United International University

School of Science and Engineering

CT Assignment#02; Year 2021; Semester: Spring
Course: PHY 105; Title: Physics
Full Marks: ; Section: B; Time: 30 minutes

Name:	ID:	Date:

1. Draw a motion figure for Transverse wave. Mention at least three examples.

2. The DHM equation can be represented as $x = Ae^{-\gamma t}cos(\omega' t + \phi)$. (i) Mention the parameters *A*, γ, ω', and ϕ. (ii) Draw a graph showing all types of DHMs including SHMs. (iii) Write down the mathematical equation for ω' and γ.

3. The equation of a travelling wave is $y = 10 \sin 0.79\pi\ (-36000t + 18x)$**.** Calculate (i) the amplitude of the vibrating particle, (ii) wave velocity, (ii) wave length, (iv) frequency and (v) time period.

4. A body oscillates with SHM according to the progressive equation $x = 12\sin(\frac{2\pi t}{10} + 3\frac{\pi}{4})$. Find the (i) wavelength, (ii) velocity, (iii) frequency, and (iv) position of the wave.

5. For a damped oscillator circuit, a copper wire spring having mass m =250gm, k = 85×10^6 N/m, b = 70gm/s, is connected with a capacitor with capacitance C = 2μF. Therefore the corresponding inductance is found as L= 1.4705mH. Now, find out (i) the period of the motion, (ii) the maximum value of resistance R of the circuit for which it would be oscillatory, and (iii) the resonant frequency, if any.