Foundation of mathematics I

Code: MATH1102

1st stage

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Reference: Lal, R. (2017). Algebra 1: Groups, rings, fields and arithmetic. Springer.

Chapter One – Logic

Statements, propositional connectives, conjunction, disjunction, negation, conditional statement, implication, equivalence, statement formula and truth functional rules, universal quantifier, existential quantifier, negation of a statement formula involving quantifiers, tautology and logical equivalences, theory of logical inference, consistency of premises.

Chapter Two – Set Theory

Set, zermelo-fraenkel axiomatic system, subset, proper subset, intersection, empty set, union, De Morgan's law, successor, successor set, Peano's axiom.

Chapter Three– Cartesian product and relations

Cartesian product, relation, composition, inverse, reflexive relation, symmetric relation, antisymmetric relation, transitive relation, equivalence relation, equivalence classes, partition, quotient set.