

SOLUZIONI 17/7/07 - FARMACIA

Es. 1

$$E_p = mgh \Rightarrow m = \frac{E_p}{gh} = \frac{35.28 \text{ J}}{9.8 \frac{\text{m}}{\text{s}^2} \cdot 9 \text{ m}} = 0.4 \text{ kg}$$

$$E_p = mgh' \Rightarrow E_p = 0.4 \cdot 9.8 \cdot 20 \text{ J} = 78.4 \text{ J}$$

$$E_{\text{persa}} = 78.4 - 35.28 = 43.12 \text{ J}$$

Es. 2

$$E = \frac{1}{2} m \omega^2 A^2 \Rightarrow m = \frac{2 \cdot E}{\omega^2 A^2} = \frac{2 \cdot 2.5}{(0.4)^2 (20)^2} = 0.078 \text{ kg}$$

$$v = A\omega = 20 \cdot 0.4 = 8 \text{ m/s}$$

Es. 3

$$(a) M_1 (T_2 - T_3) = M_2 (T_1 - T_2)$$

$$M_1 (20 - 0) = 0.5 (80 - 20)$$

$$M_1 = 0.5 \cdot \frac{60}{20} = 1.5 \text{ kg}$$

$$(b) \frac{V_{gh}}{V_a} = \frac{\rho_{gh}}{\rho_a} = 0.89 \quad (89\%)$$

Es. 4

$$PV = nRT$$

$$\Delta U = Q + P\Delta V =$$

$$= -5000 \text{ J} + 10^5 \text{ Pa} \cdot 20 \cdot 10^{-3} \text{ m}^3 =$$

$$(1 \text{ atm} \approx 10^5 \text{ Pa}) = -5000 + 2000 \text{ J} = -3000 \text{ J}$$

Es. 5

ALTO

$$4 \text{ serie con } (1//3) \\ \Rightarrow \frac{1}{C_{eq}} = \frac{1}{4} + \frac{1}{1+3} = \\ = \frac{1}{2} \Rightarrow C_{eq} = 2 \mu\text{F}$$

BASSO

$$8 \text{ serie con } (6//2) \\ \Rightarrow \frac{1}{C'_{eq}} = \frac{1}{8} + \frac{1}{6+2} = \\ = \frac{1}{4} \Rightarrow C'_{eq} = 4 \mu\text{F}$$

FINALE

$$C_{eq} // C'_{eq}$$

\Rightarrow

$$C_{TOT}^{AB} = C_{eq} + C'_{eq}$$

$$= 6 \mu\text{F}$$