PHY536 final exam (ERROR IN #10 fixed 3/16/19)

All work on this exam must be your own. Open books and notes. Multiple choice. Choose the best answer for each question. Choose only one answer. To submit answers, go to https://catalyst.uw.edu/webq/survey/wilkes/369332. You will need to log in with your UW NetID.

Do not click "submit" until you are satisfied with your answers!

1. Standing waves are produced in 10m long stretched string. If the string vibrates in 5 segments and wave velocity is 20m/s, its frequency is
   a) 2Hz
   b) 4Hz
   c) 5Hz
   d) 10Hz

2. The frequency of a tuning fork is 256. It will NOT resonate with a fork of frequency
   a) 256
   b) 512
   c) 738
   d) 768

3. An organ pipe closed at one end has a fundamental frequency of 1500Hz. The maximum number of overtones (number of harmonics above the fundamental) generated by this pipe, which a normal person can hear is
   a) 12
   b) 9
   c) 6
   d) 4

4. A closed organ pipe and an open pipe of the same length produce four beats per second, when sounded together. If the length of the closed pipe is increased, then the number of beats will
   a) Increase
   b) Decrease
   c) Remain the same
   d) First decrease, then remain the same

5. When the amplitude of a sound pressure wave is doubled, the sound pressure level (in decibels)
   a) is doubled.
   b) is halved.
   c) decreases by 2 dB.
   d) increases by 6 dB.
6. The trigonometric Fourier series of an even function of time does not have the
   a) dc term
   b) cosine terms
   c) sine terms
   d) odd harmonic terms

7. Within reasonable limits, which of the following should NOT affect the
   fundamental frequency of vibration of a string?
   a) changing the amplitude of vibration.
   b) changing the tension of the string.
   c) changing the length of the string.
   d) changing the linear density (mass per meter) of the string.

8. Two pure tones cause resonance in different positions along the basilar
   membrane in the cochlea.
   These tones have different
   a) amplitude.
   b) frequency.
   c) timbre.
   d) reverberation

9. What is the sound pressure level (SPL) of a sound having a RMS pressure of 200
   N/m²?
   a) 150 dB
   b) 140 dB
   c) 170 dB
   d) 160 dB

10. What is the resonant frequency of a Helmholtz resonator whose volume is 2.5
    cubic m with neck radius of 0.08 m and neck length of 0.135 m? (use c=331 m/s)
    a) 13 Hz
    b) 11 Hz
    c) 15 Hz
    d) 14 Hz

You may click "save for later" if you want to interrupt your work.
When finished, click "review" : your answers will be displayed for you to check.
You’re not done! You must click "submit" on the review page!
Review your answers carefully - after you click "submit", you cannot revise !
Exam scores and course grades will be posted on Catalyst Gradebook (not Canvas)
by Tuesday morning March 19.

Save for later Review >>