Unit : 1   **[18 Marks]**

Set Theory: -

Set, subset, equality of two sets, Null set ,Universal set, complement of a set, Difference of two sets, Venn Diagram, commutative ,associative and distributive laws , De morgans laws , Cartesian product of two sets ,power sets , Partitions sets , Mathematical Inductions , Computing Principles , Permutations , Combinations.

Unit : 2   **[18 Marks]**

Function: -

Definition, Domain and Range, Constant function, polynomial function, Relational functions, Exponential functions and Logarithm functions, Inverse function, Trigonometric functions, Graph of the functions, Recursive functions: Definitions and Examples.

Mathematical Functions :-

Floor and Ceiling functions , Integer and Absolute value functions , Remainder functions
Sequence and Series :-

Definitions, Difference between Sequence and series, To find nth term and sum of n terms
Application to Break-Even Analysis: -

Demand, supply, Revenue and cost function

Unit : 3   **[18 Marks]**

Vector, Determinants and Matrices
Vector   :   Definitions only
Determinant   :   Concept of Determinants , Properties of determinants, Cramers Rule.
Matrices   :   Algebra of matrices , Row and Column Transformation, Computation of Inverse , Simultaneous equations in two And three unknown variables solve by matrix methods .

Unit : 4   **[16 Marks]**

Limit and Continuity
Limit of a function, Rules of a Limit (without proof), some standard Limits (without proof)

$$\lim_{x \to a} \frac{X^n - a^n}{x - a} \quad , \quad \lim_{x \to 0} \frac{a^x - 1}{x} \quad , \quad \lim_{x \to 0} \frac{e^x - 1}{x}$$

$$\lim_{x \to 0} (1 + x)^{1/x} \qquad \qquad \lim_{x \to 8} (1 + 1/x)^x$$
$$\frac{\lim \sin x}{X} \qquad \qquad , \qquad \frac{\lim \text{Tan} x}{X}$$

Continuity and discontinuity for a polynomial functions at a point.

Text Books :-
Advanced Mathematics – Ravi Gor (Nirav Prakashan)

Reference Book : -
Discrete Mathematics - S . Lipschutz , M .Lipson