

Seman 4

$$1) a) V_{0x} = (9 \text{ m/s})(\cos 40^\circ) = 6.89 \text{ m/s}$$
$$V_{0y} = (9 \text{ m/s})(\sin 40^\circ) = 5.79 \text{ m/s}$$

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

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

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

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

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

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

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

$$t_v = t_s + t_c$$

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

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

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

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

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

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

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

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

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

$$t_s = \frac{-12.03 \text{ m/s}}{-9.80 \text{ m/s}^2} = 1.23 \text{ seg}$$

$$t_v = 2t_s$$

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

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

$$x = V_{ox} t_v$$

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

$$\underline{x = 39.29 \text{ m}}$$

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

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

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

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

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

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

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

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

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

$$x = V_{ox} t_v$$

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

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

4) Los ejercicios a, b y c son las mismas
Respuestas que la del 3.

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

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

$$t_v = 2 t_s$$

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

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

$$x = v_{ox} t_v$$

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

$$\underline{x = 40.14 \text{ m}}$$

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

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

$$t_s = 1.97 \text{ seg}$$

$$t_v = 2 t_s$$

$$t_v = 2(1.97 \text{ seg})$$

$$t_v = 3.94 \text{ seg}$$

c) $H_{\max}$

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

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

$$D) V_{ox} = (30 \text{ m/s}) (\cos 40^\circ)$$

$$X = V_{ox} T_v$$

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

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

$$6/a) V_{oy} = (40 \text{ m/s}) (\sin 45^\circ) 28.28 \text{ m/s}$$

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

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

$$T_v = 2 T_s$$

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

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

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

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

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

$$C) V_{ox} = (40 \text{ m/s}) (\cos 45^\circ) 28.28 \text{ m/s}$$

$$X = V_{ox} T_v$$

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

$$X = 163.18$$