Session: 2023 - 2024

Name of the Assistant/Associate Professor: Dr. MONIA
Class and Section: B.Sc.III(A + B)(Semester-V)
Subject: Mathematics
Paper: Groups and Rings

July
Week 4 **Chapter 1: Groups and Subgroups, Theorems on properties of groups** **Introduction of subgroups and its example**
Week 5 **Chapter 1:** **Introduction of subgroups and its examples** **Subgroup criterion** **Product, intersection and union of subgroup** **Cyclic groups**

AUGUST
Week 1 **Chapter2: Cosets** **Introduction to sets of a subgroup** **Index of a subgroup, Langrange's theorem**
Week 2 **Chapter2: Cosets, Theorems on normal subgroups, Quotient Groups**
Week 3 **Chapter 3: Homomorphisms and Automorphisms, Homomorphism and isomorphisms of Groups,** **Kernel of Homomorphism, Fundamental theorems on homomorphism of groups**
Week 4 **Chapter 3: Homomorphisms and Automorphisms** **Some theorems on Automorphisms of a group** **Normalizer of an element**

SEPTEMBER
Week 1 **Chapter 4: Permutation Groups**
Alternating Group and its related theorems **Cayley theorem** **Detailed examples of permutation groups and its related concepts**

Week 2 **Assignments**
Week 3 **Chapter 5: Rings and fields, Ring without zero divisors and its related examples** **Integral Domain and its examples**
Week 4 **Chapter5: Rings and fields, Introduction of subrings of a ring** **Characteristic of a ring**
Week 5 **Chapter 6: Ideals and Quotients Rings, Theorems on intersection of ideals** **Simple Ring and its related theorems** **Principal ideal and principal ideal domain**

OCTOBER
Week 1 **Chapter 6: Ideals and Quotients Rings, Maximal ideal and prime ideal**
Week 2 **Chapter 7: Homomorphisms of Rings**
Week 3 **Chapter 8: Embedding ring, Some Theorems on Embedding Rings**
Week 4 **Chapter 8: Euclidean Rings, Divisibility in commutative ring** **Prime elements and Irreducible elements, Principal Ideal Domain**

NOVEMBER
Week 1 **Chapter 9: Euclidean Rings, maximal ideal and prime ideal** **Some theorems on prime element and irreducible elements**
Week 2 **Chapter 9: Polynomial Rings,** **Polynomial over an integral domain, Remainder Theorem**
Week 3 **Vacations (Diwali)**
Week 4 **Revision**