



ΑΠΑΝΤΗΣΕΙΣ

Θεμα Α1

$$A_1 - \gamma, A_2 - \gamma, A_3 - \alpha, A_4 - \begin{matrix} \alpha - 2 \\ \beta - 1 \\ \gamma - 5 \\ \delta - 3 \end{matrix} \quad A_5 - \begin{matrix} \alpha - \Lambda \\ \beta - \Sigma \\ \gamma - \Sigma \\ \delta - \Lambda \\ \epsilon - \Sigma \end{matrix}$$

Θεμα Β

B₁) Σωστή απάντηση η (γ)
Σύμφωνα με τον 3^ο Ν.Ν.

B₂) Αν εκτελεστεί ελ. κίνηση τότε $h = 20\text{m}$.
Αφ' αφοσιωνται τα β και γ οπότε
βλέπουμε είναι η απάντηση (α)

Θεμα Γ

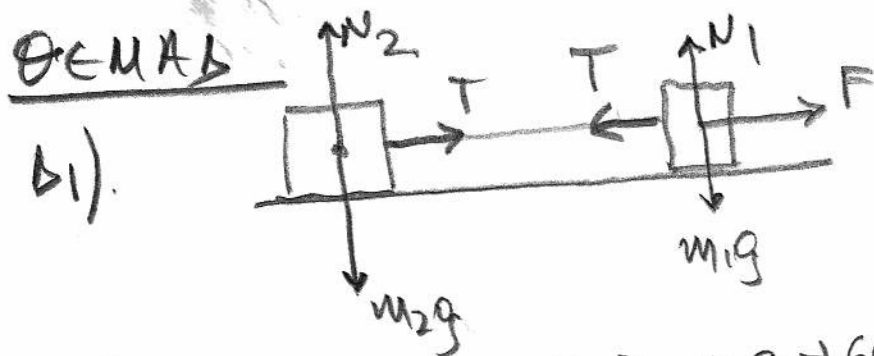
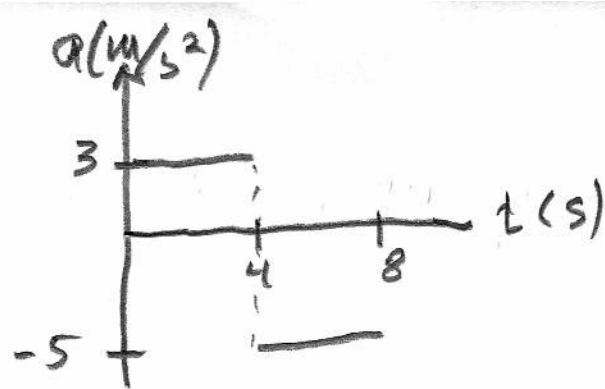
$$\Gamma_1) a_1 = \frac{\Delta v}{\Delta t} = \frac{20 - 8}{4} = \frac{12}{4} = 3\text{m/s}^2$$

$$a_2 = \frac{\Delta v}{\Delta t} = \frac{0 - 20}{4} = -5\text{m/s}^2$$

$$\Gamma_2) x = v_0 t + \frac{1}{2} a t^2 = 8 \cdot 4 + \frac{1}{2} 3 \cdot 4^2 = 32 + 24 = 56\text{m}$$

$$\Gamma_3) v = v_0 + a t_1 \Rightarrow 11 = 8 + 3 t_1 \Rightarrow t_1 = 1\text{s}$$

Γ₄)



$$\sum F = m \cdot a \Rightarrow F - T = m_1 a \Rightarrow 600 - T = 10a \quad (1)$$

$$\sum F = m \cdot a \Rightarrow T = m_2 a \Rightarrow T = 20a \quad (2)$$

$$(1) + (2) : 600 = 30a \Rightarrow a = 20 \text{ m/s}^2.$$

$$\Delta 2) (2) : T = 20 \cdot 20 \Rightarrow T = 400 \text{ N}.$$

$$\Delta 3) \text{ To } \Sigma_1 \text{ και τα } \text{ταχύτητα } v = at \Rightarrow v = 20 \cdot 5 \Rightarrow v = 100 \text{ m/s}.$$

$$\text{Αρα } v = v_0 - a't \Rightarrow 0 = 100 - a' \cdot 2 \Rightarrow a' = 50 \text{ m/s}^2. \text{ (επιβράδυνση)}$$

$$\text{Και } \text{ισχύει } \sum F = ma \Rightarrow T - F = m_1 a' \Rightarrow T = 600 + 10 \cdot 50$$

$$T = 1100 \text{ N}.$$

$$T = \mu \cdot N \Rightarrow T = \mu \cdot m_1 g \Rightarrow 1100 = \mu \cdot 100 \Rightarrow \mu = 11$$

$$\Delta 4) \text{ Στα } 2 \text{ s } \text{ το } \Sigma_1 \text{ έχει ταχύτητα } x = v_0 t - \frac{1}{2} a' t^2 \Rightarrow$$

$$x = 100 \cdot 2 - \frac{1}{2} \cdot 50 \cdot 2^2 \Rightarrow x = 200 - 100 \Rightarrow x = 100 \text{ m}.$$

$$W_T = -Tx \Rightarrow W_T = -1100 \cdot 100 \Rightarrow W_T = -110.000 \text{ J}.$$