

Biophysics final exam, part I., topic list for the labs (2020, EP)

The form of the exam is an online zoom-meeting. 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 (lens, mirrors), 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	Measurement of the impedance of the skin.
A/11	Ultrasound and its medical applications
A/12	Absorption of gamma radiation, basis of radiation protection.
B/1	Dosimetry, dose(rate) measuring devices.
B/2	Coulter-counter, electronic cell counting.
B/3	Generation of X-ray radiation, absorption of X-ray and basis of X-ray imaging.
B/4	Analysis of the amplifier, signal processing.
B/5	Determination of gamma photon energy, principle of dual isotope labeling.
B/6	Physical basis of ECG.
B/7	Audiometry, determination of the auditory threshold curve and of the audiogram.
B/8	Pulse generators and their applications.
B/9	Imaging by gamma radiation.
B/10	Diffusion and its significance in the human body.
B/11	Fluid flow, the physical basis of blood circulation.
B/12	Sensory function and its modeling.
B/13	Functional principle of the CAT-scan, experiment with the phantom.