

**INFORMATICS - PRACTICES**  
**Class XII**  
**(Theory)**

**Duration : 3 Hours**

**Marks:75**

<b>Unit No.</b>	<b>Unit Name</b>	<b>Marks</b>
<b>1.</b>	<b>BUSINESS COMPUTING</b>	<b>15</b>
<b>2.</b>	<b>PROGRAMMING</b>	<b>30</b>
<b>3.</b>	<b>RELATIONAL DATABASE MANAGEMENT SYSTEM</b>	<b>30</b>
	<b>TOTAL</b>	<b>75</b>

**UNIT 1: BUSINESS COMPUTING**

General concept, User interfaces (Front End), Underlying Database (Back End), Intergration of User Interface and Database;

More application areas of Databases:

Inventory control, Financial Accounting, Pay-Accounting System, Invoicing Management System, Personal Management System/HRD System, Fees Management system Result Analysis System, Admission Management System, Income Tax Management System;

Advanced Program Development Methodology: System Development Life Cycle, Relational Database Concept, Relational Database, Management System, Data Models (Entity Relationship Model), Entity and Entity Set, Attributes (Single, Composite and Multi-Valued), Relationship (One-to-One, One-to-Many and Many-to-Many), Entity Relationship Modeling Convernitions, Communicating with an RDBMS using SQL, Relational Database Management System, SQL Statements. About programming language in SQL.

Data Dictionay, Data Warehousing, Data Mining, Meta Data;

Object Modeling: Indtroduction to object oriented modeling using Unified Modeling Language (Concepts only).

Client Server Computing: Concept of Client Server Computing.

**UNIT :2 PROGRAMMING: Visual Basic**

**Review of Class XI;**

**Programming Fundamentals**

Modules: Modules in Visual Basic-Form Modules, Standard Modules, and Class Modules;

Procedures: Procedures (General, Event, Function, Property);

Control Structures:

Decision Structure - IF, IF-THEN-ELSE, Select Case;

Looping Structure-Do While ..... Loop, Do ..... Loop While, For..... For ..... Next, For Each .... Next;

**Functions:** Concept of Functions, Defining and Use of User Defined functions, function to perform calculations, Parameterized Functions;

Library Functions (System Functions)

**String Function:** Space (), Str (), Right (), Left (), Mid (), InStr (), Len (), Ltrim (), Ltrim (), Rtrim (), Ucase (), Lcase (), String (),

Numeric Function : Sgn (), Val (), Rnd (), Int (),

Time-Related Function : Now (), Time (), Month (),

Miscellaneous Function : Msg Box (), Input Box (),

Types of forms: Single Document Interface (SDI) and Multiple Document Interface (MDI);

MDI Applications: Creating MDI form and Child form, Arranging Child Forms;

Visual Basic Project: Properties, Component and References, Data Environment;

Accessing database from ORACLE using ODBC or ADO or OLEDB;

Accessing Databases: Using ODBC and OLE DB to connect with database.

Data Control : Accessing Data with the Data Control, Using Data-Aware Controls, Using Data Control Properties-Database Name, Exclusive, Options, Read Only, Record Source,

Data Control Methods- Refresh, Update Controls, Update Record;

Bound Controls: Adding Bound Text and Bound Label Controls. Data-Bound list Boxes/ Grids, and Sub Forms.

ADO (ActiveXData Object): Connection Object, Command Object, and RecordSet Object, Special ADO Properties - Connection String, Command Text, Command Types Cursor Location, Cursor Types, Lock Types, Mode Types.

ADO Data Control : ADO Data Control Methods, ADO Data Control Events.

Data Reports: Designing of Report: Data Project, Data Environment and Connection. Simple Data Report, Formatting Row Spacing and Column Spacing of Report, Inserting Header and Footer, Inserting Controls, Creating Reports using SQL Queries.

Error Handling: The Error Object Properties, Types of Errors-General File Errors, Physical Media Errors, Program Code Error, and Database Error

### **UNIT 3 : RELATIONAL DATABASE MANAGEMENT SYSTEM**

Review of ORACLE FROM Class XI

#### **Database Fundamentals**

Concept of Database Transaction, Committing a Transaction, Concept of "All or None" in a Transaction, Network Protocols Required (TCP/IP) for Data Communication, Stored Procedures, Concept of Database Fragmentation and Distributed Databases.

