Here is some information about our ISM final.

The exam will take place next Wednesday afternoon in the seminar room.

It will be closed book, BUT you will be allowed to bring two pages of *hand-written* notes with you. I strongly suggest you put together these notes from scratch, and that they contain more than equations.

I *will* supply you with all the physical and astronomical constants you'll need; you don't need to include any of them in your notes.

The exam will be similar in format to the midterm, with about six or seven multi-part problems. Those problems will test your understanding of concepts and how they relate to each other, and how they can be applied. You won't be asked to do involved math (though some math, of course). For example, you won't be expected to derive the radius of a supernova shock during the sedov phase from the shock-jump equations and express it in scaled form, but you would be expected to explain a simple shock structure (as in problem 1 of the first week of the shock section, with the piston and the wall and the velocity vectors). On the more mathy side of shocks, I'd expect you to be able to analyze quantitatively the free expansion phase or explain what the Rankine Hugoniot relations *mean* or apply the shock velocity vs. temperature relation.

You wouldn't be expect to recreate something like the full solution to the density-sensitive line ratio problem, but I would expect you to be able to set up the governing equations based on which processes (e.g. collisional deexcitation, spontaneous emission, collisional excitation) are important, and explain what makes the line ratio density sensitive and explain what the critical densities are.

For the weeks where we read papers (dustpedia, Orion Nebula, multi-phase medium) I could imagine asking you to explain a key figure in the relevant papers.

A good way to organize your studying (and the associated generation of your pages of notes) would be to look at each week's assignment and write down the several most important concepts; then write down associated equations and diagrams; then think about how these concepts might be deployed to analyze data. For example, I'd expect you to be able to go from a reddening measurement to dust extinction estimate to a dust column density determination (given a cross section) and then a particle density estimate given a distance the reddened star.

It would also be useful I think to go over each problem in each assignment (and the midterm) and make sure you can do them. But apropos of my comment above about not emphasizing involved math, I wouldn't suggest you redo each highly mathematical problem, but rather make sure you understand the concepts and how they're applied.