



Regulation R20

Subject code:3B1AL

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech I Semester Supplementary Examinations, January 2024**APPLIED PHYSICS**
(Electronics and Communication Engineering)**Maximum Marks: 70****Date:22.01.2024 Duration: 3Hours**

- 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 10marks 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	Define Drift velocity.	L1	CO1
2	Classify the materials in metals, semiconductors & insulators on the basis of band theory of solids.	L3	CO1
3	What is meant by intrinsic semiconductors?	L1	CO2
4	Write the applications of Hall effect?	L1	CO2
5	Write a about Optical loss and gain?	L1	CO3
6	What is photovoltaic effect?	L1	CO3
7	Differentiate direct and indirect band gap semiconductor?	L2	CO4
8	What is a quantum dot?	L1	CO4
9	What is a photo detector?	L1	CO5
10	Mention the applications of PIN diode.	L1	CO5

Part-B

Answer all the questions (5X10M=50Marks)			
11	Explain Quantum free electron theory and obtain expression of conductivity? [10M]	L2	CO1
OR			
12	Derive an expression for Density of states in an atom. [10M]	L3	
13	Calculate the carrier concentration in N-type Semiconductor? [10M]	L3	CO2
OR			
14	What is PN Diode? Explain the construction working and I-V characteristics of PN diode. [10M]	L2	
15	What is a hetero structure device? Mention the types and band diagram of hetero structure? [10M]	L1	CO3
OR			
16	Explain the transistion in bulk semiconductors and obtain the relation between Einstein coefficients. [10M]	L2	

17	What are advantages of LED and explain the working of LED with neat diagram? [10M]	L2	CO4
18	OR What is semiconductor diode laser? Explain its construction and working? [10M]	L2	
19	What is Avalanche photo diode? Explain its construction? [10M]	L2	CO5
20	OR What is a solar cell? Describe its construction and working? [10M]	L2	