

# **Science (PCM)**

## **PHYSICS (30 Questions)**

### **Unit 1: Mechanics**

- Units & Dimensions
- Vectors
- Motion in One & Two Dimensions
- Projectile Motion
- Newton's Laws of Motion
- Friction
- Circular Motion
- Work, Energy & Power
- Centre of Mass
- Rotational Motion
- Gravitation

### **Unit 2: Thermal Physics**

- Thermal Expansion
- Calorimetry
- Kinetic Theory of Gases
- Thermodynamics
- Heat Transfer

### **Unit 3: Oscillations & Waves**

- Simple Harmonic Motion
- Wave Motion
- Sound Waves
- Doppler Effect

### **Unit 4: Electricity & Magnetism**

- Electrostatics

- Electric Potential
- Capacitors
- Current Electricity
- Kirchhoff's Laws
- Magnetism
- Electromagnetic Induction
- Alternating Current

### **Unit 5: Optics & Modern Physics**

- Ray Optics
- Wave Optics
- Optical Instruments
- Photoelectric Effect
- Dual Nature of Matter
- Atomic Structure
- Nuclear Physics
- Semiconductor Electronics

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### **CHEMISTRY (30 Questions)**

#### **Physical Chemistry**

- Mole Concept
- Atomic Structure
- Chemical Bonding
- States of Matter
- Thermodynamics
- Chemical Equilibrium
- Ionic Equilibrium
- Redox Reactions
- Electrochemistry

- Chemical Kinetics
- Surface Chemistry
- Solutions

### **Organic Chemistry**

- General Organic Chemistry
- Isomerism
- Hydrocarbons
- Haloalkanes & Haloarenes
- Alcohols, Phenols & Ethers
- Aldehydes & Ketones
- Carboxylic Acids
- Amines
- Biomolecules
- Polymers
- Reaction Mechanisms
- Named Reactions

### **Inorganic Chemistry**

- Periodic Table
- Chemical Bonding
- p-Block Elements
- d-Block Elements
- f-Block Elements
- Coordination Compounds
- Metallurgy
- Qualitative Analysis

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## **MATHEMATICS (20 Questions)**

### **Algebra**

- Sets
- Relations & Functions
- Complex Numbers
- Quadratic Equations
- Matrices
- Determinants
- Sequences & Series
- Binomial Theorem
- Permutations & Combinations

### **Calculus**

- Limits
- Continuity
- Differentiation
- Applications of Derivatives
- Indefinite & Definite Integration
- Differential Equations

### **Coordinate Geometry**

- Straight Lines
- Circles
- Conic Sections

### **Vector & 3D Geometry**

- Vector Algebra
- Three-Dimensional Geometry

### **Probability & Statistics**

- Probability
- Statistics
- Mathematical Reasoning
- Linear Programming

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## **SCIENTIFIC REASONING (Common – 10 Questions)**

### **Scientific Method**

- Observation & Hypothesis
- Experimental Design
- Variables & Controls
- Scientific Investigation

### **Data Interpretation**

- Graph Analysis
- Scientific Tables
- Experimental Results
- Error Analysis

### **Critical Scientific Thinking**

- Cause & Effect
- Pattern Recognition
- Scientific Inference
- Evidence-Based Conclusions

### **Applied Science**

- Engineering Applications
- Environmental Science
- Energy & Sustainability
- Technology-Based Problem Solving

### **Question Types**

- Case Study Questions
- Assertion–Reason
- Statement-Based Questions
- Graph & Diagram Analysis
- Experimental Analysis

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## **LOGICAL & ANALYTICAL APTITUDE (Common – 10 Questions)**

### **Logical Reasoning**

- Analogy
- Classification
- Coding-Decoding
- Number & Letter Series
- Logical Sequence

### **Analytical Reasoning**

- Blood Relations
- Direction Sense
- Seating Arrangement
- Ranking
- Puzzle Solving

### **Quantitative Aptitude**

- Percentage
- Ratio & Proportion
- Average
- Time & Work
- Time, Speed & Distance
- Profit & Loss
- Simple & Compound Interest

### **Data Interpretation**

- Tables
- Bar Graphs
- Pie Charts
- Line Graphs

### **Critical Thinking**

- Logical Arguments
- Assumptions
- Conclusions
- Decision Making
- Problem Solving