



R20 Regulation *Subject code:3B1AC*
TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
 (Autonomous, Accredited by NAAC with 'A+' Grade)

B. Tech I Semester Supplementary Examinations, January 2026

ENGINEERING PHYSICS
(Common to CE & ME)

Maximum Marks: 70

Date: 09.01.2026

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	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	What is the ratio of fundamental harmonic and the overtones emitted by a closed pipe?		2M	2	L1
5	Define interferometers & its basic principle.		2M	3	L1
6	What happen if the Newton's rings are formed with white light?		2M	3	L1
7	State Bragg's law.		2M	4	L1
8	Define Resolving power of grating.		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.		5M	1	L2
	b) Explain the working of mechanical harmonic oscillator.		5M		
OR					
12	a) Distinguish between forced and natural oscillations.		5M	1	L2
	b) Discuss about the energy decay in damped harmonic oscillator.		5M		
13	a) Derive transverse wave equation in a string.		5M	2	L2
	b) Derive the expression for reflection and transmission of transverse waves at a boundary.		5M		
OR					
14	Derive the plane acoustic equation and show that the velocity of sound wave in gas is $V = \sqrt{\left(\frac{\gamma P}{\rho_0}\right)}$.		10M	2	L2

15	Explain the formation of Newton's rings	10M	3	L2
	OR			
16	Describe the construction and working of a Mach Zehnder Interferometer.	10M	3	L2
17	a) What do you mean by diffraction of light? b) Derive equation of Fraunhofer diffraction due to single slit.	5M 5M	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