B.Sc. (Information Technology)
Syllabus
Session (2016-2017)

Note:

B.Sc. (Information Technology)

Semester System

Semester-I

Sr. No.	Paper No.	Paper	Marks				Page No.
			Theory	Internal Assessment	Practical	Total	
1	Paper–I	Fundamentals of Computers	60	15	-	75	3
2	Paper–II	C Programming Part- I	60	15	-	75	4
3	Paper–III	Basic Mathematics & Statistics	60	15	-	75	-
4	Paper–IV	Communication Skills in English	40	10	-	50	-
5	Paper–V	Punjabi/Basic Punjabi (Mudhli Punjabi) (Compulsory)	40	10	-	50	-
6	Paper–VI	Practical- PC Computing & C - Language	-	15	60	75	5-7

B.Sc. (Information Technology) Semester – I

Paper – I: Fundamentals of Computers

Time: 3 Hours   **Max. Marks: 75**
Theory Marks: 60
Theory Internal Assessment Marks: 15

Note:
1. Eight questions are required to be set giving equal weightage to all the units. The candidates will have to attempt any five. All questions carry equal marks.
 2. The student can use only Non–programmable & Non–storage type Calculator.

UNIT-I

1. Introduction to Computer:
Computer System Characteristics, Hardware - CPU, Memory, Input, Output & Storage devices, Organization of Secondary Storage Media**,** Software - System & Application, Types of processing: Batch and On-line.

2. Operating System Concepts:
Role of an Operating System, Types of operating systems, Booting procedure and its types, Fundamentals and typical instructions of Windows & Non-Windows based Operating Systems.

3. MS Word 2010:
Overview, creating, saving, opening, importing, exporting and inserting files, formatting pages, paragraphs and sections, indents and outdents, creating lists and numbering. Headings, styles, fonts and font size. Editing, positioning and viewing texts, Finding and replacing text, inserting page breaks, page numbers, book marks, symbols and dates. Using tabs and tables, header, footer and printing. Headers and Footers, Mail merge, macros, tables.

UNIT-II
4. MS – PowerPoint 2010:
Introduction to MS Power Point, Power Point Elements, Exploring Power Point Menu, Working with Dialog Boxes, Saving Presentation, Printing Slides, Slide View, Slide Sorter view, notes view, outline view, Formatting and enhancing text formatting.

Text Books:
1. R.K. Taxali : Introduction to Software Packages, Galgotia Publicaions.
2. MS–Office , Compiled by SYBIX.
3. MS–Office , BPB Publications.
4. Introduction to Computer, P.K. Sinha.

B.Sc. (Information Technology) Semester – I

Paper – II: C Programming Part – I

Time: 3 Hours **Max. Marks: 75**
Theory Marks: 60
Theory Internal Assessment Marks: 15

Note:
1. Eight questions are required to be set giving equal weightage to all the units.   The candidates will have to attempt any five. All questions carry equal marks.
2. The student can use only Non–programmable & Non–storage type Calculator.

UNIT-I

Logic Development Tools: Data Representation, Flow Charts, Problem Analysis, Decision Tree, Decision Table, Pseudo Code and Algorithm

Fundamentals: Character Set, Identifiers and Key Words, Data Types, Constants, Variables, Expressions, Statements, Symbolic Constants.

UNIT-II

Operators and Expressions: Arithmetic Operators, Unary Operators, Relational and logic Operators, Assignment and Conditional Operators, Library functions.

Data Input and Output: Preliminaries, single character Input, single character output, entering input data, more about scanf function, writing output data more about printf functions, gets and puts functions, interactive programming.

UNIT-III

Control Statements: Preliminaries, While, Do–While and For statements, Nested loops, If–else, Switch, Break – Continue statements.

Functions: Brief overview, defining, accessing function, passing arguments to a function, specifying argument data types, function prototypes, recursion.

Arrays: Defining and processing as array, passing array to a function, multi – dimensional arrays.

References:
1. Programming in C : Schaum Outlines Series.
2. C Programming : Stephen G. Kochan.
3. Let Us C : Yashwant Kanitkar

B.Sc. (Information Technology) Semester – I

Paper –VI (Practical)
PC Computing and C Language-I

Time: 3 Hours   **Max. Marks: 75**
Practical Marks: 60
Practical Internal Assessment Marks: 15

Practical – C Language Part I & PC Computing

Practical Assignment of C – Programming

1. Write a program to print Hello World on screen.
2. Write a program to find sum of two numbers.
3. Write a program to add , subtract, multiply, divide given numbers.
4. Write a program to calculate sum of marks in five subjects and find percentage.
5. Write a program to find area and circumference of a Circle
6. Write a program to find area and perimeter of Rectangle.
7. Write a program to find area and perimeter of a Triangle.
8. Write a program to swap two numbers using third variable.
9. Write a program to swap two numbers without using third variable.
10. Write a program to check whether a number is even or odd.
11. Write a program to find greatest among two numbers .
12. Write a program to find greatest among three numbers.
13. Write a program to find roots of Quadratic equation.
14. Write a program to print ASCII values of given range.
15. Write a program to check whether the character is vowel or not.
16. Write a program to perform arithmetic operations using switch based on integer values.
17. Write a program to find out all the numbers divisible by 5 or 7 in between 1 to 20.
18. Write a program to read marks from keyboard and your program should display equivalent grade according to the following table

Marks	Grade
80-100	Distinction
60-79	First Class
35-59	Second Class
0-34	Fail

19. Write a program to find sum of digits of a given number.
20. Write a program to check whether a number is Armstrong or not.
21. Write a program to check whether a number is Prime or not.
22. Write a program to find Factorial of given number .
23. Write a program to print Fibonacci series up to a given range.
24. Write a program to check whether leap year or not.
25. Write a program to compute the summation for the following series

    2+4+6+8………………………………….+n
26. Write a program to compute the summation for the following series

    1!+2!+3!+4!....................................+n!

