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**PHYS2627/PHYS2265 Introductory quantum physics**

**2265-1LABORATORYREPORT**

**Experiment 1: Experiments of Thermal Radiation**

Student Name: \_\_\_\_\_ Student No.: \_\_\_\_\_

Group No.: \_\_\_\_\_ Date: \_\_\_\_\_

**A.Radiation Rates from Different Surfaces**

Power Setting 5.0

Power Setting 6.5

Thermister resistance \_\_\_\_\_  $\Omega$  Thermister resistance \_\_\_\_\_  $\Omega$

Temperature \_\_\_\_\_  $^{\circ}\text{C}$  Temperature \_\_\_\_\_  $^{\circ}\text{C}$

Surface	Sensor Reading(mV)	Surface	Sensor Reading(mV)
Black		Black	
White		White	
Polished Aluminum		Polished Aluminum	
Dull Aluminum		Dull Aluminum	

Power Setting 8.0

Power Setting 10.0

Thermister resistance \_\_\_\_\_  $\Omega$  Thermister resistance \_\_\_\_\_  $\Omega$

Temperature \_\_\_\_\_  $^{\circ}\text{C}$  Temperature \_\_\_\_\_  $^{\circ}\text{C}$

Surface	Sensor Reading(mV)	Surface	Sensor Reading(mV)
Black		Black	
White		White	
Polished Aluminum		Polished Aluminum	
Dull Aluminum		Dull Aluminum	

**B.Absorption and Transmission of the Thermal Radiation**

Questions

1. What do your results suggest about the phenomenon of heat loss through windows?

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2. What do your results suggest about the Greenhouse Effect?

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**C.Inverse Square Law**

Table 2.1 Ambient Radiation Level

X(cm)	Ambient Radiation Level (mV)
10	
20	
30	
40	
50	
60	
70	
80	
90	
100	

Average Ambient Radiation Level = \_\_\_\_\_

Table 2.2

X (cm)	Rad. (mV)	$1/X^2$ (cm <sup>-2</sup> )	Rad. – Ambient Rad. (mV)
2.5			
3.0			
3.5			
4.0			
4.5			
5.0			
6.0			
7.0			
8.0			
9.0			
10			
12			
14			
16			
18			
20			
25			
30			
35			
40			
45			
50			
60			
70			
80			
90			

Questions

1. Which of the two graphs is not linear? Is it linear over the entire range of measurements?

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Questions

1. What does your graph indicate about the Stefan - Boltzmann Law at low temperature?

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2. Is your graph a straight line? Discuss any deviations that exist.

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