

# CONTENTS

## ● Previous year paper Fully Solved

### ALGEBRA

1. Elements of Set Theory 5–13
2. Relation and Function 14–20
3. Number Theory 21–50
4. Polynomials, Division Algorithm 51–56
5. Theory of Equations 57–90
6. Group 91–116
7. Ring, Integral Domain and Field 117–141

### MATRICES & VECTOR SPACES

#### Section (I) : Matrices

1. Matrices (A) 142–153
2. Matrices (B) 154–163
3. Matrices (C) 164–177
4. Matrices (D) 178–204

#### Section (II) : Vector Spaces

5. Vector Spaces 205–215
6. Linear Transformations 216–223

### CALCULUS

#### Section (I) : Differential Calculus

1. Function 224–235
2. Limit, Continuity and Differentiability 236–272
3. Rolle's Theorem, Mean Value Theorem, Taylor's Theorem 273–286
4. Rates of Change 287–290
5. Tangents and Normals 291–308
6. Maxima and Minima 309–322
7. Curvature 323–335
8. Asymptotes 336–350
9. Singular Points 351–365
10. Curve Tracing 366–381
11. Partial Differentiation 382–414

#### Section (II) : Sequences and Series

12. Sequences 415–419
13. Series 420–450

#### Section (III) : Integral Calculus

14. Indefinite Integrals 451–475
15. Definite Integrals 476–498
16. Rectification, Quadrature, Volume and Surfaces 499–525
17. Multiple Integration 526–549

### DIFFERENTIAL EQUATION

1. Differential Equations 550–610

### GEOMETRY

#### Section (I) : Analytic Plane Geometry 611–616

1. Fundamental Concepts of 2D 617–624
2. Straight Lines 625–640
3. Pair of Straight Lines 641–649
4. The Circle 650–668
5. The Parabola 669–682
6. The Ellipse 683–701
7. The Hyperbola 702–718
8. Polar Equations 719–744

#### Section (II) : Analytic Solid Geometry

9. Fundamental Concepts of 3D 745–757
10. The Plane 758–768
11. The Straight Line 769–784
12. The Sphere 785–799
13. The Cone 800–810
14. The Cylinder 811–824

### VECTORS

1. Vectors 825–871

### MECHANICS

#### Section (I) : Statics

1. Parallelogram of Forces, Equilibrium of Coplanar Forces, Moments and Couples 872–891
2. Friction 892–898
3. Centre of Gravity and Centre of Mass 899–911

#### Section (II) : Dynamics

4. Motion of a Particle in a Straight Line 912–926
5. Newton's Laws of Motion 927–935
6. Motion in a Plane 936–944
7. Projectiles 945–954
8. Simple Harmonic Motion 955–960
9. Circular Motion 961–972
10. Motion under Central Forces 973–978
- Miscellaneous Exercise (Vector, Mechanics) 979–993

### ELEMENTS OF COMPUTER PROGRAMMING

1. Number System 994–1008