

VIKRAM UNIVERSITY, UJJAIN
INSTITUTE OF COMPUTER SCIENCE

PROGRAMME TITLE: Certificate Course in DBMS & SQL.

DURATION OF COURSE: 6 Months

SCOPE: This certification course will be run only at the Institute of Computer science. The main objective of this course is to make students self dependent (आत्मनिर्भर) in computer programming and computer technology, so that students can make their career in computer technology field.

PROGRAMME OBJECTIVES:

The objective of the Certificate Course in DBMS & SQL programme is to prepare students for productive careers in the software industry and . Certification courses are aimed at skills development in computers using Back end database concept skills.

The main objectives of the Certificate Course in DBMS & SQL programme includes:

- To develop in depth understanding of the key concepts of Back end database to impart knowledge of problem solving techniques.
- Focus on development of knowledge and specific skills required in Programming Language with DBMS & SQL.
- To develop competent computer professionals with strong ethical values.

PROGRAMME OUTCOMES (POs)

At the end of this Certificate Course in DBMS & SQL programme, student will be able to:

- Prepare software's and Application on computer system.
- Gain understanding of the key Back end database skills.
- Understanding the key concepts of Back end database to improvise organizational performance.

After Completion of the programme students are able to work as-

- DBA Manager.
- Data Base Analyzer.
- Data Base Strategy Designer .

COURSE NAME: CERTIFICATE COURSE IN DBMS & SQL
LEVEL OF COURSE: CERTIFICATE COURSE
DURATION: 6 Months
ELIGIBILITY: 10+2
FEE: 3000/-

SCHEME OF EXAMINATION

Paper code	Title of Paper	Theory External Marks	Min.Pass Marks	Internal Mark	Min.Pass Marks	Total
	Paper-I	75	27	25	9	100
	Paper-II	75	27	25	9	100
	Internship/ Industrial	150	54	50	28	200
	Training/ Project Work	300		100		400

Code	Topic
Paper- I	DBMS
Paper-II	SQL

Database Management System

UNIT-1

DBMS Concepts and architecture Introduction, Review of file organization techniques, Database approach v/s Traditional file accessing approach, Advantages of database systems, Data models, Schemas and instances, Data independence, Functions of DBA and designer. Entities and attributes, Entity types, Value, Sets, Key attributes, Relationships, Defining the E-R diagram of database, **Various data models:** Basic concepts of Hierarchical data model. Network data model, and Relational data model, Comparison between the three types of models.

UNIT-2

Relational Data models: Domains, Tuples, Attributes, Relations, Characteristics of relations, Keys, Key attributes of relation, Relational database, Schemas, Integrity constraints, Intension and Extension, **Relational Query languages:** Relational algebra and relational calculus, Relational algebra operations like select, Project, Join, Division, outer union etc.

UNIT-3

Types of relational calculus i.e. Tuple oriented and domain oriented relational calculus and its operations. SQL: Data definition in SQL, update statements and views in SQL QUEL & QBE: Data storage and definitions. Data retrieval queries and update statements etc.

UNIT-4

Data Base Design: Introduction to normalization, Normal forms, Functional dependency, Decomposition, Dependency preservation and losslessjoin, problems with null valued and dangling tuples, multivalued dependencies. Distributed databases, protection, security and integrity constraints, concurrent operation on databases, recovery, transaction processing, basic concepts of object oriented data base system and design.

UNIT-5

Case study of relational database management systems: Oracle and Microsoft access, Oracle tools.

Reference Books:

- 1. Data Base Management System by C.J. Date
- 2. Data Base Management System by Ullman
- 3. Fundamental of database system byElmasri/Navathe the Benjamin / Cunnings Publishing company inc..
- 4. Data base design by GioWiederhold, McGraw Hill
- 5. Fundamental of Data Base Management System by Leon & Leon, Vikas Publishing House Pvt. Ltd.

SQL

UNIT-I
Structured Query Language : Writing Basic SQL Select Statements, Restricting and Sorting Data, Single-Row Functions, Joins (Displaying Data from Multiple Tables), Aggregating Data using Group Functions, Sub-queries, Manipulating Data, Creating and Managing Tables, Including Constraints, Creating Views, Creating other Database Objects (Sequences, Indexes and Synonyms)
UNIT-II
Advanced SQL : Controlling user Access, using SET operators, Data Time Functions, Enhancements to Group by clause (cube, Rollup and Grouping), Advanced Sub-queries (Multiple column Sub-queries, Sub-queries in FROM clause, Scalar and correlated Sub queries), WITH Clause, Hierarchical retrieval.
UNIT-III
PLSQL : Introduction, Overview and benefits of PL/SQL, Subprograms, types of PL/SQL blocks, Simple Anonymous Block, Identifiers, types of identifiers, Declarative Section, variables, Scalar Data Types, The % Type attribute, bind variables.
UNIT-IV
Control Structures : Conditional processing using IF statements and CASE statements, Loop Statement, while loop statement, for loop statement, the continue statement composite data types : PL/SQL records, The % ROWTYPE attribute, insert and update with PL/SQL records,
UNIT-V
INDEX by tables, INDEX BY Table Methods, Use INDEX BY Table of Records, Explicit Cursors, Declare the Cursor, Open the Cursor, Fetch data from the Cursor, Close the Cursor, Cursor FOR loop, The % NOTFOUND and % ROWCOUNT Attributes, the FOR UPDATE Clause and WHERE CURRENT Clause, Exception Handling, Handle Exceptions with PL/SQL.
References:-
1. Murach’s Oracle SQL and PLSQL by Joel Murach, Murach and Associates. 2. Oracle Database 11g PL/SQL Programming Workbook, ISBN : 9780070702264, By : Michael 3. McLaughlin, John Harper, Tata McGrawHill. 4. Oracle PL/SQL Programming, Fifth Edition By Steven Feuerstein, Bill Pribyl

Internship/ Industrial Training/Project Work