The examination covers basic analytic properties of the real numbers and functions thereon. The following is a (not necessarily exhaustive) list of topics from which questions are drawn.

1. STRUCTURE OF THE REAL LINE
   - Countable and uncountable sets, completeness property
   - Open and closed sets, Bolzano-Weierstrass theorem
   - Compactness, Heine-Borel theorem

2. SEQUENCES AND SERIES OF NUMBERS
   - Definition of convergence of sequences and series of numbers, basic properties
   - Necessary and sufficient conditions for convergence
   - Conditional versus absolute convergence of series of numbers

3. FUNCTIONS OF A REAL VARIABLE
   - Limits and continuity, properties of continuous functions, uniform continuity
   - Differentiability, Mean Value Theorem and its consequences

4. THE RIEMANN INTEGRAL
   - Definition and basic properties of the Riemann integral
   - Necessary and sufficient conditions for integrability, upper/lower sums characterization of the integral
   - Fundamental Theorem of Calculus and its consequences

5. SEQUENCES AND SERIES OF FUNCTIONS
   - Definition of convergence of sequences and series of functions, basic properties
   - Pointwise versus uniform convergence of sequences and series of functions, M-Test
   - Power series and their properties

The material is found in a large number of texts, and is approached in a rather uniform fashion. Some texts that have been recently used are:

Bartle, *The Elements of Real Analysis*
DePree and Swartz, *Introduction to Real Analysis*
Krantz, *Real Analysis and Foundations*
Rosenlicht, *Introduction to Analysis*
Wade, *An Introduction to Analysis*