27. Write a program to find whether given number is Palindrome or not?

28. Write a program to print the following pattern
    ```
    *
    *  *
    *   *   *
    *   *   *   *
    ```

    ```
    1
    2 3
    4 5 6
    7 8 9 10
    ```

29. Write a program to print the following pattern
    ```
    * * * *
    * * *
    * *
    *
    ```

    ```
      *                    *
     * *                  *  *
    ***                  *  *  *
    ****                 *  *  *  *
    ```

30. Write a program to print the following Pascal Triangle
    ```
            1
          1   1
        1   2   1
      1   3   3   1
    1   4   6   4   1
    ```

31. Write a program to find sum of series $\dfrac{1}{2} - \dfrac{2}{3} + \dfrac{3}{4} + \ldots\ldots + \dfrac{n}{n-1}$

32. Write a program to find sum of series $\dfrac{1}{2} - \dfrac{2}{3} + \dfrac{3}{4} - \dfrac{4}{5} \ldots\ldots \pm \dfrac{n}{n+1}$

33. Write a program to find conversion of Decimal number to Binary number.

34. Write a program to find conversion of Binary number to Decimal number.

35. Write a program to read an array and print it.

36. Write a program to find sum of elements of array.

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

38. Write a program to find addition of two matrices.

39. Write a program to find multiplication of two matrices.

40. Write a program to insert an element in an array at the given position.

41. Write a program to sort the array elements using Bubble sort in Ascending order.

42. Write a program to find the maximum element from given input array elements.

43. Write a program to represent a Multi-Dimensional Array in Matrix Input.

44. Write a program to find the factorial of a number using functions
45. Write a program to display an array using a function.
46. Write a program to calculate Factorial of a number using recursion.
47. Write a program to generate Fibonacci series using recursion.
48. Write a program to print sum of digits of a number using recursion.
49. Write a program to find swapping of two numbers using call by value concept.
50. Write a program to find swapping of two numbers using call by address concept.

B.Sc. (Information Technology)

Semester System

Semester-II

Sr. No.	Paper No.	Paper	Marks				Page No.
			Theory	Internal Assessment	Practical	Total	
1	Paper–I	Communication Skills in English	40	10	-	50	-
2	Paper–II	Punjabi/Basic Punjabi (Mudhli Punjabi) (Compulsory)	40	10	-	50	-
3	Paper–III	Principles of Digital Electronics	60	15	-	75	9
4	Paper–IV	C- Programming Part - II	60	15	-	75	10
5	Paper–V	Numerical Methods & Statistical Techniques	60	15	-	75	11
6	Paper–VI	Practical- C Language-II	-	15	60	75	12- 14

B.Sc. (Information Technology) Semester – II

Paper: III Principles of Digital Electronics

Time: 3 Hours   **Total Marks: 75**
Theory Marks: 60
Theory Internal Assessment M: 15

Note: 1. Eight questions are required to be set giving equal weightage to all the   units. The candidates will have to attempt any five. All questions carry equal marks.
      2. The student can use only Non–programmable & Non–storage type Calculator.

1. Number Systems.
 Introduction to Decimal, Binary, Octal and Hexadecimal Numbers. Complements. Signed Binary Numbers(Arithmetic Addition & Subtraction), Binary Codes:(BCD,Excess-3,Gray codes, ASCII), Binary Storage and Registers.

2. Boolean Algebra and Logic Gates.
Basic Definitions: Postulates and theorems of Boolean Algebra, Boolean Functions, Canonical and Standard Forms, De-Morgan's Theorem Reducing Boolean expressions, Digital Logic Gates: (AND, OR NOT ,NAND, NOR, EX-OR, EX- NOR), Implementations using Basic Gates, Universal Gates

3. Minimization Techniques .
Canonical and Standard forms SOP and POS of Boolean functions , K-Maps simplifications   up to Five-Variable Map, Sum of Products and Product of Sums Simplification, Don't-Care Conditions.

4. Combinational Logic.
 Half Adder and Full Adder , Binary Adder- Subtractor, Decimal Adder, Comparator, Decoders, Encoders, Multiplexers.

5. Synchronous Sequential Logic.
Sequential Circuits, Latches, Flip-Flops(SR,JK,JK Master Slave, D and T-type). Negative edge and Positive edge triggered clocks

6. Registers ad Counters.
Shift Registers:(Serial-in Serial-out, Serial-in Parallel-out, Parallel-in Serial-out, Parallel-in Parallel-out), Ripple Counters, Synchronous and Asynchronous Counters, Mod counters up/down counters

7. Memory and Programmable Logic.
Introduction, Random-Access Memory, Memory Decoding, Error Detection and Correction, Read-Only Memory, Programmable Array Logic.

References:
1. Integrated Electronics by Millman, Halkias McGraw Hill.
2. Malvino: Digital Computer Electronics, McGraw Hill.
3. D.A. Hodges & H.G. Jackson, Analysis and Design of Integrated Circuits, International, 1983.
4. Joph. F. Wakerley, Digital Principles and Practices.
5. Ujjenbeck, John: Digital Electronics: A Modern Approach, Prentice Hall, 1994.
6. Mano, M. Morris: Digital Logic and Computer Design, Edition, 1993
7. Electronics by R.K Gaur

B.Sc. (Information Technology) Semester – II

Paper – IV: C Programming Part–II

Time: 3 Hours   **Total Marks: 75**
Theory Marks: 60
Theory Internal Assessment M: 15

Note: 1. Eight questions are required to be set giving equal weightage to all the units. The candidates will have to attempt any five. All questions carry equal marks.
      2. The student can use only Non–programmable & Non–storage type Calculator.

UNIT-I

Strings: String declaration, string functions and string manipulation.

Pointers: Fundamentals, pointer declaration, passing pointers to a functions, pointer and one dimension arrays, operation on pointers, pointers & multi–dimensional arrays, passing functions to other functions, more about declarations.

UNIT-II

Storage classes: Automatic, external and static variables.

Structures & Unions: Defining and processing a structure, user defined data types, structures and pointers, passing structures to functions, self referential structure, unions.

UNIT-III

Data Files: Opening, closing, creating and processing of data files.

Programming exercises of above concepts

References:
1. Programming in C : Schaum Outlines Series.
2. C Programming : Stephen G. Kochan.
3. Let us C: Yashwant Kanetkar

B.Sc. (Information Technology) Semester – II

Paper – V: Numerical Methods and Statistical Techniques

Time: 3 Hours   **Total Marks: 75**
Theory Marks: 60
Theory Internal Assessment M: 15

Note: Eight questions are required to be set giving equal weightage to all the units. The candidates will have to attempt any five. All questions carry equal marks. . The student can use only Non–programmable & Non–storage type Calculator.

UNIT-I

Introduction:
1. Numerical Methods, Numerical methods versus numerical analysis, Errors and Measures of Errors.

2. Non–linear Equations, iterative Solutions, Multiple roots and other difficulties, Interpolation methods, Methods of bi–section, False position method, Newton Raphson – method.

3. Simultaneous Solution of Equations, Gauss Elimination Method, Gauss Jordan Method

4. Numerical Integration and different Trapezoidal Rule, Simpson's 3/8 Rule.

5 Interpolation and Curve Fitting, Lagrangian Polynomials, Newton's Methods: Forward Difference Method, Backward Difference Method Divided Difference Method.

6 Least square fit linear trend, Non–linear trend.
$Y = ax^b$
$Y = ab^x$
$Y = ae^x$
Polynomial fit: $Y = a+bx+cx^2$

UNIT-II

Statistical Techniques:
1. Measure of Central Tendency, Mean Arithmetic, Mean Geometric, Mean Harmonic, Mean, Median, Mode.
2. Measure of Dispersion, Mean Deviation, Standard Deviation, Co–efficient of Variation.

