B.Sc. I YEAR Computer Science (For Regular Students)

Paper	Subjects	Internals			Theory	Total (B)	Total A+B	Practical	Grand Total
		3 Months	6 Months	Total (A)					
I	Computer Fundamentals and PC-Packages	10	10	20	40	80	100	50	150
II	Programming in C				40				

B.Sc. II YEAR Computer Science (For Regular Students)

Paper	Subjects	Internals			Theory	Total (B)	Total A+B	Practical	Grand Total
		3 Months	6 Months	Total (A)					
I	Object Oriented Programming using C++ and Java	10	10	20	40	80	100	50	150
II	Data Structures and Software Engineering				40				

B.Sc. III YEAR Computer Science (For Regular Students)

Paper	Subjects	Internals			Theory	Total (B)	Total A+B	Practical	Grand Total
		3 Months	6 Months	Total (A)					
I	Web Application Development using PHP and DBMS	10	10	20	40	80	100	50	150
II	Operating System and Computer Network				40				

B.SC. I YEAR COMPUTER SCIENCE
PAPER I COMPUTER FUNDAMENTALS AND PC-PACKAGES

Max Marks: 40   **Min Marks: 13**

Course Objective: This course is designed to understand the basic terminologies of computer including hardware and software. PC-Software focuses on providing basic training of Office Automation Software. The course provides a comprehensive coverage of computer architecture. It discusses the main components of the computer and the basic principles of its operation. It demonstrates the relationship between the software and the hardware and focuses on the foundational concepts that are the basis for current computer design.

Course Outcome: After completing the course students will be able to understand the basic operations of computer and will be able to opt for jobs as an Office Automation Clerk, Support Assistant. Understand the fundamentals of different instruction sets architecture and their relationship to the CPU design. Understand the principles and the implementation of computer arithmetic. Understand the operation of modern CPUs including pipelining, memory systems and busses.

UNIT-I
Block diagram of computer: input unit, output unit, CPU, Memory Unit, generations of computers, types of Computers: desktop, laptop, palmtop, workstation and super computers. All types of input and out devices, hardware, software, and firmware. **Linux:** Features of Linux — Pros and Cons of Linux, Workspace, The Panel, Taskbar, Title bar, Window Manager, Manipulating Windows: Focus, Logout, Maximize and Minimize, resize, move, rollup, unroll, close, move to workspace, shutting down the system, Launchers, date and time, file manager, creating, deleting, moving and modifying the permissions of folders, Trash Can, Graphic image access, Creating and managing folders.

UNIT-II
Introduction to Writer: Features of writer, Parts of main window, Menu bar, Rulers, Status bar, context menus, slide bar, Starting new documents, opening existing documents, saving documents, Save command, Save As command, password protection, changing password, renaming and deleting files, using the navigator, undoing and redoing changes, reloading a document, closing a document, word and character count, page style, selecting text, selecting vertical block of text, cutting copying and pasting text , find and replacing text, insert special characters, macros, checking spelling and grammar, using synonyms and the thesaurus, Auto Correct, footnote, Endnote, bookmark, hyperlink, paragraph settings, border, Drop Caps, Formatting characters: font name, size, effects, bullets and numbering, Formatting pages: page break, page margins, page number, Inserting Header, Footer, border, background, print a page, Template, insert images, resizing, rotate, flipping, compress and deleting an image, working with drawing tools: insert, resize, grouping, rotating, positioning image with text, wrapping text. Working with font work object, working with Tables, Mail Merge.

Introduction To CALC Spreadsheet: Definition of Calc, Workbook, Working On worksheet, cells, title bar, menu bar, toolbar, formula bar, status bar, creating, opening and saving spreadsheets, sheet navigation, working with rows and columns, editing and formatting data, merging and splitting cells, Auto format of cells and sheets, conditional formatting, sorting records, find and replace, creating & formatting charts and graphs, using style and templates, working with graphics. Drawing tools, printing a spreadsheet, adding header and footer, formulas and functions, filter data using auto and advanced filter.

