



R20 Regulation

Subject code:3B2AF

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech II Semester Supplementary Examinations, July 2025

APPLIED PHYSICS

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

Maximum Marks: 70

Date: 11.07.2025

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 5 Units. Answer any one full question from each unit.
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)		Marks	CO	BTL
1	What is block theorem?	2M	1	L1
2	Write the classification of metals, semiconductors & insulators.	2M	1	L1
3	What is meant by intrinsic semiconductors? Write examples?	2M	2	L1
4	What is drift and diffusion currents?	2M	2	L1
5	What is Hetero structure? Mention the types of Hetero structure?	2M	3	L1
6	Define Optical loss and Gain.	2M	3	L1
7	What is injection Electro Luminescence?	2M	4	L1
8	Write the symbol of LED.	2M	4	L1
9	What is photovoltaic effect?	2M	5	L1
10	Mention two applications of PIN diodes.	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	Explain and derive an expression for Density of states.	10M	1	L2
	OR			
12	Explain and derive an expression for Effective mass with neat diagram.	10M	1	L2
13	Calculate the carrier concentration in N type semiconductor.	10M	2	L2
	OR			
14	What is Hall effect? Derive an expression for Hall Coefficient.	10M	2	L2
15	Explain types of band gap modification in semiconductor materials for opto electronic devices.	10M	3	L2
	OR			
16	Derive expression for density of states of photons.	10M	3	L2
17	Explain the construction and working of LED.	10M	4	L2
	OR			
18	What is semiconductor diode laser? Explain its construction.	10M	4	L2
19	Mention the general properties of semiconductor photo detectors and explain their uses?	10M	5	L2
	OR			
20	Explain the construction and working of Avalanche Photo diode.	10M	5	L2