



<b>Chapter 1 : Functions and Limits</b>		<b>1-1 - 1-22</b>		<b>Chapter 3 : Applications of Derivative</b>		<b>3-1 - 3-47</b>	
1.1	Introduction to Functions.....	1-2		3.1	Introduction.....	3-2	
1.1.1	Some Important Definitions.....	1-2		3.2	Geometrical meaning of Derivatives (Slope, Gradient)....	3-2	
1.1.2	Function.....	1-2		3.3	Examples.....	3-2	
1.2	Types of Functions.....	1-3		3.4	Tangents and Normal.....	3-8	
1.3	Examples.....	1-4		3.5	Maxima and Minima.....	3-19	
1.4	Examples Based on Odd and Even Function.....	1-18		3.6	Radius of Curvature.....	3-36	
1.5	Introduction to Limits.....	1-20		3.6.1	Radius of Curvature in Cartesian Form.....	3-37	
1.6	Existence of Limits.....	1-20		<hr/>			
1.6.1	Uniqueness of Limit.....	1-21		<b>Chapter 4 : Integration</b>			
1.7	Properties of Limits.....	1-21		<b>4-1 - 4-86</b>			
1.8	Substitution.....	1-21		4.1	Integration.....	4-2	
1.9	List of Standard Important Formulae.....	1-21		4.1.1	Indefinite Integral.....	4-2	
<hr/>				4.1.2	Integration of Standard Function.....	4-2	
<b>Chapter 2 : Derivatives</b>		<b>2-1 - 2-84</b>		4.2	Rules of Integration.....	4-3	
2.1	Introduction.....	2-2		4.3	Solved Examples on Simple Integration.....	4-3	
2.2	Definition of Derivative.....	2-2		4.4	Integration of Composite Function.....	4-9	
2.3	Geometrical Meaning of Derivatives.....	2-2		4.5	Integrals of Simple Algebraic Rational Functions.....	4-11	
2.4	Derivatives of Standard Functions.....	2-3		4.6	Integration by Trigonometric Transformation.....	4-14	
2.4.1	Constant Function.....	2-3		4.7	Integration by Substitution Method.....	4-24	
2.4.2	Power Function.....	2-3		4.7.1	Some Substitutions.....	4-24	
2.4.3	Exponential Function.....	2-3		4.8	Solved Examples.....	4-25	
2.4.4	Logarithmic Function.....	2-4		4.9	Integral of the Form.....	4-39	
2.4.5	Trigonometric Functions By using First Principle.....	2-4		4.9.1	Solved Example.....	4-40	
2.4.6	Derivatives of Inverse Trigonometric Functions.....	2-6		4.10	Integration by Partial Fraction.....	4-42	
2.5	Derivatives of Some Standard Functions.....	2-7		4.11	Integral of the Form.....	4-57	
2.6	Rules of Differentiation.....	2-8		4.11.1	Examples.....	4-57	
2.6.1	Derivative of Sum.....	2-8		4.12	Integrals of the Form.....	4-62	
2.6.2	Derivative of Difference.....	2-8		4.12.1	Integrals of the Form.....	4-63	
2.6.3	Examples.....	2-9		4.13	Integration by Parts.....	4-68	
2.6.4	Derivative of Product.....	2-12		4.14	Generalized Rule of Integration by Parts.....	4-79	
2.6.5	Derivative of Quotient.....	2-16		<hr/>			
2.6.6	Derivatives of a Composite Functions (Chain Rule).....	2-22		<b>Chapter 5 : Definite Integration</b>			
2.7	Composite Derivatives.....	2-22		<b>5-1 - 5-42</b>			
2.8	Derivatives of Inverse Functions.....	2-36		5.1	Definite Integral.....	5-2	
2.9	Derivatives of Inverse Trigonometric Functions by Suitable Substitution.....	2-37		5.2	Some Properties of Definite Integral.....	5-2	
2.10	Derivatives of Implicit Functions.....	2-45		5.2.1	Examples.....	5-2	
2.11	Logarithmic Differentiation.....	2-52		5.3	Problems on Property of Definite Integration.....	5-13	
2.12	Derivatives of Parametric Functions.....	2-63		5.4	Definite Integral by Method of Substitution.....	5-22	
2.13	Derivative of One Function with respect to another Function .....	2-72		5.5	Integration by Parts.....	5-37	
2.14	Second Order Differentiation.....	2-81		5.6	Examples.....	5-37	

**Chapter 6 : Applications of Definite Integration****6-1 - 6-26**

6.1	Introduction .....	6-2
6.2	Area under the Curve as a Definite Integral.....	6-3
6.3	Examples .....	6-3
6.4	Area between Two Curves.....	6-14
6.4.1	Examples .....	6-14
6.5	Volume of a Solid of Revolution .....	6-20
6.5.1	Examples .....	6-21

**Chapter 7 : Differential Equation****7-1 - 7-40**

7.1	Introduction .....	7-2
7.2	Solved Examples .....	7-2
7.3	Formation of Differential Equation.....	7-6
7.3.1	General Solution .....	7-7
7.3.2	Particular Solution .....	7-7
7.4	Examples .....	7-7
7.5	Solution of Differential Equations of First Order and First Degree .....	7-13
7.6	Examples .....	7-14

7.7	Equation Reducible to Variable Separable Form.....	7-19
7.8	Solved Examples .....	7-20
7.9	Homogeneous Differential Equation .....	7-25
7.10	Linear Differential Equation.....	7-31

**Chapter 8 : Application of Differential Equations****8-1 - 8-13**

8.1	Rectilinear Motion Under Constant Acceleration .....	8-2
8.1.1	Examples .....	8-2
8.2	Motion Under Variable Acceleration .....	8-3
8.2.1	Examples .....	8-3
8.3	Applications of Differential Equations .....	8-8
8.3.1	Introduction .....	8-8
8.3.2	Simple Electrical Circuits .....	8-8
8.3.3	Kirchhoff's Law.....	8-8

**Chapter 9 : Numerical Integration****9-1 - 9-17**

9.1	Numerical Integration.....	9-2
9.2	Simpson's Rule .....	9-8
9.2.1	Simpson's (1/3) <sup>rd</sup> Rule Over $[x_0, x_n]$ .....	9-8
9.2.2	Simpson's $\frac{3}{8}$ <sup>th</sup> Rule.....	9-14

