



Shree H. N. Shukla Institute of Pharmaceutical Education & Research

(Affiliated to Gujarat Technological University, Approved by PCI)

Shree H. N. Shukla College Campus, Nr. Lalpari Lake, B/H. Marketing Yard,
Amargadh – Bhichari, Raikot. Mo. 9099063150, 9727753360

B.Pharm SEMESTER: I

Subject Name: REMEDIAL MATHEMATICS

Subject Code: BP107TT

Scope: This is an introductory course in mathematics. This subject deals with the introduction to Partial fraction, Logarithm, matrices and Determinant, Analytical geometry, Calculus, differential equation and Laplace transform

Objectives: Upon completion of the course the student shall be able to:-

1. Know the theory and their application in Pharmacy
2. Solve the different types of problems by applying theory
3. Appreciate the important application of mathematics in Pharmacy

Teaching scheme and examination scheme:

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	Theory		Practical	
				External	Internal	External	Internal
2	0	0	2	35	15	0	0

Sr No	Course Contents	Total Hrs
1	Partial fraction Introduction, Polynomial, Rational fractions, Proper and Improper fractions, Partial fraction, Resolving into Partial fraction, Application of Partial Fraction in Chemical Kinetics and Pharmacokinetics Logarithms Introduction, Definition, Theorems/Properties of logarithms, Common logarithms, Characteristic and Mantissa, worked examples, application of logarithm to solve pharmaceutical problems Function: Real Valued function, Classification of real valued functions, Limits and continuity : Introduction, Limit of a function, Definition of limit of a function	6
2	Matrices and Determinant: Introduction matrices, Types of matrices, Operation on matrices, Transpose of a matrix, Matrix Multiplication, Determinants, Properties of determinants, Product of determinants, Minors and co-Factors, Adjoint or adjugate of a square matrix, Singular and non-singular matrices, Inverse of a matrix, Solution of system of linear of equations using matrix method, Cramer's rule, Characteristic equation and roots of a square matrix, Cayley–Hamilton theorem, Application of Matrices in solving Pharmacokinetic equations	6
3	Calculus: Differentiation : Introductions, Derivative of a function, Derivative of a constant, Derivative of a product of a constant and a function, Derivative of the sum or difference of two functions, Derivative of the product of two	6



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	functions (product formula), Derivative of the quotient of two functions (Quotient formula) – Without Proof , Derivative of x^n w.r.t. x , where n is any rational number, Derivative of e^x , Derivative of $\log_e x$, Derivative of ax , Derivative of trigonometric functions from first principles (without Proof), Successive Differentiation, Conditions for a function to be a maximum or a minimum at a point. Application	
4	Analytical Geometry Introduction: Signs of the Coordinates, Distance formula, Straight Line : Slope or gradient of a straight line, Conditions for parallelism and perpendicularity of two lines, Slope of a line joining two points, Slope – intercept form of a straight line Integration: substitution, Method of Partial fractions, Integration by parts, definite integrals, application	6
5	Differential Equations : Some basic definitions, Order and degree, Equations in separable form , Homogeneous equations, Linear Differential equations, Exact equations, Application in solving Pharmacokinetic equations Laplace Transform : Introduction, Definition, Properties of Laplace transform, Laplace Transforms of elementary functions, Inverse Laplace transforms, Laplace transform of derivatives, Application to solve Linear differential equations, Application in solving Chemical kinetics and Pharmacokinetics equations	6

Recommended Books (Latest Edition)

1. Differential Calculus by Shanthinarayan
2. Pharmaceutical Mathematics with application to Pharmacy by Panchaksharappa Gowda D.H.
3. Integral Calculus by Shanthinarayan
4. Higher Engineering Mathematics by Dr.B.S.Grewal

LEARNING OUTCOMES:

UNIT	LEARNING OUTCOME
1	Understanding basic formulas to be used for calculations in pharmacy.
2	Ability to perform mathematical operations with confidence, speed and accuracy.
3	Application of mathematics in pharmacy calculations.
4	Ability to evaluate raw data and compilation.

BOOK LIST:

Sr. no	Book name	Price (Rs.)
1	Differential Calculus by Shanthinarayan.	888/-
2	Pharmaceutical Mathematics with application to Pharmacy by Panchaksharappa Gowda D.H.	295/-
3	Integral Calculus by Shanthinarayan.	675/-
4	Higher Engineering Mathematics by Dr.B.S.Grewal.	207/-