CDAC C-CAT 2027 Registration: Apply Online by 29 Dec

This comprehensive guide covers CDAC C-CAT 2027 core subjects including C Programming, Data Structures, OS, DBMS...

1. EXAM / NOTIFICATION KEY FACTS & DATES

Post / Course Name	Post Graduate Certificate Programmes
Minimum Qualification	BE / B.Tech / MCA / MCM / M.Sc / PG Degree
Application Start Date	25 Nov 2026
Last Date to Apply	29 Dec 2026
Exam Date	9 Jan 2027
Selection Process	C-CAT Score Card & Online Counselling (CCAT Rank Based)
Exam Mode & Duration	Computer Based Test (CBT), 1 Hour per Section (Section A, B, C)
Key Subjects	Section A: Aptitude/English, Section B: C, DS, OS, OOPs, DBMS, Section C: D...
Negative Marking	+3 marks for correct answer, -1 mark for wrong answer

2. 4-STEP SMART PREPARATION PLAN

1. Phase 1: Master C Programming basics, memory layout, pointer arithmetic, and standard data structures thoroughly.
2. Phase 2: Build strong concepts in Operating Systems (Process Scheduling, Paging) and DBMS SQL queries.
3. Phase 3: Solve previous C-CAT pattern questions and practice Quantitative Aptitude Speed Math daily.
4. Phase 4: Take timed section-wise mock tests to manage the 60-minute per section constraint effectively.

3. SAMPLE GOLDEN SHORTCUTS & FORMULAS

* Shortcut 1 (Pointer Arithmetic): New Address = Base Address + (Index * sizeof(Data Type)).
* Shortcut 2 (BST Inorder Traversal): Inorder traversal of any valid Binary Search Tree is always strictly sorted.
* Shortcut 3 (Number of Edges in Tree): A tree with N vertices always contains exactly N - 1 edges.
* Shortcut 4 (Net Percentage Change): Net % change for successive increments A% and B% = A + B + (AB / 100)%.

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4. TOP 10 HIGH-WEIGHTAGE SYLLABUS TOPICS (QUICK SUMMARY)

1. C Programming Basics & Pointers
Weightage: High (5-7 Qs)

Pointers in C store memory addresses and require strict type matching during dereferencing. Pointer arithmetic depends entirely on the data type size; incrementing an integer pointer moves it by 4 bytes on 32-bit/64-b...

2. Data Structures: Trees and Graphs
Weightage: High (4-6 Qs)

Binary search trees maintain left subtree smaller and right subtree larger than the root node. In-order traversal of a BST always yields sorted elements in ascending order. Tree height balanced algorithms like AVL use...

3. Operating Systems & Process Synchronization
Weightage: High (4-6 Qs)

Process synchronization prevents race conditions using atomic semaphores (counting and binary) and mutex locks. Producer-Consumer, Readers-Writers, and Dining Philosophers are classic synchronization problems. Deadloc...

4. Object-Oriented Programming with C++
Weightage: High (4-5 Qs)

Core OOP pillars are Encapsulation, Abstraction, Inheritance, and Polymorphism. Dynamic binding is achieved using virtual functions and base class pointers at runtime via VTABLE and VPTR mechanics. Constructors cannot...

5. Computer Networks & Protocols
Weightage: High (4-5 Qs)

OSI 7-layer model mapping to TCP/IP 4-layer architecture is vital for C-CAT. IP addressing includes IPv4 32-bit dotted decimal format, subnet masking, CIDR notation, and default gateway routing. TCP provides connectio...

6. Database Management Systems & SQL
Weightage: High (4-5 Qs)

Relational algebra and SQL clauses execution order: FROM, WHERE, GROUP BY, HAVING, SELECT, ORDER BY. Normalization reduces redundancy: 1NF removes repeating groups, 2NF removes partial dependencies, 3NF removes transi...

7. Digital Logic & Computer Architecture
Weightage: High (3-5 Qs)

Boolean algebra simplification utilizes De Morgan laws, Karnaugh Maps (K-Maps), and SOP/POS forms. Universal gates NAND and NOR can implement any logical boolean function. Memory hierarchy prioritizes Registers, Cache...

