

ΑΠΑΝΤΗΣΕΙΣ ΔΙΑΓΩΝΙΣΜΑΤΟΣ
ΦΥΣΙΚΗ Α ΛΥΚΕΙΟΥ
18_11_23

Θέμα Α

A₁) α - 2 , β - 3 , γ - 4 , δ - 1

A₂) α - 2 , β - 1 , γ - 3 , δ - 4

A₃) γ

A₄) β

A₅) α - λάθος , β - σωστό , γ - λάθος , δ - σωστό , ε - σωστό

Θέμα Β

B₁) α)

Χρονική στιγμή t (s)	Ταχύτητα u (m/s)	Διάστημα s (m)
0	0	0
1	4	2
2	8	8
4	16	32

β) Γραμμή 2: $a = \frac{u}{t} = \frac{4}{1} = 4 \text{ m/s}^2$, $s = \frac{1}{2} \cdot a \cdot t^2$ ή $s = \frac{1}{2} \cdot 4 \cdot 1^2$ ή $s = 2 \text{ m}$

Γραμμή 3: $s = \frac{1}{2} \cdot a \cdot t^2$ ή $8 = \frac{1}{2} \cdot 4 \cdot t^2$ ή $t = 2 \text{ s}$, $u = a \cdot t$ ή $u = 4 \cdot 2 = 8 \text{ m/s}$

Γραμμή 4: $u = a \cdot t$ ή $t = \frac{u}{a}$ ή $t = \frac{16}{4}$ ή $t = 4 \text{ s}$, $s = \frac{1}{2} \cdot a \cdot t^2$ ή $s = \frac{1}{2} \cdot 4 \cdot 4^2$ ή $s = 32 \text{ m}$

B₂) A) - γ

$$B) S_1 = \frac{1}{2} \cdot a \cdot t_1^2$$

$$S_2 = \frac{1}{2} \cdot a \cdot t_2^2 \quad \text{ή} \quad S_2 = \frac{1}{2} \cdot a \cdot (2t_1)^2 \quad \text{ή} \quad S_2 = \frac{1}{2} \cdot a \cdot 4 \cdot t_1^2 \quad \text{ή} \quad S_2 = 4 \cdot \frac{1}{2} \cdot a \cdot t_1^2 \quad \text{ή} \quad S_2 = 4S_1$$

Θέμα Γ

$$\Gamma_1) \alpha) u = u_0 - a \cdot t \quad \text{ή} \quad 10 = 20 - 2t \quad \text{ή} \quad 2t = 10 \quad \text{ή} \quad t = 5s$$

$$\beta) s = u_0 \cdot t - \frac{1}{2} \cdot a \cdot t^2 \quad \text{ή} \quad s = 20 \cdot 5 - \frac{1}{2} \cdot 2 \cdot 5^2 \quad \text{ή} \quad s = 100 - 25 = 75 \text{ m}$$

$$\Gamma_2) \alpha) S_1 + S_2 = d \quad \text{ή} \quad u_1 \cdot t + u_2 \cdot t = 1000 \quad \text{ή} \quad 25t = 1000 \quad \text{ή} \quad t = 40 \text{ s}$$

$$\beta) S_1 = u_1 \cdot t \quad \text{ή} \quad S_1 = 10 \cdot 40 \quad \text{ή} \quad S_1 = 400 \text{ m}$$

$$S_2 = u_2 \cdot t \quad \text{ή} \quad S_2 = 15 \cdot 40 \quad \text{ή} \quad S_2 = 600 \text{ m}$$

Θέμα Δ

Δ₁)

0-2 sec: ΕΟΕ⁺ χωρίς u₀

2-4 sec: ΕΟΚ

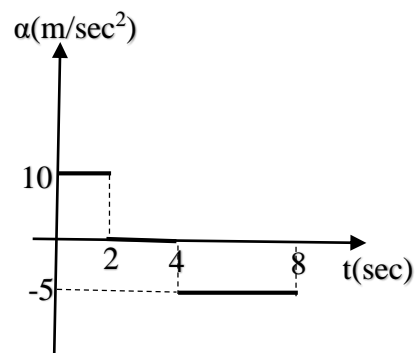
4-8 sec: ΕΟΕ⁻

Δ₂)

$$\mathbf{0-2 \text{ sec:}} \quad a_1 = \frac{\Delta u_1}{\Delta t_1} = \frac{20}{2} = 10 \frac{\text{m}}{\text{sec}^2}$$

$$\mathbf{2-4 \text{ sec:}} \quad a_2 = \frac{\Delta u_2}{\Delta t_2} = \frac{0}{2} = 0 \frac{\text{m}}{\text{sec}^2}$$

$$\mathbf{4-8 \text{ sec:}} \quad a_3 = \frac{\Delta u_3}{\Delta t_3} = \frac{-20}{4} = -5 \frac{\text{m}}{\text{sec}^2}$$

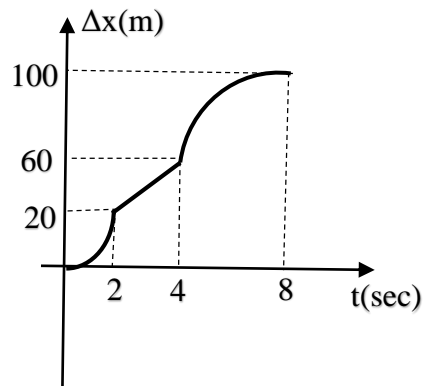


Δ3)

$$\Delta x_1 = E_1 = \frac{20 \cdot 2}{2} = 20 \text{ m}$$

$$\Delta x_2 = E_2 = 2 \cdot 20 = 40 \text{ m}$$

$$\Delta x_3 = E_3 = \frac{20 \cdot 4}{2} = 40 \text{ m}$$



Δ4) $s_{ολ} = |E_1| + |E_2| + |E_3| = 20 + 40 + 40 = 100 \text{ m}$

$$\Delta x = E_1 + E_2 + E_3 = 20 + 40 + 40 = 100 \text{ m}$$

Δ5) $u_{\mu} = \frac{s_{ολ}}{t_{ολ}} = \frac{100}{8} = 12,5 \frac{\text{m}}{\text{sec}}$