A Complete Book as per the Syllabus of Computer Science and Computer Application (Hons/PG) for SLST Candidates conducted by WBCSSC

Complete Guide to SLST
COMPUTER
COMPUTER SCIENCE AND APPLICATION

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SYLLABUS

COMPUTER APPLICATION (HONS./PG) [CODE-36]

1. **Computer Fundamentals:**
   Parts of a Computer, Block diagram of a Computer system and brief description of each functional unit, Input and Output devices, Memory hierarchies, Application and System software, Computer Languages.
2. **Computer Arithmetic:**
   Positional number systems and conversion of one base to another, Binary arithmetic, Negative number representation using 1's and 2's complement, Various codes: ASCII, EBCDIC, BCD, BCD arithmetic.
3. **Digital logic fundamentals:**
   Boolean algebra: Concepts and basic postulates, Forming Boolean expression, Minimization of function using algebra and K-maps, Implementation using basic gates. Combinational Circuits: Half Adder, Full Adder, Multiplexer and Demultiplexer. Sequential Circuits: Flip flops and Counters.
4. **Operating System:**
   Concept of Operating System, Functions of Operating System, Classification of Operating System, Process scheduling, Brief study about processor Management and memory management algorithm, Concept of Deadlock.
5. **Data Structure:**
   Date types and Structures-definition, Concept of linear and nonlinear data structures, Linear data structure: Array, Linkist, Stack, Queue.
   Nonlinear data structure: Graph, Tree
   Brief Study of algorithm, Complexity of an algorithm, Studies of searching and Sorting algorithms.
6. **Programming Language:**
   (a) C- Language: Basic structure, Character set, Keywords, identifiers, Constant and variables-type declaration. Arithmetic, Relational, Logical and Assignment operator, Conditional Operator, Formatted Input and Output, Branching and Looping. Array-one dimensional and two dimensional, Pointers, Structure and Union, File handling.
   (b) Object Oriented Programming: Concept, Difference with procedure oriented programming, data abstraction-object, class and methods, inheritance and polymorphism, OO approach- C++ as OO language.
7. **DBMS:**
   Advantage of using DBMS, Architecture, Relational Data Model, E-R data model, Writing of simple query, using relational algebra and SQL, Normalisation.
8. **Network:**
   Goals of Computer Network, Performance of a network, LAN, MAN, WAN and Internet, Various topologies and transmission media, OSI and TCP/IP Model, Concept of Protocols, Routing techniques, Switching techniques: Circuit and packet switching, Addressing schemes: Physical, logical and port addressing, Application of Network: e-mail, chatting, file transfer, Basic concept about WWW, DNS, URL.

COMPUTER SCIENCE (HONS./PG) [CODE-08]

1. **Introduction and Background:**
   Generation of computers, Basic building blocks of Computer and their descriptions. Number system—Binary, Octal, and Hexadecimal, Fixed and floating point number representations, Different codes—BCD, Excess—3, Gray, ASCII, and EBCDIC, Binary arithmetic, Complement representations.
2. **Digital logic:**
   Logic gates, Truth table, Minimization of Boolean expressions, Adder, Subtractor, Multiplexer, Encoder, Decoder, Flip Flops, Register, Counters.
3. **Computer Organization:**
   CPU Organization with registers, Different addressing modes, Instruction formats, Hardwared and Micro programmed control units, Arithmetic algorithms related to arithmetic operations. Primary memory, Secondary memory Cache memory and Virtual memory, different I/O devices such as keyboard, Mouse, Dot matrix printer, Visual display unit.
4. **Overview of programming:**
   Introduction to computer based problem solving, Algorithms—time and space complexity analysis, Flow Chart, Pseudo code, Decision table, structured programming concepts, Programming languages classifications-machine, Assembling and high-level, Translators, Editors, Operating Systems—Multi programming, Multi tasking, Time sharing, Multi processing, Fundamental data Structure concepts—Array Stack, Queue and Linked lists.
5. **Programming Languages:**
   BASIC, C, C++, Program design, Implementation of the primitive date structures, Object oriented concepts.
6. **Overview of Software and Packages:**
   Utility commands in DOS, Windows and LINUX operating systems, Shell programming and application of batch files, File managements—use of folders, and directory systems, Database programming for commercial applications using packages in star office and use of spreadsheet packages, Elements of word processing.
7. **Computer Network:**
   Concept of networking, Client server concepts, E-mail, chat, internet, www, use of scripting language, html, Web page design etc.

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