UNIT - III

Number System: decimal, binary, octal, hexadecimal, conversions from one base to another base. Codes: ASCII code, EBCDIC code, Gray code. Logical gates — AND, OR, NOT, NAND,NOR, X-OR,X-NOR gates their symbols and truth tables, Boolean algebra, de-morgan's theorem, binary arithmetic-addition, subtraction, multiplication and division, unsigned binary number, singed magnitude numbers, 1's complement, 2'complement representation of numbers, 2'complement arithmetic. Boolean function and truth table, SOP, POS form, minterms/maxterms, simplification of logical circuits using Boolean algebra and Kamaugh Maps, circuit design with gates, Combination Circuit, adder/substractor circuit, Flip Flop, Sequential Circuit.

UNIT-IV

Integrated Circuit — Decoder, Multiplexer, Register. Memory cell, primary memory: RAM, static and dynamic RAM, ROM, PROM, EPROM, and EEPROM, cache memory, secondary memory and its types, virtual memory concept memory accessing methods: serial and random access. Data bus, control bus & address bus. Word length of a computer, memory addressing capability of a CPU, processing speed of a computer, microprocessors, single chip microcomputers (microcontrollers).

UNIT-V

General architecture of a CPU, instruction format and data transfer instructions, data manipulation instructions and program control instruction, Types of CPU organization: accumulator based machine, stack based machine and general-purpose register based machine, addressing modes, data transfer schemes: (I) programmed data transfer: synchronous, asynchronous and interrupt driver data transfer (II) direct memory access data transfer: Cycle stealing block transfer and burst mode of data transfer.

Text Books

1. Digital logic and Computer Design by Malvino leach
2. Computer System Architecture by M Morris Mano, Computer Today by S.K. Basandra
3. Fundamental of computers by P.K. Sinha, Computer Fundamental & Archi. by B.Ram
4. Computer Organization and Architecture by Stallings
5. Libre Office5

Practical list

1. Write steps for creating a formatted CV having the following fields objective, name, father's name, mother's name, DOB, address, email-id, qualification, hobbies.
2. Create a formatted "Appreciation Certificate" and "Certificate of Proficiency" for best student.
3. Create a formatted table using Table Menu and do all the operations on the table.
4. Create a formatted pay slip of 10 employee having fields:
   Employee No, Employee Name, Designation, Phone No, Address, Basic Pay, DA (60% of basic), HRA, Gross Pay.
5. Create a formatted mark sheet and print the grade using conditional logic.
6. Create a sales sheet for 10 sales employees and compare their sales for this year using chart.

PAPER II PROGRAMMING IN C

Max Marks: 40   **Min Marks: 13**

Course Objective: The course aims to provide exposure to problem-solving through programming. It aims to train the student to the basic concepts viz. conditional and decision making, file handling of the C-programming language. This course involves a lab component which is designed to give the student hands-on experience with the concepts.

Course Outcome: After the course the students will be able to identify and abstract the programming task, will be able to write pseudo-code of the task, choose the right data representation formats based on the requirements of the problem and hence use the language to efficiently solve the task.

UNIT-I

Classification of programming language: procedural languages, problem-oriented languages, nonprocedural languages. Structured programming concepts: modular programming: top down analysis, bottom up analysis, structured programming. Problem solving using computers: program definition and analysis, program design, coding, compilation, debugging and testing, documentation, implementation and maintenance.

UNIT–II

Introduction to C language: constants, variables, keywords, data types, operators, expressions, operator precedence associativity. Structure of C program: variable declaration, declaration of variable as constant.

UNIT-III

Managing input and output operators: formatted and unformatted. Control statements: branching, jumping & looping, scope rules and storage classes. Arrays (one and two dimensional).

UNIT-IV

String: Declaration and Initialization of Strings, Array of Strings, Built-in String Functions strlen, strcpy, strcmp, strcat, strlwr, strrev function, other String functions.
Functions: user defined functions, stored functions, categories in functions, passing arguments to functions, recursion.

UNIT-V

Pointers: operators, declarations, pointer to arithmetic, array of pointers. Structures: declaring, accessing, initializing array of structures.
File handling in C: opening and closing a data file, inserting data to data file. modes of file (read, write and append).

Text Books-
1. Programming in C by S.S. Bhatia
2. How to solve it by computers by R.G. Dromy, PHI
3. Let us C by Yashwant Kanetkar
4. ANSI C by E. Balagurusamy

Reference Books-

1. How to design programs-An Introduction to programming and computing-Felleisen et al, PHI publication.
2. Introduction to algorithms by cormen, PHI.
3. Programming in C by Dennis Richie.

