PHY1025 Test 5 Review Spring, 2010

Waves – Energy in motion via some sort of oscillation.

Transverse and Longitudinal Waves

Mechanical and Electromagnetic Waves

Wavelength, Frequency, Period, Amplitude and Waveshape. How are they related?

How is each perceived by humans in sound waves and in Electromagnetic Radiation?

(Pitch, Loudness, Quality, Color, Brightness, etc.)

Destructive and Constructive Interference (In phase vs Out of Phase)

How do noise-canceling headphones work?

Sound Waves. Definition of and physical qualities.

Compression and Rarefaction

Human Hearing – Frequency and Intensity Range (20 – 20,000 Hz, 0 – 120 dB)

Infrasound and Ultrasound – definitions?

Threshold of Hearing and Threshold of Pain (0 dB, 120 dB)

Decibels (dB) – How to do basic calculations of relative intensity (+30 dB => 1000 X more intense, etc.)

Approximate speed of sound in gases, liquids, solids

Standing waves – What are they?

Doppler Effect – Observed frequency change when source and observer of a wave are moving relative to each other. Approaching – f shifts up; Receding – f shifts down - How do Doppler-based applications (police radar,

ultrasound) work?

What is sonar? How do fish-finders work? How does a medical ultrasound machine work?

Definitions of current, voltage (potential difference), resistance, power, (I,V,R,P,)

What exactly does each one measure?

Know the units for each of the above.

Make sure that, given any two of I,V,P,R, you can figure out the other two.

You will be given the equations I = V/R and P = IV = I2R = V2 /R.

What are the three things that determine the resistance of a material?

What's the difference between an electrical conductor and an insulator?

What can you tell by the thickness of an electrical device's power cord?

Why do you have circuit breakers in your house? What do they do?

How does electric current affect the human body?

How much current is required to produce an effect on the human body?

What's the difference between DC and AC? How is AC produced? How is DC produced?

What's the difference between a kilowatt (KW) and a Kilowatt-Hour (KWHR)?

What does each unit measure? Which does the electric company use on your bill?

v = f λ v = 331.5 + 0.6TC m/s

T = 1/f

dB = 10log(I/I0)