Infosys SP/DSE Complete Exam Preparation Guide

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Volume 1: Exam Pattern, Strategy & Aptitude Mastery

Target: Infosys Specialist Programmer (SP) & Digital Specialist Engineer (DSE)
Edition: November 2025
Based on: Official Sample Question Paper + Previous Year Analysis

Preface

This guide is built from **real Infosys SP/DSE assessment patterns** (Nov 2025 sample paper) and candidate experiences revealing that:

- "Easy" questions are **Codeforces 2200+ rated** (Pupil/Expert level)
- "Medium" questions reach **Codeforces 2400-2600** (Candidate Master)
- "Hard" questions hit **Codeforces 3000+** (Master/Grandmaster level)

Critical Reality: This is NOT a standard placement test. It's a **competitive programming assessment** disguised as a coding interview.

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PART I: EXAM STRUCTURE & STRATEGY

Chapter 1: Complete Exam Pattern (Nov 2025)

1.1 Two-Stage Assessment

Stage 1: Online Test (120 minutes total)

Section	Questions	Time (min)	Difficulty	Weightage
Logical Ability	15	25	Medium	20%
Technical Ability	10	35	Medium-Hard	25%
Verbal Ability	20	20	Easy-Medium	15%
Pseudo Code	5	10	Medium	10%
Puzzle Solving	4	10	Hard	10%
English Grammar	5	10	Easy	5%
English Writing	1	10	Medium	5%

Total: 60 questions in 120 minutes (2 hours)

Stage 2: Coding Round (180 minutes)

Question	Difficulty	Expected Pattern	Time Target	Weightage
Q1	Easy (CF 2200)	Arrays, Strings, Hashing	30-40 min	30%
Q2	Medium (CF 2400)	Greedy, Intervals, Scheduling	50-60 min	35%
Q3	Hard (CF 2600-3000)	DP, Graphs, Advanced Trees	70-90 min	35%

Total: 3 questions in 180 minutes (3 hours)

1.2 Selection Process Flow

```
Online Test (Stage 1)
    ↓
Pass Cutoff (~60-70% score)
    ↓
Coding Round (Stage 2)
    ↓
Solve 2+ problems correctly
    ↓
Technical Interview
```

```
    ↓
HR Interview
    ↓
Final Selection (L1/L2/L3 based on performance)
```

L3 Selection Criteria:

- Coding Round: 2.5+ problems solved (including partial credit for Q3)
- Technical Interview: Strong DSA + CS fundamentals
- Projects: Production-level complexity

Chapter 2: Section-Wise Strategy

2.1 Time Management Blueprint

Online Test (120 minutes):

Phase 1 (0-40 min): **High-Value Sections First**

- Verbal Ability: 15 minutes → 20 questions (easy scoring)
- English Grammar: 5 minutes → 5 questions
- Pseudo Code: 10 minutes → 5 questions
- English Writing: 10 minutes → 1 essay/email

Goal: Secure 30/40 questions (75%) in easy-medium sections

Phase 2 (40-85 min): **Technical Core**

- Technical Ability: 30 minutes → 10 questions (DSA, DBMS, OS)
- Logical Ability: 15 minutes → 15 questions

Goal: 15/25 questions (60%)

Phase 3 (85-120 min): **Puzzles & Review**

- Puzzle Solving: 10 minutes → 4 questions (solve 2-3)
- Review & flagged questions: 25 minutes

Goal: 2/4 puzzles + fix errors

Expected Total: 47-52/60 questions (78-87%) → **Pass Comfortably**

Coding Round (180 minutes):

Phase 1 (0-10 min): **Read ALL 3 questions**

- Understand each problem fully
- Identify patterns: Q1 (linear DS), Q2 (greedy), Q3 (DP/graph)
- Choose solving order (sometimes Q2 is easier than Q1)

Phase 2 (10-50 min): **Q1 (Easy) — 40 minutes max**

- 10 min: Understand + identify pattern
- 20 min: Code + test with examples
- 10 min: Edge cases + optimize

Target: Full solution with all test cases passing

Phase 3 (50-110 min): **Q2 (Medium Greedy) — 60 minutes max**

- 15 min: Understand + prove greedy correctness
- 30 min: Code + test
- 15 min: Edge cases + optimization

Target: Full solution or 80%+ test cases

Phase 4 (110-180 min): **Q3 (Hard DP) — 70 minutes**

- 20 min: Identify DP state + recurrence
- 35 min: Code (tabulation or memoization)
- 15 min: Test + optimize

Target: At least 50-60% test cases (partial credit counts!)

