

QUESTIONS OF COLLOQUIUM №.2

«FUNDAMENTALS OF PHYSICAL METHODS OF DIAGNOSTICS AND THERAPY»

FOR ANGLOPHONE STUDENTS OF THE 1 COURSE

2 Term of 2020/2021

1. Ultrasound. Sources and detectors of ultrasound. Ultrasonic wave properties, ultrasound propagation features.
2. Action of ultrasound on substance, on body tissues. Use of ultrasound in Medicine for treatment and diagnostics.
3. Optical system of the eye: Light-conducting and light-perceiving apparatus of the eye. Principal optical and visual axis of the eye. Single nodal point. Accommodation. Distance of the best vision. Near point of the eye.
4. Reduced eye. The resolution of the eye (the least angle of view). Acuity of vision. Disadvantages of optical system of the eye and their correction with help of lenses.
5. Interaction of light with matter. Absorption of light. Bouguer-Lambert-Beer's law.
6. Effective absorption cross section of the molecule. Natural absorption coefficient, transmission coefficient, optical density of solution. Concentration colorimetry.
7. Light scattering. Nephelometry.
8. Thermal radiation. Characteristics of thermal radiation. Black, white, gray body.
9. Laws of thermal radiation. Planck's formula.
10. Physical fundamentals of thermography.
11. Dosimetry of ionizing radiation. Absorbed dose and exposer dose. Dose rate, relationship of exposure dose rate and radioactive drug activity.
12. Quantitative estimation of biological effects of ionizing radiation. Quality factor Equivalent dose. Effective equivalent dose. Coefficient of radiation risk.
13. Dosimeters. Natural background and permissible values of ionizing radiation doses. Protection against ionizing radiation.

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