

# Forum:Seminar papers/Biophysics/2. LF/2017-2018/Group 3A: MCQ (Kevin): Lasers and Microscopic Techniques in Medicine, Acoustics

## Article to be checked

Check of this article is requested.

Suggested reviewer: Carmeljcaruana

### Lasers and Microscopic Techniques in Medicine

1)The principle of a laser involves:

- I. spontaneous emission
- II. stimulated emission
- III. spontaneous absorption
- IV. stimulated absorption

- A.I
- B.II
- C.I and III
- D.II and IV

2)Light is refracted at the border, between medium X and vacuum, at a critical angle of  $\alpha$ . What is the refraction index,  $n$ , of this medium X?

- A.  $n = 1/\sin\alpha$
- B.  $n = \sin\alpha$
- C.  $n = \sin\alpha/1$
- D.  $n = \sin\alpha/\alpha$

3) The TEM (transmission electron microscopy):

- I.uses an electron beam
- II.Scans the surface of a sample being viewed
- III.A consistent Image is formed directly
- IV.Image has to be formed into a consistent image

- A. 1,2 and 4
- B. 1 and 4
- C. 1,2 and 3
- D. 1 and 3

4) In order for laser light to be generated an active medium has to be used. This medium can be:

- I. Solid
- II.Liquid
- III.gasseus

IV. as a plasma

- A. I,II & III
- B. I,II,III & IV
- C. I,II & IV
- D. II & III

5) The limit of resolution In an electron microscope is:

- A. 1mm
- B. 1nm
- C. 0.2 mm
- D. 0.2 nm

### Acoustics

6) An ambulance has passed by Alice and as it was passing by she noticed that the frequency of the sound of the ambulance appeared to be higher when the ambulance was approaching her than after it has passed her. This is an example of:

- A. Acousto-optic effect
- B. Doppler effect
- C. Evershed effect
- D. Franssen effect

7) The values for infrasound and ultrasound are:

- A. Infrasound= <16-20 Hz & Ultrasound= >20000 Hz
- B. Infrasound= <100Hz & Ultrasound= >100000Hz
- C. Infrasound= <4Hz & Ultrasound= > 40000Hz
- D. None of the above

8) Which law states that: The Relationship between stimuli and perceived intensity of stimuli is logarithmic

- A. Weber-Fechner law
- B. Ohms law
- C. Helmholtz law
- D. Galileo Galilei Law

9) A sound in solid propagates as:

- A. longitudinal wave
- B. transverse wave
- C. Both longitudinal and transverse wave
- D. linear wave

10) The EU regulation says that a sound level of more than 85dB is dangerous. A certain club in Prague has music playing at a sound intensity of  $10^{-0.5}$  W/m<sup>2</sup>. What is the sound level difference? Is it above or below the dangerous level?

Standard sound intensity:  $10^{-12}$  W/m<sup>2</sup>

- A. 50dB above
- B. 50dB below

C. 30dB above

D. 30dB below

Answers: Q1.D Q2. A Q3.D Q4.B Q5.D Q6.B Q7.A Q8.A Q9.C Q10.C