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Parcial: 1

Nombre de la Materia: Física

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Nombre de la Licenciatura: RH

Cuatrimestre: Quinto

1. Trabajo $T = F \cdot d$

Datos
 $F = 30 \text{ N}$
 $d = 60 \text{ cm} \rightarrow = 0.6 \text{ m}$

a) $(30 \text{ N}) \cdot (0.6 \text{ m})$

$T = 18 \text{ J}$

b) $T = F \cos \alpha \cdot d$

$T = (30) \cos 30^\circ (0.6 \text{ m})$

$T = 15.58811 \text{ J}$

2. Trabajo $T = m \cdot g \cdot d$ $F = m \cdot g$

Datos
 $m = 25 \text{ kg}$
 $g = 9.81 \text{ m/s}^2$
 $d = 6.4 \text{ m}$

$F = m \cdot g = (25 \text{ kg}) (9.81 \text{ m/s}^2)$
 $F = 245.25 \text{ N}$

$T = F \cdot d = 245.25 (6.4) = 1,568$

3. Trabajo $T = F \cdot d$

Datos
 $F = 3 \text{ N}$
 $d = 1200 \text{ cm}$
 $\rightarrow 12 \text{ m}$

$T = (3 \text{ N}) \cdot (12 \text{ m})$

$T = 36 \text{ J}$

b) $F \cdot \cos \alpha \cdot d$

$T = 58860 \cdot 0.65 \cdot 150$

$T = 5,738850 \text{ J}$

4. Datos
 $m = 6000 \text{ kg}$
 $d = 150 \text{ m}$
 $\alpha = 30^\circ$
 $M = 0.65$

$F = (6000)(9.81) = 58860$

5. Trabajo $T = F \cdot d$ a) a)

Datos
 $F = 12 \text{ N}$
 $d = 7 \text{ m}$
 $T = (12 \text{ N}) \cdot (7 \text{ m})$
 $T = 84 \text{ J}$

b) $T = 84 \text{ J}$

6. Datos a) $F = m \cdot g$ $T = F \cdot d$
 $m = 50 \text{ kg}$ $F = (50 \text{ kg})(9.81 \text{ m/s}^2)$
 $d = 8 \text{ m}$ $F = 490.5 \text{ N}$
 $T = ?$

$T = (490.5 \text{ N})(8 \text{ m}) = 3924 \text{ J}$

b) 3924 J

7. ~~Handwritten scribble~~

8. $m = 20 \text{ ton} = 20000 \text{ kg}$ $F = 20000 \text{ N}$ $v = 36 \text{ km/hr}$

$$T = m \cdot g \cdot d \quad d = \frac{m \cdot g}{F} \quad d = \frac{20000 \cdot 9.81}{20000} = 9.81$$

$$T = \frac{20000 \text{ kg} \cdot 9.81 \cdot 9.81}{m \cdot g \cdot d} = 1924722$$

9. Datos
 $m = 65 \text{ kg}$
 $d = 10 \text{ m}$
 $F = 300 \text{ N}$

$$T = (65 \text{ kg}) (9.81 \text{ m/s}^2) (10 \text{ m}) = 6376.5 \text{ J} //$$

$$T = m \cdot g \cdot d$$

10. $F = 24 \text{ N}$ $d = 10 \text{ m}$

a) 30° $T = F \cos \alpha \cdot d$
 $T = (24) (\cos 30^\circ) (10 \text{ m})$
 $T = 207.84 \text{ J} //$

b) 90° $T = F \cos \alpha \cdot d$
 $T = (24) (\cos 90^\circ) (10 \text{ m})$
 no se efectua trabajo en el cuerpo porque $\cos 90^\circ = 0 //$

c) 120°
 $T = F \cos \alpha \cdot d$
 $T = (24) \cos 120^\circ (10 \text{ m})$
 $T = 120 \text{ J} //$

11. $F = m \cdot g$ $T = F \cdot d$ $P = \frac{T}{t}$ Datos $m = 1500 \text{ kg}$ $h = 150 \text{ m}$ $t = 2 \text{ min} = 120 \text{ s}$

$$F = (1500 \text{ kg}) (9.81 \text{ m/s}^2) = 14715 \text{ N}$$

$$T = (14715 \text{ N}) (15 \text{ m}) = 220725 \text{ J}$$

$$P = \frac{T}{t} = \frac{220725 \text{ J}}{120} = 1839.375 \text{ W} //$$

b) kW
 $1839.375 \text{ W} \cdot \frac{1}{1000} \text{ kW} = 1.839375 \text{ kW}$
 $\text{kW} = 1.839375$

c) CV
 $1.839375 \text{ kW} \cdot \frac{1.33 \text{ CV}}{1 \text{ kW}} = 2.44636875 \text{ CV}$
 $\text{CV} = 2.44636875$

