Q.P. Code: 19HS0850 **R19**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech I Year I Semester Supplementary Examinations December-2021

ADVANCED PHYSICS

(Mechanical Engineering)

Time: 3 hours Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	Derive the condition for bright and dark fringes through the interference in thin films by reflection?	L4	8M
	b	What is the thickness of the thinnest film of 1.33 refractive index in which destructive interference of the yellow light ($6000\,\overset{o}{A}$) of a normally incident beam in air can take place by reflection?	L1	4M
		OR		
2	a	Write brief note on grating spectrum?	L2	6M
	b	How you determine the wavelength of light using grating spectrum?	L2	6M

UNIT-II

3	a	What are the basic requirements of acoustically good hall?	L1	8M
	b	Define Reverberation and Reverberation time?	L1	4M
		OR		
4	a	Write the properties of Ultrasonic waves.	L2	6M
	b	Explain the detection methods of Ultrasonic waves.	L2	6M

UNIT-III

5	a	Explain B-H curve of ferromagnetic material.	L2	8M
	b	What are soft and hard magnetic materials.	L1	4M
		OR		
6	a	Derive Clausius – Mossotti equation?	L4	8M
	b	What are the advantages of dielectric materials	L1	4M

UNIT-IV

7	a	Describe the important characteristic of laser beam?	L1	6M
	b	Derive the relation between the various Einstein's coefficients of absorption and emission of radiation.	L4	6M
		OR		
8	a	What is the numerical aperture of an optical fibre and derive an expression for it.	L1	8M
	b	An optical fibre has a numerical aperture of 0.20 and cladding refractive index of 1.59. Determine the refractive index of core and the acceptance angle for the fibre in water has a refractive index of 1.33.	L3	4M

UNIT-V

9	a	Explain ball milling technique for synthesis of nanomaterial.	L2	7M
	b	Write the applications of nanomaterial.	L2	5M
		OR		
10	a	Discuss properties of nanomaterials.	L2	7M
	b	Write brief note on biomedical applicatins of nanomaterials.	L2	5M

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