

Physics 2325 - Dr. Terry Honan

■ Test 4 - A - Answers

Problem 1 (i) yes (ii) no

Problem 2 (a) 7.16 s (b) $v = 0.302 \text{ m/s}$ and $a = 0.853 \text{ m/s}^2$ (c) 2.34 mm

Problem 3 (a) $2.05 \times 10^{-6} \text{ N}$ (b) $2.63 \times 10^{-4} \frac{\text{m}}{\text{s}}$

Problem 4 (a) $8.14 \times 10^{-6} \text{ m}$ (b) $0.109 \frac{\text{W}}{\text{m}^2}$ (c) 110 dB

Problem 5 (a) 12 m/s (b) 3.40 s (c) $\sqrt{v_0^2 + 2GM\left(\frac{1}{R} - \frac{1}{R+h}\right)}$ (d) 30.1 AU

■ Test 4 - B - Answers

Problem 1 (i) F (ii) D (iii) G

Problem 2 (a) $v = 0.937 \text{ m/s}$ and $a = 17.5 \text{ m/s}^2$ (b) 4.36 m/s^2 (c) 0.288 Hz

Problem 3 (a) 2.377 kg (b) $2\pi \sqrt{\frac{2L}{3g}}$

Problem 4 (a) $3.16 \times 10^{-4} \frac{\text{W}}{\text{m}^2}$ (b) $P_{\text{max}} = 0.511 \text{ Pa}$ and $s_{\text{max}} = 2.62 \times 10^{-9} \text{ m}$

Problem 5 (a) $v_{\text{max}} = 2.1 \text{ m/s}$ and $f = 22.3 \text{ Hz}$ (b) $T = 1.96 \text{ N}$ and $\mathcal{P} = 0.123 \text{ W}$

Problem 6 $\sqrt{GM\left(\frac{1}{2R} - \frac{1}{d}\right)}$

Problem 7 $m = 0.0633 \text{ kg}$