UNIT-V

Quotient ring,. homomorphism and isomorphism in rings, kernel of homomorphism, Fundamental theorem of ring homomorphism.

Relation between the roots and coefficients of general polynomial equation in one variable. Transformation of equations. Descarte's Rule of signs, solution of Cubic equations (Cardon method). Biquadratic equations.

References :

1. I.N. Herstein : Topics in Algebra, Wiley Eastern Ltd., New Delhi, 1975.
2. R.S. Agrawal : A Textbook on Modern Algebra.
3. K.B.Datta : Matrix and Linear Algebra Prentice Hall of India Pvt. Ltd., New Delhi, 2000.
4. H.S.Hall and S.R. Knight : Higher Algebra, H.M. Publications, 1994.
5. Bansal, Bhargava, Agrawal : Amurt Big Ganita.
6. Chandrika Prasad : Text book on Algebra and Theory of Equations, Pothi shala Pvt. Ltd Allahabad.
7. Gokhroo, Saini : Elements of Abstract Algebra
8. Sharma, Purohit : Elements of Abstract Algebra

PAPER-II
CALCULUS

Note : The question paper will be divided into three sections A, B and. C as follows:

Section A : In this section, ten questions will be set taking two questions from each unit. Each question will be of short answer type not exceeding 20 words and will carry 3/4 mark. The candidate will be required to attempt all the questions (aggregating 7.5 marks).

Section B : In this section, ten questions will be set taking two questions from each unit. The answer of each will not exceed 250 words or two and a half page. Each question will be of 7.5 marks. The candidate will be required to I attempt five questions in all taking one question from each unit (aggregating 37.5 marks).

Section C : In this section, four questions will be set covering all the five units and whose answers shall not exceed 500 words or five pages each. Each question may have sub parts in it and will carry 15 marks. The candidate will be required to attempt any two questions (aggregating 30 marks).

UNIT-I

Polar coordinates and derivatives of arc, Polar subtangent and subnormal, pedal-equation, successive differentiation. Leibnitz theorem. Maclaurin and Tailor series expansions.

UNIT - II

Asymptotes, curvature, Test of concavity and convexity. Points of inflexion. Multiple points. Tracing of curves in Cartesian and polar coordinates.

UNIT - III

Reduction formula for nth power of trigonometric functions. Quadrature, Rectification, volumes and surfaces of solid of revolution.

UNIT - IV

Degree and order of a differential equation. Equations of first order and first degree, Equations in which the variables are separable, Homogeneous equations. Linear equations and equations reducible to the linear form. Exact differential equations.

UNIT - V

First order and higher degree equations solvable for x,y,p. Clairaut's form and singular solutions. Geometrical meaning of a differential equation. Linear differential equations with constant coefficients. Homogeneous linear ordinary differential equations and the equations reducible in homogeneous form.

References

1. Gorakh Prasad : A Text book on differential calculus (Pothi shala)

2 Gorakh Prasad : A Text book on Integral calculus and Differential Equations (Pothi shala).

3. E.A.Codignton : An introduction to ordinary Differential Equations Prentice Hall of India, 1961.

4. P.K. Jain and S.K.Kaushik : An Introduction to Real Analysis, S.Chand & Co., New Delhi-II 2000.

5. Bansal, Bhargava : Avakalan Ganita-II

6. Bansal, Bhargava : Samakalan Ganita-Il

7. Gokhroo, Saini : Uchch Avakalan Ganita

8. Gokhroo, Saini : Uchch Samakalan Ganita.

9. Bansal, Bhargava & Agrawal : Avkal Samikaran I.

10. Gokhroo, Saini, Kumbhat : Avkal Samikaran.