University of Salahaddin
College of Science
Department of Physics
General Physics

Question Bank

Second Medical

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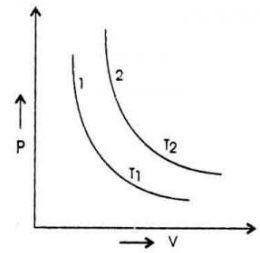
1\ a) Chose the correct for the following questions:

Chose the correct answer:

1. A container filled with a sample of an ideal gas at the pressure of 1.5 atm. The gas is compressed isothermally to one-fourth of its original volume. What is the new pressure of the gas?

   a) 2 atm **b)** 3 atm **c)** 4 atm **d)** 5 atm **e)** 6 atm

2. For a certain mass of the isothermal curves between P and V at T1 and T2 temperature are 1 and 2 shown in fig. Then



   (1) $T_1 = T_2$ **(2)** $T_1 < T_2$

   (3) $T_1 > T_2$ **(4)** Nothing can be predicted

3. Which of the following is a form of kinetic energy that occurs within a molecule when the bonds are stretched or bent?

   a) Translational **b)** Vibrational **c)** Rotational **d)** Internal

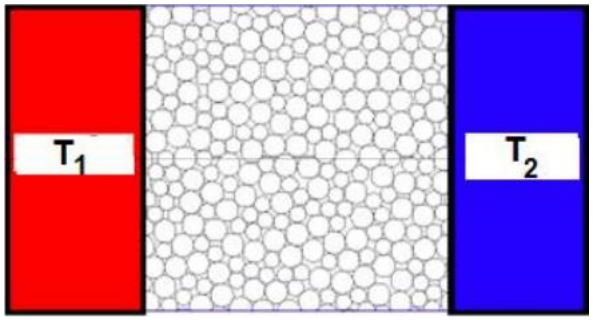
4. A pressure is recorded as 622 torr. What is this pressure in atm?

   a) 1.22 **b)** 0.818 **c)** 5.17 **d)** 0.0393

5. A hot object with a temperature T1 is connected to a cool object with a temperature of T2. The object used to conduct heat has a length L and a cross-sectional area A. The rate of heat flow is:

   a) A (T1 – T2) / kL **b)** k (T1 – T2) / AL **c)** kAL / (T1 – T2)

   d) kL (T1 – T2) / A **e)** kA (T1 – T2) / L



Q2 / Fill following blanks:

1) Measure the temp. of point by ……. thermometer.

2) The rate of heat flow by the two spheres is equal to …….

3) Triple point of water is equal to ……. or ……...

4) The ……. of the thermal conductivity means flow of heat from high to lower temp.

5) The rate at which objects emit radiation energy depends ……...,

……., and ……

Q3 / Briefly explain the following with draw if us necessary:

1- The Unusual Behavior of Water.
2- Wine's Law.
3- Sea Breezes and Land Breezes Arise from Uneven Surface Heating
4- Real gases do not obey the Ideal gas law, especially at high pressures.
5- Newton law of cooling.

Q4 / Draw the following diagrams with all necessary indications:

1. Sea Breezes and Land Breezes Arise from Uneven Surface Heating.
2. Real gases do not obey the Ideal gas law, especially at high pressures.

Q 5 / Prove that:

1. The Change of heat flow is proportional to the temperature and two the surface of wall.
2. The kinetic energy is equal to one and a half kinetic temperature.
3. The Coefficient of Cubical Expansion.
4. The Change of heat flow through the walls of a cylindrical tube.

Q6 / A small plastic container, called the coolant reservoir, catches the radiator fluid that overflows when an automobile engine becomes hot. The radiator is made of copper and the coolant has an expansion coefficient of 4.0×10^{-4} $(^{o}C)^{-1}$. If the radiator is filled to its 15-quart capacity when the engine is cold (6 °C) and expansion coefficient of 51×10^{-6} $(^{o}C)^{-1}$, how much overflow will spill into the reservoir when the coolant reaches its operating temperature (92 °C)?

Q7 / One wall of a house consists of 0.019-m-thick plywood backed by 0.076-m-thick insulation. The temperature at the inside surface is 25.0 °C, while the temperature at the outside surface is 4.0 °C, both being constant. The thermal conductivities of the insulation and the plywood are, respectively, 0.030 and 0.080 J/(s·m·°C), and the area of the wall is 35 m^2. Find the heat conducted through the wall in one hour (a) with the insulation and (b) without the insulation.

Q8 / a) How many type of Thermodynamic Wall?

b) Define thermodynamic system, show that properties of (closed, isolated, and open system).

Q9 / Show the difference between the following:

1. Ideal gas and Real gas.

2. Thermal expansion and Thermal conductivity.

3. Infrared thermometer with Laser pointer and Pyrometer thermometer

Q10 /

a) How many types of parameters in Thermodynamics studies?

b) Explain the type of Heat Transfer

c) How many types of temperature measurement and define one of them?