Buffer: 10 minutes for review/debugging

2.2 Scoring Strategy

Minimum Target for Interview Call:

- **L1 (DSE)**: 1.5 coding problems + 65% online test
- **L2**: 2 coding problems + 70% online test
- **L3**: 2.5 coding problems + 75% online test

Reality Check:

- Solving Q1 + Q2 fully = Interview guaranteed
- Solving Q1 + Q2 + 50% Q3 = Strong L2/L3 candidate
- Solving all 3 = Top 1% (L3 confirmed)

Chapter 3: Common Mistakes

3.1 Online Test Mistakes

Mistake 1: Starting with Puzzles

- Puzzles are hard and time-consuming
- Low success rate (solve 2/4 max)
- Start with easy sections (Verbal, Grammar)

Mistake 2: Spending Too Long on Technical Ability

- 35 minutes allocated, but 10 questions
- If stuck after 3 minutes, flag and move
- Come back in Phase 3

Mistake 3: Ignoring English Writing

- Easy 10 minutes for 5% weightage
- Write structured email/essay
- Use formal language

Mistake 4: Not Reading Instructions Carefully

- Pseudo code questions have specific syntax
- Logical ability may have negative marking
- Read question twice before answering

3.2 Coding Round Mistakes

Mistake 1: Not Reading All Questions First

- Sometimes Q2 is easier than Q1
- Solve in order of confidence, not problem number
- Q1 "easy" can be CF 2200 (very hard)

Mistake 2: Spending 90 Minutes on Q1

- If stuck after 40 minutes, move to Q2
- Partial credit exists
- 2 problems with 80% each > 1 problem with 100%

Mistake 3: Not Testing Edge Cases

- Empty array: n = 0
- Single element: n = 1
- Maximum constraints: n = 10^5, values = 10^9
- Always test these manually

Mistake 4: Submitting Without Reading Constraints

- Constraint: n ≤ 10^5 → $O(n^2)$ will TLE
- Constraint: values ≤ 10^9 → use long long
- Missing this = 0 points despite correct logic

Mistake 5: Panic on Seeing Hard Problem

- Q3 is SUPPOSED to be very hard
- Even 50% test cases = competitive score
- Focus on getting SOME points, not perfect solution

PART II: APTITUDE SECTIONS

Chapter 5: Logical Ability (15Q, 25 min)

5.1 Question Types

Type 1: Number Series (3-4 questions)

Pattern: Identify next number in sequence

Example:

```
2, 6, 12, 20, 30, ?
```

Solution:

- Differences: 4, 6, 8, 10 (arithmetic sequence +2)
- Next difference: 12
- Answer: 30 + 12 = **42**

Common Patterns:

- Arithmetic: constant difference
- Geometric: constant ratio
- Square/Cube: n^2, n^3
- Fibonacci: sum of previous two
- Alternating: two sequences interleaved

Practice:

```
1. 3, 7, 15, 31, 63, ?
   Answer: 127 (pattern: 2ⁿ - 1)

2. 1, 4, 9, 16, 25, ?
   Answer: 36 (perfect squares: n²)

3. 2, 5, 10, 17, 26, ?
   Answer: 37 (pattern: n² + 1)
```

Type 2: Logical Deduction (4-5 questions)

Pattern: Given statements, derive conclusions

Example:

```
Statements:
1. All managers are leaders
2. Some leaders are innovators
3. No innovator is a follower

Conclusions:
A. Some managers are innovators
B. No leader is a follower
C. Some leaders are not followers

Which conclusions are valid?
```

Solution: Only C is valid (some leaders are innovators, who are not followers)

Key Rules:

- All A are B → if C is A, then C is B
- Some A are B → at least one A is B
- No A is B → A and B are disjoint

Type 3: Coding-Decoding (2-3 questions)

Example:

```
If LAPTOP is coded as MZQUQO, how is MOBILE coded?
```

Solution:

- L → M (+1)
- A → Z (+25, wrapping)
- P → Q (+1)
- T → U (+1)
- O → Q (+2)
- P → O (-1)

Pattern: alternating +1, -1 shifts

Practice: Create your own encoding rules

Type 4: Blood Relations (1-2 questions)

Example:

```
Pointing to a photograph, A says: "He is the son of my father's only daughter."
Who is in the photograph?
```

Solution:

- My father's only daughter = me (A is female) or my sister
- If A is female: son of me = A's son
- If A is male: son of my sister = A's nephew

Answer: A's son or nephew

Type 5: Seating Arrangement (2-3 questions)

