

4C quiz #1: Chapters 18-19

Started: Sep 20 at 8:11pm

Quiz Instructions

Make sure all numerical answers are given to the correct number of significant figures. Have a calculator and plenty of scratch paper handy.

How do I take a quiz? <https://community.canvaslms.com/t5/Student-Guide/How-do-I-take-a-quiz/ta-p/507>



Question 1 26.3 pts

A cylinder of length L and diameter d is increased in temperature in such a way that its length increases by 1% (as compared to its initial length). As a result,

(a) its diameter will increase by ,

(b) the area of each circular face will increase by ,

(c) the area of the curved part of the surface will increase by ,

(d) its volume will increase by ,

(e) the distance between two arbitrarily marked points on the cylinder will

by , and

(f) the density will by .

(g) If the cylinder has a hole down the middle, the diameter of the hole will

by .



Question 2 13.2 pts

A thermodynamic system can proceed from state A to state B with two different processes. For

process 1, **50 J** of work is done on the system and **300 J** of heat is transferred to the system. For process 2, **50 J** of work is done BY the system on its environment.

The internal energy of the system is by A J (positive value).

For process 2, B J (positive value) of heat must be transferred the system.

If the system is initially in state A, and process 1 is followed by the reverse of process 2, then the system will end up in , and the net change in the internal energy of the system will be C J. Furthermore, there will be net transfer of D J (positive value) of heat the system and a net E J (positive value) amount of work done the system.



Question 3 5.3 pts

From previous question: A =



Question 4 5.3 pts

From previous question: B =



Question 5 2.6 pts

From previous question: C =



Question 6 5.3 pts

From previous question: __D__ =



Question 7 5.3 pts

From previous question: __E__ =



Question 8 5.3 pts

Three rods each have a heat conductance of **30 W/K**. Combinations of one or more of these rods can be used to conduct heat from one temperature to another.

The rod combination which results in the largest heat conductance is

Choose one:

- (A) placing all three rods in series.
- (B) placing all three rods in parallel.
- (C) using just one rod.
- (D) placing two rods in series.
- (E) some other combination.

The resulting heat conductance is __A__ W/K.

The rod combination which results in the smallest heat conductance is

Choose one:

- (A) placing all three rods in series.
- (B) placing all three rods in parallel.
- (C) using just one rod.
- (D) placing two rods in series.

(E) some other combination.

The resulting heat conductance is B **W/K**.

Placing one of the rods in series with the parallel combination of the other two rods will result in a heat conductance of C **W/K**.



Question 9 5.3 pts

From previous question: A =

10



Question 10 5.3 pts

From previous question: B =

90



Question 11 5.3 pts

From previous question: C =

45



Question 12 15.8 pts

Two equal volume containers are filled with different monatomic ideal gasses at the same temperature and pressure. One is filled with helium and the other is filled with argon (helium has a lower mass per atom than argon).

Which container has the greater number of atoms?

both equal

Which container has the greater internal energy?

both equal

Which gas molecules are (on average) moving the fastest?

helium

If the temperature of the helium gas is increased and gas is allowed to escape so as to bring the pressure back to what it was before, how will the internal energy of the gas in the container compare to what it was before?

Choose one:

(C)

- (A) Internal energy will increase.
- (B) Internal energy will decrease.
- (C) Internal energy will remain the same.

Now suppose a third equal volume container is filled with hydrogen gas (diatomic) at the same temperature and pressure as the argon container.

Which container has the greater number of molecules?

both equal

Which container has the greater internal energy?

hydrogen

Quiz saved at 3:27pm

Submit Quiz