

Contents

● Previous Years' Solved Papers

Part-I PHYSICS

A. MEASUREMENT

1. Fundamental Quantities and Units3
2. Measurement of Small-lengths
Vernier Calliper6

B. PURE KINEMATICS

1. Elements of Vectors9
2. Acceleration12

C. MECHANICS

1. Laws of Motion14
2. Moment of a Force16

D. WORK, ENERGY AND POWER19

E. HYDROSTATICS22

F. VIBRATIONS, WAVES AND SOUND

1. Vibrations25
2. Wave Motion and Sound27

G. HEAT

1. Kinetic Theory of Matter30
2. Thermal Expansion33
3. Thermal Energy36
4. Thermal Radiation39

H. LIGHT

1. Introduction to Light42
2. Reflection of Light44
3. Refraction of Light through Plane Surface47
4. Refraction of Light through
Thin Lenses51
5. Optical Instruments54

I. ELECTROSTATICS.57

J. CURRENT ELECTRICITY

1. Simple Circuits59

2. Applications of Electric Current :
Electric Appliances 63

K. ELECTROMAGNETISM

1. Magnetic Field 66
2. Force on a Moving Charge in a Magnetic
Field 68
3. Electromagnetic Induction 71
- Important Points 78

Part-II CHEMISTRY

PHYSICAL CHEMISTRY 1-60

1. Science and Scientific Method 3
2. State of Matter—Solid, Liquid and
Gaseous State 7
3. Atoms and Molecules—Laws of
Chemical Combination 11
4. Atomic Structure and Radioactivity 16
5. Valency or Chemical Bonding 22
6. Symbols, Formulae and Chemical Equations ... 27
7. Gaseous Laws 31
8. Atomic Weight, Molecular Weight and
Equivalent Weight 36
9. Electrolysis, Acid, Base and Salt 41
10. Various Chemical Reactions and Catalysis 46
11. Solutions 51
- Some Noteworthy Points 56

INORGANIC CHEMISTRY 61-88

1. Periodic Classification of Elements 61
2. Water 66
3. Hydrogen, Sulphurated Hydrogen,
Hydrogen Chloride and Chlorine 71
4. Nitrogen, Ammonia, Oxygen and
Sulphur Dioxide 76
5. Metals and Non-metals 81
- Some Noteworthy Points 85

ORGANIC CHEMISTRY89–120

1. An Introduction to Organic Chemistry89
2. Classification of Organic Compounds93
3. Saturated and Unsaturated Hydrocarbons98
4. Plastics, Artificial Fibres, Medicines
Explosives and Detergents105
5. Chemical Calculations110
- Some Noteworthy Points119

Part-III
MATHEMATICS

A. ARITHMETIC

1. Compound Interest3
2. Questions Based on Work and Speed8
3. Bank Deposits and Payment in Instalments14

B. STATISTICS

1. Elementary Statistics21
2. Frequency Graph23
3. Central Measures27
4. Mean Deviation and Standard Deviation32

C. ALGEBRA

1. Simple Formulae and their Use36
2. Number System40
3. Laws of Indices and their Applications43
4. Logarithms and their Use47
5. Factors52
6. L.C.M. and H.C.F.56
7. Quadratic Polynomials and
Quadratic Equations59
8. Simultaneous Equations and Problems64

9. Set Theory 68
10. Mapping 72

D. TRIGONOMETRY

1. Circular Measure, Radian and
Trigonometrical Ratios 76
2. Trigonometrical Ratios of Sum &
Difference of Two Angles 80
3. Ratios of Multiple and Sub-multiple Angles 83
4. Transformation of Sums into
Products and *Vice-versa* 87
5. Height and Distance 90

E. GEOMETRY

1. Locus, Pythagoras Theorem and its
Applications 93
2. Circles, Tangents to the Circles and
Cyclic Quadrilaterals 96
3. Theorems on Angles in Alternate
Segment and Proportion 101

F. MENSURATION

1. Cube, Cuboid and Right Prism 106
2. Right Pyramid and Right Circular Cylinder 109
3. Right Circular Cone, Sphere and
Frustum of Cone 113

G. COORDINATE GEOMETRY

1. Distance of Two Points, Section Formula
and Area of the Triangle 118
2. Straight Line 122
3. Angle between Two Straight Lines,
their Point of Intersection and Length of
Perpendicular 125