Q.P. Code: 19HS0848 **R19**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech I Year I Semester Supplementary Examinations Feb-2021

ENGINEERING PHYSICS

(Common to CE & AGE)

Time: 3 hours Max. Marks: 60

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

UNIT-I

1	a	Explain the divergence of a vector field and give its physical significance.	6M
	b	If r is the position vector of a point, then show that a) div $r = 3$ and b) grad $(r.A) = A$.	6M

OR

2	a	State and explain Kepler's laws of planetary motion.	8M
	b	If the Earth be one half of its present distance from the sun, what will be the number of days in a year.	4M

UNIT-II

3	a	What is Hook's law? Explain it.	8M
	b	Describe the behavior of a wire under an increasing load.	4M

OR

4	a	Define strain. Explain the types of strain.	7M
	b	A wire of 3.0 m long and 0.625 sq.cm in cross section is found to stretch by 0.3 cm under a tension of 1200 kg. What is Young's modulus of the material of the wire?	5M

UNIT-III

5	a	Describe the factors affecting the acoustics of buildings.	6M
	b	Outline the remedies that must be followed for an acoustically good hall.	6M

OR

6	a	Describe the piezoelectric effect.	4M
	b	b) Explain the production of ultrasonics by piezoelectric method.	8M

UNIT-IV

7	a	What is a simple harmonic oscillator? Derive the equation of motion of simple harmonic oscillator.	8M
	b	A particle executes SHM with a period of 0.002 sec and amplitude of 10 cm.Find its acceleration when it is 4 cm away from its mean position and also obtain its maximum velocity.	4M

OR

8	a	What are damped oscillations? Solve the differential equation of a damped harmonic oscillator.	8M
	b	Discuss the case of under damped motion	4M

UNIT-V

9	a	Describe the classification of nanomaterials with suitable examples.	6M
	b	Nanomaterials behave differently in their properties than the bulk materials. Justify.	6M

OR

10	a	Explain the synthesis of nanomaterials by ball milling method.	8M
	b	Discuss the advantages of nanomaterials	4M

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