

WEST BENGAL COUNCIL OF HIGHER SECONDARY EDUCATION

SUBJECT: COMPUTER SCIENCE (COMS)

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).		9
	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, unicode), 1's complement, 2's complement.		7
	Boolean Algebra ☐ Postulates, logic gates: NOT, AND, OR, NAND, XOR, XNOR, truth tables, De Morgan theorem, SOP, POS, Simplifications using K-Map and Boolean algebra, logic circuits.		10
Unit 2	Programming Fundamentals	10 Marks	25 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.		18
	Introduction to Problem Solving ☐ Steps for Problem Solving (analysing the problem, developing an algorithm, coding, testing, debugging).		5

Unit 3	Introduction to C	10 Marks	45 Hrs
	Basic Structure ☐ Character set, keywords, identifiers, constants, variables and type declaration, Sample programs, pre-processor.		2
	Operators ☐ Arithmetic, Relational, Logical, Assignment, Increment and Decrement, Conditional, comma; operator precedence and associativity; arithmetic expression-evaluation and type conversion. Character I/O, Escape sequence and formatted I/O.		3
	Branching and Looping ☐ if, if-else, while, do-while, for.		3
	Arrays and Structure - One-dimensional and Two-dimensional, Different types of uses. String handling with arrays – read and write, concatenation, comparison, string functions. - Structures: Initialization; arrays of a structure, arrays within structures, structure within structure.		12
	User defined functions ☐ Need, Call by Reference, call by value, return value and types, nesting of functions, recursion.		10
	Pointers ☐ Declaration and initialization, operators, pointer arithmetic's, accessing variables, pointer & arrays, strings, functions.		15