MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act,1956

I B.Tech I Sem Supply End Examination, October 2022
Engineering Physics
(Civil, Mechanical)

Time: 3 Hours.   **Max. Marks: 70**

Note: 1. Question paper consists: Part-A and Part-B.
        2. In Part – A, answer all questions which carries 20 marks.
        3. In Part – B, answer any one question from each unit.
           Each question carries 10 marks and may have a, b as sub questions.

PART- A
(10*2 Marks = 20 Marks)

1.	a)	State and explain Newton's first law of motion	2M	CO1	BL-2
	b)	Define the terms: scalar and vector	2M	CO1	BL-5
	c)	What are Damped Harmonic oscillations	2M	CO2	BL-1
	d)	Explain the significance of Quality factor (Q)	2M	CO2	BL-2
	e)	Define reverberation and reverberation time	2M	CO3	BL-1
	f)	What is sound absorption coefficient of a material? explain briefly	2M	CO3	BL-1
	g)	What is Huygen's Principle	2M	CO4	BL-1
	h)	State the superposition theorem	2M	CO4	BL-1
	i)	How will you differentiate laser light from ordinary light?	2M	CO5	BL-4
	j)	What is the numeral aperture of an optical fibre cable with a clad index of 1.378 and a core index of 1.546	2M	CO5	BL-5

PART- B
(10*5 Marks = 50 Marks)

2	a	What are the different types of forces in nature? Explain in detail	5M	CO1	BL-2
	b	Explain the form invariance of Newton's second law	5M	CO1	BL-2

OR

3	Derive Newton's equations of motion in polar coordinates	10M	CO1	BL-5

4	What are forced oscillations? Derive and solve the differential equation of driven (forced) harmonic oscillator	10M	CO2	BL-5

OR

5	Derive the differential equation of a damped harmonic oscillator, investigate the conditions of over damping, critical damping and under damping	10M	CO2	BL-5

6	a)	What are the basic requirements of acoustically good hall	5M	CO3	BL-1
	b)	Explain the types of noise and how these noises are controlled?	5M	CO3	BL-2

OR

7	What is meant by acoustic quieting? Discuss in detail the different methods of acoustic quieting.	10M	CO3	BL-6

8	a)	Describe the construction and working of Michelson interferometer	5M	CO4	BL-2
	b)	What is resolving power of grating? Derive an equation for resolving power.	5M	CO4	BL-5

OR

9	Describe in detail the Newton's rings experiment and show that the diameter of the nth dark ring is given by $D_n = 2\sqrt{m\lambda R}$	10M	CO4	BL-6

10	a)	Distinguish between step index fibre and graded index fibre	5M	CO5	BL-4
	b)	Explain the important applications of optical fibre	5M	CO5	BL-2

OR

11	Describe in detail the construction and working of He-Ne laser	10M	CO5	BL-6

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BL: Blooms Taxonomy Levels