Practical List

1. Program to Print First N Prime Numbers

2. Program to Find Whether the Given Number is a Prime Number

3. Program to Find Largest of Three Numbers

4. Program to Find Factorial of a Number without using Recursion

5. Program to Find Sum and Average of Three Real Numbers

6. Program to Print a Table of any Number

7. Program to Reverse a Given Number

8. Program to Find Factorial of a Number using Recursion

9. Program to Print Fibonacci Series

10. Program to Print the Following Output:

```
        1
       121
      12321
     1234321
    123454321
   12345654321
  1234567654321
 123456787654321
```

11. Write a Program to calculate simple interest.

12. Basic salary of an employee is input through the keyboard. The DA is 25% of the basic salary while the HRA is 15% of the basic salary. Provident Fund is deducted at the rate of 10% of the gross salary(BS+DA+HRA). Program to Calculate the Net Salary.

13. Program to Find Area of Square & Circumference of a   Circle

14. Program to Show Call by Reference

15. Program to Show Call by Value

16. Program to Check Whether a Character is a Vowel or not by using *switch* Statement.

17. Program to Check Whether the Given Number is an Armstrong Number

18. Write a Program to convert temperature. (Fahrenheit –Centigrade and vice-versa)

19. Program to Implement *continue* Statement

20. Program to Implement *break* Statement

21. Program to Implement Structure

22. Program to Implement Structure with Array
23. Program to Write and Read a Character from a File
24. Program to Write and Read an Integer from a File

BSC II YEAR COMPUTER SCIENCE
PAPER I OBJECT ORIENTED PROGRAMMING USING C++ AND JAVA

Max Marks: 40   **Min Marks: 13**

Course Objective: To understand concepts of Object-Oriented Programming Language like classes, objects, polymorphism, memory management and garbage collection, inheritance using C++. Course is further extended to understand the process management using thread and creating GUI application in platform independent environment using java.

Course Outcome: Student will be able to implement classes, object, inheritance, reusability, security and many more OOPS tricks   for better and effective programing in C++ and Java. Multithreading gives an opportunity to learning process working. Applet provided students to create their internet and user-friendly application.

UNIT-I
Introduction to C++: programming paradigms, Key concepts of object-oriented programming, advantages of OOP's. Input and output in C++: pre-defined streams, unformatted console I/O operations, formatted console I/O operations. C++ declarations: parts of C++ program, types of tokens, keywords, identifiers, data types, constants, operators, precedence of operators, referencing and dereferencing operators, scope access operator. Control structures: decision making statements, looping statements.

UNIT-II
Functions: main (), parts of function, passing arguments: value, address, reference, inline functions, function overloading: principles, precautions, library functions. Classes and objects: declaring classes and objects, accessing class members, keyword: public, private, protected, defining member function: member function inside the class, member function outside the class, static member functions variables and function, friend function, friend class, overloading member function. Constructors and Destructors: characteristics, applications, constructors with arguments, overloading constructors, types of constructors.

UNIT-III
Operator overloading: overloading unary operator, binary operator. Inheritance: access specifiers: public inheritance, private inheritance, protected data with private inheritance, types of inheritances: single, multiple, hierarchical, multilevel, hybrid, multipath, virtual base class. Pointers & arrays: pointer declaration, pointer to class & object, Array: declarations & initialization, arrays of classes. polymorphism: static (Early) binding, dynamic (Late) binding, virtual function, pure virtual function.

UNIT-IV
C++ vs JAVA, JAVA environment, Structure of Java, Tokens, Statements, JAVA virtual machine. Define a Class, Adding Variables and Methods, Creating Objects, Accessing Class Members, Constructors, Method Overloading, Static Members, Nesting of Methods. Arrays: One Dimensional & two Dimensional, strings, Vectors, wrapper Classes. Define Interface, Extend Interface, Implement Interface, Accessing Interface Variables. System Packages, Using System Package, adding a Class to a Package, Hiding Classes.

UNIT-V
Inheritance: Extending a Class, Overriding Methods, Final Variables and Methods, Final Classes, Finalize Methods, Abstract methods and Classes, Visibility Control. Creating Threads, Extending the Threads Class, Stopping and Blocking a Thread, Life Cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization, Implementing the Runnable Interface. Writing Applets, Applets Life Cycle, Creating an Executable Applet, designing a Web Page, Applet Tag,

Adding Applet to HTML File, Running the Applet, Passing Parameters to Applets, Aligning the Display, HTML Tags & Applets, Getting Input from the User.

