CDAC - Common Admission Test Syllabus

Section A - English (20 Questions)

- Synonyms, Antonyms
- Reading Comprehension(Passage)
- Sentence completion
- Prepositions (of, by, on, at, with etc.)
- Articles (A, An, The)
- Choosing Appropriate Filler with appropriate phase or part of sentence
- Arrangement of Sentences (Given 4 Sentences in PQRS form and arranged them)
- Spotting Errors
- Idioms and Phrases
- Active and passive voice

Section A - Quantitative Aptitude (15 Questions)

- Number Systems: HCF & LCM, Decimal Fractions, Square Root and Cube Root, Average, Problems on Numbers
- Simplification
- Ages,
- Surds & Indices
- Percentages, Profit & Loss, Ratio & Proportion, Partnership
- Chain Rule
- Allegation & Mixture
- Simple Interest & Compound Interest
- Area: Volume and Surface Area
- Calendar, Clocks
- Races & Games of skills
- Permutation & Combinations, Probability
- Height & Distances
- Pipe and Cisterns
- Time & Work, Time & Distance
- Boats & Streams
- Train

Section A- REASONING (15 Questions)

- Verbal Reasoning : Analogy
- Blood Relation (sentence form , A+B –>A is sister of B)
- Puzzle Test
- Direction Sense Test
- Sitting Arrangement (Circular Table , Straight Line)
- Series (Number)
- Direction Sense(North East West South)
- Coding Decoding (A-Z)
- Data Sufficiency
- Odd Man Out and Series

Section B - C Programming (15 Questions)

- **History** Of C, Keywords In C, Standards, Data Types, Type Modifiers, Qualifiers
- **Operators**: Priority and Associativity
- **Decision Control**: If ..else and switch case
- **Iteration**: while, do..while ,for ,Jump Statements
- **Function**:
  - Built-in, User defined
  - Pass by Value and Pass By address
  - Recursion, Storage Classes In C
- **Pointer**: Wild Pointer, NULL Pointer,Void Pointer
  - Scale Factor, Pointer Arithmetics, Function Pointer
- **Array**: 1D & 2D Array
  - Static and Dynamic Implementation
  - Memory Allocation
  - Accessing members using array and Pointer Notation
- **String**: Library Functions, String size and length
  - String access using pointer and pointer arithmetic
  - Multiple Strings and CommandLine Argument using two D Array , Array of Pointers
- **PreProcessor Directives**:
  - #include, #define, #pragma
  - Operators # and ##
  - Difference Macro and Function
- **Structure**:
  - Memory Allocation
  - Access of structure members using dot(.) and arrow (->) operator
  - Array of Structure
  - Bit Field
- **Union**: Memory Allocation
  - Accessing Different type of members in shared memory
- **File Handling**:
  - Types of Files, Modes of Files
  - Sequential & Random Access File
  - Byte Read / Write, Buffer size data Read / Write, Binary Data Read / Write

Section B - Data Structure (7 Questions)

- **Introduction to Data Structure**
- **Algorithms**: Divide and conquer algorithms
  - Greedy Algorithm
- **Time Complexity:**
  - Best Case, Average Case, Worst Case
- **Sorting**: Selection Sort, Bubble Sort, Insertion Sort, Merge Sort, Quick Sort
- **Searching**:
  - Binary Search, Linear Search
- **Stack**:
  - Applications of Stack
    - Expression Conversion, evaluation and balancing
  - Operations of Stack
- **Queue**:
  - Types of Queue
  - Applications of Queue
  - Operations of Queue
- **LinkedList :**
  - Singly Linear /Circular LinkedList operations and time complexity
  - Doubly Linear /Circular LinkedList time complexity
- **Tree :**
  - Tree Terminologies
  - Types of Tree Binary Tree and its types, AVL Tree, Spanning Tree
  - Traversal : Inorder, Preorder, PostOrder
- **Graph:**
  - Basic Terminologies of graph

Section B - Object Oriented Concepts (9 Questions)

- Difference Between Structure in C & C++
- POP Vs OOP
- Class, Object
- Inspectors, Mutators, Facilitators, Constructor and Destructor
- cin, cout, Default Arguments, Inline Functions.
- Array of objects, new/delete Operator, references ,Constructor/Destructor revisited, Dynamic Array of Objects.
- Static Data Members and Member Functions
- Introduction to Exception Handling
- Composition, Friend Function and Friend class
- Function overloading, Operator Overloading Introduction
- Copy constructor and Assignment operator.
- Inheritance, Types, Modes, virtual inheritance
- Virtual Functions, Pure Virtual Functions
- Abstract Class, Interface Concept
- Template programming: With Functions and Class.
- File Handling intro, RTTI and Casting Operators Basics

Section B - Operating System Concepts (9 Questions)

- **Introduction**
  Introduction to Operating System, What is OS, Booting the System

- **System Architecture Design** of **OS**: System Calls, Dual Mode Operation: System mode and Kernel mode

- **Process Management**: What is Process, States of the Process, PCB, CPU Scheduling, CPU Scheduling Algorithms, Inter Process Communication, Process Synchronization/Coordination, Deadlocks and Deadlock Handling Methods.