Example:

```
6 people A, B, C, D, E, F sit in a row:
- A is 3 seats from C
- B is next to A
- D is at one end
- E is not next to D

Find F's position.
```

Solution:

- D at end: D _ _ _ _ _
- A 3 from C: D A _ C _ _ or D _ A _ C _
- B next to A: D A B C _ _ or D B A _ C _
- E not next to D: Place E away from D
- F fills remaining

Strategy: Draw visual diagrams

5.2 Time Management (25 minutes for 15 questions)

Allocation:

- Number Series: 1 min each (4 min total)
- Logical Deduction: 2 min each (8 min total)
- Coding-Decoding: 1.5 min each (3 min total)
- Blood Relations: 1.5 min each (3 min total)
- Seating Arrangement: 2 min each (6 min total)
- Buffer: 1 minute

Strategy:

1. Solve number series first (quick wins)
2. Skip complex deduction questions initially
3. Return to flagged questions in buffer time

Chapter 6: Technical Ability (10Q, 35 min)

6.1 Topics Distribution

Topic	Questions	Time	Priority
Data Structures & Algorithms	4	14 min	**Critical**
DBMS & SQL	2	7 min	High
Operating Systems	2	7 min	High
OOP & Design	1	3.5 min	Medium
Computer Networks	1	3.5 min	Medium

6.2 DSA Questions (4 questions)

Question Type 1: Time Complexity Analysis

Example:

```
for (int i = 0; i &lt; n; i++) {
    for (int j = i; j &lt; n; j++) {
        // O(1) operation
    }
}
```

What is time complexity?

Options: A) O(n) B) O(n log n) C) O(n²) D) O(2^n)

Solution: C) O(n²)

- Outer loop: n iterations
- Inner loop: (n-i) iterations
- Total: n + (n-1) + (n-2) + ... + 1 = n(n+1)/2 = O(n²)

Question Type 2: Data Structure Selection

Example:

```
Which data structure is best for implementing LRU cache?

A) Array
B) Linked List
C) HashMap + Doubly Linked List
D) Binary Search Tree
```

Solution: C) HashMap + Doubly Linked List

- HashMap: O(1) lookup
- DLL: O(1) insertion/deletion at both ends
- Combined: O(1) get and put operations

Question Type 3: Algorithm Identification

Example:

```
Which algorithm is used to find shortest path in weighted graph
with non-negative weights?

A) BFS
B) DFS
C) Dijkstra
D) Bellman-Ford
```

Solution: C) Dijkstra

- BFS: unweighted graphs only
- DFS: doesn't guarantee shortest path
- Dijkstra: weighted, non-negative
- Bellman-Ford: weighted, allows negative

Question Type 4: Problem-Solving Pattern

Example:

```
Given array and target sum, find if subarray with sum exists.
Best approach?

A) Brute force O(n³)
B) Prefix sum + HashMap O(n)
C) Sorting + Binary Search O(n log n)
D) Dynamic Programming O(n²)
```

Solution: B) Prefix sum + HashMap O(n)

6.3 DBMS & SQL (2 questions)

Question Type 1: Normalization

Example:

```
A table has columns: StudentID, StudentName, CourseID, CourseName,
Instructor, Department

What normal form violation exists?

A) 1NF
B) 2NF
C) 3NF
D) BCNF
```

Solution: B) 2NF

- CourseName depends on CourseID (partial dependency)
- {StudentID, CourseID} is composite key
- Non-prime attribute (CourseName) depends on part of key

Question Type 2: SQL Query

Example:

```
-- Find 2nd highest salary
SELECT MAX(salary)
FROM employees
WHERE salary &lt; (SELECT MAX(salary) FROM employees);
```

Is this correct?

Answer: Yes, this is a valid approach (though LIMIT/OFFSET is cleaner)

6.4 Operating Systems (2 questions)

Question Type 1: Deadlock

Example:

```
Which is NOT a necessary condition for deadlock?

A) Mutual Exclusion
B) Hold and Wait
C) Preemption
D) Circular Wait
```

Solution: C) Preemption

- Deadlock requires **No Preemption**
- If resources can be preempted, deadlock prevented

Question Type 2: Scheduling

Example:

```
Round Robin with quantum = 2
Processes: P1(burst=5), P2(burst=3), P3(burst=8)
Average waiting time?

A) 5
B) 6
C) 7
D) 8
```

Solution: Calculate Gantt chart manually

Chapter 7: Verbal Ability (20Q, 20 min)

7.1 Question Types

Type 1: Reading Comprehension (5-8 questions)

Strategy:

