Sample Questions from Past Qualifying Exams

This list may give the impression that the exams consist of a series of questions fired at the student one after another. In fact most exams have more the character of a conversation with considerable give and take. Hence this list cannot be expected to indicate accurately the difficulties involved.

The list indicates the professor associated to each question where available. Some have been in the MGSA files for a while, and this information has been lost (if it was ever there).

The listing by section is approximate, since some questions may fit under more than one heading.

Combinatorial Game Theory

- Show that Red-Blue Hackenbush is NP-hard.
- What is the recursive definition of a game? [**Berlekamp**]
- Which games are numbers? [**Berlekamp**]
- Give the definition of some non-number games. [**Berlekamp**]
- What does it mean to say that $G < H$? [**Berlekamp**]
- What are the mean and temperature of a game? [**Berlekamp**]
- What can we say about the result of a games based on its mean and temperature? [**Berlekamp**]
- What is chilling? What is heating? What is overheating? [**Berlekamp**]
- What is the kernel of freezing? [**Berlekamp**]
- Why does warming invert chilling in go? Does it in general? [**Berlekamp**]