Abstract Algebra BCADA4321

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1 Groups

Introduction to Groups: Binary Operation, Definition of Groups, Examples of Group, Introduction to set of Integers modulo n, Uniqueness of identity element and Uniqueness of Inverse element, Subgroups: Order of an element, Subgroups, One-Step Subgroup Test , One-Step Subgroup Test (proof not required), Examples of Subgroups, Cyclic Groups: Generators of Cyclic Group, Fundamental Theorem of Cyclic Groups and its corollaries, Permutation groups: Writing a permutation as a product of disjoint cycles, Disjoint cycles commute, Order of a permutation, Even and Odd Permutation

2 Rings and Fields

Definition and examples of Rings, Properties of rings, Subrings, Definition and example of Integral Domains, Definition and examples of Field, Ideals, Factor Rings, Prime Ideal and Maximal Ideal, Ring Homomorphism and its properties. Polynomial Ring, Division Algorithm and its corollaries.