1. Skim passage first (30 seconds)
2. Read questions before detailed reading
3. Focus on first and last sentences of paragraphs
4. Underline keywords related to questions

Time: 1 minute per question (8 min total for passage + questions)

Type 2: Synonyms/Antonyms (4-6 questions)

Example:

```
Synonym of "Ubiquitous":
A) Rare
B) Omnipresent
C) Absent
D) Occasional
```

Solution: B) Omnipresent

Strategy: Memorize 200 high-frequency words

Type 3: Sentence Completion (3-4 questions)

Example:

```
The project was _____ due to lack of funding.

A) accelerated
B) postponed
C) initiated
D) approved
```

Solution: B) postponed

Type 4: Error Detection (2-3 questions)

Example:

```
Neither of the students / have / submitted their assignments / on time.
       A              B              C                    D

Where is the error?
```

Solution: B) have → "Neither" is singular, should be "has"

Chapter 8: Pseudo Code (5Q, 10 min)

8.1 Pseudo Code Syntax (Infosys Standard)

Common Constructs:

```
// Variables
Integer a, b, c
String s
Array arr[10]

// Input/Output
Read a
Print a

// Conditionals
if (condition) then
    statements
else
    statements
end if

// Loops
for i = 1 to n
    statements
end for

while (condition)
    statements
end while

// Functions
function name(parameters)
    statements
    return value
end function
```

8.2 Sample Questions

Question 1: Output Prediction

```
Integer a = 5, b = 10
a = a + b
b = a - b
a = a - b
Print a, b
```

Output: 10 5 (swap without temp variable)

Question 2: Find Error

```
Integer sum = 0
for i = 1 to 10
    sum = sum + i
Print sum
end for
```

Error: Print should be AFTER loop (currently inside)

Question 3: Complete Code

```
function factorial(n)
    if n == 0 then
        return 1
    else
        return _____
    end if
end function
```

Answer: `n * factorial(n - 1)`

Chapter 9: Puzzle Solving (4Q, 10 min)

9.1 Common Puzzle Types

Type 1: Mathematical Puzzles

Example: 100 Doors

100 doors, all closed.

- Pass 1: Toggle every door (all open)
- Pass 2: Toggle every 2nd door
- Pass 3: Toggle every 3rd door
- ...
- Pass 100: Toggle 100th door

How many doors are open at end?

Solution: 10 (perfect squares: 1, 4, 9, 16, 25, 36, 49, 64, 81, 100)

- Door n is toggled by all divisors of n
- Perfect squares have odd number of divisors
- Odd toggles → open

Type 2: Logic Puzzles

Example: Burning Ropes

Two ropes, each burns in exactly 60 minutes (non-uniformly).
How to measure 45 minutes?

Solution:

1. Light rope 1 from both ends, rope 2 from one end
2. When rope 1 finishes (30 min), light rope 2's other end

3. Rope 2 has 30 min left, burning from both ends → finishes in 15 min
4. Total: 30 + 15 = 45 minutes

Type 3: Probability Puzzles

Example: Two Dice

Probability of sum = 7 when rolling two dice?

Solution: 6/36 = 1/6

- Favorable outcomes: (1,6), (2,5), (3,4), (4,3), (5,2), (6,1)
- Total outcomes: 36

Type 4: Optimization Puzzles

Example: Egg Drop

2 eggs, 100-floor building. Find minimum drops to determine highest safe floor.

Solution: 14 drops

- Use decreasing interval strategy: 14, 27, 39, 50, 60, 69, 77, 84, 90, 95, 99, 100
- First egg finds interval, second egg finds exact floor

Chapter 10: English Grammar (5Q, 10 min)

Quick-fire section. Focus on:

1. Subject-Verb Agreement
2. Tense Consistency
3. Pronoun Reference
4. Prepositions
5. Articles (a, an, the)

Time: 2 minutes per question max

Chapter 11: English Writing (1Q, 10 min)

11.1 Format: Email Writing

Typical Prompt:

```
Write an email to your manager requesting leave for 3 days.
```

Template:

```
Subject: Leave Application for [Dates]

Dear [Manager Name],

I am writing to request leave for 3 days from [Start Date] to
[End Date] due to [Brief Reason].

I have ensured that all my current tasks are completed/delegated
```

```
to [Colleague Name]. I will be available via email if any urgent
matter arises.

I kindly request you to approve my leave application.

Thank you for your understanding.

Best regards,
[Your Name]
```

Scoring Criteria:

- Proper format (subject, greeting, closing)
- Clear purpose
- Professional tone
- Correct grammar
- Logical flow

References

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