



R18 Regulation

Subject code:2B2AF

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech II Semester Supplementary Examinations, July 2025

APPLIED PHYSICS-II
(Common to EEE, ECE, CSE & 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 diffusion and drift?	2M	1	L1
2	Write the applications of Hall effect.	2M	1	L1
3	What is the principle involved in working of solar cell?	2M	2	L1
4	Write the characteristics of PIN diode.	2M	2	L1
5	What is Biot – Sawarts law.	2M	3	L1
6	Derive the equation of continuity.	2M	3	L1
7	Name the four types of polarization mechanisms that can take in the presence of an electric field in dielectric materials.	2M	4	L1
8	What is domain theory of ferromagnetism.	2M	4	L1
9	Calculate the magnitude of Bohr magneton?	2M	5	L1
10	What is Meissner effect explain it?	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	a) Calculate the charge carrier concentration of p-type semiconductor. b) Explain Hall effect.	5M 5M	1	L2
OR				
12	a) Explain the formation of P-N junction. b) Explain the operation of N-P-N transistor.	5M 5M	1	L2
13	a) What is semiconductor laser.Explain. b) Evaluate the conditions in which semiconductor laser works.	5M 5M	2	L2
OR				
14	a) Explain PIN and avalanche photo diodes with their structure. b) Write the applications of photodiodes.	5M 5M	2	L2
15	a) What is Ampere's & Faraday's law. b) Derive Maxwell's equations in vaccum & non conducting medium.	5M 5M	3	L2
OR				
16	a) Explain Stoke's theorem. b) Calculate vector potential for a given magnetic field using Stoke's theorem.	5M 5M	3	L2

17	a) Explain electronic polarization & derive electronic polarizability. b) What is ferro electricity? Write the applications of ferro electric materials.	5M 5M	4	L2
OR				
18	a) What is internal field in a dielectric material. b) Derive an expression for calculation of internal field for a cubic dielectric crystal.	5M 5M	4	L2
19	a) Explain origin of magnetic moment. b) What are magnetic domains? Explain the hysteresis property of ferromagnetic material.	5M 5M	5	L2
OR				
20	a) Explain hysteresis curve based on domain theory. b) Write a note on soft & hard magnetic material.	5M 5M	5	L2