

# Exam questions of Medical physics

## Faculty of Medicine

### 1. **Biological thermodynamics**

### 2. **Biomechanics**

Viscoelastic properties of biomaterials. Mechanical movement in living organism. Mechanical properties of muscles. Periodic oscillation and mechanical waves. Periodic mechanic oscillations. Mechanical waves. Sound. Physical properties of sound waves. Scale of sound wave frequency. Acoustic sounds, Ultrasound and Infrasound. Doppler principle.

### 3. **Biomechanics of fluids and gases**

Fluids biomechanics. Main principles and regularities of hydrostatics. Main fundamentals of hydrodynamics. Physical fundamentals of Hemodynamic. Heart – main components of blood circulation. Blood circulation. Blood pressure: description and measurement. Main mechanisms of aerodynamics in respiratory system. Air transport in respiratory system.

### 4. **Electromagnetic interactions in living systems**

Electromagnetism. Main concepts and rules of electricity. Electrostatics. Electrodynamics. Main concepts and laws of magnetism. Induction and strength of magnetic field. Electromagnetic induction. Magnetic properties of a material. Alternating current

### 5. **Bioelectricity and biomagnetism**

Bioelectricity. Electric properties of living cell. Electric potentials of tissues and systems, their registration. Electrostimulation of tissues and organs. Biomagnetism. The Earth's magnetic field

### 6. **Electromagnetic waves**

Main properties of electromagnetic waves

### 7. **Photoelectric effect**

### 8. **Atom and atom nucleus structure**

Modern quantum-mechanical model of the atom. Structure of atomic nucleus. Interactions in nature

### 9. **Electromagnetic scale**

Description of electromagnetic waves of different frequency