Here is a summary of the examination rules, as I discussed them briefly in class.

The exam lasts 30 minutes, and it will be split roughly in two parts:

(1) For the first part (about 20 minutes), you have to pick three of the topics from those listed below, one from each sublist (e.g., localization, integral extensions, completion is OK, but localization, tensor product, DVR is not). When you come in the room, I will ask you what these three topics are, and I will select one of them. You should then start presenting this topic (including, definition, motivation, examples, statements of results). I may ask questions about this topic, including asking for more examples, or for ideas or details of a proof. If you get stuck, or finish presenting this topic within the 20 minutes, I will ask questions about one of the other two topics that you selected until the first part is finished.

(2) For the second part, I will ask questions about *any* topic covered in the class (not counting the exercises), and mostly about topics that were not part of your list of three. This might include questions about definitions, examples, theorems, sketches of proofs, etc, but it will be in general less technical and detailed than the questions for the first part.

Very important: in both parts, I expect that you write essentially complete sentences on paper (or maybe on the blackboard, depending on the room the exam takes place) to explain your answers; this will play a role in the grade. In particular, statements of theorems should be completely precise.

Finally: the content of the lecture of the last week is not part of the exam.

List 1

- Categories and functors
- Localization
- Noetherian modules and rings
- Local rings (e.g. Nakayama's Lemma)
- Exact sequences and exactness
- Tensor product of modules

List 2

- Base change for modules
- Dimension of a ring, height of an ideal
- Integral extensions
- Cohen-Seidenberg theorems
- Modules of finite length
- Artinian modules and rings

List 3

- Krull's Principal Ideal Theorem
- Noether Normalization
- Zariski's Theorem, Nullstellensatz
- Dimension and height for finitely-generated algebras over fields
- Discrete valuation rings