Quiz

Chapter # 15 (Oscillations)

Topics Included:

1) Simple Pendulum
2) Circular Motion & SHM
3) Damped SHM
4) Forced Oscillations & Resonance

National University of Computer and Emerging Sciences

Department of Computer Science — **Chiniot-Faisalabad Campus**

28

QUIZ 4

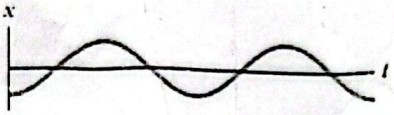
Name: Muhammad Taha Roll no. 25F-0755 Date .....

Semester 01 Class BSCS (A:P) Section 1B

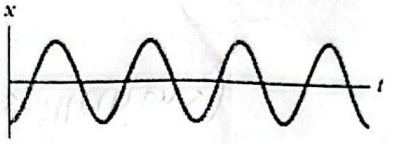
8

Q1. Figure shows two curves representing objects undergoing simple harmonic motion. The correct description of these two motions is that the simple harmonic motion of object B is (a) of larger angular frequency and larger amplitude than that of object A, (b) of larger angular frequency and smaller amplitude than that of object A, (c) of smaller angular frequency and larger amplitude than that of object A, or (d) of smaller angular frequency and smaller amplitude than that of object A.
[2 Marks]

2



Object A



Object B

$\omega = 2\pi f$

Q2. A student thinks that any real vibration must be damped. Is the student correct? If so, give convincing reasoning. If not, give an example of a real vibration that keeps constant amplitude forever if the system is isolated.
[2 Marks] Answer: Student thinking is incorrect. 0

A real vibration may or may not be damped. usually its not damped.

Example:
- Sunlight vibration.
- naturalsounds
- etc.

Q3. Christian Huygens (1629–1695), the greatest clock-maker in history, suggested that an international unit of length could be defined as the length of a simple pendulum having a period of exactly 1 s. How much shorter would our length unit be if his suggestion had been followed?
[6 Marks]

$$T = 2\pi\sqrt{\frac{L}{g}}$$

$$T^2 = 4\pi^2 \cdot \frac{L}{g}$$

$$\frac{gT^2}{4\pi^2} = L$$

$$L = \frac{gT^2}{4\pi^2}$$

$$L = \frac{(9.8)(1)^2}{4(3.1415)^2}$$

$$= \frac{9.8}{39.4784}$$

$$L = 0.2482 \text{ m}$$