B.Sc. SEMESTER V
VISUAL BASIC PROGRAMMING and
DATABASE MANAGEMENT SYSTEM
Subject Code: UG-CS(05)-S5-T
Course Outline

Unit I

Working with Visual Basic Window Components: Menu Bar, Tool Bar, Project Explorer Window, Form Layout Window, Properties Window, Toolbox, Code Editor Window **Working with Forms:** Properties, Events, Methods **Working with Basic Controls:** Label, Command Button, Text Box, Option Button, Frame, CheckBox, ListBox, ComboBox, Image, Scroll, Picture, Timer, DriveListBox, DirListBox, FileListBox and Shape Controls. **Basic Programming Fundamentals:** Variables, Data types, Constant, Conversion Function. **Scope of Variable:** Public, Private, Static. **Operators:** Logical, Arithmetic, Concatenation, Comparison. **Decision Structure:** If.. Then, If..Then..Else, Select Case.. End Case. **Loop Structure:** Do..While, While.. Wend, For.. Next, With.. EndWith. DoEvents ().

Unit II

Arrays: Dynamic Array, Preserve and Control arrays. **Procedure:** General procedure, General Methods for Passing Arguments to a Procedure, **Functions:** User-Interaction, String, Math, Date, Conversion Functions. **Modules:** Form, Standard.

Menus: Creating, Adding Menu Items, Creating Shortcut, Adding Separators Bars, Submenus, Code for Menus. **Creating Popup Menu:** System, Custom.

Unit III

Database Handling: Database Concepts, Creating and Accessing Database, Using Data Control. **Using DAO:** Creating Search Programs, Numeric Search and Complex Search Programs.

Using ADO Data Control: Data Link, ODBC Data Source name, Using Connection String, Creating Navigating buttons. **Working with Advanced Data Controls:** DataList Control, DataCombo Control, DataGrid Control and Msflexgrid Control. **Handling Errors:** Run Time, Trapping and Handling Error, ERR Object. Data Environment and Data Reports.

Unit IV

    DBMS: Definition: Databases, DBMS, Problems with traditional file processing system, Objectives of the database systems, Three level architectures of DBMS, Components of DBMS, Database Administrator, Database Users, Data model, Different types of data models, Concepts of Hierarchical, Network Models.

    E-R Models: Basic Concepts, Entity, Attributes, Relationship, Mapping, Keys, Weak and Strong Entity Set, Problems on E-R Diagrams.

Unit V

    Extended E-R Features: Specialization, Generalization, Aggregation, Problems on Reduction of an E-R Schema to Tables, Tabular representation of Strong, Weak entity Sets and Relationship Sets.

    Relational Model: Structure, Relational Algebra, Fundamental Operations, Set – Intersection, Natural Join, Division and Assignment Operation. Extended Relational Algebra Operations, Aggregate Functions.

Unit VI

    Functional Dependency: Functional Dependency, Fully Functional Dependency, Partial Dependency, Transitive Dependency, Multi Valued Dependency. **Normalization:** Normal Forms (1NF, 2NF, 3NF, BCNF, 4NF, 5NF). Problems on Normal forms.

B. Sc. Semester VI
COMPILER CONSTRUCTION, SQL and PL / SQL
Subject Code: UG-CS(05)-S6-T
Course Outline

Unit I

Compilers and Translators: Need, The Structure of a Compiler, Lexical Analysis, Syntax Analysis, Intermediate Code Generation, Optimization, Code Generation, Book Keeping, Error Handling.

Unit II

High Level Programming Languages: Definitions of Programming Languages, The Lexical and Syntactic Structure of a Language, Data Elements, Structures, Operators, Assignment Statements, Data Environments, Parameter Transmission, Storage management.

The Role of the Lexical Analyser: Approach to the Design of Lexical Analyzer, Implementation of Lexical Analyzer, Context Free Grammars, Derivations and Parse Trees, Ambiguous Grammar.

Unit III

Parsers: Shift-Reduce Parsing, Operator Precedence Parsing, Top-Down Parsing, Predictive Parsers, Symbol Table,

Code Optimization: The Principal Source of Optimization, Loop Optimization, DAG Representation of Basic Blocks.

Code Generation: A Machine Model, A Simple Code Generator, Register Allocation and Assignment.

Unit IV

CODD'S Rules, Oracle Database Objects, Sub Languages of SQL, Data Types, Operators. **DDL Statement:** Creating Tables, Deriving Table from Existing Table, Altering, Dropping Tables. Integrity Constraints, Specifying Names for the Constraints, Viewing Integrity Constraints, Adding and Dropping Constraints. **DML Statements:** SELECT statement, Insert, Update, Delete, Working with Sequences and Synonyms. **Built-in functions:** Arithmetic, Date, Character, Conversion, Single row, Aggregate, Decode. Joins, Set Operators and Sub queries. **DCL and TCL Statements:** Grant, Revoke, Commit, Rollback and Savepoints.

Unit V

VIEWS: Creating Views, Dropping Views, Inserting, Updating and Deleting Data using Views, Types of Views. **PL/SQL Programming:** PL/SQL Data Types, Identifiers, Operators and Expressions, Iterative Statements, Conditional Statements, Emphasis on Problems.

Exception Handling: Predefined Exceptions, User Defined Exceptions. **Cursors:** Declaring Cursors, Opening and Retrieving Records, Closing Cursors. Attributes of Explicit and Implicit Cursors, Parameter Passing in Cursors, Problems on Exception Handling, Cursors.

Unit VI

Procedures: Create and Drop Procedure, Creating Procedures with Parameters, Calling Procedures, Granting the EXECUTE Permission, Problems on Procedures.

Function: Creating and Dropping Function, Purity Levels in Functions, Executing Functions. **Triggers:** Create Triggers, Type of Triggers, Creating BEFORE and AFTER Triggers, INSTEAD-OF Triggers, Trigger Predicates, Inserting, Updating and Deleting Triggers, Enabling, Disabling and Dropping Triggers. Problems on Functions and Triggers.