- **Memory Management**: What is memory management, Swapping, Contiguous Memory Allocation, Paging, Segmentation, Virtual Memory Management, Demand Paging, Thrashing.

- **File** & **Storage Management**: What is File, What is File System, File System Structure, File System Architecture, Disk Space Allocation Methods, Disk Scheduling algorithms.

Section B –Computer Fundamentals and Networking (10 Questions)

- **Introduction** to **Computer** and its major components (CPU, Memory, IO): Memory Technologies and its characteristics, IO Module Structure, External Devices Structure and IO techniques.
- **Memory** (cache memory, main memory, secondary memory)
  Register Memory
  Primary Memory/Main Memory (RAM)
  Types of RAM
  SRAM, DRAM, SDRAM, DDR SDRAM
  Secondary Memory (ROM)
  Types of ROM
  ROM, PROM, EPROM, EEPROM, Flash

- **NETWORK:**
  Centralized Computing, Decentralized Computing
  Server-client, Cloud computing
- **Common Types of Networks:**
  LAN,WAN,WLAN,MAN,SAN,CAN
  Primary and Main Types of Networks
  Basic types of LAN

Token Ring
Ethernet
MAC Address
IPV4,IPV6, Port Numbers
Switch , Switch Techniques and Bridges
Router

- **OSI Layer**
- **IP Addressing**
- **Common TCP/IP stack Protocols:**
  - ARP (Address Resolution Protocol)
  - IP (Internet Protocol)
  - ICMP (Internet Control Message Protocol)
  - TCP (Transmission Control Protocol)
  - UDP (User Datagram Protocol)
  - FTP (File Transfer Protocol)
  - Telnet (Telecommunications Network)
  - DNS (Domain Name System)
  - HTTP (Hypertext Transfer Protocol)

Section C - Digital Electronics (20 Questions)

- **Introduction**
  - Signal, Analog Signal, Digital Signal
- **Number System**
  - Decimal number ,Binary number, Octal number, Hexadecimal number
  - Converting from Another Base to Decimal
  - Converting from Decimal to Another Base
  - Converting from a base Other than 10 to Another Base Other than 10
  - Octal to binary, Binary to octal
  - Hexadecimal to binary, Binary to hexadecimal, BCD
  - Laws, Boolean Algebra, K-Map, Logic Gates, Universal gate
  - Binary Addition, Binary Subtraction
  - 1's complement,2's complement,9's complement,10's complement, Multiplication, Division
  - Gray code,Excess-3 code
- **Combinational Circuit**
  - Half Adder ,Full Adder, Half Subtractor, Full Subtractor
  - Multiplex, Demultiplexer
  - Decoder, Encoder
- **Sequential Circuit**
  - RS Flip-flop, D Flip-flop, JK Flip-flop, T Flip-flop
  - Counter, Shift Register
- **Logic Family** in **short**
  - Circuit of each logic family
  - Advantages, Disadvantages
- **Resolution Problems**

Section C - Computer Architecture (15 Questions)

- **Machine Instructions**
  - Memory-Reference Instructions
  - Register-Reference Instructions
  - I/O Instructions
  - Addressing Modes
- ALU Data Path
- CPU Control Unit Design, Memory Interfacing, Pipelining

Section C - Microprocessor (15 Questions)

- **Introduction**, Basic Concept, what is Microprocessor, Basic Microcomputer
  Classification of Microprocessor
  - RISC Architecture, CISC Architecture
  - Harvard Architecture, Von Neumann Architecture

  Microprocessor 8085
  8085 Architecture

Bus Structure in 8085, Registers

8085 PIN DESCRIPTIONS

Interrupt

Classification of Interrupts, Interrupt Handling Procedure

8085 Instruction

Instruction Set Classification, Instruction Format
Addressing Modes in Instructions

INSTRUCTION EXECUTION AND TIMING DIAGRAM

Opcode fetch, Memory Read, Memory Write, I/O read, I/O Write Counter and Delay
Microprocessor 8086

- **Architecture of 8086**

  8085 PIN DESCRIPTIONS, addressing modes, Instruction Set Classification
  Brief Introduction to Microprocessor Interfacing

  - 8255 =>Programmable Peripheral Interface
  - 8254/8253 =>Programmable Interval timer
  - 8259 =>Programmable Interrupt controller
  - 8279 => Programmable Keyboard/Display Interface
  - 8257 => DMA (Direct memory access) controller
  - 8251 => Programmable communication Interface(USART)