

M.Sc. (I.T.)
SEMESTER – II
Paper No.: 5

Title of the Paper: Operating System

Credits: 5

Marks: 100

Marks: Semester End Examination: 70 Marks
Continuous Internal Evaluation: 30 Marks

Unit 1:

Evolution of Operating System, Basic concepts: User job, Resources, Batch processing, Multiprogramming, Time sharing, Process, Process Control Block.

Unit 2: Memory management

Address Protection, Segmentation, Virtual Memory, Paging, Page replacement algorithms, Support for concurrent process: Mutual Exclusion, Shared Data, Critical Sections, Busy form of waiting, Lock and Unlock primitives, Synchronization, Blocking and wake up, Process Scheduling, Process states, Virtual processors, Interrupt mechanism, Scheduling Algorithms, Implementation of concurrency primitive.

Unit 3: System Deadlock

Prevention, Detection and Avoidance

Unit 4: Multiprogramming system

Queue management, I/O Supervisors, Memory Management, File system, Disk scheduling.

Unit 5:

Shell Programming, UNIX-C interface, System calls, Device Driver, Interrupt Handler. UNIX and Linux as example systems

REFERENCE BOOKS:

1. Peterson and Silberschatz, Operating System Concepts, Addison Wesley.
2. P. B. Hansen, Operating System Principles, PHI
3. K. Chritian, The UNIX Operating System, John Wiley.
4. A. N. Haberman, Introduction to Operating System Design, Galgotia.

M.Sc. (I.T.)
SEMESTER – II
Paper No.: 6

Title of the Paper: Linear Algebra

Credits: 5

Marks: 100

Marks: Semester End Examination: 70 Marks

Continuous Internal Evaluation: 30 Marks

Unit 1:

Vector Space, Definition and Examples, Vector Subspaces, Linear Dependence and Independence, Span of a Set, Basis and Dimension of a Vector Space, Line, Affine Spaces, Quotient Spaces.

Unit 2:

Linear Transformation, Representation of Linear Transformation by a Matrix, Kernel and Image of a Linear Transformation, Linear Isomorphism

Unit 3:

Geometric Ideas and rank, Identity, Stretch along axes, Reflection with respect to axes, Rotation, Shear, Projection, Their Combinations

Unit 4:

Inner Product Spaces, The Euclidean plane and the dot product, General Inner Product Spaces, Orthogonality, Geometrical Application, Orthogonal Projection onto a Line.

Unit 5:

Orthonormal Basis, Orthogonal Complements and Projections, Linear functionals and hyper-planes, Orthogonal Transformations, Associated Co-ordinates, Reflections, Orthogonal map of the plane.

REFERENCE BOOKS:

1. S. Kumaresan, Linear Algebra-A Geometric Approach, PrenticeHall, New Delhi, 2003.
2. K. B. Dutta, Matrix and Linear Algebra, PrenticeHall, New Delhi.
3. N. S. Gopalakrishnan, University Algebra, Wiley Eastern Ltd.

**M.Sc. (I.T.)
SEMESTER – II
Paper No.: 7**

Title of the Paper: Data Base Management System

Credits: 5

Marks: 100

**Marks: Semester End Examination: 70 Marks
Continuous Internal Evaluation: 30 Marks**

Unit 1: DBMS Concepts

Data abstraction, Database System architecture, Schemas and Subschemas, Data independence, Physical Data Organization: Hashed, Index file, B-tree.

Unit 2: Data Models

Data modeling using entity relationship, Hierarchical and Network Model: DBTG proposals, Data manipulation languages.

Unit 3: Relational Model

Relational Algebra and Calculus, Strong Organization for Relations, Functional, Multivalued and Project-Join dependencies, Decomposition, Normal Forms: First, Second, Third, BCNF, Fourth and PJ normal forms.

Unit 4: STRUCTURED QUERY LANGUAGE (SQL * PLUS)

Tables, Primary key, Foreign Key, Indexes, Data Definition Language: Create, Alter, Truncate, Drop, Data Manipulation Language: Insert, Update, Delete, Database Constraints.

Unit 5: Database Objects & Function

View, Sequence, Synonyms, Transaction Control Language: Commit, Rollback, Savepoint, Data Control Language: Grant, Revoke, Database index, General SQL Function (Character, Arithmetic, Date, Conversion).

REFERENCE BOOKS:

1. C. J. Date, An Introduction to Database Systems, Vol I & II, Addison Wesley.
2. J. D. Ullman, Principle of Database Systems, Galgotia, New Delhi,
3. Wiederhold, Database Design, McGraw Hill.
4. SQL, PL/SQL The Programming Language of Oracle by Ivan Bayross, 3rd Edition
5. Learn Oracle 8i by Jose A Ramalho

M.Sc. (I.T.)
SEMESTER – II
Paper No.: 8

Title of the Paper: Programming Lab-II

Marks: 100

Practical Based On

**Paper 7: Data Base Management System {50%}
and Object Oriented Programming {50%}**

Object Oriented Programming:

Objects & Classes

Class Definition, Constructors, Deconstructors, Objects as function arguments, Memory management of Classes, Objects and static data, Array as class member data & Array of objects
Classes within classes

Operator Overloading & Inheritance

Overloading of unary & binary operators, Data Conversion between Basic types, Objects and Different, Classes, Concept of derived class & base class, Constructor for derived & base class, Public & private inheritance, Levels of inheritance, multiple inheritance, Templates & File Handling.

REFERENCE BOOKS:

1. Robert Lafore, Object Oriented Programming in Turbo C++, Guide, Galgotia Pub. (P) Ltd.
2. E Balagurusamy, Object Oriented Programming in C++, Tata McGraw-Hill Publishing Co. Ltd.
3. Barkakati N., Object Oriented Programming in C++, PHI.
4. OOP's using C++ for Dummies.