Q.P. Code: 20HS0849 **R20**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech I Year I Semester Supplementary Examinations November-2022

APPLIED PHYSICS

(Common to CSE, CSM, CIC,CAD,CCC & CSIT)

Time: 3 hours Max. Marks: 60

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

UNIT-I

1	a	Discuss the theory of interference of light due to thin films by reflection with suitable ray diagram	L1	5M
	b	Derive the condition for constructive and destructive interference in the case of reflected system.	L4	7M

OR

2	a	Describe Fraunhofer diffraction due to double slit and derive the conditions for principal maxima, secondary maxima and minima.	L3	8M
	b	A plane transmission grating having 4250 lines per cm is illuminated with sodium light normally. In the second order spectrum, the spectral lines are deviated by 30^0. What is the wavelength of the spectral line?	L4	4M

UNIT-II

3	a	What are the salient features of quantuml free electron theory? Derive an expression for electrical conductivity in a metal.	L4	8M
	b	Write advantages quantum free electron theory over classical free electron theory.	L1	4M

OR

4		Explain the propagation of electromagnetic wave in non-conducting media.	L4	12M

UNIT-III

5	a	Describe the construction and working principle of He-Ne Laser with the help of a neat diagram.	L3	8M
	b	Write the advantages of He-Ne laser.	L1	4M

OR

6	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-IV

7	a	Describe the Hall Effect in semiconductors.	L3	8M
	b	Write the applications of Hall Effect.	L1	4M

OR

8	a	Derive the expression for current generated due to drifting of charge carriers in semiconductors in the presence of electric field	L4	6M
	b	Derive the expression for current generated due to diffusion of charge carriers in semiconductors in the absence of electric field	L4	6M

UNIT-V

9	a	Prove that super conductor is a very good diamagnetic material.	L4	8M
	b	Write the applications of superconductors.	L1	4M

OR

10	a	Explain Sol-Gel technique for synthesis of nanomaterial.	L4	8M
	b	Write the applications of nanomaterial in various fields.	L1	4M

END