

Name. _____		Printed Pages:01		
Student Admn. No.: _____				
School of Basic and Applied Sciences Summer Term Examination – July - August 2024 [Programme: B.Sc. (Physics, Chem. Math, PCM)] [Semester: II] [Batch: 1]				
Course Title: Thermal Physics and Semiconductor Device		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.	Distinguish between isothermal and adiabatic processes with suitable example.	CO1	K1	5
2.	State one well known statement of the second law of thermodynamics. Calculate the maximum possible efficiency of a heat engine working between zero degrees Celsius and hundred degrees Celsius.	CO2	K2	5
3.	State zeroth law of thermodynamics and explain its significance. On the basis of this law introduce the concept of temperature.	CO1	K2	5
SECTION-B (40 Marks)		10 Marks each		
4.	Draw the load line on the output characteristics of a common – emitter amplifier. What is its significance? Show how the transistor acts as an amplifier.	CO5	K3	10
5.	Define entropy of a system and explain how its change gives the criterion for the direction of a physical or chemical change.	CO4	K4	10
6.	Explain the duality of Norton's and Thevenin's equivalent circuits.	CO3	K4	10
7.	Write down Kelvin's and Clausius statements of the second law of thermodynamics. Show they are equivalent to each other.	CO2	K3	10
SECTION-C (45 Marks)		15 Marks each		
8.	Derive an expression for Maxwell's distribution law of velocities for gas molecules.	CO3	K4	15
9.	Derive an expression for Planck's law of radiation.	CO4	K4	15
10	Explain the conditions of overdamping, critical damping and underdamping in a LCR series circuit.	CO5	K5	15