Text Books:
Object-Oriented programming with ANSI & turbo C++ by Ashok N. Kamthane.
Object-Oriented programming in C++ by E.Balagurusamy
E. Balaguruswamy, "Programming In Java", 2nd Edition, TMH Publications ISBN 0-07- 463542-5

Reference Books:
C+ Object-Oriented programming in C++ by Robert Lafore.
The complete reference by Herbert Schildt, TMH publication.

Suggested Practical List:

C++

1. Write a program in C++ to exchange the content of two variables using call by reference
2. Write a program in C++ to demonstrate the Constructor Overloading, assume desired parameters.

3. Write a program in C++ to create the class shape, and overload the function to return the perimeters of the different shapes.

4. Write a program in C++ demonstrating the public, protected and private parameters.

5. Write a program in C++ to sort the integer array.

6. Write a program in C++ to search the 2nd largest, the 2nd smallest element in an array.

7. Write a program in C++ demonstrating the Static Data member.

8. Write a program in C++ to demonstrate constructor with default argument.

9. Write a program in C++ to demonstrate destructor in inheritance.

10. Write a program in C++ to demonstrate unary operator over complex number class.

11. Write a program in C++ to demonstrate binary operator for the matrix class.

12. Write a program in C++ to demonstrate multiple inheritance.

13. Write a program in C++ to demonstrate multilevel inheritance, public inheritance, private inheritance.

14. Write a program in C++ to demonstrate protected inheritance.

15. Write a program in C++ to demonstrate constructor call in the derived class.

16. Write a program in C++ to demonstrate destructor call in the derived class.

17. Write a program in C++ to demonstrate virtual function.

18. Write a program in C++ to demonstrate friend function.

19. Write a program to implement a Class Matrix that adds subtracts and Initializes the matrix.

20. Write a program to implement an Account Class with member functions to Compute Interest, Show Balance, Withdraw and Deposit amount from the Account.

21. Write a C++ program to implement a student class having roll no, name, rank, addresses as data members.

Java

1. Write a program in java to find the average and sum of the N number using command line argument.
2. Write a program in java to demonstrate Type Casting.
3. Write a program in java to find the number of arguments provide at runtime.
4. Write a program in java to test the prime number.
5. Write a program in java to calculate the simple interest and input by the user.
6. Write a program in java to create a simple class to find out the area and perimeter of rectangle and box using super and this keyword.
7. Write a program in java to find G.C.D. of the number.
8. Write a program in java to design a class account using the inheritance and static that show all function of bank (withrawal, deposite).
9. Write a program in java to find the factorial of a given number using recursion.
10. Write a program in java to design a class using abstract methods and classes.
11. Write a program in java to design a String class that string Method (Equal, Reverse the string, change case).
12. Write a program in java to create a package that a access the member of external access as well as same package.
13. Write a program in java to that import the user defined package and access the member variable of classes that contained by package
14. Write a program in java to that show the partial implementation of Interface.
15. Write a program in java to implement the Runnable Interface.
16. Write a program in java to implement Inter thread communication.
17. Write a program in java to implement thread life cycle.
18. Write a program in java to implement applet and print Hello.
19. Write a program in java to implement applet add two number.
20. Write a program in java to implement applet life cycle.

Max Marks: 40   **Min Marks: 13**

Course Objectives: The course is designed to develop skills to design and analyze linear and nonlinear data structures. To understand the algorithm for solving a problem in real world. It strengthens the ability to the students to identify and apply the suitable data structure for the given real-world problem. It enables them to gain knowledge in practical applications of data structures. The course also introduces the concepts and methods required for the construction of large software intensive systems. It aims to develop a broad understanding of the discipline of software engineering.
Course Outcome: At the end of the course the students will be able to design and analyze the time and space efficiency of the data structures. Students will learn to apply various techniques for efficient data storage structure in real world problems. They will be able to analyze different algorithms and their correctness and compare different techniques linear and nonlinear data structures. Students will have basic knowledge and understanding of the analysis and design of complex systems. They develop the ability to apply software engineering principles and techniques and develop, maintain and evaluate large-scale software systems.

UNIT-I
Concept of data structure and analysis of algorithm, abstract data structure, Introduction to stack and primitive operation on stack using array. Stack applications:-Infix Prefix, Postfix and Recursion, Introduction to queues, Primitive operation on queues using array, circular queue and applications of queue.