Books Recommended:
1. V. Rajaraman: Computer Oriented Numerical Methods, Prentice Hall of India Private Ltd., New Delhi.
2. B.S. Grewal, Numerical Methods for Engineering, Sultan Chand Publication.

B.Sc. (Information Technology) Semester – II
Paper–VI: C Language–II
(Practical)

Total Marks: 75
Practical Marks: 60
Practical Internal Assessment M: 15

Practical- Implementation of Numerical Methods and Statistical Techniques Using C Language

Practical Assignment of Numerical Methods

1. Write a program to find roots of a quadratic equation of type $ax^2+bx+c=0$.
2. Write a program to implement Bisection Method to find root of equation $x^3-4x-9=0$.
3. Write a program to implement False Position Method to find root of equation $x^3-2x-5=0$.
4. Write a program to implement Newton Raphson Method to find root of equation $x^3-4x-9=0$.
5. Write a program to find solution of system of linear equation using Gauss Elimination Method.
6. Write a program to find solution of system of linear equation using Gauss Jordan Method.
7. Write a program to implement Trapezoidal Rule for tabulated function.
8. Write a program to implement Trapezoidal Rule for known function.
9. Write a program to implement Simpson's $1/3^{rd}$ rule for tabulated function.
10. Write a program to implement Simpson's $1/3^{rd}$ rule for known function.
11. Write a program to implement Simpson's $3/8^{th}$ rule for tabulated function.
12. Write a program to implement Simpson's $3/8^{th}$ rule for known function.
13. Write a program to implement the Lagrangian Method of interpolation to interpolate value of variable 'y' for given value of variable 'x'.
14. Write a program to implement Newton's Forward Difference Interpolation Formula.
15. Write a program to implement Newton's Backward Difference Interpolation Formula.
16. Write a program to implement Newton's Divided Difference Interpolation Formula.
17. Write a program to fit the geometric curve $y=ax^b$
18. Write a program to fit the geometric curve $y=ab^x$
19. Write a program to fit the geometric curve $y=ae^{bx}$
20. Write a program to calculate Arithmetic Mean, Geometric Mean, Harmonic Mean of Individual Series

21. Write a program to calculate Arithmetic Mean, Geometric Mean, Harmonic Mean of Discrete Series.
22. Write a program to calculate Arithmetic Mean, Geometric Mean, Harmonic Mean of Continuous Series.
23. Write a program to calculate Median in the case of Individual Series.
24. Write a program to calculate Median in the case of Discrete Series.
25. Write a program to calculate Median in the case of Continuous Series.
26. Write a program to calculate Mode in the case of Discrete series.
27. Write a program to calculate Mode using empirical relation between median and mean.
    Mode= 3 Median – 2 Mean
28. Write a program to calculate Range and its Co-efficient in Continuous Series
29. Write a program to calculate Mean Deviation using Mean in the case of Individual Series.
30. Write a program to calculate Mean Deviation using Mean in the case of Discrete Series.
31. Write a program to calculate Mean Deviation using Mode in the case of Continous Series.
32. Write a program to calculate Standard Deviation in the case of Individual Series.
33. Write a program to calculate Standard Deviation in the case of Discrete Series.
34. Write a program to calculate Standard Deviation in the case of Continous Series.
35. Write a program to find Standard Deviation, Variance and Coefficient of Variation in the case of Continuous Series.

Practical Assignment of C-Programming II

1. Write a program to read string.
2. Write a program to count the length of string without using string handling function.
3. Write a program to count the total number of vowels in a string.
4. Write a program to reverse a string and also display it without using string handling function.
5. Write a program to concatenate two strings without using inbuilt functions.
6. Write a program to copy one string to another without using inbuilt function.
7. Write a program to read a string and copy the reverse of string without using inbuilt function.
8. Write a program to convert a string to uppercase.
9. Write a program to convert the string to lowercase.

10. Write a program to print length using string handling function.
11. Write a program to reverse string using string handling function.
12. Write a program to print sum of two numbers using pointers.
13. Write a program to find greatest among two numbers using pointers.
14. Write a program to swap two values using pointers using call by address.
15. Write a program to calculate factorial of numbers using pointer concept.
16. Write a program to read array using pointer.
17. Write a program for multiplication of two matrices using pointers.
18. Write a program to swap two strings without using third variable with help of pointers.
19. Write a program to find the sum of upper triangle & lower triangle of a matrix using pointers.
20. Write a program to read the record of a single student using structure.
21. Write a program to read and print the records of n students using structure.
22. Write a program to implement the concept of structure and union.
23. Write a program to implement the concept of all storage classes in a program.
24. Write a program to implement the concept of array of structures.
25. Write a program to implement the concept of passing structures to functions.
26. Write a program to read and print the contents of file in program.
27. Write a program to implement concept of reading single character from file.
28. Write a program to read mixed data using fscanf ().
29. Write a program for writing the block of data using fwrite ().
30. Write a program to implement the concept of reading block of data from opened file by using the fread ().
31. Write a program to implement the concept of fseek ().
32. Write a program to implement ftell (), fseek (), rewind ().
33. Write a program to implement the concept of command line argument.
34. Write a program to open a file in read and write mode.
35. Write a program to insert more data into data file using append ().
36. Write a program to write a character into file and display it.
37. Write a program to print even and odd number from file.
38. Write a program to merge two files using command line argument facility.
39. Write a program to implement malloc ().
40. Write a program to read and print the n records of a class using file handling.

B.Sc. (Information Technology)

Semester System

Semester-III

Sr. No.	Paper No.	Paper	Marks				Page No.
			Theory	Internal Assessment	Practical	Total	
1	Paper–I	Object Oriented Programming Using C++	60	15	-	75	16-17
2	Paper–II	Data Structure	60	15	-	75	18
3	Paper–III	System Analysis & Design	60	15	-	75	19
4	Paper–IV	Environment Studies – I (Compulsory)	40	10	-	50	-
5	Paper–V	Programming Lab-I (C++ Programming Language)	-	10	40	50	20-21
6	Paper–VI	Programming Lab – II (Data Structure)	-	05	20	25	22

B.Sc. (Information Technology) Semester – III

Paper – I: Object Oriented Programming Using C++

Time: 3 Hours

Max. Marks: 75
Theory Marks: 60
Theory Internal Assessment Marks: 15

Note:
1. Eight questions are required to be set giving equal weightage to all the units. The Candidates will have to attempt any five. All questions carry equal marks.
2. The student can use only Non–programmable & Non–storage type Calculator.

UNIT-I

1. **Getting Started** :. Introduction, A brief history of C++, Variables , constants, Expression, Statements, Comments and keywords of C++, Operators in C++: Arithmetic, Relational, Logical,
Assignment, Increment/Decrement, Conditional, Precedence of Operators , Data type, Type Conversion, library function.

