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Unit 3 - Week 2 :

Assignment 2

The due date for submitting this assignment has passed. **Due on 2018-09-05, 23:59 IST.**
As per our records you have not submitted this assignment.

1) The speed that is most likely to be found for a molecule in a gas is known as the_____. ***1 point***

- (a) Root Mean Square Speed
- (b) Most Probable Speed
- (c) Average Speed
- (d) Mean Speed

No, the answer is incorrect.
Score: 0

Accepted Answers:
(b) Most Probable Speed

2) ***1 point***

According to the Boltzmann distribution in one direction, the probability density (v) that a molecule has velocity, v, is given as

$$f(v) = Ae^{-Mv^2/2RT}$$

A is the integration constant. The value of A is-

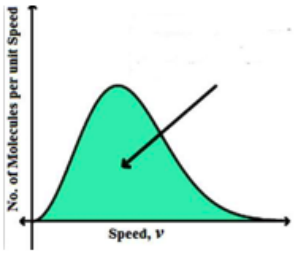
- (a) $(M/2\pi RT)^{1/2}$
- (b) $(M/2\pi RT)^{3/2}$
- (c) $(M/2RT)^{1/2}$
- (d) $(M/2RT)^{3/2}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
(a) $(M/2\pi RT)^{1/2}$

3) ***1 point***

Session with Students



The area under the curve represents

- (a) The total number of molecules of the gas in a fixed volume within the given speed range
- (b) The More than the total number of molecules of the gas in a fixed volume within the given speed range
- (c) The less than the total number of molecules of the gas in a fixed volume within the given speed range
- (d) The half of the total number of molecules of the gas in a fixed volume within the given speed range

No, the answer is incorrect.
Score: 0

Accepted Answers:
(a) The total number of molecules of the gas in a fixed volume within the given speed range

4) What happens to the following quantities as the gas cools? ***1 point***

- a) The peak height of the Maxwell-Boltzmann Speed Distribution graph of number of molecules vs. speed gets shorter
- b) The average molecular speed of the gas decreases
- c) The double of the total number of molecules of the gas in a fixed volume within the given speed range
- d) The root-mean-square molecular speed of the gas increases

No, the answer is incorrect.
Score: 0

Accepted Answers:
b) The average molecular speed of the gas decreases

5) The translational kinetic energy of 3 moles of Nitrogen at 27^0C is ***1 point***

- a) 2700R/2
- b) 243R/2
- c) 900R/2
- d) 81R/2

No, the answer is incorrect.
Score: 0

Accepted Answers:
a) 2700R/2

6) The most probable speed of one mole of ideal gas molecule is given by the expression: ***1 point***

- a) $(2RT/M)^{1/2}$
- b) $(3RT/M)^{1/2}$

c) $(2KT/M)^{1/2}$

d) none of these

No, the answer is incorrect.
Score: 0

Accepted Answers:
a) $(2RT/M)^{1/2}$

7) ***1 point***

In the Maxwell Speed Distribution Curve, Root mean square speed (C_{rms}) Average speed (C_{avg}), Most probable speed (C_{mp}) follow the order as

(a) $C_{rms} > C_{mp} > C_{avg}$

(b) $C_{rms} > C_{avg} > C_{mp}$

(c) $C_{mp} > C_{avg} > C_{rms}$

(b) $C_{mp} > C_{rms} > C_{avg}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
(b) $C_{rms} > C_{avg} > C_{mp}$

8) From Maxwell speed distribution curve, the probability of finding the molecules is ***1 point***

a) Lower in the lower speed range

b) Lower in the higher speed range

c) Higher in the lower speed range

d) Independent of the speed range

No, the answer is incorrect.
Score: 0

Accepted Answers:
a) Lower in the lower speed range

9) If we heat the gas, the peak of Maxwell-Boltzmann Speed Distribution curve will be _____ and the heights of the curve will be_____ ***1 point***

(a) shifted to the right; decrease;

(b) shifted to the left; decrease;

(c) shifted to the right; increase

(d) shifted to the left; increase

No, the answer is incorrect.
Score: 0

Accepted Answers:
(a) shifted to the right; decrease;

10) Choose the correct statement associated with the Maxwell distribution of speed of molecules ***1 point***

a) Molecules of low molar mass have a broad spread of speeds, and a significant fraction may be found travelling much faster than the r.m.s. speed

b) Molecules of high molar mass have a broad spread of speeds, and a significant fraction may be found travelling much faster than the r.m.s. speed

c) Molecules of low molar mass have a broad spread of speeds, and a small fraction may be found travelling much faster than the r.m.s. speed

d) Molecules of high molar mass have a broad spread of speeds, and a low fraction may be found travelling much faster than the r.m.s. speed

No, the answer is incorrect.
Score: 0

Accepted Answers:
d) Molecules of high molar mass have a broad spread of speeds, and a low fraction may be found travelling much faster than the r.m.s. speed

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