R20 Regulation *Subject code:3B1AC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B. Tech I Semester Supplementary Examinations, June 2026

ENGINEERING PHYSICS

(Common to CE& MECH)

Maximum Marks: 70 Date: 20.06.2026 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 10 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	Write about mechanical impedance.	2M	1	L1
2	Explain critical damping in damped mechanical harmonic oscillator?	2M	1	L1
3	What is transverse wave?	2M	2	L1
4	Define absorption coeffient of a material.	2M	2	L1
5	Describe the Huygens principle.	2M	3	L1
6	Why the rings are circular shape in Newton's rings experiment	2M	3	L1
7	State Bragg's law.	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	Derive the expression for electrical harmonic oscillator?	10M	1	L3
	OR			
12	What is forced harmonic oscillator? Derive its equation of motion.	10M	1	L3
13	Derive the equation of velocity of a longitudinal wave in a bar.	10M	2	L3
	OR			
14	Derive the plane acoustic equation and show that the velocity of sound wave in gas is $V = \sqrt{(\frac{\gamma P}{\rho_0})}$.	10M	2	L3
15	Explain the formation of Newton's rings	10M	3	L2
	OR			
16	Explain Young's double slit experiment.	10M	3	L2
17	a) What do you mean by diffraction of light b) Derive equation of Fraunhofer diffraction due to single slit	2M 8M	4	L2
	OR			

18	Describe suitable diagram the Powder method for determination of crystal structure	10M	4	L2
19	a) Explain the construction and working of a He – Ne gas laser. b) Write the properties of laser	5M 5M	5	L2
	OR			
20	a) Distinguish between light propagation in step index optical fiber and graded Index optical fiber b) Give applications of optical fiber	7M 3M	5	L2