2. **Input / Output Statements** : Inputting using in and outputting using cout statements.
 Preprocessor directives, Basic program construction. A Complete C++ Program: Invoking Turbo C++, naming your program, using the editor, saving your program, compiling and linking, running the program. Errors : Compiler, linker and runtime. Other IDE Features: Compiling and linking shortcut exiting from IDE, examining files, opening an existing file, DOS shell

3. **Decision Making and Looping Statement :** If Statement, If-else statement, nesting of if statement, switch statement, conditional operator statement.
While loop, do loop, for loop, nesting of loops, break and continue statement, go to statement.

UNIT-II

4. **Arrays :** Defining an array, array type, array elements, Accessing and initializing elements of array, Programming of C++ with array, String handling, array of strings.

5. **Functions** : Definition of function, Declaring function, Local, global variables, execution of function, Passing argument to function, Return values Reference arguments, Overloading functions, Inline function, friend function and default parameter., Storage classes.

6. **Structures:** A simple structure, specifying the structure, defining a structure variable, Accessing Structure member, Other structure features. Structure within structure. Structure and classes. Arrays of structure.

UNIT-III

7. **Object Oriented Programming** Objects & Classes, Constructor & Destructor, Operator overloading: Overloading unary operators, Overloading binary operators, Data conversion, Pitfalls operator overloading and conversion.

8. Inheritance Derived class and Base Class, Derived Class Constructors, Overriding member functions, Inheritance in the English distances class, class hierarchies, Public and Private Inheritance, Level of inheritance.

9. Polymorphism: Problems with single inheritance, Multiple inheritance, Virtual Functions, Pure Virtual Functions.

Books:
1. C++ & Graphics by Vijay Mukhi's
2. Turbo C++ by Robert Lafore.
3. C++ Programming Language by Schaum's outline series

B.Sc. (Information Technology) Semester – III

Paper – II: Data Structure

Time: 3 Hours   **Max. Marks: 75**
Theory Marks: 60
Theory Internal Assessment Marks: 15

Note: 1. Eight questions are required to be set giving equal weightage to all the units. The candidates will have to attempt any five. All questions carry equal marks.
2. The student can use only Non–programmable & Non–storage type Calculator.

UNIT-I

Basic Data Structure: Introduction to elementary Data Organization, Common Operation on Data Structures, Algorithm Complexity, Big O Notation, Time – Space trade off between Algorithms.

Arrays: Array Defined, Representing Arrays in Memory, Various Operations on Linear Arrays, Multidimensional Arrays.

UNIT-II

Linked Lists Types of Linked Lists, Representing Linked Lists in Memory, Advantages of using Linked Lists over Arrays, Various Operations on Linked Lists.

Stacks: Description of STACK structure, Implementation of Stack using Arrays and Linked Lists, Applications of Stacks – Converting Arithmetic expression from infix notation to polish and their subsequent evaluation, Quicksort Technique to sort an array.

Queues: Description of queue structure, Implementation of queue using arrays and linked lists, Description of priorities of queues, Dequeues.

UNIT-III

Trees: Description of Tree Structure and its Terminology, Binary Trees and Binary Search Trees and their representation in Memory

Sorting and Searching: Sorting Algorithms, Bubble Sort, Searching Algorithms, Linear Search and Binary Search.

Graphs: Description of Graph Structure, Implement Graphs in Memory using Adjacency Matrix, Path Matrix.

References:
1. Seymour Lipschutz, Theory and Problems of Data Structures, Schaum's Outline Series, McGraw Hill Company.
2. Tanenbaum, Data Structure using C.

B.Sc. (Information Technology) Semester – III

Paper – III: System Analysis & Design

Time: 3 Hours   **Max. Marks: 75**
Theory Marks: 60
Theory Internal Assessment Marks: 15

**Note: 1. Eight questions are required to be set giving equal weightage to all the units.
The candidates will have to attempt any five. All questions carry equal marks.
2. The student can use only Non–programmable & Non–storage type Calculator.**

UNIT–I

System Planning and Analysis: Introduction to systems development life cycle and role of different stages. Requirement analysis, Problem definition, Feasibility Study and its importance. Information Gathering Tools, Cost Benefit Analysis, Role and responsibilities of System Analyst.

UNIT-II

System Design: Input/Output Design, Modular and Structured Design, Tools for structured design(Data Flow Diagrams, Data Dictionary, Decision Tree, Structured English and Decision Tables) and system design considerations.

System Implementation: System testing, Quality assurance, Documentation tools, Managing system implementation.

UNIT–III

System Testing: Introduction to testing and its types

System Maintenance: Concept of maintenance and its importance, types of maintenance

References:
1. "Elements of System Analysis" – Marvin Gore and John W. Stubbe, 2003.
2. "System Analysis and Design" – Thapliyal M.P., 2002.
3. "Modern Systems Analysis & Design" – Hoffer, George and Valacich , 2001.
4. "SSAD: System Software Analysis and Design" – Mehta Subhash and Bangia Ramesh, 1998.
5. "Understanding Dynamic System : Approaches to Modelling, Analysis and Design" – Dorny C. Nelson, 1993.
6. "System Analysis and Design" – Perry Edwards, 1993.
7. "Systems Analysis and Design" – Elias M. Awad, 1993.
8. "Analysis and Design of Information Systems" – James A. Senn, 1989.

B.Sc. (Information Technology) Semester – III

Paper – V
(Programming Lab-I)

Max. Marks: 50
Practical Marks: 40
Practical Internal Assessment Marks: 10

Lab – I: Based on C++, Programming Language

Practical Assignment of C++

1. Write a program to calculate the sum of two numbers.
2. Write a program to calculate the Simple Interest.
3. Write a program to calculate area and perimeter of a rectangle.
4. Write a program to calculate square root and cube of a given number.
5. Write a program to calculate greatest of three numbers using conditional operator.
6. Write a program to check whether a given character is vowel or not.
7. Write a program to check whether a given number is prime or not.
8. Write a program to find the sum of digits of a number.
9. Print the following pyramids:

1	1	1
2 5	1 1	2 3
3 6 0	1 2 1	4 5 6
4 7 9 10	1 3 3 1	7 8 9 10
	1 4 6 4 1	

10. Write a program to find HCF of two positive integer numbers.
11. Write a program that print n Fibonacci numbers.
12. Write a program to evaluate the series Sum = $1+x^3+x^5+x^7+\ldots\ldots\ldots+x^{2n+1}$
13. Write a program to calculate Factorial of a number using Recursion.
14. Write a program to print the Fibonacci number using Recursion.
15. Write a program to show the use of inline function which calculates the maximum of two numbers.
16. Write a program to calculate the area of circle using inline function.
17. Write a program to show the concept of function overloading to calculate area where same name function differs in mumber of parameters.
18. Write a program to demonstrate the use of default arguments to calculate the volume of box.
19. Write a program to input and output all the elements of an array.
20. Write a program to calculate the average of 'n' numbers.
21. Write a program to search a given number from a given list of numbers entered using Linear Search.

