

APTITUDE NOTES (EXAM-ORIENTED) — PART 1

1. NUMBER SYSTEM

What it tests: Basic math logic, number manipulation, and speed.

Key Concepts

- Types of numbers: natural, whole, integers, rational, irrational
- Prime numbers, factors, multiples
- LCM & HCF
- Divisibility rules (2, 3, 5, 7, 9, 11)
- Decimal and fraction conversions

Exam Tips

- Memorize divisibility rules for fast solving
 - Use LCM/HCF to solve ratio and time work problems
 - Practice fast fraction to decimal conversion
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2. PERCENTAGES

What it tests: Real-life financial logic and proportional reasoning.

Key Concepts

- Percentage formula: $(\text{part}/\text{whole}) \times 100$
- Increase & decrease
- Profit/Loss using %
- Discounts
- Simple interest basics

Exam Tips

- Always identify base value (whole) first
 - Use approximation for quick checks
 - Learn 10%, 20%, 25%, 50% shortcuts
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3. RATIO & PROPORTION

What it tests: Division of quantities, mixture problems, and proportional thinking.

Key Concepts

- Ratio definition (a:b)
- Proportion: $a/b = c/d$
- Alligation method (mixture problems)
- Direct and inverse proportion

Exam Tips

- Solve mixture problems using alligation
 - Use proportion formula for scaling problems
 - Keep ratio values simple by dividing by gcd
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4. AVERAGES

What it tests: Central value understanding and quick computations.

Key Concepts

- Average formula: total sum / number of items
- Weighted average
- Missing value in average
- Combined average

Exam Tips

- Use total sum method for combined averages
 - Convert average problems into equations
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5. TIME & WORK

What it tests: Efficiency, speed, and team work logic.

Key Concepts

- Work rate: Work/Time
- Man-day concept
- Work done by multiple people
- Pipes and cisterns (water flow problems)

Exam Tips

- Convert everything into “work per day”
- Use LCM for combined work
- Avoid confusion between “time taken” and “work done”

6. TIME, SPEED & DISTANCE

What it tests: Speed logic, distance coverage, and real-life motion.

Key Concepts

- Speed = Distance / Time
- Relative speed (same direction vs opposite direction)
- Average speed vs simple speed
- Train crossing and meeting problems

Exam Tips

- Use relative speed for moving objects
 - Always convert units (km/h to m/s)
 - Keep formulas in mind: distance = speed × time
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7. SIMPLE & COMPOUND INTEREST

What it tests: Financial calculations and compounding logic.

Key Concepts

- Simple Interest (SI) = $P \times R \times T / 100$
- Compound Interest (CI) = Amount - Principal
- CI formula: $A = P(1 + r/100)^n$
- Difference between SI and CI

Exam Tips

- Use shortcut formulas for yearly compounding
 - Use approximation for faster calculation
 - Learn basic compound interest table
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8. PROFIT & LOSS

What it tests: Business logic and percentage applications.

Key Concepts

- Profit = Selling Price - Cost Price
- Loss = Cost Price - Selling Price
- Profit % = $(\text{Profit}/\text{CP}) \times 100$

- Discount & Marked Price

Exam Tips

- Always identify CP and SP clearly
 - Use ratio method for multiple transactions
 - Convert discount to effective profit/loss
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9. ALCHEMY (MIXTURE & ALLIGATION)

What it tests: Logical mixing and ratio application.

Key Concepts

- Mixing two quantities with different values
- Alligation rule
- Mean value calculation

Exam Tips

- Use alligation chart for fast answers
 - Always check total quantity
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10. PROBABILITY

What it tests: Chance, outcomes, and counting logic.

Key Concepts

- Probability = favourable outcomes / total outcomes
- Independent events
- Conditional probability
- Basic combinations/permuations

Exam Tips

- Always define the sample space clearly
 - Use counting methods to reduce errors
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11. PERMUTATION & COMBINATION (BASIC)

What it tests: Arrangement logic and counting accuracy.

Key Concepts

- Permutation: order matters
- Combination: order doesn't matter
- nCr , nPr formulas

Exam Tips

- Identify if order matters or not
 - Use factorial simplification
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12. LOGICAL REASONING (BASIC)

What it tests: Structured thinking and analysis.

Key Concepts

- Series & Patterns
- Blood relations
- Direction sense
- Seating arrangement
- Syllogisms
- Data interpretation

Exam Tips

- Draw diagrams for puzzles
 - Avoid assumptions; use only given data
 - Use elimination method
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13. VERBAL ABILITY (BASIC)

What it tests: Communication clarity and grammar logic.

Key Concepts

- Reading comprehension
- Error spotting
- Sentence correction
- Vocabulary in context

Exam Tips

- Read questions first then passage
- Eliminate wrong grammar options

- Understand meaning, not just words