Syllabus for the Qualifying Review in
TOPOLOGY

The examination will be based on the following topics:

1. Equivalence relations, partial and linear orderings, Zorn's lemma, the axiom of choice and the well ordering principle.

2. Open and closed sets, neighborhoods, closure, interior, accumulation and interior points. Bases, sub-bases and axioms of countability.

3. Continuity and homeomorphisms. Subspaces, product spaces and quotient spaces. Function spaces with the compact-open topology.

4. Connected and path connected spaces. Compactness, the Heine-Borel theorem, the Bolzano-Weierstrass theorem, the Tychonoff theorem and one-point compactification. Metric spaces, completeness and the Baire category theorem. Urysohn's metrization theorem.

References:

There are many books covering most of this material in a satisfactory fashion. Two examples are:

- J. Dugundji. Topology.

- S. Willard. General Topology.