R20 Regulation *Subject code:3B1AC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech I Semester Supplementary Examinations, July2025

ENGINEERING PHYSICS

(Common to CE & ME)

Maximum Marks: 70 Date:16.07.2025 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	Define wave.	2M	1	L1
2	Differentiate between damped and undamped vibration.	2M	1	L1
3	What do you mean by the terms i) reflection ii) transmission of wave	2M	2	L1
4	Define absorption coeffient of a material.	2M	2	L1
5	Write the Huygens principle.	2M	3	L1
6	What happen if the Newton's rings are formed with white light?	2M	3	L1
7	What is Fraunhofer diffraction?	2M	4	L1
8	Define diffraction.	2M	4	L1
9	Write the components of laser.	2M	5	L1
10	Write about the structure of optical fibre.	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	a) Define simple harmonic motion explain the terms time period, amplitude and phase of a wave. b) Explain the working of mechanical harmonic oscillator.	5M 5M	1	L2
	OR			
12	a) Distinguish between forced and natural oscillations. b) Discuss about the energy decay in damped harmonic oscillator.	5M 5M	1	L2
13	a) Derive transverse wave equation in a string. b) Derive the expression for reflection and transmission of transverse waves at a boundary.	5M 5M	2	L2
	OR			
14	a) Give an account of standing waves. b) Derive Sabine's formula for reverberation time of a hall.	5M 5M	2	L2
15	Describe the construction and working of a Michelson Interferometer.	10M	3	L2
	OR			
16	Describe the construction and working of a Mach Zehnder Interferometer.	10M	3	L2

17	Describe the Fraunhofer diffraction pattern due to circular aperture.	10M	4	L2
	OR			
18	With the help of neat labelled diagram, demonstrate Laue method.	10M	4	L2
19	Derive expression for numerical aperture of an optical fibre and hence derive acceptance angle.	10M	5	L2
	OR			
20	With the help of suitable diagrams, Explain the construction and working of a ruby laser.	10M	5	L2