

# CONTENTS

## ● Important Formulae

2–10

### Modern Algebra

1. Set Theory, Relation, Mapping and Number System 11–14

### Algebra

1. Surds 15–18
2. Simultaneous Quadratic Equations 19–22
3. Arithmetic Progression 23–28
4. Geometric Progression 29–34
5. Harmonic Progression 35–38
6. Miscellaneous Series 39–44
7. Binomial Theorem 45–50
8. Logarithm 51–53
9. Exponential and Logarithmic Series 54–59
10. Determinants and Matrices 60–63
11. Probability 64–67
12. Partial Fractions 68–70
13. Theory of Equations 71–73
14. Permutations and Combinations 74–78

### Trigonometry

1. Trigonometrical Identities 79–84
2. Trigonometric Equations 85–88
3. Relation Between Sides and Angles of a Triangle 89–93
4. Solution of Triangle 94–99
5. Properties of Triangle 100–106
6. Heights and Distance 107–115
7. Inverse Circular Functions 116–122
8. Complex Number and De Moivre's Theorem 123–128

### Co-ordinate Geometry

1. Straight Line 129–131
2. Equations Representing two Straight Lines 132–137
3. Circle 138–147
4. Parabola 148–156
5. Ellipse 157–166
6. Hyperbola 167–171

## Calculus

1. Differentiation (Different methods) and Differentiation from First Principles 172–180
2. Tangents and Normals 181–186
3. Maxima and Minima 187–194
4. Function and Limits 195–201
5. Elementary Integration, Integration by Substitution 202–207
6. Integration by Parts 208–213
7. Integration Continued 214–222
8. Definite Integration 223–229
9. Application of Definite Integral 230–233
10. Differential Equation 234–236

### Vector Analysis

1. Position Vector, Addition, Subtraction and Products of Vectors 237–245

### Dynamics

1. Velocity, Acceleration and Rectilinear Motion 246–258
2. Relative Motion 259–263
3. Motion Under Gravity 264–272
4. Projectiles 273–285
5. Laws of Motion 286–291
6. Impulse, Work, Power and Energy 292–300
7. Collision of Elastic Bodies 301–309
8. Uses of Laws of Motion (Pulleys) 310–316

### Statics

1. Composition and Resolution of Two Forces 317–324
2. Equilibrium of Three Forces Acting on a Particle 325–333
3. Equilibrium of more than Three Forces Acting on a Particle 334–337
4. Parallel Forces 338–343
5. Moments and Couples 344–353
6. Equilibrium of Three Forces Acting on by a Rigid Body 354–368
7. General Conditions of Equilibrium 369–372
8. Centre of Gravity 373–387
9. Friction 388–396