#### **PL/SQL (Programming Language in SQL)**

Importance of Writing Procedures,

Declaring Variables: About PL/SQL, PL/SQL Block Structure, Program Constructs, Use of Variables, Handling Variables in PL/SQL, Types of Variable, Declaration, Naming Rules, Assigning Values to Variables, Initialization, and Keywords, Scalar Data types, Base Scalar Data Types, Scalar Variable Declaration,%TYPE attribute: for variable declaration, Declaring Boolean Variables, PL/SQL Record Structure, Referencing Non-PL/SQL variables, DBMS\_OUTPUT.PUT\_LINE;

Writing Executable Statements: PL/SQL Block Syntax and Guidelines, SQL function in Code, SQL Function in PL/SQL, PL/SQL Functions, Data type Conversion, Nested Block and Variable Scope, Operators in PL/SQL PL/SQL, Using Bind Variables Programming

Guidelines, Determining Variable Scope, SQL Statements in PL/SQL, Retrieving data in PL/SQL, Manipulating Data using PL/SQL, Inserting Data, Updating Data, Deleting Data, Naming Conventions, Commit and Rollback Statement, SQL Cursor, and Cursor Attributes:

**Writing Control Structure:** Controlling PL/SQL Flow of Execution, IF statement. IF-THEN-ELSE Statement Execution Flow, IF-THENSELF Statement Execution Flow, Building Logical Conditions, Logic Tables, Boolean Condition, Iterative Control: LOOP Statement, Basic Loop, FOR Loop While Loop;

Creating Procedures: Overview of Procedures, Syntax for Creating Procedures, Developing Stored Procedures and its Advantages, Creating a Stored Procedure, Procedure Parameter Modes, Creating Procedures with Parameters. IN and OUT parameters and Usage, DEFAULT Option for Parameters. Removing Stored Procedures.

Writing Cursors, Introduction to Cursors (Explicit and implicit) Explicit Cursor Functions, Controlling Explicit Cursors, Declaring, Opening and Closing the Cursor, Fetching data from the Cursor, Explicit Cursor Attributes (%ISOPEN,%NOTFOUND,%ROWCOUNT), controlling multiple fetches, Cursors and Records, Cursor FOR Loops, Cursor FOR Loops using Sub Queries.

Triggers: Types of Triggers: Row-Level Triggers, Statement Level Triggers, BEFORE and AFTER Triggers, INSTEAD of Triggers, Valid Trigger Type, Trigger Syntax, Combining Trigger Types, Enabling and Disabling Trigger, Replacing Trigger, Dropping a Trigger.

Development of Data Base Application (Application Domain:)

Student database for school, Employee database for a company, Library Database for Library. Student database management system for school, Employee database management system for Library, Railway Reservation System Hotel Reservation, Inventory Control System;

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## Class XII Practical

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**Duration: 3 Hours**

**Marks:25**

**1. Hands of experience**

**10**

**A problem should be given covering the following features**

1. Start a Standard Exe Project and it should contain MDI form with Menu Bar and Tool Bar (with Images)
2. Table structure in the database for the application with Constraints (Primary Key, Foreign Key, Check , and Unique).
3. A New Form to place and ADO component on it, for accessing data in table Stored Procedure to perform transaction/conditional update.
4. Trigger (Any)
5. Data Repoet to view Data of Table
6. Making executable files of the project.

## 2. Records

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1. Create an Application using Visual Basic for Student Information System Having a Student table in ORACLE and a student Data Form in Visual Basic to enter data into the database.

2. Create an Application using Visual Basic for Criminals Informations System Having a Criminal Table in ORACLE Database and a Criminals Data Entry From in Visual Basic to enter data into the database. The Data entry form should contain form level and Field level checks using procedures.

3. Create an Application using Visual Basic for Nursing Home Automation System having Linked tables (for example: Patient, Employee, Bill) in ORACLE Database and a required Data Entry Forms in Visual Basic to enter data into the database. The Data entry form should contain form level and Field level checks using procedures. Use of Bond Controls and Sub-Forms are to be encouraged in this application.