12. $F = m \cdot g$
 $v = 50 \text{ km/hr} = 40 \text{ CV}$
 $v = \frac{d}{t}$ $P = 50 \text{ km/t} = 1 \text{ HR} \rightarrow 3600 \text{ seg}$
 $F = 50,000 \text{ m}$ $t = (1030.07 \text{ W}) (3600) = 3708252$
 $t = 3600 \text{ s}$ $F = T/d = (3708252) \div (50000)$
 $P = 1030.07 \text{ W}$ $F = 74.16 \text{ N} //$ $T = F \cdot d$ $F = m \cdot g$

13. Datos $m = 150 \text{ kg}$ $d = 18 \text{ m}$ $T = 40 \text{ s}$

a) W
 $P = \frac{61803 \text{ J}}{40 \text{ s}} = 1545.075 \text{ W} //$

$$T = F \cdot d = (4133.5) (18) = 61803 \text{ J}$$

$$F = 150 \cdot 9.81 = 8433.5 \text{ N}$$

b) kW
 $1.545075 \text{ W} \cdot \frac{1}{1000} \text{ kW} = 1.545075 \text{ kW}$
 $\text{kW} = 1.545075$

14. Data
 $m = 25000 \text{ kg}$
 $h = 1.6 \text{ km} \rightarrow 1600 \text{ m}$
 $t = 5 \text{ min} = 300 \text{ s}$

$$P = \frac{T}{t} \quad T = F \cdot d \quad F = m \cdot g$$

$$F = (25000 \text{ kg})(9.81 \text{ m/s}^2) = 245250 \text{ N}$$

$$T = (245250 \text{ N})(1600 \text{ m}) = 392400000 \text{ J}$$

$$P = \frac{T}{t} = \frac{392400000}{300 \text{ s}} = 1308000 \text{ W}$$

$$\text{kW} = 1308 \text{ kW}$$

$$\pm \text{kW} = 1.33 \text{ c.v.}$$

$$1308000 \text{ W} \cdot \frac{1.33}{1} \text{ c.v.} \\ \text{c.v.} = 171396000 \text{ //}$$

15.

$$\text{c.v.} = 20$$

$$v = 50 \text{ m/min}$$

16. $P = m \cdot g$ (P22)

$$\text{c.v.} = 8$$

$$v = 25 \text{ km/hr}$$

$$M = 0.2$$

17. $P = 250 \text{ kW}$ $m = 5000 \text{ kg}$ $F = 9810 \text{ N}$ $d = 1$

$$d = m \cdot g$$

$$v = \frac{T}{F}$$

$$\frac{\sqrt{2(9810)(1)}}{1000}$$

$$v = 19.62 \text{ m/s}$$

$$F = m \cdot g = (5000)(9.81) = 9810 \text{ N}$$

$$d = m \cdot g$$

$$d = \frac{9810}{9810} = 1$$

18. $m = 80 \text{ kg}$ $h = 300 \text{ m}$ $t = 8 \text{ min} = 480 \text{ s}$

$$P = \frac{T}{t}$$

$$P = \frac{235440}{480 \text{ s}}$$

$$F = m \cdot g = (80)(9.81) = 784.8 \text{ N}$$

$$P = 1308$$

$$T = F \cdot d = (784.8)(300 \text{ m}) = 235440 \text{ J}$$

$$T = m \cdot g \cdot d \quad T = (80)(9.81)(300) = 235440 \text{ //}$$

19. $m = 130 \text{ kg}$ $d = 10 \text{ m}$ $t = 2 \text{ min} \rightarrow 120 \text{ s}$

$$P = \frac{T}{t} = \frac{12753 \text{ J}}{120} = 106.275 \text{ //}$$

$$T = F \cdot d = (12753 \text{ N})(10 \text{ m}) = 12753 \text{ J}$$

$$F = m \cdot g = (130)(9.81) = 12753 \text{ N}$$

20. $P = \frac{T}{t}$ $T = F \cdot d$ $F = m \cdot g$ Datos: $d = 20 \text{ m}$ $t = 60 \text{ s}$
 $m = 1275.3 \text{ kg}$

