

Biophysics final exam, part I., topic list for the labs (2023, EP)

The form of the exam is oral. You will be required to talk about two topics (one from the A-list, and one from the B-list). In each topic you will get two sub-questions (altogether four questions). A perfect answer is 2 points worth, a minimum of 2.5 points must be reached to continue to the theory part.

A/1	Image formation, microscope.
A/2	Concentration determination with the refractometer.
A/3	Optics of the eye, image formation in the eye.
A/4	Special microscopy methods.
A/5	Force measurement with a spring/cantilever ; resonance.
A/6	Light emission and its laboratory applications.
A/7	Material identification and concentration determination by polarimetry.
A/8	Light absorption and its laboratory applications.
A/9	Basis of nuclear measurement techniques.
A/10	Absorption of gamma radiation, basis of radiation protection.
A/11	Dosimetry, dose(rate) measuring devices.
A/12	Analysis of the amplifier, signal processing.
B/1	Coulter-counter, electronic cell counting.
B/2	Generation of X-ray radiation, absorption of X-ray and basis of X-ray imaging.
B/3	Determination of gamma photon energy, principle of dual isotope labeling.
B/4	Physical basis of ECG.
B/5	Audiometry, determination of the auditory threshold curve and of the audiogram.
B/6	Pulse generators and their applications.
B/7	Imaging by gamma radiation.
B/8	Diffusion and its significance in the human body.
B/9	Fluid flow, the physical basis of blood circulation.
B/10	Sensory function and its models.
B/11	Functional principle of the CAT-scan, experiment with the model.
B/12	Measurement of the impedance of the skin.
B/13	Ultrasound and its medical applications.