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Department of Physics, National Dong Hwa University,

No. 1, Sec. 2, Da Hsueh Rd., Shoufeng, Hualien, 97401, Taiwan

**General Physics-I (PHYS1000AA, AB, AC)**

**Quiz - 2**

Date: 2022-11-29 Fall Semester-111

Time: 11:10 am – 12:10 pm Maximum marks: 100

Student id: Name:

1. **The amplitude of a system moving in simple harmonic motion is doubled. Determine the change in (a) the total energy, (b) the maximum speed, (c) the maximum acceleration, and (d) the period.**

**Solution:**

(a) so if  

Therefore 

(b) , so if *A* is doubled, 

(c) , so if *A* is doubled, 

(d) is independent of *A*, so 

2. **A seismographic station receives S and P waves from an earthquake, separated in time by 17.3 s. Assume the waves have traveled over the same path at speeds of 4.50 km/s and 7.80 km/s. Find the distance from the seismograph to the focus of the quake.**

**Solution:**

The distance the waves have travelled is *d* = (7.80 km/s)*t* =   
(4.50 km/s)(*t* + 17.3 s), where *t* is the travel time for the faster wave.

Then, 

or 

and the distance is 