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, April 2022
Engineering Physics
(CIVIL & MECH)

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)	What is rotation transformation?	2M	CO1	BL1
	b)	List the types of friction with examples?	2M	CO1	BL1
	c)	Discuss SHM in phasor notation.	2M	CO2	BL2
	d)	Define mechanical and electrical impedances.	2M	CO2	BL1
	e)	Distinguish between harmonics and overtones.	2M	CO3	BL2
	f)	What are acoustic waves?	2M	CO3	BL1
	g)	Differentiate interference and diffraction.	2M	CO4	BL2
	h)	What are the conditions to achieve sustained interference?	2M	CO4	BL1
	i)	What are negative temperature states?	2M	CO5	BL1
	j)	Define numerical aperture and acceptance angle.	2M	CO5	BL1

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

2	Show that Newton's laws of motion are invariant. Write the equations of equilibrium when the body is in space.	10M	CO1	BL3

OR

3	What is angle of repose? Prove that angle of repose is equal to the angle of friction. A body weighing 50N is just pulled upon inclined plane of 30°by a force of 40 N applied at 30° above the plane. Find the coefficient of friction	10M	CO1	BL3

4	Define quality factor and sharpness of resonance. Write the expression for quality factor in LCR series resonant circuit.	10M	CO2	BL1

OR

5	Explain the steady state form of a forced damped harmonic oscillator with relevant equations.	10M	CO2	BL4

6	Discuss in detail about the reflection and transmission of waves on a string. What are the boundary conditions?	10M	CO3	BL2

OR

7	What are standing sound waves? Explain.	10M	CO3	BL4

8	Describe the principle, construction and working of a Michelson's interferometer. Explain how it can be used to determine the wavelength of a monochromatic light?	10M	CO4	BL4

OR

9	Explain the resolving power of a grating.	10M	CO4	BL4

10	What is pumping and population inversion in lasers? Write the various methods of pumping.	10M	CO5	BL1

OR

11	Explain the refractive index profiles of step index and variable index fibre.	10M	CO5	BL4

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