United International **University**

School of Science and Engineering

Class Test II; Year 2020; Semester: Fall
Course: PHY 2105; Title: Physics
Marks: 10; Section: B; Time: 30 minutes

1. Here are the equations of three waves: (1) $y = 2\sin(4x - 2t)$, (2) $y = 2\sin(3x - 4t)$, (3) $y = 2\sin(3x - 3t)$. Rank the waves according to their (a) wave speed and (b) find out the greatest maximum particle velocity of the medium. [2]

2. Two damped harmonic oscillators have initial amplitude A= 5cm. Draw displacement vs. time graphs for (i) $\omega/\gamma = 1$ and (ii) $\omega/\gamma = 5$ [2]

3. For the damped oscillator of m = 250 g, k = 85 N/m,and b =70 g/s. Which damping conditions maintain the oscillator? If the system is oscillatory find the angular frequency and frequency of the oscillation. [3]

4. A wave has an angular frequency of 110 rad/s and a wavelength of 1.80 m. Calculate (a) the speed of the wave. (b) frequency of oscillating particle and (c) write the equation for the wave. [3]