United International University

School of Science and Engineering

Quiz#03; Year 2020; Semester: Fall
Course: PHY 105; Title: Physics
Full Marks: 20; Section: E; Time: 20 minutes

Name:	ID:	Date:

1. What is Progressive wave? Write down the appropriate equation for a progressive wave. What is wavelength of a wave? Draw a figure showing wavelength, if necessary. **1.5**

2. Write down (i) the basic equation for both the SHM and DHM, (ii) the equation for damping frequency, and the condition by which you can get resonant frequency of RLC circuit, and (iii) also the resonant frequency of RLC circuit. **1.5**

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. **3**

4. A body oscillates with SHM having frequency 50 Hz according to the progressive equation $y = b\,cos(\omega t + 6\frac{\pi}{4})$. Find the wavelength. **1**

5. For a damped oscillator circuit, a copper wire spring has m =250gm, k = 85N/m, b = 70gm/s, L= 0.1mh, and C = 0.0020μF. (a) What is the period of the motion? (b) What is maximum value of resistance R for the circuit to be oscillatory? (c) What is resonant frequency? **3**