

**University of Salahaddin**  
**College of Science**  
**Department of Physics**  
**General Physics**



# Question Bank

**Second Communication**

**Dr. Hassan S. Ibrahim**

**2021-2022**

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

- 1- Which of the following is the worst conductor of heat?  
a) glass      b) plaster      c) aluminum      d) brass
- 2- Thermal conductivity of water \_\_\_\_\_ with rise in temperature.  
a) decreases      b) remains same      c) increases  
d) may increase or decrease depending upon temperature.
- 3- When the temperature of the surrounding is higher than the temperature of the body, then the heat loss by convection from the body to the surrounding will be  
a) negative      b) non of these      c) zero      d) positive
- 4- A healthy person has an oral temperature of 38.7 °C. What would this reading be on the Rankin scale?  
a) 527.26°      b) 528.26°      c) 529.26°      d) 530.26°
- 5- 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

**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- Sea Breezes and Land Breezes Arise from Uneven Surface Heating
- 2- The Unusual Behavior of Water.
- 3- Transfer of heat by convection in general.
- 4- 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 through the walls of a Radial heat flow.
2. The Coefficient of Cubical Expansion.
3. The Change of heat flow is proportional to the temperature and two the surface of wall.

**Q6 /** Suppose we have an oxygen molecule at 27 °C at pressure is 1 atm, therefore the diameter of molecular is 290 pm. Find the mean free path? Also find the time between collisions?  $R = 8.3145 \text{ J/mol K}$ .

$$K = 1.38066 \times 10^{-23} \text{ J/K}$$

**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<sup>2</sup>. 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. Mercury thermometer and Alcohol thermometer