

SUBJECTS FOR THE 2nd MIDTERM TEST (Pharmacy) (2011/2012)

Biophysics

Light sources

Sun, incandescent lamps, halogen lamp, metal vapour (e.g. Hg) lamps

Lasers

Light amplification, conditions for LASER operation

Properties of laser light

Structure of atoms

Atoms, electrons, nuclei, Rutherford's scattering experiment

Franck-Hertz experiment, Bohr's model

Electron as a wave, state function

Propagation law of free electrons, Heisenberg uncertainty relation

Bound state electron and atomic states

Discrete atomic energy levels, quantum numbers

Spin and associated magnetic momentum of an electron

Structure of the nucleus, mass deficiency and binding energy

Atomic interactions

Binding distance, binding energy

Classification of bond types, intramolecular, intermolecular

Van der Waals interactions, radii

Boltzmann distribution

Barometric formula; thermal emission of metals; Nernst equation

Equilibrium and rates of chemical reactions, Arrhenius-plot

Gases

Ideal gases; temperature, pressure of the gas

Real gases; Van der Waals state equation

Topics from laboratory practices: Measurements on 6-10th weeks.

Problems: 1, 2, 3, 4, 5, 6, 7, 8, 41, 67, 68