4. Improve the above mentioned application by incorporating Data Reports to produce day to day, Weekly, Fortnightly, Monthly and Annual reports (Consult the instructor or collect live information for the requirement of Reports)

5. Create a database handling application of Student Expert System. Following features are to be incorporated in the application:

- a. Create following linked tables of Student in the ORACLE database.
  - i. StudentMaster : containing general information about the student.
  - ii. StudentDetail : Table to store data having details such as Class, Section, Marks and other relevant information.
  - iii. StudentFeeDetail: Should contain details like Financial Year, Class, Fee, FeeStatus(such as Paid and Unpaid)
  - iv. Accounts : General Accounts table to store fee collection details such as received from, date, chequeno and other relevant information.
- b. The database should have Procedures to update data, Insert data and to perform other database transactions.
- c. Database triggers should also be defined wherever automatic data modification is required.
- d. Visual basic forms for data entry.
- e. Procedures in Visual Basic to perform Database Transactions and Commit changes made.
- f. Reporting tool to make the MIS reports, required to analyse data entry.

## 3. Project

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The following case study is to be adopted for the development of project.

A book publishing company B R Publishing Group is in existence since 1950. They were untouched with latest technological inventions. They are still using a traditional approach of bookkeeping and accounts maintenance.

A company, Nova technology, introduced themselves as system integrator and developers who can change existing working system into the latest concept of paper less office. They wanted few details from the company about its working. The details are under :

- \* Name of the company is B R Publishing Group.
- \* The company is having 20 employees. One Managing Director, Two Managers (Work manager and Marketing Manager) and 17 employees who work as a team for book publishing.

- \* The company publishes book in different Indian languages and different topics.
- \* Every book involves an Author and its detail.
- \* The book is sold in the market at a variable discount options  
Book Seller: 30%  
Schools: 20%  
Customer: 15%
- \* The company is maintaining information about Author and all its details such as Personal Information, Royalty etc.
- \* The company manages information about the book such as Book Name, Author, Quantity Sold, Quantity in Stock, etc.
- \* The company maintains Customer (Book Sellers) information. Books Sold, Subject, Language, and Amount Pending etc.
- \* Reports are required at different levels, such as  
Customer Listing  
Book Listing  
Language Wise Book Listing  
Topic Wise Book Listing  
Pending Amount Listing (Customer Wise, Book Wise)  
Author Royalty Detail  
Bill Generation etc.

As a developer you are required to design the project and develop it as per customer needs (Developer can also visit a publishing company to collect customer details and live data). Suitable assumptions can be made during implementation. A proper normalized database is to be maintained in the RDBMS and the front end is to be developed using advanced interface controls. User-friendly interface is to be generated. The project should include data reports for reporting purpose.

**Note:** *This is a sample case study. Similar type of cases can be developed on different application areas such as Library, Hospital, Transport Authority, Transporters, Wholesale Merchants, and Chemist Shops etc. The cases to be developed should preferably be obtained from live situations.*

#### 4. Viva Voce

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Five questions from topics covered in the syllabus

#### Reference Books:

- \* Mastering Visual Basic 6 - Petroutsos (BPB)
- \* Mastering Database Programming with Visual Basic 6 - Petroutsos (BPB)
- \* Advanced Visual Basic 6 Project - Bay Ross (BPB)
- \* Programming in Visual Basic 6 - Bay Ross (BPB)
- \* Visual Basic 6 Complete - Sybex (BPB)
- \* MCSD: Visual Basic 6 Desktop Applications Study Guide- Michael (BPB)
- \* Successful Projects in Visual Basic- Christopher (BPB)
- \* Oracle8: The Complete Reference- George Koch, Kevin Loney (TMHP)
- \* Visual Basic Black Book (IDG)
- \* Mastering Visual.NET Database Programming-Petroutsos (BPB)
- \* Programming in Visual Basic - McBride (BPB)

- \* Mastering Oracle8i - Freeman (BPB)
- \* Learn Oracle8i - Ramalho (BPB)
- \* TEACH YOURSELF SQL/PL SQL USING ORACLE8i & 9i with SQL  
J- BAYROSS (BPB)
- \* Visual Basic and ORACLE SSI Press
- \* Oracle Programming with Visual Basic- Snowdon (BPB)
- \* Quan Book 'O' Level all Vol. - DOEACC (BPB)