22. Write a program to search a given number from the list of numbers entered using Binary Search.
23. Write a program to convert a decimal number to a binary number.
24. Write a program to find transpose of a matrix.
25. Write a program to calculate the product of two matrices.
26. Write a program to compare two strings using library function.
27. Write a program to check whether a given string is palindrome or not.
28. Write a program to count number of vowels , consonants, digits, spaces and other characters typed in.
29. Write a program to maintain employee information using nested structure.
30. Write a program to show the working of union.
31. Write a program to dynamically allocate and deallocate memory.
32. Write a program to generate Fibonacci numbers using objects and classes.
33. Write a program to multiply two matrices by returning an object from function.
34. Write a program to calculate average percentage of marks in a particular subject by n students of a class.
35. Write a program to demonstrate how a friend function acts as a bridge between two classes.
36. Write a program to add two complex numbers by overloading constructors.
37. Write a program to trace the flow of execution of destructor in a class.
38. Write a program to demonstrate the use of Copy Constructor.
39. Write a program to demonstrate how dynamic objects can be created and destroyed using 'new' and 'delete' operator.
40. Write a program showing the overloading of prefix and postfix increment operators.
41. Write a program to concatenate two string objects by overloading the '+' operator.
42. Write a program to convert basic to user-defined type(class).
43. Write a program to convert user-defined type(class) to basic type.
44. Write a program demonstrates Single Inheritance.
45. Write a program demonstrates Multiple Inheritance in which class is derived publicly from both the base classes.
46. Write a program demonstrates Multi-level Inheritance.
47. Write a program demonstrates Hierarchical Inheritance.
48. Write a program demonstrates Hybrid Inheritance.
49. Write a program that demonstrates the use of Virtual function.
50. Write a program that demonstrates the use of Pure Virtual function.

B.Sc. (Information Technology) Semester – III

Paper – VI
Programming Lab-II(Data Structure)

Lab – II: **Data Structure**   **Max. Marks: 25**
Practical Marks: 20
Practical Internal Assessment Marks: 05

Arrays

1. Write a program to Traverse an Array.
2. Write a program to Insert Item into Unsorted Array.
3. Write a program to Insert Item into Sorted Array.
4. Write a program to Delete Item from Array.
5. Write a program to Merge Two Unsorted Arrays.
6. Write a program to Merge Two Sorted Arrays.
7. Write a program to Traverse a 2-D Array.

Searching Techniques

8. Write a program to Search an Item using LINEAR SEARCH.
9. Write a program to Search an Item using BINARY SEARCH.

Sorting Techniques

10. Write a program to Sort an Array using BUBBLE SORT.
11. Write a program to Sort an Array using SELECTION SORT.
12. Write a program to Sort an Array using INSERTION SORT.
13. Write a program to Sort an Array using MERGE SORT.
14. Write a program to Sort an Array using QUICK SORT

Linked List

15. Write a program to Traverse a Linked List.
16. Write a program to Reverse a Linked List.
17. Write a program to Insert Item as First Node.
18. Write a program to Insert Item a Last Node.
19. Write a program to Insert Item After a Specific Node.
20. Write a program to Insert Item into Sorted Linked List
21. Write a program to Delete a First Node.
22. Write a program to Delete a Last Node.
23. Write a program to Delete any Specific Node.
24. Write a program to Search an Item in an Unsorted Linked List.
25. Write a program to Search an Item in a Sorted Linked List.

Stack

26. Write a program to Implement Stack using Array.
27. Write a program to Implement Stack using Linked List.

Queue

28. Write a program to Implement Queue using Array.
29. Write a program to Implement Circular Queue using Array.
30. Write a program to Implement Queue using Linked List

B.Sc. (Information Technology) Semester System

Semester-IV

Sr. No.	Paper No.	Paper	Theory	Internal Assessment	Practical	Total	Page No.
1	Paper–I	Database Management System & Oracle	60	15	-	75	24
2	Paper–II	Computer Architecture	60	15	-	75	25
3	Paper–III	Java Programming	60	15	-	75	26
4	Paper–IV	Environment Studies – II(Compulsory)	40	10	-	50	-
5	Paper–V	Compiler Design	60	15	-	75	27
6	Paper–VI	Programming Lab – I (Oracle)	-	10	40	50	28
7	Paper–VII	Programming Lab – II (HTML & JAVA)	-	10	40	50	29

B.Sc. Information Technology) Semester – IV

Paper – I: Database Management System and Oracle

Time: 3 Hours   **Total Marks: 75**
Theory Marks: 60
Theory Internal Assessment M: 15

Note : (i) In theory eight questions are to be set in all. The candidates are required to attempt five of them. All questions are to be of equal marks.
(ii) The maximum marks of the paper is 75.
(iii) As per as possible except in the Computer language papers no program may be asked in theory papers. Emphasis should be on algorithm development.
(iv)The student can use only Non–programmable & Non–storage type Calculator. Practical marks will include the appropriate weightage for proper maintenance of Lab record.

UNIT-I

Introduction to Data, fields, record, file, database, database management system, structure of database system, advantage & disadvantage, levels of database system, Relational model, Hierarchical model, Network model, comparison of these model, E–R diagram, different keys used in a relations system, SQL.

UNIT-II

DBA, responsibilities of DBA, Relational form like 1NF, 2NF, 3NF, BCNF, 4th NF, 5th NF, DBTG, Concurrency control and its management, protection, security, recovery of database.

UNIT-III

Oracle 10g
Introduction to Oracle 10g, Object Oriented Features of Oracle 10g, SQL–DDL, DML, DCL, Join methods & sub query, Union Intersection, Minus, Tree Walking, Built in Functions, Views, Security amongst users, Sequences, Indexing.

PL/SQL: Introduction to PL/SQL, Cursors–Implicit & explicit, Procedures, Functions & Packages Database Triggers.

References:
Introduction to Database by C.J.Date
Database Management System by B.C.Desai
Database Concept by Korth
Oracle–Developer– 2000 by Ivan Bayross
Database System Concepts & Oracle(SQL/PLSQ)–AP Publishers

B.Sc. (Information Technology) Semester – IV

Paper – II: Computer Architecture

Time: 3 Hours

M. Marks: 75
Theory Marks: 60
Theory Internal Assessment Marks: 15

Note:
1. **Eight questions are required to be set giving equal weightage to all the units. The Candidates will have to attempt any five. All questions carry equal marks.**
2. **The student can use only Non–programmable & Non–storage type Calculator.**

UNIT-I

Information Representation : Register Transfer, Various Registers, Implementing Common Bus Using Multiplexers: Logical; Arithmetic & Shift Micro – operations.

Basic Computer Design Instruction Codes, Interfacing various Registers, Computer Instructions, Timing Signals, Instruction Cycle, Design of a Basic Computer.

