Regulation R20 *Subject code: 3B2AF*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech II Semester Supplementary Examinations, January 2024

APPLIED PHYSICS

(Common to EEE,CSE,CSE(AI&ML),CSE(DS) and IT)

Maximum Marks: 70 Date:23.01.2024 **Duration: 3 Hours**

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 10 questions. Answer any 5 questions which carries 10M.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10x2M=20 Marks)		Bloom's Tx	CO
1	What is Bloch's theorem?	L1	CO1
2	Classify materials into metals, semiconductors & insulators.	L3	CO1
3	Draw the diagram of dependence of Fermi level on temperature in P-type Semi-conductors.	L1	CO2
4	Differentiate drift and diffusion currents.	L2	CO2
5	What is Hetero structure? Mention the types of Hetero structure?	L1	CO3
6	Define the Optical loss and Gain.	L1	CO3
7	What is injection Electro Luminescence?	L1	CO4
8	Write the symbol of LED.	L1	CO4
9	What is photo detector?	L1	CO5
10	Mention the applications of solarcell?	L1	CO6

Part-B

Answer all the questions (5X10M=50Marks)			
11	Explain Quantum free electron theory and obtain expression for resistivity of a metal. [10]	L2	CO1
	OR		
12	Explain Kronig-Penny model. [10]	L2	
13	Calculate the carrier concentration in N type semiconductor. [10]	L3	CO2
	OR		
14	What is Hall effect? Derive an expression for Hall Coefficient? [10]	L3	
15	Explain types of semiconductor materials for Opto electronic devices. [10]	L2	CO3
	OR		
16	What are optical joint density states? Derive expression for optical joint density of states. [10]	L3	
17	Explain the construction and working of LED. [10]	L2	CO4

	OR		
18	What is semiconductor diode laser? Explain its construction and working? [10]	L2	
19	What is Avalanche photo diode? Explain its construction? [10]	L2	CO5
	OR		
20	What is a solar cell? Describe its construction and working. [10]	L2	