

UNIVERSITY OF MADRAS
B.Sc. DEGREE COURSE IN MATHEMATICS
SYLLABUS WITH EFFECT FROM 2020-2021

BMA-CSC09

CORE-IX: ALGEBRAIC STRUCTURES-I
(Common to B.Sc. Maths with Computer Applications)

Inst.Hrs : 6

Credits : 4

YEAR: III

SEMESTER: V

Learning outcomes:

Students will acquire knowledge about the concepts of Sets, Groups and Rings.

UNIT I

Introduction to groups- Subgroups- cyclic groups and properties of cyclic groups- Lagrange's Theorem- A counting principle.
Chapter 2 Section 2.4 and 2.5.

UNIT II

Normal subgroups and Quotient group- Homomorphism- Automorphism.
Chapter 2 Section 2.6 to 2.8.

UNIT III

Cayley's Theorem- Permutation groups.
Chapter 2 Section 2.9 and 2.10.

UNIT IV

Definition and examples of ring- Some special classes of rings- homomorphism of rings- Ideals and quotient rings- More ideals and quotient rings.
Chapter 3 Section 3.1 to 3.5.

UNIT V

The field of quotients of an integral domain- Euclidean Rings- The particular Euclidean ring.
Section 3.6 to 3.8.

Contents and treatment as in

“Topics in Algebra” – I. N. Herstein, Wiley Eastern Ltd.

Reference:

- 1.Modern Algebra by M.L.Santiago, McGraw Hill Education India pvt Ltd.
- 2.Modern Algebra by S. Arumugam and others, New Gamma publishing House, Palayamkottai.
- 3.Modern Algebra by Visvanathan Nayak, Emerald Publishers, Reprint 1992.

e-Resources:

1. <https://nptel.ac.in>
2. <http://garsia.math.yorku.ca/~sdenton/algstruct>.