

UDES

DIEGO EDUARDO CRUZ AGUILAR

FISICA

PLATAFORMA

1. $F = 30 \text{ N}$ $d = 60 \text{ cm}$ $\alpha = 30^\circ$
 $T = 18 \text{ J}$ $T = F \cdot d$ $T = 30 \cdot 0.6 = 18 \text{ J}$
 $T = 15.48 \text{ J}$ $T = F \cos \alpha \cdot d$ $T = 30 \cdot 0.86 \cdot 0.6$

2. $m = 25 \text{ kg}$ $h = 6.4 \text{ m}$
 $T = m \cdot g \cdot h$ $T = 25 \cdot 9.81 \cdot 6.4 = 1569.5 \text{ J}$

3. $F = 3 \text{ N}$ $d = 1.200 \text{ m}$
 $T = 3.6 \text{ J}$ $T = F \cdot d$ $T = 3 \cdot 1.200 = 3.6 \text{ J}$

5. $F = 12 \text{ N}$ $d = 7 \text{ m}$
 $T = 84 \text{ J}$ $T = F \cdot d$ $T = 12 \cdot 7 = 84 \text{ J}$

6. $M = 50 \text{ kg}$ $d = 8 \text{ m}$
 $T = m \cdot g \cdot h$ a) $T = 5 \cdot 9.81 \cdot 8 = 392.4 \text{ J}$
 $T = F \cdot d \cdot \cos \alpha$ b) $T = 50 \cdot 8 \cdot 0 = 0 \text{ J}$

7. $m = 10 \text{ Dm}^3 = U = 10 \text{ L} = 10 \text{ kg}$ $h = 3 \text{ m}$
 $T = m \cdot g \cdot h$ $T = 10 \text{ kg} \cdot 9.81 \cdot 3 = 294.30 \text{ J}$

8. $F = 20000 \text{ N}$ $d = 1 \text{ km} = 1000 \text{ m}$ $m = 20 \text{ ton}$
 $T = F \cdot d \cdot \cos \alpha$ $T = 20000 \cdot 1000 \cdot 1 = 20000000 \text{ J}$

¿Que trabajo hace cada hora si la velocidad es de 36 m^2 ?
 $T = 20000000 \cdot 36 = 720000000 \text{ J}$

9. $F = 300 \text{ N}$ $d = 10 \text{ m}$ $h = 75 \text{ cm}$ $m = 65 \text{ kg}$
 $T = F \cdot d$ $T = 300 \cdot 10 = 3000 \text{ J}$

y que despues lo sube a un camion cuyo plataforma esta a 75 cm

$T = 65 \cdot 9.81 \cdot 0.75 = 478.24 \text{ J}$
 $T = m \cdot g \cdot h$ Trabajo total = $3000 + 478.24 = 3478.24 \text{ J}$

10. $F = 24 \text{ N}$ $d = 10 \text{ m}$ $T = F \cdot d \cdot \cos \alpha$
 A) $24 \cdot 10 \cdot \cos(30^\circ) = 24 \cdot 10 \cdot 0.8660254 = \underline{207.85 \text{ J}}$
 B) $24 \cdot 10 \cdot \cos(90^\circ) = 24 \cdot 10 \cdot 0 = \underline{0 \text{ J}}$
 C) $24 \cdot 10 \cdot \cos(120^\circ) = 24 \cdot 10 \cdot (-0.5) = \underline{-120 \text{ J}}$

11. $T = 2 \text{ min} = 120 \text{ seg}$ $m = 1500 \text{ kg}$ $h = 1500 \text{ cm} = 15 \text{ m}$
 $T = m \cdot g \cdot h$ $P = \text{Trabajo} \div \text{tiempo}$
 $T = 1500 \text{ kg} \cdot 9.81 \cdot 15 \text{ m} = 220725 \text{ J}$
 $P = 220725 \text{ J} \div 120 \text{ seg} = 1839.38 \text{ W}$
 $P = 1839.38 \div 1000 = 1.83938 \text{ kW}$
 $P = 1839.38 \cdot 1.33 / 1000 = 2.4463 \text{ CV}$

12. $v = 50 \text{ km/hr} = 1 \text{ km/h} = 0.27777777 \text{ m/s} = 13.38 \text{ m/s}$
 $F = P \div v$ $P = 40 \text{ CV} = 30075.19 \text{ W}$
 $F = 30075.19 \div 13.38 = \underline{2166.30 \text{ N}}$

13. $T = 40 \text{ seg}$ $m = 350 \text{ kg}$ $h = 18 \text{ m} = d$
 $T = m \cdot g \cdot h$ $P = T \div \text{tiempo}$

$T = 350 \cdot 9.81 \cdot 18 = \underline{61803 \text{ J}}$
 $P = 61803 \div 40 = 1545.08 \text{ W}$
 $P = 1545.08 \div 1000 = 1.54508 \text{ kW}$

14. $T = 5 \text{ min} = 300 \text{ seg}$ $m = 25000 \text{ kg}$ $h = 16 \text{ km} = d = 1000 \text{ m to}$
 $T = m \cdot g \cdot d$ $P = \text{Trabajo} \div \text{Tiempo}$

