Name: _____

Date: _____

Astron 211 OOM #7
ISM

OOM Policy: You can work in pairs or groups of 3 if desired. You can consult class notes and books — no phones or computers. Make sure you are clear about the process you use to solve the problems: partial credit will be awarded. Always include units.

Estimate how many particles (atoms, molecules, or ions) would be in the classroom from the phases of the ISM listed below. Estimate how much total kinetic energy would be present from each of the phases.

component	T (K)	n (m^{-3})	state
molecular clouds	10-20	10^{8-12}	H_2
CNM	70	3×10^7	H
WNM	10^4	10^6	H
WIM	10^4	10^6	H II
H II regions	10^4	10^{8-10}	H II

Number of molecules:

1. Molecular clouds:

2. CNM:

3. WNM:

4. WIM:

5. H II:

Total energy:

1. Molecular clouds:

2. CNM:

3. WNM:

4. WIM:

5. H II:

Compare with the relevant quantities for air at room temperature and atmospheric pressure.