8. Memory Management & Paging
Weightage: High (3-4 Qs)

Logical address generated by CPU is translated into physical address in main memory using Page Table and TLB (Translation Lookaside Buffer). Page replacement algorithms include FIFO, LRU (Least Recently Used), and Opt...

9. Quantitative Aptitude: Percentages & Ratio
Weightage: High (4-5 Qs)

Percentage change formula is [(Final - Initial)/Initial] * 100. Ratio proportions can be solved using unitary method or multiplier x. Successive percentage changes follow net change formula: A + B + (A*B)/100. Profit ...

10. Logical Reasoning & Series Completion
Weightage: High (4-5 Qs)

Number and alphabet series test pattern recognition using prime numbers, squares, cubes, and alternate mathematical operations. Syllogism problems are best solved using Venn diagrams or 100-50 rules. Blood relation tr...

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5. 10 SAMPLE EXAM-STYLE PRACTICE MCQS (WITH ANSWERS)

Q1. What is the output of the C expression: printf("%d", 5 >> 1 + 1);?
(A) 2 (B) 1 (C) 4 (D) 0
Ans: (B) | Addition '+' operator has higher precedence than right shift '>>'. So, 1 + 1 = 2. The expression becomes 5 >> 2. Binary of 5 is 0101; right shifting by 2 bits gives 0001, which is 1.

Q2. Which data structure is best suited for implementing a recursive function call stack?
(A) Queue (B) Array (C) Stack (D) Linked List
Ans: (C) | Function calls follow Last-In-First-Out (LIFO) order. When a function calls another, active stack frames are pushed onto the call stack and popped upon returning.

Q3. In an Operating System, Belady's Anomaly is associated with which page replacement algorithm?
(A) Least Recently Used (LRU) (B) First-In-First-Out (FIFO) (C) Optimal Page Replacement (D) Least Frequently Used (LFU)
Ans: (B) | Belady's Anomaly is the phenomenon where increasing the number of page frames results in an increase in page faults under the FIFO algorithm.

Q4. Which virtual function concept in C++ enables runtime polymorphism?
(A) Function Overloading (B) Operator Overloading (C) Virtual Functions (D) Templates
Ans: (C) | Virtual functions enable dynamic binding (late binding) at runtime using VTABLE, allowing derived class methods to be called via base class pointers.

Q5. What is the default subnet mask for a Class B IP address in IPv4?
(A) 255.0.0.0 (B) 255.255.0.0 (C) 255.255.255.0 (D) 255.255.255.255
Ans: (B) | Class B IP addresses use 16 bits for Network ID and 16 bits for Host ID, making 255.255.0.0 the default Class B subnet mask.

Q6. Which normal form handles partial dependencies in relational database management systems?
(A) 1NF (B) 2NF (C) 3NF (D) BCNF
Ans: (B) | Second Normal Form (2NF) requires the table to be in 1NF and guarantees that no non-prime attribute is dependent on a proper subset of any candidate key (eliminates partial dependency).

Q7. In digital logic, how many 2-to-1 multiplexers are needed to construct a 4-to-1 multiplexer?
(A) 2 (B) 3 (C) 4 (D) 5
Ans: (B) | To implement a 4:1 MUX using 2:1 MUXes, 2 MUXes are needed in the first stage and 1 MUX in the second stage. Total = 2 + 1 = 3.

Q8. What is the result of 2's complement of the binary number 101100?
(A) 010100 (B) 010011 (C) 010100 (D) 010100
Ans: (A) | 1's complement of 101100 is 010011. Adding 1 to LSB gives 010011 + 1 = 010100.

Q9. A train 150 meters long passes a telegraph post in 10 seconds. What is the speed of the train in km/h?
(A) 45 km/h (B) 54 km/h (C) 60 km/h (D) 72 km/h
Ans: (B) | Speed = Distance / Time = 150 / 10 = 15 m/s. Converting m/s to km/h: 15 * (18 / 5) = 54 km/h.

Q10. What will be the output of the C snippet: int a[]={10,20,30,40}; printf("%d", *(a+2));?
(A) 10 (B) 20 (C) 30 (D) 40
Ans: (C) | *(a+2) represents element at index 2 of array 'a'. Index 0 is 10, index 1 is 20, and index 2 is 30.

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