SCHEME OF MARKS [BA/BCOM/BSC]-CA- II YEAR

Papers	Duration	Internal				Theory	Total		Practical		Grand Total
	Second Year	Three Months	Six Months	Total							
				Max	Min		Max	Min	Max	Min	
I	Object Oriented Programming (C++) & Conceptual Operating System	10	10	20	07	40	80	28	50	17	150
II	Computer Networks & Relational Database Management System					40					

ST. ALOYSIUS' COLLEGE (AUTONOMOUS) JABALPUR M.P.
B.A./B.Com/B.Sc. – II Year
Subject- Computer Application
Paper-I
Object Oriented Programming (C++) & Conceptual Operating System

Maximum Marks: 40   **Minimum Marks: 13**

Objective: The objective of this paper is to give the conceptual and sufficient knowledge of object oriented programming using C++, and the basics of operating system which includes architecture, Mutual exclusion algorithms, deadlock detection and deadlock recovery.

Course Outcome: By the end of this paper the students should be able to analyze and design the programs of object oriented concepts using C++. In addition to this, the student gets familiar with the types and functions of operating system, concept of memory allocation and its methods, process scheduling and various schedulers.

UNIT-I

Introduction to C++: Key concepts of Object-Oriented Programming, Advantages of OOP's. Input and Output in C++, Parts of C++ Program, Keywords, Identifiers, Data types, Constants, Operators, Scope resolution operator. **Control Structures:** Decision Making Statements, Looping Statements, Type casting.

UNIT-II

Functions: Basics of functions, inline functions, function overloading, library functions. **Classes and objects:** declaring classes & objects, Access Specifiers - Public, Private and Protected, Defining member functions - inside, outside the class, friend function.

UNIT-III

Constructors and Destructors: Characteristics, constructors with arguments, Overloading constructors, types of constructors. **Operator overloading:** Concepts and usage, **Inheritance:** Types of inheritances. Polymorphism and its types.

UNIT-IV

Introduction –Functions & types of operating systems, operating system structures, system calls and system programs. **Process management-** Process concepts, process scheduling, operation on process. Inter process communication. CPU scheduling - scheduling algorithms, process synchronization, semaphores, classic Problems of synchronization, Deadlocks.

UNIT-V

Memory Management - Single and multiple partitioned allocations, memory allocation (first fit, best fit, worst fit), fragmentation (internal, external), paging, Segmentation. Virtual Memory Management- Demand paging and Page Replacement Algorithms. **File Management** - File concept, Access methods, Directory structure, Allocation methods, freespace management, disk scheduling.

Text books:
Object-Oriented Programming with ANSI & Turbo C++ Ashok N. Kamthane
Balagurusamy: Object Oriented Programming in C++
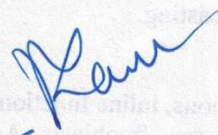Abraham Silberschatz and P. B. Galvin - Operating system concepts - Addison Wesley Publication.

Reference Books:
Herbert Schlitz: C++ the complete Reference- TMH publication.
R. Lafore: Object oriented programming in C++

List of Practicals
1. Display int, float, char and string using cin and cout.
2. Program using read(), write() and getline().
3. Program to add two numbers.
4. Program to check eligibility to admission.
5. Program to find the addition of n entered number.
6. Program to check whether entered number is even or odd.
7. Program to check percentage and grade of a student.
8. Program to print days of week.
9. Program to calculate sum of digits of entered number.
10. Program to check that given number is palindrome or not.
11. Program to calculate area of rectangle, triangle and sphere using function overloading.
12. Program to access private members of a class using member function.
13. Program to implement multilevel inheritance.
14. Program to implement multiple inheritance.
15. Program to read values using constructors.
16. Program to declare default argument in constructor to obtain power of a number.
17. Program to implement multiple virtual base class.
18. Program to declare pure virtual function.

ST. ALOYSIUS' COLLEGE (AUTONOMOUS) JABALPUR M.P.
B.A./B.Com/B.Sc. – II Year
Subject- Computer Application
Paper-II
Computer Networks & Relational Database Management System

Maximum Marks: 40   **Minimum Marks: 13**

Objective: The objective of this course is to provide students concepts and fundamentals of data communication and computer networks. It also provides a solid foundation of database management systems using SQL.

Course Outcome: After the completion of this course the students will be able to –

1. Understand the terminology and concepts of the OSI reference model, TCP-IP reference model, concepts of protocols and various network interfaces.