UNIT-II
LINKED LIST- Introduction to Linked List, Types of Linked List (Singly, Circular Linked List, Doubly Linked List), Basic operations on Linked List (Insertion, Deletion & Traverse), Stacks, Queues, Circular Queue using Singly Linked List and Application of Linked List.

UNIT-III
TREES-Basic terminology ,Binary Trees, Tree representations as array and Linked List, Basic operation Binary tree, Traversal of Binary trees:- In-order, Preorder, Post order, Application of Binary tree, Threaded Binary tree.
SEARCHING & SORTING: Sequential Searching, Binary search, Insertion sort, Selection sort, Quick sort, Bubble sort, Heap sort, Comparison of sorting methods.
GRAPH: Introduction of graphs, definition, Terminology, Directed, Undirected and weighted graph, representation of graph, graph traversal-Depth first, breath first search, Spanning tree, Minimum spanning tree (kruskal , prim's), shortest path algorithm.

UNIT-IV
INTRODUCTION TO SOFTWARE ENGINEERING: Software Engineering- A Layered Technology, The Software Process, Software Process Models, The Linear Sequential Model, The Prototyping Model, The RAD Model, The Incremental Model, The Spiral Model, Comparison of different life-cycle models. Requirement Analysis and Specification: Properties of a good SRS document.

DESIGN CONCEPTS AND PRINCIPLES: Cohesion, Coupling and Functional Dependence, need of function independence, function-oriented design and object-oriented design, DFD model of a system.

UNIT-V
PROJECT ESTIMATION: Project planning, Metrics for software project size estimation: Lines of Code (LOC), Function point (FP), Limitations of function point (FP) metric. **PROJECT ESTIMATION TECHNIQUES:** Empirical estimation techniques - COCOMO Model **SOFTWARE TESTING FUNDAMENTALS:** Black Box Testing - equivalence class partitioning, Boundary Value Analysis. White Box Testing, Control flow graph, Cyclomatic complexity. **SOFTWARE TESTING STRATEGIES:** Unit Testing, Regression Testing, System Testing: Alpha and Beta Testing, Integration testing, Recovery Testing, Stress Testing, Performance Testing.

Text Books:
1. Software Engineering: A Practitioner's Approach, Author: Roger S. Pressman
2. Data Structures Through C (A practical Approach), Author: G.S. Baluja
3. An Integrated Approach to Software Engineering Author: Pankaj Jalote

Reference Books
1. Data Structures using C++ Author: D.S. Malik   Second Edition
2. Principles of Data Structures using C and C++   Author: Vinu V Das   New Age International Publishers
3. A Practical Introduction to Data Structures and Algorithm Analysis Author: Clifford A. Snaffer Third Edition (Java)
4. Data Structures and Algorithms Made Easy Narasimha Karumanchi

Practical List

1. Write a program to find the factorial of a given number using recursion
2. Write a program to find GCD using recursion
3. Write a program for bubble sorting
4. Write a program for linear search
5. Write a program for binary search
6. Write a program for selection sorting
7. Write a program for quick sorting
8. Write a program for insertion sorting
9. Write a program to print Fibonacci series using recursion
10. Write a program to perform insertion and deletion operation on stack
11. Write a program to perform insertion and deletion operation on queue using static implementation
12. Write a program to perform insertion and deletion operation on queue using dynamic implementation
13. Write a program to insert a node at the beginning in singly linked list.
14. Write a program to insert a node at the middle of singly linked list
15. Write a program to insert a node at the last of singly linked list
16. Write a program to delete a node from the beginning of singly linked list
17. Write a program to delete a node from the middle of singly linked list
18. Write a program to delete a node from last in the singly linked list.
19. Write a program to traverse all the nodes in singly linked list.
20. Write a program to insert a node in the beginning of circular linked list.
21. Write a program to insert a node in the last of circular linked list.
22. Write a program to evaluate postfix operation.

B.Sc. III YEAR COMPUTER SCIENCE
PAPER I WEB APPLICATION DEVELOPMENT USING PHP AND DBMS

Max Marks: 40   **Min Marks: 13**

Course Objective: The objective of the course is to present an introduction to database management systems, with an emphasis on how to organize, maintain and retrieve - efficiently, and effectively - information from a DBMS also provides the understanding for developing web application and server-side programming.

Course Outcome: Students will be able to work with a basic web application and understand the Database management, web design and server connectivity.

