

CONTENTS

Physics

● Previous Year's Solved Paper

	<i>Pages</i>		<i>Pages</i>
● General Informations	2 – 14	● Electrons and Photons	53 – 55
Scientific Instruments	2	● Atoms, Molecules and Nuclei	56 – 58
Signs and Symbols	4	● Solids and Semiconductor Devices	59 – 62
Fundamental Principles and their Founders	7	● Objective Questions	63 – 211
Nobel Prize Winners in Physics	8	1. Measurement and Dimensional Analysis	65
Discoveries Relating Atom	11	2. Rectilinear Motion	71
Dimensions of Different Physical		3. Motion in two and three Dimensions	79
Quantities	12	4. Laws of Motion	89
Some Important Formulae	13	5. Work, Energy and Power	98
● Mechanics	15 – 25	6. Rotatory Motion of Rigid Body	105
[Introduction and Measurement,		7. Gravitation	111
Description of Motion in two and three		8. Heat and Thermodynamics	118
Dimensions, Law of Motion, Work,		9. Oscillations	127
Energy and Power, Rotational Motion,		10. Wave Motion	134
Gravitation]		11. Electrostatics	141
● Heat and Thermodynamics	26 – 27	12. Current Electricity	153
● Oscillations and Waves	28 – 31	13. Thermal and Chemical Effects of	
● Light	32 – 33	Currents	161
● Optics and Optical Instruments	34 – 39	14. Magnetic Effect of Current	165
● Electrostatics	40 – 41	15. Magnetism	171
● Current Electricity	42 – 45	16. Electromagnetic Induction and Alter-	
[Current Electricity, Thermal and Chemi-		nating Current	175
cal Effects of Currents]		17. Electromagnetic Waves	182
● Magnetic Effect of Current and		18. Ray Optics and Optical Instruments	185
Magnetism	46 – 49	19. Electrons and Photons	199
● Electromagnetic Induction and		20. Atoms, Molecules and Nuclei	203
Alternating Current	50 – 52	21. Solids and Semiconductor Devices	208
		● Glossary	212 – 216

Chemistry

Points to Remember (Unit 1 to 37)	3 – 61	3 States of Matter	72
Objective Questions	63 – 185	4 Structure of Atom	77
Unit		5 Chemical Families—Periodic Proper-	
1 Atoms, Molecules and Chemical Arith-		ties	81
metics	65	6 Chemical-Bonding and Molecular	
2 Elements, Their Occurrence and Extrac-		Structure	83
tion	70	7 Carbon and Its Inorganic Compounds	87
Unit		Unit	

8	Energetics	90	26	Organic Chemistry Based on Functional Groups (I) [Halides and Hydroxy Compounds]	151
9	Physical and Chemical Equilibria	94	27	Organic Chemistry Based on Functional Groups (II) [Ethers, Aldehydes, Ketones, Carboxylic acids and their derivatives]	155
10	Redox-Reactions	99	28	Organic Chemistry Based on Functional Groups (III) [Cyanides, Isocyanides, Nitro-compounds and Amines]	159
11	Rates of Chemical Reactions	103	29	Chemistry of Representative Elements	162
12	Chemistry of Non-metals (I) [H, N, and O]	108	30	Transition Metals Including Lanthanides	166
13	Chemistry of Non-metals (II) [B, Si, P, S, Halogens and Noble gases]	111	31	Co-ordination Chemistry and Organometallics	169
14	Chemistry of Lighter Metals	115	32	Nuclear Chemistry	172
15	Chemistry of Heavier Metals	119	33	Synthetic and Natural Polymers	175
16	Carbon-Compounds : Structure and shape(s) of Hydrocarbons	122	34	Surface Chemistry	177
17	Preparation and Properties of Hydrocarbons	126	35	Biomolecules	180
18	Purification and Characterisation of Organic Compounds	130	36	Chemistry of Biological Process	182
19	Molecules of Life	132	37	Chemistry in Action	183
20	Atomic Structure and Chemical Bonding	133		Assess Yourself	186 – 192
21	The Solid State	133		Glossary	193 – 214
22	Solution	136		Assess Yourself : Answers	215 – 215
23	Chemical Thermodynamics	141			
24	Electrochemistry	144			
25	Chemical Kinetics	148			

Unit**Mathematics**

● Algebra	3 – 99	● Matrices and Determinants	100 – 123
1. Set Theory	3	1. Matrices	100
2. Cartesian Product of Sets and Relations	13	2. Determinants	114
3. Real Number on the Line	20	● Trigonometry	124 – 185
4. Complex Numbers	25	1. Identities and Trigonometric Ratios	124
5. The Binary System	33	2. Inverse Trigonometric Functions	154
6. Sequence and Series	37	3. Heights and Distance	161
7. Quadratic Equation	52	4. Properties of Triangle	176
8. Linear Equations in two Variables	67	● Analytical Geometry of Two and Three Dimensions	186 – 226
9. Permutations and Combinations	74	1. The Points and Straight Lines	186
10. Binomial Theorem	81		
11. Logarithms and their Application	89		

2. The Circle	195	2. Correlation and Regression	331
3. Conic Section (Parabola, Ellipse and Hyperbola)	202	3. Probability	336
4. Three Dimensional Coordinate Geometry	216	● Statics	1 – 45
● Differential Calculus	227 – 256	1. Resultant of Coplanar Forces	1
1. Functions	227	2. Moments and Couples	9
2. Limits, Continuity and Differentiability	232	3. Equilibrium of three Forces acting on a Particle	19
3. Differentiation	241	4. Equilibrium of three Forces acting on by a Rigid Body	27
4. Application of Derivatives	249	5. General conditions of Equilibrium	42
● Integral Calculus and Differential Equation	257 – 289	● Dynamics	46 – 92
1. Indefinite Integral	257	1. Velocity, Acceleration and Rectilinear motion	46
2. Definite Integral	267	2. Relative motion and Its Simple Applications	61
3. Area of Bounded Regions	275	3. Motion under Gravity	66
4. Differential Equation	279	4. Projectile Motion	75
● Vector Algebra	290 – 306	5. Laws of Motion	87
1. Vectors	290		
● Statistics and Probability	307 – 344		
1. Frequency Distribution, Mean, Median, Mode and Standard Deviation	307		