Forum:Seminar papers/Biophysics/2. LF/2017-2018/Group 2A (Serina): MCQ - Optics, Biomechanics

OPTICS:

1. An example of Total internal reflection is:

A. Endoscopy B. Dispersion C. Diffraction D. Sparkling of a star Correct Answer: A

2. Light can be polarized by:

A. Dispersion B. Double refraction C. Chromatic aberration D. Total internal reflection Correct Answer: B

3. The irradiance of a light ray is proportional to:

A. The frequency of a light ray B. The frequency of a light ray squared C. The amplitude of the electric field of the light ray D. The amplitude of the electric field of the light ray squared Correct Answer: D

4. Which of these is *not* a characteristic of electromagnetic waves?

A. Electromagnetic waves have two fields: electric and magnetic. B. The angle between the electric and magnetic field is 90 degrees. C. The electric and magnetic fields are perpendicular to the direction of propagation. D. Electromagnetic waves are longitudinal waves. Correct Answer: D

5. Calculate the ratio of the refractive index of medium 1 to medium 2 when the incident and refracted angles are given by 60° and 45°.

A. 1.00 B. 0.45 C. 1.71 D. 1.22 Correct Answer: D

BIOMECHANICS:

1. Properties of an ideal fluid include:

A. No viscosity, no friction, incompressible B.Highly viscous, no friction, compressible C. Chemically active, viscous, incompressible D. Optically active, incompressible, density below $10gcm^{-3}$ Correct Answer: A

2. Fick's first law :

A. Flux travels from regions of low concentration to regions of higher concentration with a magnitude that is proportionate to the concentration gradient. B. The negative sign indicates that the flux is in the same direction as the concentration gradient. C. Flux travels from regions of higher concentration to regions of lower concentration with a magnitude that is proportionate to the concentration gradient. D. The concentration gradient has no effects on the flux. Correct Answer: C

3. Simple harmonic motion can be described with the equation x = A sin wt where ω = 2πf where f is the frequency. Which of the following equations is correct for the velocity during simple harmonic motion?

A. v = Aω cos ωt B. v = Aω sin ωt C. v = A cos ωt D. v = A sin ωt Correct Answer: A

4. The flow of a fluid in parallel concentric layers in a pipe, which can individually differ in velocity is referred to as:

A. Poiseuille´s Law B. Laminar Flow C. Irregular fluid viscosity D. Fick´s Law Correct Answer: B

5. According to the principle of Bernoulli, an increase in the speed of a fluid occurs simultaneously with a/an:

A. Increase of pressure B. Decrease of pressure C. Increase of viscosity D. Increase in the fluid´s potential energy Correct Answer: B