

DEPARTMENT OF MATHEMATICS

ORAL EXAMINATION

Major area: CATEGORY THEORY

Topics: Categories, Functors, Natural Transformations
Adjoint Functors, Equivalence of Categories
Limits and Colimits
Monads
Kleisli and Eilenberg-Moore Categories
Yoneda Lemma and Yoneda Embedding
Cartesian Closed Categories
Functional Completeness of CCC's
Typed and Untyped λ -calculus
Church-Rosser/Normalization
C-monoids
Scott's model of untyped λ -calculus
Sheaves
Type Theory
Toposes and their internal language
The Axiom of choice and Boolean Toposes
Topos Semantics
Adjunction between Toposes and Type Theories
Spectrums of Lattices and Sheaf Representations
Completeness
Freyd's cover of a Topos