Physical Chemistry MSc1 Structural Chemistry Winter Semester 2008/09

Exam questions

1.	Interactions of atoms and molecules with particles
2.	Interactions of atoms and molecules with external fields
3.	The hydrogen atom. Structure angular and magnetic moments
4.	The hydrogen atom. Selection rules and electromagnetic spectrum
5.	Many electron atoms. Structure, interaction with external fields, spectrum
6.	Ions. Ionization, interactions
7.	Molecular symmetry
8.	The electronic structure of molecules
9.	The covalent bond
10.	The rotation of molecules
11.	Vibrational motions of molecules
12.	Vibrational spectra of molecules
13.	Excitation of electrons, transitions, electronic states and decay
14.	Substituent effect and electronic spectra, applications, UPS
15.	The dispersion of light, electronic spectra excited with polarized light
16.	Mass spectroscopy
17.	Paramagnetism, paramagnetic properties of molecules
18.	Diamagnetism, NMR, spin-spin interactions, ¹³ C-NMR spectroscopy, recording
	NMR spectra
19.	The Overhauser effect, realaxation processes: theory and measurement, two
	dimensional NMR
20.	Diffraction methods in the structure elucidation of molecules
21.	Intermolecular interactions
22.	Diffraction methods for the investigation of the structures of molecular ensembles
23.	Spetroscopic methods for the investigation of the sructures of molecular ensembles