Q.P. Code: 16HS603 **R16**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech I Year I Semester Supplementary Examinations December 2018
ENGINEERING PHYSICS
(Common to CE, ME,AGE,EEE)

Time: 3 hours Max. Marks:60

(Answer all Five Units 5 X 12 = 60 Marks)

UNIT-I

1	**a**	Describe the formation of Newton's ring with necessary theory	8M
	b	Explain how the wavelength of light sources is determined by forming Newton's rings.	4M
		OR	
2	**a**	Explain the construction and working of Nd:YAGlaser with suitable energy level diagram and What are the advantages of Nd:YAG laser?	8M
	b	Explain population inversion?	4M

UNIT-II

3	**a**	Deduce the expression for the interplanar distances in terms of miller indices for a cubic system	8M
	b	Draw miller indices of planes (1 0 0) , (1 0 1) and (0 1 1)	4M
		OR	
4	**a**	Describe the application of Ultrasonic in non destructive testing (NDT) of material.	8M
	b	Explain the detection methods of Ultrasonic waves?	4M

UNIT-III

5	**a**	What is de Broglie Hypothesis? Derive the expression for de Broglie wavelength for an electron.	6M
	b	Derive Schrödinger's time independent wave equation?	6M
		OR	
6	**a**	Describe the electrical conductivity of metal using Quantum Free Electronic theory and What are the advantages Quantum free electron theory?	8M
	b	For the matal having 6.5×10^{28} conduction electron/m^3. Find the relaxation time of conduction electrons if the metal has resistivity 1.43×10^{-8} Ω m. Given m= 9.1×10^{-31} kg, e = 1.6×10^{-19} C.	4M

UNIT-IV

7	**a**	Describe the Hall effect in a semiconductor?	6M
	b	Derive Einstein's relation in semiconductors?	6M
		OR	
8	**a**	Explain B-H curve of ferromagnetic material?	6M
	b	What are soft and hard magnetic materials?	6M

UNIT-V

9	**a**	What is superconductivity? Write the properties of super conductors?	6M
	b	Explain penetration depth in superconductor?	6M
		OR	
10	**a**	Explain ball milling technique for synthesis of nanomaterial?	8M
	b	What are the techniques available for synthesizing nanomaterials?	4M

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