programs or a similar type of programs should be prepared

Q.1. Write an HTML program to create the following table:

Class	Subject1	Subject2	Subject3
BCA I	Visual Basic	PC Software	Electronics
BCA II	C++	DBMS	English
BCA III	Java	Multimedia	CSA

Q.2. Write an HTML program to create the following lists:

(I) C

(II) C++

(III) Fortran

(IV) COBOL

Q.3. Write an HTML program to create the following lists:

1. Java
2. Visual Basic
3. BASIC
4. COBOL

Q.4. Write an HTML program to demonstrate hyperlinking between two web pages. Create a marquee and also insert an image in the page.

Q.5. Write an HTML program to create frames in HTML with 3 columns (Width = 30%, 30% , 40%).

Q.6. Write an HTML program to create a web page with a blue background and the following text:

New Delhi

New Delhi, the capital and the third largest city of India is a fusion of the ancient and the modern. The refrains of the Muslim dynasties with its architectural delights, give the majestic ambience of the bygone era.

Q.7. Write an HTML program to create the following table:

Admission

Course	OC	BC	MBC	SC/ST	TOTAL
Computer science	9	18	5	5	37
Commerce	14	25	6	5	50
Grand total					87

Q.8. Write an HTML program to create the following table:

Car Price List

Maruti		Tata		Ford	
Model	**Price**	**Model**	**Price**	**Model**	**Price**
Maruti 800	2 Lac	Sumo	2 Lac	Ikon	5 Lac
Omni	3 Lac	Scorpio	3 Lac	Gen	2 Lac

Q.9. Write an HTML program to create the following table:

Students Records

Name	Subject	Marks
Arun	Java	70
	C	80
Ashish	Java	75
	C	69

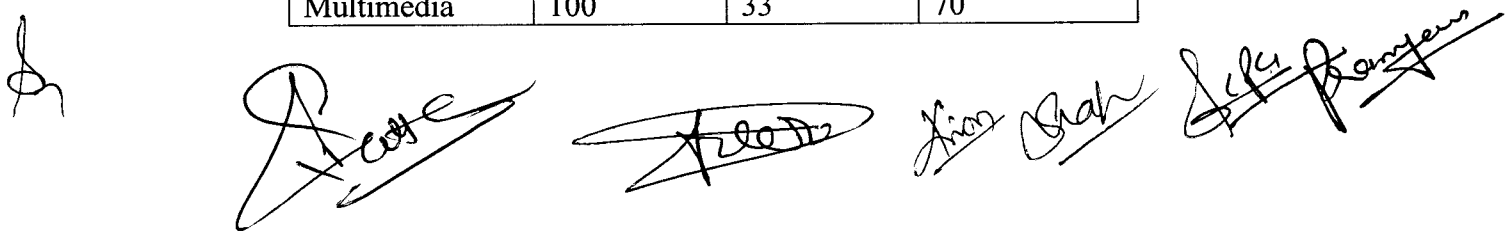
Q.10. Create an HTML document and embed a flash movie in it.

Q.11. Write the HTML coding to display the following table. Also insert an image in the web page.

Subject	Max	Min	Obtain
Java	100	33	75
Multimedia	100	33	70
Operating System	100	33	68
C++	100	33	73

Q.12. Write the HTML coding to display the following table:

Name		Rahul	
Roll No.		101	
Subject	**Max**	**Min**	**Obtain**
Java	100	33	75
Multimedia	100	33	70



Q.13. Write an HTML program to create a form as the following:

Enter Name:
Enter Roll No.:
Enter Age:
Enter DOB:

