PHYS 117 2021 Alternative Midterm Exam (18524729)

Current Score: 0/9 **Due:** Tue, Mar 2, 2021 10:35 AM CST

Question	1	2	3	4	5	6	7	8	9	10	Total
Points	**0**	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	**0/9**

Description

This set of 1 statement of commitment to academic integrity and 9 questions is the midterm exam for PHYS 117 Winter 2021 at the University of Saskatchewan.

33% of the exam mark is based on the answers for the 6 multiple-choice questions submitted through WebAssign. All 6 questions are weighted equally.

67% of the exam mark is based on the answers (submitted through WebAssign) and solutions (submitted through Canvas) for the 3 word problems. All 3 word problems are weighted equally.

Instructions

Answers for **all** questions must be submitted in WebAssign.

For each of questions 8 through 10, in addition to submitting your answers in WebAssign, write the complete solution, **including a diagram**, using the problem-solving method discussed in class.

Your solutions must use the same symbols as are used on the formulae sheet.

Formulas not on the Formulae Sheet must be derived.

Keep extra decimal places throughout your calculations, and then round-off your final answer to <u>three significant figures</u>.

Submit your answer to each question in WebAssign.

When you have finished the entire exam, scan your written work for questions 8 through 10 and submit a single multi-page PDF file using the link in the Canvas site for your section.

Your WebAssign submission is due no later than 90 minutes after the questions become available and your Canvas submission is due no later than 120 minutes after the questions become available. LATE SUBMISSIONS WILL NOT BE ACCEPTED.

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1. 0/0 points UofS-P115-P117-Honour [4820285]

On my honour, I pledge that I will not give or receive aid during this assessment. I understand that I am expected to complete this assessment with no communication with other persons and no resource material other than the PHYS 115/117 Formulae sheet. I recognize that it is my responsibility to uphold academic integrity and I agree to follow the rules of this assessment and the guidelines laid forth in the policies of the University of Saskatchewan. Furthermore, I fully understand that disciplinary action may be taken against me if I am discovered to have communicated with another person or to have used an internet resource.

- ○ Yes, I understand and agree.

2. 0/1 points P117-2021-CR-Q7b [4942962]

Water is flowing with a speed of 1.00 m/s in a section of a horizontal pipe. If the pipe then widens from a radius of 0.100 m to 0.290 m, calculate the speed of the water in the larger section of the pipe (in m/s).

- 1.08
- 0.345
- 0.345
- 0.587
- 0.119

3. 0/1 points P117-2021-QD1-BZ [4942982]

Two spheres are released from rest in a viscous fluid and reach their terminal speeds. The spheres are made of the same material but the radius of sphere 1 is 2 times larger than that of sphere 2. The density of the spheres is greater than the density of the fluid. Which one of the following statements is correct?

- The magnitude of the buoyant force on either sphere equals the magnitude of its weight.
- The magnitude of the resistive drag force on sphere 1 is the same as that on sphere 2.
- The magnitude of the buoyant force on sphere 1 is the same as that on sphere 2.
- The resistive drag forces of the fluid on the marbles decrease as the speeds of the marbles increase.
- The terminal speed of sphere 1 is greater than that of sphere 2.

4. 0/1 points P117-2021-CR-Q11 [4946235]

A mass *m* connected to an ideal spring of spring constant *k* is oscillating with an amplitude *A* on a horizontal frictionless surface. Which one of the following statements is **FALSE**?

- The potential energy stored in the spring changes as the spring stretches and compresses.
- The potential energy stored in the spring is zero when the mass is at the equilibrium position.
- The kinetic energy of the mass changes as the mass oscillates.
- The kinetic energy of the mass is zero when the spring is at maximum compression.
- The total energy of the system changes as the mass oscillates.

5. 0/1 points P117-2021-QD4-BZ [4942986]

A silk thread has a cross-sectional area of 6.54×10^{-12} m^2 and an initial length of 54.1 cm. Calculate the amount that the thread stretches when a spider of weight 6.66×10^{-3} N hangs from it. Young's modulus for the thread is 2.75×10^{9} N/m^2.

- 0.100 m
- 0.200 m
- 0.401 m
- 0.000499 m
- 0.801 m

6. 0/1 points P117-2021-CR-Q6 [4942959]

In the process of tuning their instruments, two violinists in an orchestra play their instruments at the same time and a beat frequency of 8 Hz is heard. If one of the violins is playing a frequency of 316 Hz, which one of the following choices are the two possible frequencies of sound produced by the other violin?

- 312 Hz, 320 Hz
- 616 Hz, 648 Hz
- 308 Hz, 316 Hz
- 316 Hz, 324 Hz
- 308 Hz, 324 Hz

7. 0/1 points P117-2021-CR-Mosquito [4942953]

At a certain distance, the typical sound intensity level of a buzzing mosquito is 40 dB. At the same distance, a typical vacuum cleaner produces a sound intensity level of 70 dB. Approximately how many buzzing mosquitoes produce a sound intensity level equal to that of a vacuum cleaner?

- 110
- 2800
- 30
- 1600
- 1000

8. 0/1 points P117-2021-CR-Q8v3 [4947515]

A large container of water open at the top and sitting on the floor has a very small hole punched in its side. The hole is 5.80 cm above the floor. A stream of water leaves the hole horizontally and hits the floor at a distance of 13.3 cm from the container.

(a) Calculate the speed of the stream of water as it leaves the container. (HINT: The stream of water undergoes projectile motion when it leaves the container.)

1.22 m/s

(b) Calculate the height of the surface of the water in the tank above the floor.

13.4 cm

9. 0/1 points P117-2021-QD6-BZ [4942988]

A horizontal spring of constant 1,750 N/m is attached to a wall. An object with a mass of 4.36 kg is sliding toward the spring on a horizontal frictionless surface at a speed of 6.54 m/s.

(a) Calculate the kinetic energy of the object.

93.2 J

(b) Calculate the maximum compression of the spring due to the collision with the object.

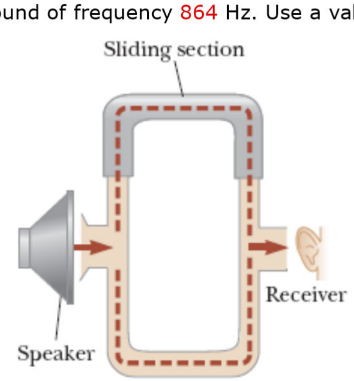
0.326 m

(c) When the object collides with the spring it attaches to the spring and undergoes simple harmonic motion. Calculate the frequency of the motion.

3.19 Hz

10. 0/1 points P117-2021-CR-Q7 [4942961]

Sound can travel from a speaker to a listener along two different paths, as shown in the diagram below. The speaker is emitting sound of frequency 864 Hz. Use a value of 343 m/s for the speed of sound.



(a) Suppose constructive interference occurs at a particular position of the upper U-shaped tube. By what minimum amount should the path length in the upper U-shaped tube be increased so that destructive interference occurs instead?

0.198 m

(b) What minimum increase in the **original** length of the upper tube will again result in constructive interference?

0.397 m

Assignment Details

Name (AID): **PHYS 117 2021 Alternative Midterm Exam (18524729)**
Submissions Allowed: **1**
Category: **Exam**
Code:
Locked: **Yes**

Feedback Settings
Before due date
After due date

Author: **Zulkoskey, Brian (** bwz856@mail.usask.ca **)**
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