

QUESTIONS of COLLOQUIUM (MODULE 1)
on «PHYSICS and MATHEMATICS»
for anglophone students of the 1 course
over 1 term of 2020/2021

1. Mechanical oscillations. Free oscillations: continuous and damped. Expressions for displacement. Forced oscillations and resonance.
2. Mechanical waves. Types of waves. Characteristics of wave. Equation of a travelling wave. Doppler effect.
3. Laminar (steady) flow. Internal friction (viscosity) of fluid.
4. Newton's equation. Newtonian and non-Newtonian liquids.
5. Laminar flow of liquid in cylindrical pipes. Poiseuille's formula.
6. Methods of the determination of liquid viscosity.
7. Turbulent (irrotational) flow. Reynolds number. Hydraulic resistance.
8. Deformation. Ways of body deformation.. Hooke's law for elastic deformation.
9. Stress-strain diagram (dependence of mechanical stress on strain for solids).
10. Electric field. Conductors and dielectrics. Electric dipole.
11. Alternating current. Basic characteristics of an alternating current. Resistance of an alternating current circuit.
12. Reactances of an alternating current circuit. Impedance.
13. Electrical pulse. Parameters of pulse signal.
14. Pulse current. Pulse current parameters. Use of pulse currents in medicine.