Q.P. Code: 18HS0848 **R18**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech I Year I Semester Supplementary Examinations Nov/Dec 2019

PHYSICS

(Common to CE & AGE)

Time: 3 hours Max. Marks: 60

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	**a**	Define Newton's second law of motion.	**2M**
	b	What are the inertial forces?	**2M**
	c	Define the terms (i) Amplitude (ii) Frequency	**2M**
	d	Calculate Poisson's ratio for sliver. Given its Young's modulus=7.25×10^{10} N/m^2 and bulk modulus =11×10^{10} N/m^2.	**2M**
	e	Write allotropes of carbon.	**2M**

PART-B

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

UNIT-I

2	**a**	Define vector product of vectors and give its properties.	**7M**
	b	Vectors are given by A=4ĵ-7k̆, by B=5î+3ĵ find out the sine angle between them.	**3M**
		OR	
3	**a**	Explain the principle of working of a rocket.	**2M**
	b	Derive an equation for the final velocity of the rocket and its special cases.	**8M**

UNIT-II

4	**a**	Write the brief note on effect of coriolis force on weather systems.	**5M**
	b	If an object is dropped from height of 200 meters at latitude 45^o, calculate the magnitude of deflection.	**5M**
		OR	
5	**a**	Derive the expression for acceleration of particle in rotating co ordinate system.	**5M**
	b	Write the differences between centrifugal and centripetal forces.	**5M**

UNIT-III

6	**a**	Derive the equation of motion of damped harmonic oscillator.	**6M**
	b	Obtain the solution for equation of damped harmonic oscillator.	**4M**
		OR	
7	**a**	Write the differences between forced vibrations and free vibrations.	**6M**
	b	A particle of mass 5 g executes S.H.M. has amplitudes of 8 cm. If it makes 16 vibrations per second find the maximum velocity?	**4M**

UNIT-IV

8	**a**	Define three elastic modules and write the equations.	**7M**
	b	A wire 3 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?	**3M**
		OR	
9	**a**	Classify the different types of beams and give clear explanation about them.	**5M**
	b	Classify the different types of supports and give clear explanation about them.	**5M**

UNIT-V

10	**a**	What are the techniques available for synthesizing Nano-material's?	**3M**
	b	Explain ball-milling technique for synthesis of nanomaterial.	**7M**
		OR	
11	**a**	What are the properties of CNTs?	**5M**
	b	Write the applications of CNTs for energy and in automobiles with examples.	**5M**

END