Premier University
Department of Computer Science and Engineering
CSE 1st Semester Retake Examination, June 2020
Course Title : Engineering Physics – I
Course No. : PHY-101

Time : 2 Hours **Marks : 35**

		Answer all questions.	
Q1.	a)	What do you mean by simple harmonic motion?	1
	b)	Show that, the total energy of simple harmonic motion is $1/2KA^2$	3
	c)	A body oscillates with simple harmonic motion according to the equation: $y=10 \sin (5t-\pi/6)$ meters Calculate: (i)The frequency, (ii) The time period, (iv)The maximum velocity.	3
Q2.	a)	Define Lissajous figures?	1
	b)	Find an expression for the Lissajous figure when two simple harmonic vibrations of equal time periods acting right angles to each other's.	4
	c)	Discuss the special cases when the phase difference between the waves and draw the corresponding diagrams: (i) $\alpha=\pi$ and (ii) $\alpha=\pi/4$	2
Q3.	a)	What do you mean by Doppler effect?	1
	b)	Calculate the apparent pitch of a note due to the motion of the source and the observer.	4
	c)	A person is standing near a railway track and a train moving with a speed of 60 km/hr is approaching him. The apparent pitch of the whistle as heard by the person is 1200 Hz.	2

		Calculate the actual frequency of the whistle. velocity of sound 350 m/s.	
Q4.	a)	What is Carnot's cycle?	1
	b)	Explain the work done in each operation of a complete cycle with necessary diagram.	4
	c)	Calculate the efficiency of a Carnot engine working between the temperatures 135^0C and 45^0C.	2
Q5.	a)	Find the Expression of work done for isothermal process?	4
	b)	A quantity of air at 35^0 and atmospheric pressure is suddenly compressed to 1/3 of its original volume. Find the resulting temperature.	3