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NPTEL

reviewer4@nptel.iitm.ac.in ▾

Courses » Molecules in Motion

Announcements **Course** Ask a Question Progress Mentor FAQ

Unit 2 - Week 1 :

Course outline

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Week 1 :

- Lecture 1 : Kinetic theory of gases
- Lecture 2 : Kinetic theory of gases (Contd.)
- Lecture 3 : Kinetic theory of gases (Contd.)
- Lecture 4 : Kinetic theory of gases (Contd.)
- Lecture 5 : Kinetic theory of gases (Contd.)
- Lecture Materials
- Quiz : Week 1 Assignment 1
- Feedback for Week 1

Week 2 :

Week 3 :

Week 1 Assignment 1

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment. **Due on 2018-08-22, 23:59 IST.**

1) The correct Ideal Gas Law equation is (P=Pressure V=Volume N_A =Avogadro's number N=Total number of molecules n=Number of moles) ***1 point***

- (a) PV=NRT
- (b) PV=N_ART
- (c) PV=nRT
- (d) Both a and b

No, the answer is incorrect.
Score: 0

Accepted Answers:
(c) PV=nRT

2) The density of an Ideal gas is ***1 point***

- (a) Directly proportional to temperature
- (b) Inversely proportional to temperature
- (c) Directly proportional to square root of temperature
- (d) Inversely proportional to square root of temperature

No, the answer is incorrect.
Score: 0

Accepted Answers:
(b) Inversely proportional to temperature

3) Relation between Boltzmann Constant (k) and Universal Gas Constant(R) is (N_A =Avogadro's number n=Number of moles) ***1 point***

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(d) R=nk

No, the answer is incorrect.
Score: 0

Accepted Answers:
(c) R=$N_A k$

4) Which statement is correct according to the Kinetic Theory? ***1 point***

a) The molecules interact through inelastic collision
b) Gravity has no effect on molecular motion
c) After the collisions, total kinetic energy of the gas molecules increases
d) The size of the gas molecules is not negligible

No, the answer is incorrect.
Score: 0

Accepted Answers:
b) Gravity has no effect on molecular motion

5) In case of elastic collision ***1 point***

a) Total Kinetic Energy and Momentum of the particles remains same before and after the collision
b) Total Kinetic Energy increases and Momentum of the particles decreases before and after the collision
c) Both Total Kinetic Energy and Momentum of the particles increase before and after the collision
d) Total Kinetic Energy decreases and Momentum of the particles increases before and after the collision

No, the answer is incorrect.
Score: 0

Accepted Answers:
a) Total Kinetic Energy and Momentum of the particles remains same before and after the collision

6) The correct statement about Translational Kinetic Energy of the Molecules ***1 point***

a) The Mean Kinetic Energy per Molecule is proportional to temperature
b) The Mean Kinetic Energy per Mole is proportional to temperature
c) Both a and b are correct
d) The Mean Kinetic Energy per Molecule is proportional to pressure

No, the answer is incorrect.
Score: 0

Accepted Answers:
c) Both a and b are correct

7) For an Ideal monoatomic gas, C_V = 12.5 J/mol .K. What is the value of C_P? ***1 point***

(a) C_P=4.2 J/mol. K
(b) C_P =20.8 J/mol. K
(c) C_P=-4.2 J/mol. K

(d) C_P=-20.8 J/mol. K

No, the answer is incorrect.
Score: 0

Accepted Answers:
(b) C_P =20.8 J/mol. K

8) The Ideal Gas Law reduces to Boyle's law when ***1 point***

- a) The temperature & no. of moles of the gas are held constant
- b) The pressure & no. of moles of the gas are held constant
- c) The temperature & pressure of the gas are held constant
- d) Only the temperature is held constant

No, the answer is incorrect.
Score: 0

Accepted Answers:
a) The temperature & no. of moles of the gas are held constant

9) The Root Mean Square Speed is ***1 point***

- a) Directly proportional to temperature
- b) Inversely proportional to square root of temperature
- c) Inversely proportional to square root of Molecular Mass
- d) Directly proportional to square root of Molecular Mass

No, the answer is incorrect.
Score: 0

Accepted Answers:
c) Inversely proportional to square root of Molecular Mass

10) The root mean square speed of N2 molecules at 300 K is ***1 point***

- a) 517m/s
- b) 731m/s
- c) 445m/s
- d) 545m/s

No, the answer is incorrect.
Score: 0

Accepted Answers:
a) 517m/s

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