

Block

2

FUNDAMENTALS OF MATHEMATICS-II

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BLOCK 2 FUNDAMENTALS OF MATHEMATICS-II

This is the second block of the course MST-001. The aim of this block is to provide sufficient material which will be needed in order to study course MST-003 and some sections of other courses of the programme.

Using the knowledge provided by the previous block of this course. The follow of the block is maintained by the following four units.

Unit 5: Limit and Continuity

In this unit concept of limit, evaluation of certain limits using factorisation, L.C.M., rationalisation and some standard rules have been discussed. Concept of left hand, right hand limits and infinite limit have been also introduced. The unit ends with the brief introduction of continuity.

Unit 6: Differentiation

This unit discusses a very important branch of calculus known as differentiation. In this unit, you will learn how differentiations of some commonly used functions are evaluated. Differentiations of functions using product rule, quotient rule and chain rule have been also discussed in this unit. Differentiation of parametric and implicit functions also takes place in the unit. Unit ends by giving a brief induction of higher order derivatives and maxima and minimum of functions.

Unit 7: Indefinite Integration

Another important branch of calculus known as integration is discussed in this unit. It discusses indefinite integral of some commonly used functions. It also discusses how we can evaluate an integral by using substitution method, partial fractions and integration by parts.

Unit 8: Definite Integration

This unit starts with the geometrical interpretation of the definite integral. Definite integral of some commonly used functions and properties of definite integral also have been discussed. Some examples based on first kind of improper integral also have been evaluated.

Notations and Symbols

$x \rightarrow a$: x approaches to a

L.H.S. : left hand limit

R.H.S. : right hand limit

∞ : infinity

$|x|$: modules of x or absolute value of x

+ ve : positive

– ve : negative

\int : sign of integration

\int_a^b : definite integral within limits a to b