

دیرستان احسان

پاسخنامه آزمون فیزیک - کار و انرژی + دینامیک (98T0618)

f_{s1} $K = 0$ $f_{s1} = 50 - 50 = 0 N$ $F' = 50 + 50 = 100 N$ (1)
 $N = 50$ $W = 50$ $f_s = 50$
 $F' - F = 100 - 50 = 50 N$

گزینه ۲ صحیح است (۲)

$$f_{s, max 1} = \frac{\sqrt{2}}{2} \times 50 \times \frac{\sqrt{2}}{2} = 25 > m_1 g \sin 45 - m_2 g = 20 \mu (۳)$$

$m_2 g = T_2 = 10 N$
 $T_2 = T_1 = 10 N$
 $m_1 g \sin 45 = f_{s1} + T_1$
 $25 = f_{s1} + 10 \Rightarrow f_{s1} = 15 N$

$f_k = \mu mg$ N T F $f_k = \mu N' = \mu mg$

$T - \mu mg = ma$
 $F - T - \mu mg - \mu mg = T ma$
 $F - 2\mu mg = 2ma = 2\mu mg$
 $F = 4\mu mg$

$\Delta P = F \times t = 4\mu mg$

$$a = \frac{v}{R}$$

$v_A = v_B = v$
 $\frac{a_A}{a_B} = \left(\frac{v_A}{v_B}\right)^2 \times \frac{R_B}{R_A} = 4$

$W = \frac{GM_e M}{r^2} = \frac{m v^2}{r} = 14 \times 10^9 \times \frac{4}{1 \times 10^4} = 56 \times 10^5 = 5.6 \times 10^6 N$

$F - T - f_k = m a$
 $T - m g = m a$
 $F - f_k - m g = (m_1 + m_2) a = 0$
 $100 - f_k - 10 = 0 \Rightarrow f_k = 90 N$

$0 - f_k - T' = m a'$
 $T' - m_1 g = m_1 a'$
 $0 - (f_k + m_1 g) = (m_1 + m_2) a'$
 $-100 = 20 a' \Rightarrow a' = -5 m/s^2$

۷- تجربی

$$F - \cancel{r}mg - T = \cancel{r}ma$$

$$T - mg = ma$$

$$F - \cancel{r}mg = \cancel{r}ma$$

$$\left. \begin{aligned} \cancel{r} &= \cancel{r}(mg + ma) \\ T &= (mg + ma) \end{aligned} \right\} \Rightarrow \frac{T}{F} = \frac{1}{2}$$

گزینه ۱ صحیح است

(۸)

$$W = mgr$$

$$\cancel{v} = \cancel{r} \cdot gr \Rightarrow gr = \cancel{v}^2$$

$$\frac{gr}{gR} = \left(\frac{Re}{Re+h} \right)^2$$

گزینه ۲ صحیح است

$$\frac{\cancel{v}^2}{1} = \frac{\cancel{v}^2}{1} \cdot \left(\frac{Re}{Re+h} \right)^2 \Rightarrow \frac{Re}{Re+h} = \frac{1}{1}$$

$$1 \cdot Re = \cancel{v} Re + \cancel{v} h$$

$$h = \frac{\cancel{v}}{1} Re$$

$$W_{mg} = mg(\Delta h) = \cancel{v} \times \left(\frac{\cancel{v}^2}{1} - \frac{\cancel{v}^2}{1} \right) = \cancel{v} \cdot \cancel{v}^2$$

گزینه ۱ صحیح است

$$W = \Delta K$$

$$W_{mg} + W_F + W_N + W_{PF} = \frac{1}{2} m v^2 - \frac{1}{2} m v_0^2$$

$$-mgh + F \times \Delta x + 0 + W_{PF} = \frac{1}{2} m v^2$$

$$-120 + 20 \times 10 + W_{PF} = \frac{1}{2} \times 2 \times v^2 = 40$$

$$W_{PF} = -70 \text{ J}$$

$$Q = -W_{PF} = 70 \text{ J}$$

$$(S_i + S_f) = W_F = \Delta K = \frac{1}{2} \times 2 \times 4^2 = 16$$

$$S_f = + \frac{E \times A}{r} = -14$$

$$S_i - 14 = 16$$

$$S_i = 30 = \frac{1}{2} \times 2 \times v^2$$

$$v^2 = 30 \text{ m/s}$$

گزینه ۳ صحیح است

$$W = \Delta K$$

$$10 = \frac{1}{2} \times 2 \times ((\cancel{v}v) - v^2) \Rightarrow \cancel{v}^2 = 10 \Rightarrow \cancel{v} = 3 \text{ m/s}$$

$$\Delta v = 4 - 2 = 2 \text{ m/s}$$

گزینه ۲ صحیح است

$$W = \Delta K$$

$$W_F + W_{PF} + W_N + W_{mg} = \frac{1}{2} m v^2 - \frac{1}{2} m v_0^2$$

$$W_F - 12 \times 2 = \frac{1}{2} \times 2 \times 4^2$$

$$W_F = 72 \text{ J}$$

$$\Delta U = -W_F = -72 \text{ J}$$

گزینه ۱ صحیح است

$$W = \Delta K$$

$$mg(\Delta h) = K_f - K_i$$

$$K_f = 80 \times 1.5 = 120 \text{ J}$$

$$K_i = 70 \text{ J}$$

گزینه ۱ صحیح است

$$\frac{1}{2} \cancel{v} v_B^2 = \frac{\cancel{v}}{R} \times \cancel{v} g R$$

$$v_B = \sqrt{1.5 g R}$$

گزینه ۳ صحیح است

$$K_A + \cancel{v} A = K_B + K_B$$

انرژی مکانیکی در هر نقطه

$$\cancel{v} g R = 2 \cancel{v} g R + \frac{1}{2} \cancel{v} v_B^2$$

دایره انتاب شود

$$2 \cancel{v} g R = \frac{1}{2} v_B^2 \Rightarrow v_B = \sqrt{4 \cancel{v} g R}$$

گزینه ۱ صحیح است