COMPUTER APPLICATION (COMA)

Class - XI

Full Marks 100

THEORY - 70 Marks

PRACTICAL - 30 Marks

A. Brief Review of Computer Systems (40 Marks)

i) Evolution of Computers and Computer Organization :

- **Evolution of Computers**
  - Abacus, Napier's Bone, Pascaline, The Babbage Machine
  - Stored Program Concept, Von Neumann Concept / Architecture
- **Computer Hardware Generations**
  - First, Second, Third, Fourth and Fifth Generation of Computers;
  - Components, Advantages, Disadvantages
- **Concept of Circuit Integration**
  - SSI, MSI, LSI, VLSI, ULSI
- **Classification of Computers**
  - Analogue, Digital, Hybrid Computers
  - Mainframe and Super Computer
  - Mini, Micro, Laptop Computer
- **Computers in Modern Society**
- **Concept of Data and Information, Data Processing**
- **Brief description of each functional block of a computer**
  - Block Diagram of a Computer System
  - Input Devices (Keyboard, Mouse, Scanner, Touch Screen, OMR, OCR, MICR, Graphic Tablet, Barcode Reader, Light Pen, Microphone, Joystick)
  - Output Devices
    - Monitor – CRT, LCD

        - Printer – Impact Printers (Dot Matrix Printer), Non-Impact Printers (Inkjet Printer, Laser Printer)
        - Plotter
    - Central Processing Unit : CU, ALU
    - Storage Devices
        - Primary Memory : RAM (DRAM, SRAM), ROM (PROM, EPROM, EEPROM, UVPROM)
        - Secondary Memory : Magnetic Media (HDD, FDD), Optical Media (CD, DVD, Blue-Ray Disk)
        - Cache Memory
        - Flash Memory

    - Communication Bus
        - System Bus – Address Bus, Data Bus, Control Bus, Power Bus

ii) <u>Data Representation :</u>

- **Number Systems**
    - Concept of Non-Positional Number System
        - Roman Number System
    - Concept of Positional Number System
        - Decimal, Binary, Octal and Hexadecimal Number System
    - Conversion
        - Inter-conversion between Decimal, Binary, Octal and Hexadecimal Numbers (Whole numbers and Fractions, using Double Add and Half Add Methods)
    - Arithmetic
        - Addition, Subtraction – Decimal, Binary, Octal and Hexadecimal Numbers
        - Multiplication, Division – Binary Number System only
    - Different methods of Negative Number Representation
        - Signed Magnitude
        - One’s Complement
        - Two’s Complement

- Subtraction using Complements (1's, 2's complement)

- **Various Binary Coding Schemes**
  - BCD
  - EBCDIC
  - ASCII
  - ISCII

- **Concept of Fixed and Floating Point Numbers**
  - Difference between fixed and floating point numbers

- **Bit map representation of images**

- **Concept of Multimedia**

iii) <u>Boolean Algebra</u>

- Definition and postulates.
- Boolean operations – OR, AND, NOT
- Proof using identities and truth tables
- De' Morgan's Theorems and Basic Principle of Duality
- Deriving truth table from Boolean expression and vice versa
- SOP and POS Expressions (Minterm and Maxterm expressions)
- Canonical form of Boolean expressions and their complements
- Simplifications

B. Software and Languages
(10 Marks)

- Definition of Software
- Programming Languages : Concepts of High Level, Low Level and Assembly language
- Types of Software

- System Software
    - Translator – compiler, interpreter, assembler
    - Operating systems:
        - Definition and Function
        - Types of OS – Single User, Multi-user, Multiprogramming, Multiprocessing, Time Sharing
        - Booting (cold and warm), Spooling, Buffering, Concept of Virtual Memory
        - Directory and file Structure, Path and Pathname
        - Concept of GUI, CUI with examples
        - Using MS DOS (Commands and their use – DIR, MD, RD, CD, COPY, CON, MOVE, REN, DEL, TYPE, MORE, ATTRIB, EDIT, DATE, TIME, CLS)
        - Using MS Windows OS
- Application Software (definition and example)
- Utility Software (definition and example)

C. Programming using Visual Basic
(10 Marks)

- **Introduction to Visual Basic (Version 6 or compatible)**
- **Getting familiar with VB user interface**
    - Standard exe, pull-down menus, toolbar, toolbox, project explorer, properties window, form layout window, form immediate window, opening and closing windows, resizing and moving windows, quitting VB
- **VB Tool Box**
    - Standard window controls, label, textbox, command-button, frame, check-box, option-button, list-box, combo-box, picture box, timer control, shapes
    - Basic properties of controls
- **Programming Fundamentals**
    - Date types in VB (integer, long, single, double, currency, string)
    - Variable and Constants

- Input / Output operations
- Control Statements
  - Branching: If-Then-Else, Switch
  - Looping: For-Next, While, Do-While

- **Simple problem solving**

D. Word Processing using MS Word (MS Office 2007 or compatible) (05 Marks)

- Introduction to Word Processing
- Creating, Opening, Editing and Saving a document
- Copy, Cut, Paste operations
- Page Setup, Headers and Footers
- Formatting Texts, Paragraph, Page Borders
- Inserting Clip-Art, Word-Art, Auto-Shapes, Picture, Symbol, Equation
- Table insertion
- Mail Merge
- Macros
- Spelling and Grammar check
- Printer Setup and Document Printing

E. Power Point Presentation using MS Word (MS Office 2007 or compatible) (05 Marks)

- Introduction of Power Point
- Creating, Opening, Editing and Saving a PowerPoint presentation
- Use of Wizards

- Different styles and background
- Formatting Texts
- Inserting Clip-Art, Word-Art, Auto-Shapes, Picture
- Applying slide-transition, applying animation to text and objects
- Inserting sound and video-clips
- Slide Show
- Printing of slides

F. Practical
(30 Marks)

- **One program on Visual Basic** **(10 Marks)**
- **Laboratory Copy (Minimum 10 programs)** **(5 Marks)**

  (Suggestive programs on VB are given below)

  - To display a message using Label, Textbook, Message Dialogue
  - To concatenate two text entries and display
  - To perform a simple arithmetic operation (+,-,*,/) and display the result in message dialogue or textbox
  - To make simple decision making (IF statement) solution and display relevant message (example: problems related to eligibility for a given value of age, profit/loss messages for given values of cost price and sale price, grade display for given values of marks of students etc.)

- To create a simple GUI application to perform both arithmetic and logical operations together (Total, Average, Grade calculation of given set of marks, salary calculations on different criteria)
- To create a simple GUI application to perform an operation based on the criteria input by the user in a checkbox/radio button

  (ex1: Find the discount of an item on the basis of category of item [electrical appliance / electronic gadget/stationery specified using a radio button] and its cost [below 1000/above 1000/equal 1000 specified using radio button])

  (ex2: Calculate the incentive of a sales person on the basis of his sales amount, customer feedback, count of customer specified using checkbox)

- To create a simple GUI application to change the properties of a control based on the selection made by the user.

  (ex1: To change the background/foreground colour of any of the controls of the form based on the colour selected from a list)

  (ex2: To change the background/foreground colour of a label based on the values input/stored in a combo-box)

- Use of MS Word – Same features as in Theory part **(5 Marks)**
- Use of PowerPoint – Same features as in Theory part **(5 Marks)**
- **Viva Voce** **(5 Marks)**