R18

Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B Tech I Year I Semester Supplementary Examinations Feb-2021
PHYSICS
(Mechanical Engineering)

Time: 3 hours   Max. Marks: 60

PART-A
(Answer all the Questions 5 x 2 = 10 Marks)

1	a	Define magnetic susceptibility.	2M
	b	What are the radiations in electromagnetic spectrum?	2M
	c	A classroom of volume 200 m^3 has a reverberation time 1.6 seconds. Calculate the total sound absorption coefficient of the classroom.	2M
	d	What are the various techniques of pumping?	2M
	e	Write allotropes of Carbon.	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	State and write Maxwell's equation in differential form.	5M
	b	Derive the continuity equation and write its significance.	5M

OR

3	a	Explain hysteresis curve of ferromagnetic material.	6M
	b	What are soft and hard magnetic materials?	4M

UNIT-II

4	a	Show that the electromagnetic waves are in transverse nature.	7M
	b	Define electromagnetic spectrum.	3M

OR

5	a	State and write the expressions for Pointing vector, energy and momentum of electromagnetic waves.	6M
	b	What are the uses of various radiation of electromagnetic spectrum?	4M

UNIT-III

6	a	Describe the formation of Newton's ring with necessary theory.	7M
	b	Explain how the wavelength of light sources is determined by forming Newton's ring.	3M

OR

7	a	Define Reverberation and Reverberation time.	4M
	b	What is the basic requirement of acoustically good hall?	6M

UNIT-IV

8	a	Explain the construction and working principle of He-Ne laser with suitable energy level diagram.	8M
	b	Write few advantages of He-Ne laser.	2M

OR

9 a Derive the relation between the various Einstein's coefficients of absorption and emission of radiation.   7M

   b The wavelength of emission is 6000A^0 and the coefficient of spontaneous emission is 10^6/s. Determine the coefficient for stimulated emission.   3M

UNIT-V

10 a Explain why surface to volume ratio very large for Nano materials   6M

    b Find the surface area to volume ratio of Sphere have radius 5 meter.   4M

OR

11 a What are the techniques available for synthesizing nanomaterials?   3M

    b Explain ball-milling technique for synthesis of nanomaterial.   7M

END