Q.P. Code: 19HS0849 R19

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech I Year II Semester Supplementary Examinations March-2021

APPLIED PHYSICS

(Electrical and Electronics Engineering)

Time: 3 hours Max. Marks: 60

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

UNIT-I

1	a	Define damped harmonic motion. Give examples	4M
	b	Derive and solve differential equation of damped harmonic oscillator.	8M
		OR	
2	a	What are forced oscillations? Give four examples.	6M
	b	Explain the phenomenon of resonance with suitable examples.	6M

UNIT-II

3	a	What are matter waves? Write their properties.	2M
	b	Derive Schrodinger time independent wave equation.	10M
		OR	
4	a	Deduce the solution of Schrodinger wave equation for particle confined in a box.	8M
	b	An electron is confined in a one dimensional potential box having width of $3x10^{-10}$ m. Estimate the kinetic energy of electron when it is in the ground state.	4M

UNIT-III

5	a	Write the Fermi-Dirac distribution function.	4M
	b	Explain the effect of temperature on Fermi-Dirac distribution.	8M
		OR	
6	a	What are intrinsic semiconductors?	2M
	b	Deduce an expression for the carrier concentration and conductivity of intrinsic semiconductors.	10M

UNIT-IV

7	a	Write the applications of Lasers.	4M
	b	Explain the construction and working of Nd-YAG laser with a neat diagram.	8M
		OR	
8	a	Classify the optical fibers based on their refractive index profile.	6M
	b	Explain the propagation of electromagnetic wave through optical fibers.	6M

UNIT-V

9	a	Outline the properties of nanomaterials that are affected due to increased surface area to volume ratio.	6M
	b	Explain in detail the quantum confinement effect and how it affects the optical and magnetic properties of nanomaterials.	6M
		OR	
10	a	Describe any one method of fabrication of nanomaterials.	8M
	b	Discuss the applications of nanomaterials.	4M

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