WEST BENGAL COUNCIL OF HIGHER SECONDARY EDUCATION

SUBJECT: MODERN COMPUTER APPLICATION (COMA)

CLASS – XI **SEMESTER – I** **FULL MARKS: 35**

Unit 1	Computer System and Organisation 15 Marks	30 Hrs
	• Basic Computer Organisation: CPU, Primary Memory (RAM, ROM, Cache), Secondary storage device, I/O devices, units of memory (bit, byte, KB, MB, GB, TB, PB). • Classification of Computers: Super, Mainframe, Mini, PC.	4
	• Concepts of Software ¬ Definition of software, types of software – System Software (Translator: assembler, interpreter, compiler, Loader, Linker, Operating System: Definition and functions, types of OS- Single use, Multiuse, Multiprogramming, Multiprocessing, Time sharing), Application Software (Definition and example), Utility Software, concept of GUI and CUI with examples using LINUX (Basic Commands).	7
	• Number System ¬ Binary, Octal, Decimal, Hexadecimal number system, conversion between number system, Weighted Code (BCD, Binary, 84-2-1 code), non-weighted code (GREY, Excess-3), encoding schemes (ASCII, ISCII, uni code), 1's complement, 2's complement.	9
	• Boolean Algebra ¬ Postulates, logic gates: NOT, AND, OR, NAND, XOR, XNOR, truth tables, De Morgan theorem, SOP, POS, Simplifications using KMap and Boolean algebra, logic circuits.	10
Unit 2	Programming Fundamentals 10 Marks	20 Hrs
	• Concept of Programming ¬ Instruction (Definition, Example), Program (definition, example), Programming Language (concept of high level, low level and assembly language), Procedural and Non-procedural programming, Concept of Structured Programming, Object Oriented Programming.	2
	• Algorithm fundamentals ¬ Definition, characteristic of algorithm, recursive and non-recursive algorithms, representation of algorithm using flowchart, pseudo code, efficiency of algorithm, space complexity, time complexity, Asymptotic Notation- big O, big Omega, big Theta.	15
	• Introduction to Problem Solving ¬ Steps for Problem Solving (analysing the problem, developing an algorithm, coding, testing, debugging).	3

Unit 3	Data Visualization using Spreadsheet 10 Marks	50 Hrs
	• Introduction to Spreadsheets ¬ Spreadsheets and their applications, overview of spreadsheet software (e.g., Open office, Google Sheets, Excel), creating workbooks, modifying workbook, zooming in on a worksheet, arranging multiple workbook windows, adding buttons to the quick access toolbar, customizing the ribbon, maximizing usable space in the program window navigating the spreadsheet interface, entering and editing data in cells saving, opening, and closing spreadsheet files.	6
	• Working with Data and Tables ¬ Entering and revising data, moving data within a workbook, finding and replacing data, correcting and expanding upon worksheet data, defining tables.	5
	• Performing Calculations on Data ¬ Naming groups of data, creating formulas to calculate values (e.g., SUM, AVERAGE, COUNT), summarizing data that meets specific conditions (e.g., AVERAGEIF, COUNTA, COUNTBLANK, COUNTIFS, SUMIF, IFERROR etc), finding and correcting errors in calculations.	5
	• Changing Workbook Appearance ¬ Formatting Cells, defining styles, workbook themes and table styles, making numbers easier to read, changing the appearance of data based on its value, adding images to worksheets.	4 Hours
	• Data Analysis and Manipulation ¬ Limiting data appearance on screen, working with text functions for data cleaning, Splitting and combining data, Data normalization and standardization, working with ranges and named ranges, conditional formatting, data validation and error checking, using logical functions (e.g., IF, AND, OR), sorting and filtering data.	10
	• Advanced Spreadsheet Features ¬ Creating and managing tables, working with charts and graphs, importing and exporting data, using goal seek.	10
	• Reporting and Presentation of Results ¬ Designing informative reports and summaries, creating interactive dashboards for data presentation, data visualization best practices, documenting data analysis processes presenting findings to stake holders.	8
	• Collaboration and Sharing ¬ Protecting worksheets and workbooks, sharing spreadsheets with others, tracking changes and commenting,	2