

Semana 4

$$1) a) V_{0x} = (9 \text{ m/s}) (\cos 40^\circ) = 6.89 \text{ m/s}$$

$$V_{0y} = (9 \text{ m/s}) (\sin 40^\circ) = 5.79 \text{ m/s}$$

$$t_s = \frac{V_{0y}}{g}$$

$$t_s = \frac{5.79 \text{ m/s}}{9.8 \text{ m/s}^2} = 0.59 \text{ seg}$$

$$H_{\max} = \frac{(-V_{0y})^2}{2g}$$

$$H_{\max} = \frac{(-5.79 \text{ m/s})^2}{2(-9.8 \text{ m/s}^2)} = 1.71 \text{ m}$$

$$Y = 1.71 \text{ m} + 30 \text{ m} = 31.71 \text{ m}$$

$$t_c = \sqrt{\frac{2Y}{g}}$$

$$t_c = \sqrt{\frac{2(31.71 \text{ m})}{9.8 \text{ m/s}^2}} = 2.54$$

$$t_v = t_s + t_c$$

$$t_v = 0.59 \text{ seg} + 2.54 = 3.13 \text{ seg}$$

$$X = V_{0x} t_v$$

$$X = (6.89 \text{ m/s}) (3.13 \text{ seg})$$

$$X = 21.57 \text{ m}$$

$$2) a) V_{oy} = (20 \text{ m/s})(\sin 37^\circ) = 12.03 \text{ m/s}$$

$$H_{\max} = \frac{(-V_{oy})^2}{2g}$$

$$H_{\max} = \frac{(-12.03 \text{ m/s})^2}{2 \cdot 9.8 \text{ m/s}^2}$$

$$H_{\max} = 7.38 \text{ m}$$

$$b) t_s = \frac{-V_{oy}}{g}$$

$$t_s = \frac{-12.03 \text{ m/s}}{-9.8 \text{ m/s}^2} = 1.23 \text{ seg}$$

$$t_v = 2t_s$$

$$t_v = 2(1.23 \text{ seg}) = t_v = 2.46 \text{ seg}$$

$$c) V_{ox} = (20 \text{ m/s})(\cos 37^\circ) = 15.97 \text{ m/s}$$

$$X = V_{ox} t_v$$

$$X = (15.97 \text{ m/s})(2.46 \text{ seg})$$

$$X = 39.29 \text{ m}$$

$$3) a) V_{0y} = (20 \text{ m/s}) (\sin 50^\circ) = 15.32 \text{ m/s}$$

$$t_s = \frac{-V_{0y}}{g}$$

$$t_s = \frac{-15.32 \text{ m/s}}{-9.8 \text{ m/s}^2} = 1.56 \text{ seg.}$$

$$t_v = 2(1.56 \text{ seg})$$

$$t_v = \underline{3.12 \text{ seg}}$$

$$b) H_{\max} = \frac{(-V_{0y})^2}{2g}$$

$$H_{\max} = \frac{(-15.32 \text{ m/s})^2}{2(9.8 \text{ m/s}^2)}$$

$$H_{\max} = \underline{11.97}$$

$$c) V_{0x} = (20 \text{ m/s}) (\cos 50^\circ) = 12.86 \text{ m/s}$$

$$x = V_{0x} t_v$$

$$x = (12.86 \text{ m/s}) (3.12 \text{ seg})$$

$$x = \underline{40.12 \text{ m}}$$

Los ejercicios a, b, c son las mismas respuestas que la del 3

$$d) v_{oy} = (20 \text{ m/s}) (\sin 40^\circ) 12.86 \text{ m/s}$$

$$t_s = \frac{12.86 \text{ m/s}}{9.8 \text{ m/s}^2} = 1.31 \text{ seg}$$

$$t_v = 2t_s$$

$$t_v = 2(1.31 \text{ seg}) 2.62 \text{ seg}$$

$$v_{ox} = (20 \text{ m/s}) (\cos 40^\circ) 15.32 \text{ m/s}$$

$$X = v_{ox} t_v$$

$$X = (15.32 \text{ m/s}) (2.62 \text{ seg})$$

$$X = 40.14 \text{ m}$$

$$5) a) v_{oy} = (30 \text{ m/s}) (\sin 40^\circ) 19.29 \text{ m/s}$$

$$t_s = \frac{-19.29 \text{ m/s}}{-9.8 \text{ m/s}^2}$$

$$t_s = 1.97 \text{ seg} \quad b)$$

$$t_v = 2t_s$$

$$t_v = 2(1.97 \text{ seg}) \quad \underline{TV = 3.94 \text{ seg} \quad a)}$$

$$c) H_{\max} =$$

$$H_{\max} = \frac{(-19.29 \text{ m/s})^2}{2(9.8 \text{ m/s}^2)}$$

$$\underline{H_{\max} = 18.98 \text{ m}}$$

$$d) v_{ox} = (30 \text{ m/s}) (\cos 40^\circ) \quad 22.98 \text{ m/s}$$

$$x = v_{ox} \cdot t_v$$

$$x = (22.98 \text{ m/s}) (3.94 \text{ seg})$$

$$x = \underline{90.59 \text{ m}}$$

$$b) a) v_{oy} = (40 \text{ m/s}) (\sin 45^\circ) \quad 28.28 \text{ m/s}$$

$$t_s = \frac{-v_{oy}}{g}$$

$$t_s = \frac{-28.28 \text{ m/s}}{-9.8 \text{ m/s}^2} = 2.86 \text{ seg}$$

$$t_v = 2 t_s$$

$$t_v = 2 (2.86 \text{ seg})$$

$$t_v = \underline{5.77 \text{ seg}}$$

$$b) H_{\max} = \frac{(-v_{oy})^2}{2g}$$

$$H_{\max} = \frac{(-28.28 \text{ m/s})^2}{2(9.8 \text{ m/s}^2)}$$

$$H_{\max} = \underline{40.80 \text{ m}}$$

$$c) v_{ox} = (40 \text{ m/s}) (\cos 45^\circ) \quad 28.28 \text{ m/s}$$

$$x = v_{ox} \cdot t_v$$

$$x = (28.28 \text{ m/s}) (5.77 \text{ seg})$$

$$x = \underline{163.18}$$