Quant and Reasoning - Unit 1

Number System, LCM & HCF,
Simplifications and Approximations

Types of Numbers

- Natural Numbers: 1, 2, 3, ...
- Whole Numbers: 0, 1, 2, 3, ...
- Integers: ..., -3, -2, -1, 0, 1, 2, 3, ...
- Rational Numbers: Can be expressed as a/b
- Irrational Numbers: Cannot be expressed as a/b
- Real Numbers: Includes all above types

Divisibility Rules

- 2: Last digit even
- 3: Sum of digits divisible by 3
- 5: Last digit 0 or 5
- 7: Double last digit and subtract from rest
- 11: Alternating sum of digits divisible by 11
- Check other rules up to 20 for exams

Prime and Composite Numbers

- Prime: Divisible by 1 and itself only
- Examples: 2, 3, 5, 7, 11
- Composite: More than two factors
- Examples: 4, 6, 8, 9, 10
- 0 and 1 are neither prime nor composite

Co-Prime Numbers

- Numbers with HCF = 1
- Example: 3 and 4, 5 and 7
- Pairwise co-prime: Every pair in group has HCF = 1

LCM and HCF Concepts

- LCM: Least Common Multiple
- HCF: Highest Common Factor
- LCM × HCF = Product of Numbers
- To find HCF: Use difference method or prime factorization

LCM & HCF Examples

- LCM of 3 and 4 = 12
- HCF of 24 and 36 = 12
- Product of numbers = LCM × HCF
- Example: HCF(12, 15, 21) = 3

Simplification Techniques

- BODMAS: Brackets, Orders, Division, Multiplication, Addition, Subtraction
- Use approximation for quick solutions
- Apply rounding to nearest 10 or 100 if needed

Approximation Examples

- Evaluate: $\sqrt{50} \approx 7.07$
- Estimate: $198 \div 3 \approx 200 \div 3 = 66.67$
- Round off values to simplify calculations