2. Understand the role of a database management system in an Organization.

UNIT-I

Introduction to Networks. **Types of Networks:** Server based, Peer, Hybrid. **Network Topology-** Bus, Star, Ring, Mesh. Network Protocols. OSI, TCP/IP model, Comparison between OSI and TCP/IP. Communication Media. Wired & Wireless Technology (Bluetooth, Infrared).

UNIT-II

Networking Technologies- Fiber Channel, ATM. **Network Connectivity:** Hubs, Bridges, Repeaters, Switches, and Multiplexers. **Internet Connectivity:** Routers, Gateways. **Overview of Internet and TCP/IP:** Internet addressing, Concepts of ISP, Concept of URL addresses, **Internet protocols:** FTP, NNTP. **Email:** SMTP, POP. **Internet Security-** Internet Security Issues, firewall, Data Encryption, Digital Signatures.

UNIT-III

Introduction to Database and its applications, 3 schema architecture of database, data models: **Entity Relationship Model:** Entity, Entity Set, Attributes (Atomic vs Composite, Single-Valued vs- Multi-Valued, Null, Stored Vs Derived, key vs non-key, prime vs non-prime), Entity-Relationship (E-R) Diagrams. **Relational Model:** Basic Structure (Domain, Tuple, Relation).**Relational Database Design:** Pitfalls – Normalization, Functional Dependencies, First Normal Form, Second Normal Form, Third Normal Form, BCNF.

UNIT-IV

Structured Query Language: Data Types (Number, Char, Varchar2 and Date), Relational Operators. **SQL Commands:** DDL (Create, Alter, Drop and Rename), DML (Insert, Update, Delete and Select) And DCL (Rollback, Commit) **Constraints:** Column level, Table Level Constraints, (Unique Key, Primary Key, Check, Not Null and Foreign key). Range Searching , Pattern Matching . **Single Row Function:** Number Function: (Abs, Ceil, Floor, Round, Trunc, Power, Sqrt). **Character Function:** ASCII, CHR, Concat, Initcap, Substr, Length, Lower, LPAD, RPAD, Ltrim, Rtrim, Upper. **Date Function:** Add_months, Last_day, months_between, sysdate, next_day. **Group Function:** Group by Clause, Having Clause, Avg, Count, Max, Min, Sum. **Joins:** Type of Join (Natural Join, Self-Join), Views.

UNIT-V

Introduction to PL/SQL: PL/SQL Block, PL/SQL Data Type, (Number, Char, Varchar2, Date), Comments, Serveroutput Command, Dbms_output.put_line Function, Conditional Control (IF statement), Iterative Statement (For Statement, Loop, While), Cursor, Function, Procedure, Triggers.

Text Books:

1.Computer Networks Fourth Edition Andrew S. Tanenbaum
2. An Introduction to Database Systems Bipin. C. Desai
3. Fundamentals of Database Systems 5th Edition by Ramez Elmasri, Shamkant B. Navathe
4. Ivan Bayross, "SQL, PL/SQL", BPB Publications"

Reference Books:
1. Liebschuty, "The Oracle Cook Book", BPB Publication Michael Abbey, Michael J.Corey,
2..DataBaseSystem Concepts-Abraham Silbershultz, Henry Korth, S. Sudershan
(ISBN-0071148108)

List of Practicals-
1. Write a query to insert some new records in empolyee 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 ascending order of their salary
9. WAQ to list the name, salary and department and sort them in order of their salary and department.
10. WAQ to find all the manager whose salary lie 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. WAQ to find the employee who earns the lowest salary in each department. Display in ascending order of salary.
15. List the employee who earns maximum salary in their department.
16. Find the name of all employee who works for 'first bank corporation'.
17. Display the record of employee whose name start with 's' & age is greater than 18.
18. Find the name, street & city of residence of all employee who works for 'fbc'
19. WAQ to update the salary of employee number 1902 to Rs. 10,000
20. WAQ to find the name, street and city of all employee who works for 'fbc' and who earns more than 1000.
21. WAQ to find total of salaries of all employees from emp table
22. WAQ to decrease the salary of emp from 5000 and rename column as 'newsalary'
23. List the employee number of employee who belong to department 10,20
24. List the employee no of employees who earn greater than 2000
25. Insert new field called category in emp table.
26. Display different jobs in departments 20,30
27. List the names of employees having two 'aa' in the name.
28. Print the name, emp no, sal of employees in emp table.
29. List the names of employees who do the job of clerks or salesman.