UNIT-II

CPU Design Stack Organized CPU, Instruction Formats, Addressing Modes, Program Control, Hardwired & Microprogrammed (Wilhe's Design) Control Unit.

Memory Organization Memory Hierarchy, Designs & Concepts of Main Memory, Auxiliary Memory, Associative Memory, Cache and Virtual Memory.

UNIT-III

I/O Organization I/O Interface, Modes of Transfer, Program Interrupt, DMA & I/O Processor.

Pipeline & Vector Processing Parallel Processing Pipelining, Parallel & Distributed Computers, SISD, SIMD & MISD, MIMD Machines, Vector Processing.

References:
Computer System Architecture: M.M. Mano (PHI)
Computer Architecture: J.P. Hayes.
Computer Architecture: Patterson & Hemessy

B.Sc. (Information Technology) Semester – IV

Paper – III: JAVA PROGRAMMING

Time: 3 Hours
Total Marks: 75
Theory Marks: 60
Theory Internal Assessment M: 15

**Note: 1. Eight questions are required to be set giving equal weightage to all the units.
The candidates will have to attempt any five. All questions carry equal marks.
2. The student can use only Non–programmable & Non–storage type Calculator.**

UNIT-I
Introduction to Concepts of Programming: . Introduction to Java ,JVM, Features of java,JDK Environment & tools like(java, javac, appletviewer, javadoc, jdb)
Introduction to Java: Structure of java program , Data types ,Variables, Operators , Keywords , Naming Convention , Decision Making (if, switch) , Looping(for, while) , Type Casting

UNIT-II
Classes and Objects : Creating Classes and objects , Memory allocation for objects , Constructor , Implementation of Inheritance (Simple , Multilevel , Hierarchical), Implementation of Polymorphism (Method Overloading , Method Overriding), Nested and Inner classes
Arrays String and Vector : Arrays ,Creating an array,Types of Array (One Dimensional arrays , Two Dimensional array),Strings ,String – Arrays ,String Methods, String Buffer class, Vectors , Wrapper classes
Abstract Class : Interface and Packages , Modifiers and Access Control (Default, public private protected), Abstract classes and methods ,
 Interfaces and Packages : (Packages Concept , Creating user defined packages , Java Built in packages , Java.lang->math , Java.util->Random, Date, Hash Table)

UNIT-III
Multithreading: Creating Threads using Different methods, Thread Priorities, Thread Synchronization, Inter process thread Communication.
Exception Handling : Exception types , Using try catch and Multiple catch , Nested try , throw , throws and finally , Creating User defined Exceptions
File Handling : Byte Stream , character stream , file IO Basics ,File Operations(Creating file , Reading file(Character, byte) , Writing File (Character, byte)).

References:
1. "Java–The Complete Reference", Herbert Schildt, Tata MacGraw Hill.
2. "Introduction to Java Programming", Y. Daniel Mliang, Pearsons Publications.
3. "Beginning Web Programming with HTML, XHTML, and CSS", Jon Duckett, John Wiley & Sons, 06 Aug. 2004.
4. "HTML & XHTML: The Complete Reference", Thomas A. Powell, McGraw-Hill.

B.Sc. (Information Technology) Semester – IV

Paper – V: Compiler Design

Time: 3 Hours   **Total Marks: 75**
Theory Marks: 60
Theory Internal Assessment M: 15

Note: 1. Eight questions are required to be set giving equal weightage to all the units. The candidates will have to attempt any five. All questions carry equal marks.
    2. The student can use only Non–programmable & Non–storage type Calculator.

UNIT-I

Basics of Compilers and different phases of compiler design
Detailed study of Lexical Analysis and Syntax Analysis

UNIT-II

Storage Management
Static Storage Management, Dynamic Storage Management.

Symbol Table Handling
Symbol table contents, operations on Symbol Tables, Organizations of Symbol Tables.

Intermediate Code Generation: Three address Code (Triples, Quadruples).

Code Generation
Code Generator, Code generation of simple programming constructs.

UNIT-III

Code Optimization
Local optimization, global optimization, loop optimization
Types of Compiler-Incremental compilers and Cross Compilers.

References:
1. Alfred V. Aho, Ravi Sethi, Jeffrey D. Ullman: *Compiler, Principles, Techniques and Tools*,
Addision Wesley, 2006.
2. Tremblay J.P., Sorenson P.G., *The Theory and Practice of Compiler Writing*,
Mc–Graw Hill, 2007.
3. Alfred V. Aho, Ravi Sethi, Jeffrey D. Ullman: *Principles of Compiler Design,*
Narosa Publishing House, 2007.

B.Sc. (Information Technology) Semester – IV

Paper – VI
Programming Lab-I(Oracle)

Lab – I: **Oracle**   **Total Marks: 50**
Practical Marks: 40
Practical Internal Assessment M:10

B.Sc. (Information Technology) Semester – IV
Paper – VII
Programming Lab-II
Lab – II: **(HTML & Java)**   Total Marks: 50
                                                                    Practical Marks: 40
                                                                    Practical Internal Assessment M: 10

Practical Assignment of Java

1. Installation of J2SDK and how to compile and execute java program

2. Write a program to show Concept of Class and create an array of objects in JAVA.

3. Write a program to show Scope of Variables

4. Write a program to show Type Casting in JAVA.

5. Write a program to swap two numbers using pass by reference, pass by value.

6. Write a program to generate Fibonacci series, to find whether number is prime or not, to find even/odd number, to find factorial Using Switch.

7. Write a program to create a class Rectangle and use default and parameterized constructor to set data and calculate area.

8. Write a program to count no. of object created of a class using static variables and static methods.

9. Write a program to check if a particular string is ending with a specified word and is starting with a specified word.

10. Write a program to implement copy constructor and call constructor from another constructor.

11. Write a Program to implement Inheritance.

12. Write a program to find even values from given array and return array from method.

13. Write a program show the concept of overriding

14. Program to create thread by extending thread class

15. Program create thread by implementing runnable interface

16. Program creating user define exception

17. Program to add two numbers using command line argument

18. A program in Java create a class that will at least import two packages and use the method defined in the classes of those packages

19. Write a program to implement the use of sleep method in multi-threading.

    Rest of the Programs related to I/O Stream.

B.Sc. (Information Technology) Semester System

Semester-V

Sr. No.	Paper No.	Paper	Marks				Page No.
			Theory	Practical	Internal Assessment	Total Marks	
1	Paper–I	Computer Networks	80	-	20	100	31
2	Paper–II	Operating System	80	-	20	100	32
3	Paper–III	PHP	60	-	15	75	33-34
4	Paper–IV	Lab – I Computer Networks and Operating System	-	60	15	75	35
5	Paper–V	Lab – II PHP	-	40	10	50	36

B.Sc. (Information Technology) Semester – V

Paper – I: Computer Networks

Time: 3 Hrs
Total Marks: 100
Theory Marks: 80
Theory Internal Assessment M: 20

Instructions for the Paper Setters:-
Note : 1. In theory eight questions are to be set in all. The candidates are required to attempt five of them. All questions are to be of equal marks. The maximum marks of the paper is 100.
2. The student can use only Non–programmable & Non–storage type Calculator.

