R18

Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B. Tech I Year I Semester Supplementary Examinations November 2020
PHYSICS
(Mechanical Engineering)

Time: 3 hours   Max. Marks: 60

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

1	**a**	What is the relation between B, H and M?	**2M**
	b	Write any two uses of electromagnetic spectrum.	**2M**
	c	Distinguish between interference and diffraction.	**2M**
	d	What are the essential components of laser?	**2M**
	e	Define top down and bottom up process.	**2M**

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

UNIT-I

2	**a**	State and explain Biot- Savart law.	**4M**
	b	Explain the Faraday's laws of electromagnetic induction.	**6M**

OR

3	**a**	Explain hysteresis curve of ferromagnetic material.	**6M**
	b	Differentiate hard and soft magnetic materials.	**4M**

UNIT-II

4	**a**	Define the equation of electromagnetic wave and hence evaluate the velocity of light in free space.	**10M**

OR

5	**a**	Write brief note on harmful effects of electromagnetic radiation.	**7M**
	b	How we protect our self from harmful effects of electromagnetic radiation?	**3M**

UNIT-III

6	**a**	Derive general differential equation of motion for a simple harmonic oscillator.	**7M**
	b	Name the periodic motion, which is not oscillatory.	**3M**

OR

7	**a**	Define and derive the absorption coefficient.	**6M**
	b	A classroom of volume 360 m^3 has a reverberation time 1.6 seconds. Calculate the total sound absorption coefficient of the classroom.	**4M**

UNIT-IV

8	**a**	Explain the construction and working principle of He-Ne laser.	**8M**
	b	Write few advantages of He-Ne laser.	**2M**

OR

9	**a**	Write short note on applications of lasers in scientific field.	**5M**
	b	Write short note on applications of lasers in medical field.	**5M**

UNIT-V

10	**a**	What is nanomaterial? Write the classification of nanomaterials.	**4M**
	b	Explain the basic principle of nanomaterials.	**6M**

OR

11	**a**	What are carbon nanotubes? Explain its structures and types.	**8M**
	b	Explain the catalyst applications of carbon nanotubes.	**2M**

END