United International University

School of Science and Engineering

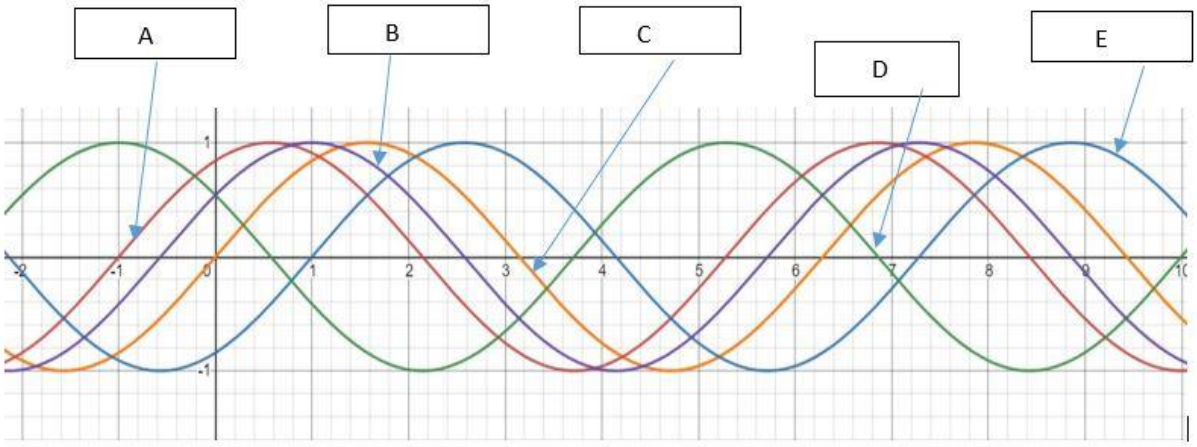
Quiz#01; Year 2021; Semester: Summer
Course: PHY 105; Title: Physics
Full Marks: 20; Section: A; Time: 30 minutes

Name:	ID:	Date:

1. Suppose $x = -A\omega^2 cos(-\omega^2 t - \delta)$. Calculate velocity and acceleration. Draw acceleration graph with naming axis label. **1.5**

2. Identify the types of motion: (i) Drilling for wall mount and (ii) Motion of Bees fly. **1**

3. Find out the leading output of the graph**.** **1**



4. Draw (i) the phase difference of two waves for δ =45^o and (ii) and δ =0^o. **1**

5. A mass, oscillating in simple harmonic motion, starts at $x = A$ and has period T. At what time, as a fraction of T, does the mass first pass through $x = 1/4\ A$? **2**

6. An air-track glider is attached to a spring of mass 250 g, pulled 10 cm to the left, and released at t=0. It makes 25 complete oscillations in 10 s. (i) What is the period of oscillation? (ii)What is the object's maximum speed? (iii) What is its maximum acceleration? (iv)What is spring constant? (v) What is total energy? (vi) Velocity at x=5 cm, and (vi) What is its instantaneous velocity at t=0.3 s? **3.5**