UNIT-I
Purpose of database system, views of data, data models: relation, network, hierarchical, instances and schemas, data dictionary, types of database languages: -DDL, DML, structure of DBMS, advantages and disadvantages of DBMS, 3-level architecture, external, conceptual & internal levels, keys.

UNIT-II
Entities & entities set, relationship and relationship set, attributes and mapping constraints, ER diagram, strong and weak entities, reducing ER diagram to tables, fundamentals of integrity rules: entity & referential integrity, generalization, specialization & aggregation,

UNIT-III
Relational algebra: select, project, cartesian product, types of joins: theta, equi, natural, outer joins, set operations. Functional Dependencies, Good & Bad Decomposition and Anomalies as a database: A consequences of bad design, Universal relation, Normalization: INF, 2NF, 3NF & BCNF normal forms, multi-valued dependency, join dependency, 4NF, 5NF.

UNIT-IV
Overview of HTML, Working with Text, Link, Table, Image, Forms. Introduction Of cascading style sheet, selector, inline, internal, external CSS, CSS in text, image, table and input.

Overview of JavaScript, Variables, Operators, Control flow statements, Popup Boxes, Functions, Events, Windows and Document Objects, Array, Validation, Errors.

UNIT-V
Introducing PHP, Variable, Constant, Arrays, Functions, GET/POST, Introduction of MySQL, Saving, deleting, updating and retrieving records from database, session, header.

Text Books:

- Database System Concepts by Henry Korth and A. Silberschatz.
- Simplified approach to DBMS, Prateek Bhatia, Gurvinder Singh Kalyani Publication
- HTML5 Black Book, DT Editorial Services.
- JavaScript Bible by Danny Goodman, Michael Morrison, Paul Novitski and Tia Gustaff Rayl.
- PHP, A Beginner's Guide by Vikram Vaswami.
- A Brain-Friendly Guide Head First PHP & MySQL by Lynn Beighley & Michael Morrison

Suggested list of programs for practical

Create the appropriate table and apply the following queries

1. WAQ to insert some new records in emp table.
2. WAQ to list the number of employees whose name is not 'ford', 'jams' or 'jones,
3. WAQ to list the name and salary and sort them in descending order of their salary
4. WAQ to list the details of employees whose name is starts from 'a'
5. WAQ to delete all records from emp table
6. WAQ to insert values in 3 fields.
7. WAQ to list the student name having 'd' as second character.
8. WAQ to list the name and salary and sort them in descending order of their salary
9. WAQ to list the name and salary and sort them in descending order of their salary
10. WAQ in employee table find all the manager who earns between 1000 and 2000.
11. Display record of employee who have salary between 1000 and 2000.
12. List the name salary and department number of the employee and order them by their salary in descending order.
13. In employee table change the city of employee from existing one to new one.
14. Add a column salary of datatype 'number' & having size '5' with default value 1000.
15. WAQ to find the employee who earns the lowest salary in each department. Display in ascending order of salary.
16. Lisl the employee who earns maximum salary in their department. Find the name of all employee who works for 'first bank corporation'. Display the record of employee whose name start with 's' & age is greater than 18.
17. Find the name, street & city of residence ol' all employee who works for 'fbc'
18. WAQ to update the salary of employee number 1902 to Rs. 10,000
19. WAQ to find the name, street and city of all employee who works for 'fbc' and who earn more than 1000.
20. WAQ to increase the salary by 2000 and rename the column as "newsalary"
21. WAQ to find the name, street and city of all employee who works for 'fbc' and who earn more than 1000
22. WAQ to find total of salaries of all employees from emp table
23. WAQ to decrease the salary of emp from 5000 and rename column as 'newsalary'
24. List the employee number of employee who belong to department 10,2().
25. List the employee no of employees who earn greater than 2000
26. Insert new field called category in emp table.
27. Display different jobs in departments 20,30
28. List the names of employees having two 'aa' in the name.
29. Print the name, emp no, sal of employees in emp table.
30. List the names of employees who do the job of clerks or salesman.
31. Write a JavaScript program to find the area of a triangle where lengths of the three of its sides are 5, 6, 7.

32. Write a JavaScript program to calculate multiplication and division of two numbers (input from user).

33. Write a JavaScript program to check two given numbers and return true if one of the number is 50 or if their sum is 50.

