M.Sc. (I.T.)
SEMESTER – IV
Paper No.: 13

Title of the Paper: Advanced Database: Concepts & Tools **Credits: 5**
Marks: 100
Marks: Semester End Examination: 70 Marks
Continuous Internal Evaluation: 30 Marks

Unit-1: Database Concepts
- Relational Database Models – Entity, Attributes, Primary Key, Table, View etc.
- Entity Relationship Model
- Unified Modeling Language (UML)
- XML Databases
- Data Analysis & OLAP
- Data warehousing & mining

Unit 2: Overview of SQL & PL/SQL
- Basic SQL Commands and functions.
- Writing PL/SQL code - If then Else, cursor for Loop,
- While Loop and Simple for Loop, Error handling.
- Stored Procedures.
- Functions.
- Triggers.

Unit 3: Oracle Architecture
- Physical & Logical database
- Oracle instance
- Database Structure & Space Management
- Memory & Process Structure
- Process Architecture

Unit-4: Database Security
- Role & Privileges
- Backup & Recovery
- SQl *Loader Utility

Unit 5: Database Management on WEB
- Introduction to WEB Application Server
- Web Server Architecture
- Data Publishing on WEB
- Deploying database on WEB
- Database Access(JDBC)
- DB Access Protocol

REFERENCE BOOKS:

Reference Books:
1. Oracle 9i The Complete Reference – Oracle Press
2. Oracle WEB Application Server Handbook – Oracle Press

M.Sc. (I.T.)
SEMESTER – IV
Paper No.: 14

Title of the Paper: Advanced Data Structures & Algorithms (Using C++) **Credits: 5**
Marks: 100
Marks: Semester End Examination: 70 Marks
Continuous Internal Evaluation: 30 Marks

Unit 1: Binary Tree & Applications

- Binary Tree - Representation and traversal
- Threaded Binary Tree
- Huffman Algorithm
- Representation of General Tree, General Tree Traversal, General expression as Tree, Evaluating an expression Tree

Unit 2 : Advanced Searching

- Tree Searching- Insertion & Deletion in Binary Search Tree
- General search Trees
- Multiway Search Tree – Representation, Searching & Traversing
- B-Tree- Representation, Searching & Traversing
- Introduction to B+-Tree

Unit 3 : Divide and Conquer

- The general method.
- Binary search, Finding maximum, Minimum.
- Merge sort, Quick sort.

Unit 4 : Greedy method.

- General method.
- Knapsack Problem.
- Job sequencing with deadlines.
- Spanning trees.
- Shortest paths.

Unit 5 : Backtracking.

- General method.
- 8 queens problems.
- Sum of subsets.
- Graph colouring

Reference Books:

1. Data Structures Using C and C++- Y. Langsam, M.J.Augenstein, A.M. Tenenbaum
2. Fundamentals of Computer Algorithms- Horowitz Ellis & Sahni Sartaj Galgotia Pub. Pvt. Ltd., New Delhi..

M.Sc. (I.T.)
SEMESTER – IV
Paper No.: 15

Title of the Paper: Project Work **Credits: 5**
Marks: 100
Marks: Semester End Examination: 70 Marks
Continuous Internal Evaluation: 30 Marks

Students have to develop a software project based on any technologies they studied or not. The project should be in-house project (developed in the institute where they studied). In the exam, they have to show live running project to the examiners in the lab.

Following parameters may be considered for evaluation:
- ♣ Problem definition
- ♣ Quality of work
- ♣ Ability to modify the software
- ♣ Knowledge of application area
- ♣ Documentation
- ♣ Presentation

Reference Books:

1. Analysis and Design of Information Systems, McGraw Hill Intl. Stdt. Edn.

M.Sc. (I.T.)
SEMESTER – IV
Paper No.: 16

Title of the Paper: *Programming Lab- IV* **Credits: 5**
Marks: 100
Marks: Semester End Examination: 70 Marks
Continuous Internal Evaluation: 30 Marks

Practical Based On
Paper 13: Advanced Database: Concepts & Tools (50%)
Paper 14: Advanced Data Structures & Algorithms (Using C++) (50%)