Syllabus: Algebra Preliminary Examination 06/2022

Topics which may be covered include:

Groups: group homomorphisms, quotient groups, isomorphism theorems, group actions, direct and semi-direct products, fundamental theorem of finitely generated abelian groups

Rings and fields: ideals, ring homomorphisms, quotient rings, isomorphism theorems, fields of fractions, Chinese remainder theorem, Euclidean domains, principal ideal domains, unique factorization domains, polynomial rings, finite fields

References to help prepare:

Abstract Algebra by Dummit and Foote, 3rd edition:
Chapters 1-3
Sections 1-4 of Chapter 4
Chapter 5
Chapters 7-8
Sections 1-5 of Chapter 9
Also, you should know basic results about finite fields, including how to construct finite fields of all possible orders.