UNIT – I
Basic concepts of Computer Networks, Client Server Network topologies.

OSI Reference Model, TCP/IP Model Comparison and Critiques, Concepts of Routers, bridges, Repeaters, Gateways.

UNIT – II
Data Transmission: – Analog & Digital Transmission, Modem, Codec, Pulse Code Modulation Multiplexing, Circuit Switching, Packet Switching, message Switching, Hybrid Switching.

Transmission Media: – Twisted Pair, Co–axial Cable, Baseband, Broadband, Fibre optics, Satellite, Wireless Transmission, Telephone System

The Data link Layer: Design Issues, Error Detection and Correction, Data Link Sliding Window Protocols.

UNIT – III
IEEE Standard 802 for LAN's and MAN's Routing Algorithm.

Internetworking, Network Security.

References:
1. Tanenbaum A.S. 'Computer Network', PHI.
2. Stalings W., 'Data and Computer Communications', PHI.

B.Sc. (Information Technology) Semester – V

Paper – II: Operating System

Time: 3 Hrs.
Total Marks: 100
Theory Marks: 80
Theory Internal Assessment M: 20

Instructions for the Paper Setters:-
Note: 1. In theory eight questions are to be set in all. The candidates are required to attempt five of them. All questions are to be of equal marks. The maximum marks of the paper is 100.
2. The student can use only Non–programmable & Non–storage type Calculator.

UNIT – I

Introduction:
Definition, evolution, need, early system, function, buffering spooling, single user, multiuser, multiprogramming, multiprocessing, multitasking, multithreading, batch processing, real time, time systems, time sharing systems, security, protection.

Processor Management / CPU Scheduling:
CPU – I/O Basic Cycle, process state, process control block, Scheduling, Queue, Schedulers, Scheduling Algorithms, Performance criteria, FCFS, SJF, Priority, SRTF, Round Robin, Multi – Levels users Algorithm.

UNIT – II

Deadlocks:
Definition, Necessary condition for deadlock, Deadlock Prevention Mutual exclusion, Hold and wait, No pre–emption, circular wait Banker's algorithms, Recovery from deadlock, semaphores.

Memory Management:
Concept of Relocation, Swapping, backing storage, swap time, MFT, MFT job scheduling, region size selection, memory fragmentation, MVT, MVT job scheduling compaction, paging, segmentation.

UNIT – III

Virtual Memory:
Overlays, demand paging, page fault, performance of demand paging, page replacement, page replacement algorithm, FIFO, Optimal page replacement, Thrashing.

Device Management:
I/O and device management physical characteristics, FCFS, SSTF, SCAN, CSCAN.

File Management:
Disk and File Management.

References:
1. "Operating System Concepts", Fourth Edition by Silberschatz Galvin Addison Wesley.
2. "Operating Systems: A Design Oriented Approach" by Crowley, Published by Tata McGraw Hill.
3. "Operating Systems" Second Edition by Dietel, Addison Wesley.

B.Sc. (Information Technology) Semester – V

Paper – III: PHP

Time: 3 Hrs.   **Total Marks: 75**
                                                                        Theory Marks: 60
                                                                        Theory Internal Assessment M: 15

Note: **In theory eight questions are to be set in all. The candidates are required to attempt five of them. All questions are to be of equal marks. The maximum marks of the paper is 75**

UNIT-I

Introduction to PHP: Introduction to PHP, History & Future Scope of PHP,Benefit & Importance of PHP , Installation of tools for working in PHP like XAMPP, WAMP for PHP, Apache & MySQL.
Introduction to Language constructs :Variables, constants, PHP's inbuilt data types
Keywords, Comments, Operators & Expressions : Arithmetic, Assignment, Comparison, Logical Operators, String & echo, print for outputting in web page: string functions, Using Loop Statement like for, for each, do while, while, switch , goto, and continue.
Working with flow control through Control Statement: if-else, if-else ladder

UNIT-II

Arrays: Introduction to Array, Simple array declaration, use of array, Numeric Array, Associative Array, Multidimensional Array, Array Functions, explode & implode functions

PHP Functions: Defining User functions, Passing parameter & return value, Use of Math functions, String functions, Date & time function, Date formats, Include, Require.FORM:GET/POST/REQUEST, Using html controls in web page, Master/Child Page concept.

State Management: Using Session in web pages for user authentication,Using Cookies in web pages for user authentication
Object Oriented Programming::Classes, Object & Constructor & Destructor, Using Access Specifier,Inheritance,Overloading.
Java Script: Syntax, Comments, Variables, Operators, Data Types, Function, Object, Condition, Looping, Form Validation.
Jquery: Syntax , selectors ,Events, effects , Jquery CSS Classes.
Ajax: Ajax introduction, XML Http, Request, Response, Event, PHP.

UNIT-III

Introduction to MySQL:Logging on to MySql, Creating a Database, Creating a Table,
Inserting Data into a table, Viewing stored Data, Modifing Stored data, Deleting Stored Data**.**
Connecting to MySQL with PHP:Sending SQL Queries with PHP.
Submitting & showing data to/from web controls from/to database,Uploading files to server/ upload form /upload script,Sending emails/ email script
Reference Books:

1. PHP and MYSQL web development (4th Edition).

2. PHP for Beginners by Ivan Bross.

2. PHP: The Complete Reference by Steven Holzner

3. PHP Pocket Reference by PHP Pocket Reference.

4. PHP and MySQL Web Development by Laura Thomson and Luke Welling

5. Head First Php & MySQL By by Beighley

B.Sc. (Information Technology) Semester – V

Paper – IV
Lab I (Computer Networks and Operating System)

Time: 3 Hours   **Total Marks: 75**

Practical Marks: 60

Practical Internal Assessment M: 15

Practical Lab: **Computer Networks and Operating System**

B.Sc. (Information Technology) Semester – V

Paper – V
Lab II (PHP)

Time: 3 Hours   **Total Marks: 50**

Practical Marks: 40

Practical Internal Assessment M: 10

Practical Lab: PHP

B.Sc. (Information Technology)

Semester System

Semester-VI

Sr. No.	Paper No.	Paper	Marks				Page No.
			Theory	Practical	Internal Assessment	Total	
1	Paper–I	Computer Graphics	60	-	15	75	38
2	Paper–II	Internet Application & E- Business	-	80	20	100	39-40
3	Paper–III	Lab (Applications of Computer Graphics in C/C++)	-	20	05	20	41
3	Paper–IV	Project	-	160	40	200	42

B.Sc. (Information Technology) Semester – VI

Paper – I: Computer Graphics

Time: 3 Hrs.   **Total Marks: 75**
Theory Marks: 60
Theory Internal Assessment M: 15

Instructions for the Paper Setters:-
Note : 1. In theory eight questions are to be set in all. The candidates are required to attempt five of them. All questions are to be of equal marks. The maximum marks of the paper is 100.
2. The student can use only Non–programmable & Non–storage type Calculator.

