

Psychoacoustics

Pantelis N. Vassilakis Ph.D.

Module 1 Homework (Introduction)

Student Name: _____

1) *(Select one of the sentence endings – 5pts)* **Psychoacoustics is a multidisciplinary field that**

- examines how emotions arise following exposure to sonic/music stimuli
- investigates the therapeutic potential of sound/music
- examines how physical and physiological aspects of acoustic waves interact to give rise to sonic perceptions
- examines the sonic sensations of pitch, loudness, duration, and timbre

2) *(Select one of the sentence endings – 5pts)* **Fechner's psychophysical law states that**

- multiplication in linear math is equivalent to addition in logarithmic math
- perceptual response (sensation) relates logarithmically to physical stimulation
- sonic sensations are the manifestations of the interaction between the physical and physiological aspects of sound waves
- the angle of wave incidence is equal to the angle of wave reflection

3) (20pts) Expand briefly on the following statements (i.e. explain them, including examples where possible)

The science of psychophysics concerns itself with

1. absolute sensation thresholds ; that is: _____

2. relative sensation thresholds; that is: _____

3. type of relationship between stimulus and sensation changes; that is: _____

4. changes in 1-3 due to stimulus duration and intensity; that is: _____

5. changes in 1-4 due to stimulus interactions; that is: _____

4) (15pts) Describe the three main aspects of an operational definition

5) (15pts) Name and briefly explain the most important aspect, in your opinion, of the definitions presented in class for each of the three concepts below

Sound:

Noise:

Music:

6) (10pts) Why, in terms of sound perception, is a) pressure a more meaningful measure than force and b) power a more meaningful measure than energy?

a)

b)

7) (15pts) Why is intensity a more meaningful measure than the 4 measures listed in the previous question, in terms of sound perception?

8) (15pts) Write the mathematical definitions of potential and kinetic energy and show that they both share the same basic units (in Kg, m, and sec – include the derivation steps)