Name. _____	**Printed Pages:01**
Student Admn. No.: _____	

School of Basic Sciences

Back Paper Examination Even Semester (Non - Graduating Batches) – June 2024

[Programme:] [Semester:) [Batch:]

Course Title: Thermal Physics and Semiconductor Devices	**Max Marks: 100**
Course Code: C1UD201B / B010201T	**Time: 3 Hrs.**

Instructions:

1. *All questions are compulsory.*
2. *Assume missing data suitably, if any.*

		K Level	COs	Marks
	SECTION-A (15 Marks) 5 Marks each			
1.	State zeroth law of thermodynamics and explain its significance. On the basis of this law introduce the concept of temperature.	K1	CO1	5
2.	An inductor of inductance 40 henry and a resister of resistance 10 ohm is connected to a d.c. source of 6 volts. Find the current after 4 sec.	K2	CO3	5
3.	Calculate the maximum possible efficiency of a heat engine working between 0°C and 1000° C.	K1	CO1	5
	SECTION-B (40 Marks) 10 Marks each			
4.	Write a short note on the indicate graphically distribution of energy in the spectrum of a black body.	K2	CO2	10
5.	Give Kelvin-Planck statement and Clausius statement of second law of thermodynamics and explain its significance. Show that both these statements are equivalent.	K3	CO1	10
6.	Distinguish between adiabatic and isothermal processes.	K4	CO1	10
7.	Derive an expression for the decay of charge of a capacitor in an LCR series circuit.	K3	CO3	10
	SECTION-C (45 Marks) 15 Marks each			
8.	Describe the formation of depletion layer in p-n junction diode. Draw and explain the V-I characteristics of a p-n Junction diode. Is current flowing through the p-n junction diode due to majority charge carries? Justify your answer.	K3	CO2	15
9.	Explain the working of a full – wave rectifier with efficiency.	K3	CO3	15
10	In what respect an LED is different from an ordinary *p-n* junction diode. Explain the construction and working of LED. Find the value of energy band gap of semiconductor that can emit the radiation of wavelength 620 nm.	K3	CO3	15