

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

SYLLABUS

- Printer – Impact Printers (Dot Matrix Printer), Non-Impact Printers (Inkjet Printer, Laser Printer)
- Plotter
- o Central Processing Unit : CU, ALU
- o 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
- o Communication Bus
 - System Bus – Address Bus, Data Bus, Control Bus, Power Bus

ii) Data Representation :

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

SYLLABUS

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

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

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

- **Bit map representation of images**

- **Concept of Multimedia**

iii) Boolean Algebra

- 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

SYLLABUS

- 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**
 - o 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**
 - o Standard window controls, label, textbox, command-button, frame, checkbox, option-button, list-box, combo-box, picture box, timer control, shapes
 - o Basic properties of controls
- **Programming Fundamentals**
 - o Date types in VB (integer, long, single, double, currency, string)
 - o Variable and Constants

SYLLABUS

- o Input / Output operations
- o 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

SYLLABUS

- 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)

- o To display a message using Label, Textbook, Message Dialogue
- o To concatenate two text entries and display
- o To perform a simple arithmetic operation (+, -, *, /) and display the result in message dialogue or textbox
- o 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.)

SYLLABUS

- o 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)
- o 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)
- o 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)**