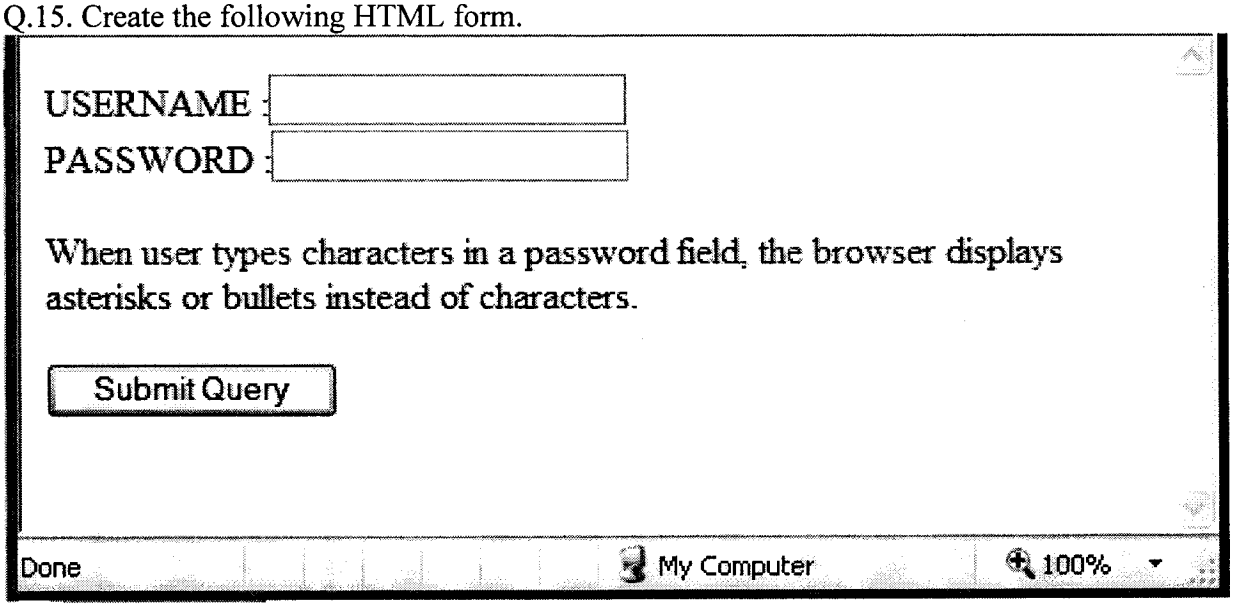
Q.14. Write an HTML program to create a web page with an image as background and the following text:

New Delhi

New Delhi, the capital and the third largest city of India is a fusion of the ancient and the modern. The refrains of the Muslim dynasties with its architectural delights, give the majestic ambience of the bygone era.

On the other side New Delhi, the imperial city built by British, reflect the fast paced present. The most fascinating of all is the character of Delhi which varies from the 13th present century mausoleum of the Lodi kings to ultra modern glass skyscrapers.

Q.15. Create the following HTML form.



Q.16. Create the following HTML form.

FIRSTNAME :
LASTNAME :

GENDER :
Male ○ Female ○

SUBJECTS: Multimedia
Multimedia
Operating System
CSA

Submit Query

Q.17. Create the following HTML form.

Enter your name :
Enter your rollno :

Subjects :
☐ Java
☐ C
☐ Visual Basic
☐ C++

Class: BCA I
BCA I
BCA II
BCA III

Submit Query

Q.18. Write the HTML coding for the following equations:

$C_2H_5OH+PCL_5=C_2H_5CL+POCL_3+HCL$

$4H_3PO_3=3H_3PO_4+PH_3$

$PCL_3+CL_2=PCL_5$

Q.19. Write the HTML code to display the following:

1. Actors
    1. Bruce Willis
    2. Gerard Butler
    3. Vin Diesel
    4. Bradd Pitt

2. Actress

    1. Julia Roberts
    2. Angelina Jolie
    3. Kate Winslet
    4. Cameron Diaz

Q.20. Write the HTML code to display the following:

1. Cricket Players
    1. Batsman
        1. Sachin Tendulkar
        2. Rahul Dravid
        3. VirendraSehwag
    2. Bowler
        d. Kumble
        e. Zaheer Khan
        f. Balaji
    3. Spinner
        d) Harbhajan
        e) Kumble
        f) Kartik

Note: At least 5 programs of CSS and Java Script to be done separately.