R18 Regulation *Subject code:2B1AB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech I Semester Supplementary Examinations, January 2024

Engineering Physics

(Common to CE and ME)

Maximum Marks: 70 Date: 20.01.2024 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=20Marks		Blooms Tx	CO
1.	Define vector and scalar quantities with examples.	L1	CO1
2.	Deduce the complex notation for forced oscillations.	L2	CO1
3.	Write two similarities between electrical and mechanical harmonic oscillators	L1	CO2
4.	Write about quality factor?	L1	CO2
5.	Define sound absorption co efficient of a material and write its unit.	L1	CO3
6.	Define acoustic waves and standing sound waves.	L1	CO3
7.	What are coherent sources.	L1	CO3
8.	Define diffraction.	L1	CO3
9.	Write the components of laser.	L1	CO3
10.	Write about the structure of optical fibre.	L1	CO3

Part-B

Answer all the following questions 5X10M=50Marks		Blooms Tx	CO
11.	(a) Derive the equation of motion in polar co- ordinates? [5] (b) Derive the equation of motion in Cartesian co-ordinates? [5]	L3 L3	CO1 CO1
	OR		
12.	Describe the transformation of scalars and vectors under rotation. [10]	L2	CO2
13.	(a) What is an electrical harmonic oscillator? Obtain an expression the Frequency of oscillators. [5] (b) Write about impedance in electrical and mechanical oscillators? [5]	L3 L1	CO2 CO2
	OR		
14.	(a) Derive the equation of motion of a simple harmonic oscillators and its total energy. [5] (b) Describe the power absorbed by oscillator? [5]	L3 L2	CO2 CO2

15.	(a) Discuss the modes of vibration of a stretched string clamped at both ends. [5] (b) Explain the laws of transverse vibrations of a string? [5]	L2 L2	CO3 CO3
	OR		
16.	Derive Sabine's formula for reverberation time. [10]	L3	CO3
17.	(a) Explain the formation of Newton's rings. [5] (b) Describe the construction and working of a Mach Zehnder Interferometer? [5]	L2 L2	CO3 CO3
	OR		
18.	Derive equation of Fraunhoffer diffraction due to N- slit. [10]	L3	CO3
19.	(a) With the help of suitable diagram, Explain the construction and working of He –Ne laser. [5] (b) Write the characteristics of laser. [5]	L2 L1	CO3 CO3
	OR		
20.	(a) Distinguish between light propagation in step index optical fiber and graded Index optical fiber. [5] (b) Describe the basic elements of a fiber optics communication system with the help of block diagram. [5]	L4 L2	CO3 CO3