$T = 25000 \cdot 9.81 \cdot 1660 = 392400000 \text{ J}$
 $P = 392400000 \div 300 = 1308000 \text{ W}$
 $P = 1308000 \cdot 1.33 \div 1000 = 1739.64 \text{ CV}$

$$15. P = 20 \text{ CV} = (20 \cdot 1000 \div 1.33) \quad P = 15037.59 \text{ W} \quad U = 50\% \text{ CV}$$

$$P = F \cdot v \quad F = P \div v$$

$$F = 15037.59 \text{ W} \div 0.333 \text{ m/s} = 45112.8 \text{ N}$$

$$16. P = 6 \text{ CV} = (6 \cdot 1000 \div 1.33) = 45112.8 \text{ W} \quad U = 25 \text{ km/h} = 6.944 \text{ m/s}$$

$$P_{\text{uso}} = \frac{\text{potencia}}{U \cdot \text{coeficiente}}$$

$$P = 45112.8 \text{ W} \div 6.944 \text{ m/s} = 0.2$$

$$P = 4511.28 \text{ W} \div 1.3888 = 3248.33 \text{ W}$$

$$17. P = 250 \text{ CV} \quad m = 1000 \text{ kg} \quad F = 9810 \text{ N} \quad a = 1$$

$$d = \frac{m \cdot a}{F}$$

$$v = \frac{\sqrt{2(9810 \text{ N})(1)}}{1000}$$

$$F = 1000 \cdot 9.81 = 9810 \text{ N} \quad v = 20000 \div 9810 = 25.48 \text{ m/s}$$

$$18. T = 180 \text{ seg} \quad m = 800 \text{ kg} \quad \text{m del motor} = 1000 \text{ kg} \quad h = 300 \text{ m}$$

$$P = m \cdot g \cdot h \div t$$

$$P = 1000 + 800 \cdot 9.81 \cdot 300 = 5297400 \text{ N}$$

$$P = 5297400 \div 180 = 29430 \text{ W}$$

$$19. T = 120 \text{ seg} \quad m = 130 \text{ kg} \quad d = 10 \text{ m}$$

$$F = m \cdot g \quad T = F \cdot d \quad P = T \div t$$

$$F = 130 \cdot 9.81 = 1275.30 \text{ N}$$

$$T = 1275.30 \cdot 10 = 12753 \text{ J}$$

$$P = 12753 \text{ J} \div 120 \text{ seg} = 106.28 \text{ W}$$

$$20. T = 1 \text{ mm} = 60 \text{ seg} \quad m = 130 \text{ kg} \quad d = 130 \text{ m} \quad F = 1275.30 \text{ N}$$

$$T = F \cdot d \quad P = T \div t$$

$$T = 1275.30 \cdot 10 = 12753 \text{ J}$$

$$P = 12753 \div 60 = 212.55 \text{ W} = (212.55 \cdot 7.33 \div 1000) = 0.28 \text{ CV}$$

$$21. m = 2 \text{ kg} \quad h = 3 \text{ m}$$

$$E_p = m \cdot g \cdot h$$

$$E_p = E_{cf}$$

$$a) E_p = 2 \text{ kg} \cdot 10 \text{ m/s}^2 \cdot 3 \text{ m} = \underline{60 \text{ J}}$$

$$b) \underline{60 \text{ J}}$$

$$22. v = 30 \text{ m/s} \quad F = 300 \text{ N} \quad m = 200 \text{ kg} \quad u = 0 \quad a = 2.5 \text{ m/s}^2$$

$$d = 180 \text{ m}$$

$$E_c = \frac{m \cdot v^2}{2}$$

$$b) E_c = 200 \cdot (30)^2$$

$$E_c = \frac{200 \cdot 900}{2} = \underline{90000 \text{ J}}$$

$$23. d = 6 \text{ m} \quad F = 122.62 \text{ N} \quad m = 200 \text{ kg} \quad v_i = E_{ci} = 0$$

$$T = 122.62 \text{ N} \cdot 6 \text{ m} = 735.72 \text{ J} \quad v = \sqrt{2 \cdot 735.72} = 250 = 2.43 \text{ m/s}$$

$$24. v = 500 \text{ m/s} \quad m = 0.006 \text{ kg}$$

$$E_c = \frac{m \cdot v^2}{2} \quad E_c = 0.006 \cdot 250000 = E_c = 0.006 \cdot 250000 = \underline{750 \text{ J}}$$

$$25. v = 13 \text{ m/s} \quad p = 3.6 \text{ N} \cdot \text{m}$$

$$E_c = \frac{m \cdot v^2}{2} \quad p = m \cdot v \quad m \cdot p = v$$

$$m \cdot 3.6 = 9.81 = \frac{0.006 \cdot 250000}{2} = 0.37 \text{ kg} \quad E_c = \frac{0.37 \cdot 169}{2} = \underline{31.2 \text{ J}}$$

$$26. E_c = 225 \text{ J} \quad m = 5 \text{ kg} \quad E_c = \frac{m \cdot v^2}{2} \quad v = \sqrt{\frac{2 E_c}{m}}$$

$$v = \sqrt{\frac{2 \cdot 225 \text{ J}}{5 \text{ kg}}} = \sqrt{90} = 9.49 \text{ m/s}$$

$$27. h = 25 \text{ m} \quad m = 3 \text{ kg} \quad E_p = m \cdot g \cdot h$$

$$E_p = 3 \cdot 9.81 \cdot 25 = \underline{732.8 \text{ J}}$$

$$28. E_p = 80 \text{ J} \quad m = 6 \text{ kg} \quad E_p = m \cdot g \cdot h \quad h = E_p \div m \cdot g$$

$$h = \frac{80 \text{ J}}{9.81 \text{ m/s}^2 \cdot 6 \text{ kg}} = \frac{80}{58.86} = \underline{1.38 \text{ m}}$$