34. Write a JavaScript program to convert temperatures to and from Celsius, Fahrenheit.

35. [Formula : c/5 = (f-32)/9 [where c = temperature in Celsius and f = temperature in Fahrenheit]

Expected Output :60°C is 140 °F

45°F is 7.222222222222222°C

36. Write a JavaScript program to create a new string adding "Py" in front of a given string. If the given string begins with "Py" then return the original string.

37. Write a JavaScript function that checks whether a passed string is palindrome or not?

38. Write a JavaScript function to find the first not repeated character. Go to the editor

Sample arguments: 'abacddbec'

Expected output: 'e'

39. Write a JavaScript program to display the current day and time in the following format.

Today is : Tuesday.

Current time is : 10 PM : 30 : 38

40. Write a JavaScript function to find the highest value in an array.

41. Write a JavaScript function to calculate the sum of values in an array.

42. Write a PHP script to get the PHP version and configuration information.

43. Create a simple HTML form and accept the user name and display the name through PHP echo statement.

44. Write a PHP script, which changes the color.

45. Write a PHP program to swap two variables.

46. Write a PHP program to convert word to digit.

47. Write a function for factorial.

48. Create a short website with the following dynamic web pages with the proper web template.

    a   Login form.

    b   Registration form with insert, Search, update and delete option.

B.SC. III YEAR COMPUTER SCIENCE
PAPER II OPERATING SYSTEM AND COMPUTER NETWORK

Max Marks: 40   **Min Marks: 13**

Course Objective: To study and apply concepts relating to operating systems, such as processes, scheduling, deadlocks, memory management, processor and disk scheduling, parallel processing, and security management policies. This paper gives the basic knowledge of computer networking with the concept of signal transmission, types of networks, transmission media and cryptography.

Course Outcome: Students will be able to get the concepts of operating system and the basic knowledge of computer networks and cryptography.

UNIT-I
Operating system definitions, its components, evolution of operating system, types of operating systems: batch, multiprogramming, multitasking, multiprocessor, real time, client server, peer-to-peer, distributed, clustered, operating system services, system calls, protection of I/O, memory and CPU. Process scheduling: concept of a process, process states, PCB, process life cycle, operations on processes, context switch, types of schedulers, CPU burst- I/O burst cycles, dispatcher, scheduling criteria, scheduling algorithms — FCFS, SJF, STRN, Round Robin, priority, event driven, multilevel queue.

UNIT-II
Inter process communication and synchronization, Deadlocks- definition, prevention, avoidance, detection and recovery. Memory Management: address binding, logical and physical address space, dynamic loading and linking. Swapping, Contiguous memory allocation: static and dynamic partitioned memory, fragmentation, swapping relocation, compaction, protection. Non-contiguous memory allocation: paging, segmentation.

UNIT-III
Virtual Memory: demand paging, page fault, page replacement algorithms- FIFO, LRU, optimal. Thrashing, page fault frequency. Disk organization, disk structure, disk management - contiguous and non-contiguous allocation strategies, disk address translation, disk caching, disk scheduling algorithms. Device Management: dedicated devices, shared devices. Security and protection: security problem, program threats, system and network threats, Security policies and mechanisms, authentication, protection and access control.

UNIT-IV
Computer Networks: Needs and Advantages, Network Types (LAN, WAN, MAN, Server based, Peer, Hybrid), Server types, Network Topology- Bus, Star, Ring, Star bus, Star ring, Mesh. Transmission Media, Signal Transmission: Digital signaling, analog signaling. OSI Model, TCP/IP Model.

UNIT-V
Network Connectivity- Hubs, Switches, Bridges, Repeaters, Multiplexers, Internet Connectivity- Routers and Brouters, Gateway. Switching (Circuit and Packet). Overview of Internet and ISP, Internet addressing (IPv4), URL addresses, DNS, FTP, NNTP, Email, and SMTP. Internet

Security: Security Issues, firewall Principle, Cryptography: Introduction, Substitution, Transposition, One - Time Pads.   Digital Signatures: Symmetric key signature, public key signature.

TEXT BOOKS AND REFERENCE BOOKS

l.   Operating system Concepts: by Silberschatz, Galvin 5th and 6thth Edition
2. Operating system Design and Concepts, by Milan Milenkovic
3. Operating system by Andrew Tanenbaum
4. Data Communications and Networking Behrouz A Forouzan
5. Computer Networks Andrew S Tanenbaum