$$F = (1275.3 \text{ kg})(9.81 \text{ m/s}^2) = 1275.3 \text{ N}$$

$$T = (1275.3 \text{ N})(20 \text{ m}) = 25,506 \text{ J}$$

$$P = \frac{T}{t} = \frac{25506}{60} = \underline{425.1 \text{ W}}$$

$$425.1 \text{ W} \cdot \frac{1 \text{ kW}}{1000 \text{ W}} = 0.4251 \text{ kW} \cdot \frac{1.33 \text{ CV}}{1 \text{ kW}} = \underline{\underline{0.5653 \text{ CV}}}$$

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

a) $E_p = mgh$

$$(2 \text{ kg}) \cdot (9.81 \text{ m/s}^2) \cdot (3 \text{ m}) = 58.86$$

b) $T = E_p$ 58.86 //

22. Distancia

$$M = 200 \text{ kg}$$

$$V = 30 \text{ m/s}$$

$$F = 500 \text{ N}$$

$$F \cdot d = m \cdot a \cdot d$$

$$F \cdot d = m \cdot g$$

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

$$d = \frac{(200 \text{ kg})(9.81)}{500 \text{ N}} = 3.924 \text{ J}$$

23. velocidad

$$F = 12.5 \text{ kg} \cdot 9.81 \text{ m/s}^2$$

$$9.81 = 122.62$$

$$D = 6$$

$$M = 250 \text{ kg}$$

$$v = \sqrt{\frac{2(F)(d)}{M}}$$

$$v = \sqrt{\frac{2(122.62)(6)}{250}}$$

$$v = \frac{(245.24)(6)}{250} = 2.94288$$

$$v = \underline{\underline{11.77 //}}$$

24. E.C una bala de 6gr $v = 500 \text{ m/s}$

$$m = 0.006 \text{ kg}$$

$$v = 500 \text{ m/s}$$

$$E.C = \frac{m \cdot v^2}{2}$$

$$E.C = \frac{(0.006 \text{ kg}) (500 \text{ m/s})^2}{2}$$

$$E.C = 1.5 \text{ J}$$

25. peso 3.0 NW $v = 13 \text{ m/s}$ E.C

$$M = \frac{P}{g}$$

$$\frac{(3.0)}{(9.81)} = 0.30$$

$$E.C = \frac{m \cdot v^2}{2}$$

$$\frac{(0.30) \cdot (13)^2}{2} = 25.5 \text{ J}$$

26. velocidad

$$M = 5 \text{ kg} \rightarrow 49.05 \text{ N}$$

$$E.C = 225 \text{ J}$$

$$g = 9.81$$

$$d = 0.9 \text{ J}$$

$$P = \frac{m \cdot g}{F}$$

$$\frac{(5) \cdot (9.81)}{49.05}$$

$$0.9$$

$$v = \sqrt{2(F)(d)}$$

$$v = \sqrt{2(49.05)(0.9)}$$

$$v = (9.81) \cdot (18) = 176.58$$

$$v = 35.316$$

27. E.P

$$m = 3 \text{ kg}$$

$$h = 2.5 \text{ m}$$

$$g = 9.81$$

$$E.P = m \cdot g \cdot h$$

$$(3 \text{ kg}) \cdot (9.81) \cdot (2.5) = 73.57 \text{ J}$$

28. Altura

$$M = 6 \text{ kg}$$

$$E.P = 60 \text{ J}$$

$$g = 9.81$$

$$6 \times 9.81 = 58.86 \text{ N}$$

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

$$d = \frac{(6) (9.81)}{58.86 \text{ N}}$$

$$\frac{58.86}{58.86} = 1$$

29. E.P

$$m = 5 \text{ kg}$$

$$h = 10 \text{ m/s}$$

$$g = 9.81$$

$$A) E.P = m \cdot g \cdot h$$

$$(5) (9.81) (10) = 490.5 \text{ J}$$

$$B) E.C = \frac{Mv^2}{2}$$

$$v = \sqrt{2(F)(d)}$$

$$5 \text{ kg} \cdot 9.81 = 49.05 \text{ N}$$