UNIT-I

Preliminaries
Basics of Computer Graphics, Computer graphics Hardware and Software.
2D Primitives
Line drawing, circle drawing and simple line clipping algorithms.

UNIT-II

2D-Transformations
Simple 2D-Transformations and their different representations, composite 2D-Transformations. 3D-Transformations
Simple 3D-Transformations, composite 3D-Transformations.

UNIT-III

Hidden Surfaces
Depth comparisons, Z-buffer algorithm, Scan line algorithms.
Projections
Parallel Projections, Perspective Projections, Oblique Projections.

References:

1. Donald Hearn & M. Pauline Baker, 'Computer Graphics', Printice Hall of India Private Limited, 2008.
2. Foley, A. Van Dam. S. Feiner, and J. Hughes, 'Computer Graphics: Principles and Practice', Addison-Wesley, 2006.
3. David F. Rogers, 'Procedural Elements for Computer Graphics', McGraw Hill Book Company, 2006.
4. Roy A. Plastick & Cordon Kalley, 'Computer Graphics', McGraw Hill Book Company, 2007.

B.Sc. (Information Technology)
Semester – VI

Paper – II: Internet Applications & E- Business

Time: 3 Hours

Total Marks: 100
Theory Marks: 80
Theory Internal Assessment M: 20

**Note: 1. Eight questions are required to be set giving equal weightage to all the units. The candidates will have to attempt any five. All questions carry equal marks.
2. The student can use only Non–programmable & Non–storage type Calculator.**

UNIT-I
Introduction : About internet and its working, business use of internet, services effect by internet, evaluation of Internet, Internet Service Provider (ISP), internet addressing (DNS) and IP addresses.

E–Mail Basic Introduction, advantage and disadvantage, structure of an email message, working of e–mail (sending and receiving messages), managing email (creating new folder, deleting messages, forwarding messages, filtering messages, implementation of outlook express.
Internet protocol Introduction, File transfer protocol (FTP), Gopher, Telnet, other protocols like HTTP and TCP/IP.

WWW introduction, working of WWW, Web browsing (opening, viewing, saving and printing a web page and bookmark), web designing using HTML, DHTML with programming techniques.

UNIT-II
E – Commerce:
Its definition, aims, process tools and results, EDI, VAN's and internet as Promoters, Types of   E – Commerce, Commerce – net.

Steps to Start E – Commerce:
H/W & S/W Requirements, steps involved in opening your own online business.

UNIT-III
EDI:
EDI Vs Traditional Systems, EDI enabled procurement process, components of EDI system, EDI implementation issues.

Concerns for E – Commerce:
Basic challenges to E – Commerce, Technological, legal and regulators heads, Internet Bandwidth & Technological Issues.

NII: Technical issues, standards & Services GII, Issues that confront us in relation to securing electronic transactions. Implementation of digital signatures. Authentication Mechanisms. Electronic cash, its elements, legal issues, risks, paper document versus Electronic document Laws for E – Commerce legal issues for Internet Commerce.

References:
1. "Understanding The Internet", Kieth Sutherland, Butterworth-Heinemann; 1st Edition (October 31, 2000).
2. "Internet Technologies", S. K. Bansal, APH Publishing Corporation (April 1, 2002).
3. "Data Communications and Networking", Behrouz A. Forouzan, 3rd Edition.

4. E – Commerce –   The Cutting Edge of Business.

        Kamlesh K. Bajaj.
        Debjani Nag.

B.Sc. (Information Technology) Semester – VI

Paper – III Lab (Applications of Computer Graphics in C/C++)

Time: 3 Hours   **Total Marks: 25**

Practical Marks: 20

Practical Internal Assessment : 05

Practical Lab: Applications of Computer Graphics in C++/C

Practical Assignment of Computer Graphics

1. Write a program to plot a pixel with specified color.
2. Write a program to plot different pixels at different locations with specified color.
3. Write a program to draw a Vertical Line, Horizontal Line, circle, ellipse, arc, rectangle, square and sector using inbuilt function.
4. Write a program to draw intersection of two lines and a circle in between them using inbuilt function.
5. Write a program to draw a line using Slope Intercept Method.
6. Write a program to draw a line using Bresenham's algorithm.
7. Write a program to draw a line using DDA Method.
8. Write a program to draw a circle using Polynomial Method.
9. Write a program to draw a circle using Trigonometric Method.
10. Write a program to draw a circle using Bresenham's algorithm.
11. Write a program to draw a circle using mid - Point Circle Method.
12. Write a program to draw an ellipse using Polynomial Method.
13. Write a program to draw an ellipse using Trigonometric Method.
14. Write a program to draw an arc using Polynomial Method.
15. Write a program to draw an arc using trignometric method.
16. Write a program to draw a Sector drawing using polynomial method.
17. Write a program to draw a Sector drawing using trignometric method.
18. Write a program to translate a 2D object.
19. Write a program to scale a 2D object.
20. Write a program for combined 2D transformation.
21. Write a program for Shearing of a 2D object.
22. Write a program for Clipping a single point.
23. Write a program using cohen sutherland algorithm.
24. Write a program for Line clipping using midpoint subdivision algorithm.
25. Write a Program to clip a polygon.
26. Write a Program for a Reflection of 2D object.
27. Write a program to translate a given 3D picture.
28. Write a program to scale a given 3D object.
29. Write a program to rotate a 3D object about 3 axes.
30. Write a program to rotate a given 3D object about axis parallel to any of the 3 principle axes.
31. Write a program to rotate a given 3d object about axis not parallel to principle axes.
32. Write a program for reflection of a given 3D object.
33. Write a program for shearing of a given 3D object.

B.Sc. (Information Technology) Semester – VI

Paper – IV: PROJECT

Max. Marks: 200
Project Marks: 160
Internal Assessment : 40

General Instructions:

1. A software module based on the work done in the entire course is to be developed.

2. The soft copy of the module shall be submitted to the College/Institute till April 30.

3. The software module shall be developed in groups, consisting of at most two students in a group.

4. The college shall depute guide(s)/supervisor(s) under whose supervision the software module shall be developed. The guide/supervisor shall clarify that the work done is original & authenticated. The certificate found to be incorrect at any stage shall attract the proceedings against all the stakeholders, as per the University rules.

5. The evaluation of the module shall be done as per the common ordinance of UG/PG w.e.f. 2012-2013 under semester system.

6. Training certificate of industrial training should be submitted to the College and also attached in the project.