

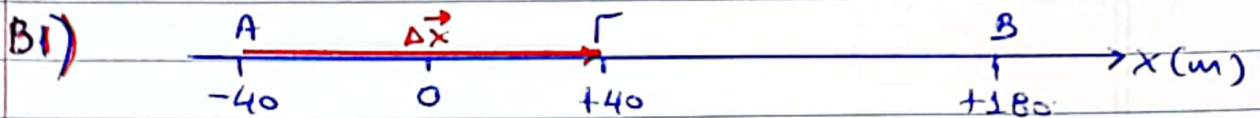
# ΛΥΣΕΙΣ ΔΙΑΓΩΝΙΣΜΑΤΟΣ

ΦΥΣΙΚΗΣ Α' ΛΥΚΕΙΟΥ 20/10/2024

## ΘΕΜΑ Α

- A1) α A2) γ A3) γ A4) δ  
 A5) Λ, Λ, Σ, Σ, Σ

## ΘΕΜΑ Β



a)  $\Delta x = x_3 - x_1 = (+40\text{m}) - (-40\text{m}) \Rightarrow \Delta x = +80\text{m}$

β)  $S_{\text{ολ}} = S_{AB} + S_{\Gamma B} = 220\text{m} + 140\text{m} \Rightarrow S_{\text{ολ}} = 360\text{m}$

B2) I)  $x = 100 - 20t$  (SI)

Από σύγκριση:  $x_0 = +100\text{m}$  και  $v = -20\text{m/s}$

Αρα ΣΩΣΤΟ τo (δ)

II)  $\Delta x = v \Delta t = -20(8-4)\text{m} = -20 \cdot 4 \Rightarrow \Delta x = -80\text{m}$

Αρα ΣΩΣΤΟ τo (δ)

## B3)

I) 0-5s:  $v_1 = \frac{\Delta x_1}{\Delta t_1} = \frac{50-0}{5-0} \text{ m/s} \Rightarrow v_1 = 10\text{m/s}$

5s-10s:  $v_2 = \frac{\Delta x_2}{\Delta t_2} = \frac{50-50}{10-5} \Rightarrow v_2 = 0$

10s-15s:  $v_3 = \frac{\Delta x_3}{\Delta t_3} = \frac{-40-50}{15-10} \text{ m/s} = \frac{-90}{5} \Rightarrow v_3 = -18\text{m/s}$

Αρα  $|v_3| > |v_1| > |v_2|$

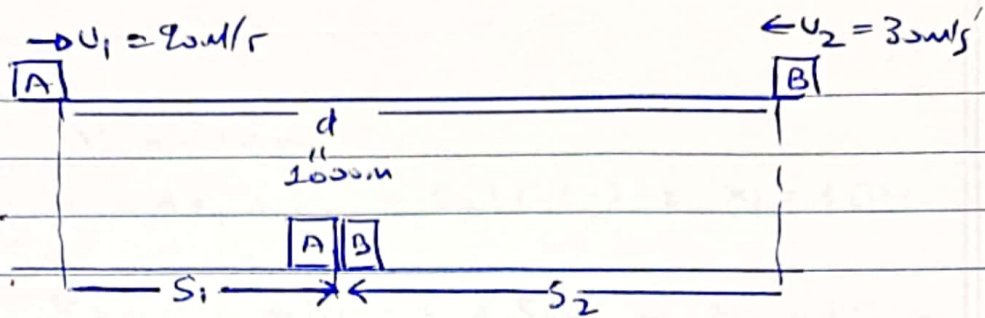
ΣΩΣΤΟ τo (β)

II)  $S_1 = |\Delta x_1| = 50\text{m}$ ,  $S_2 = 0$ ,  $S_3 = |\Delta x_3| = 90\text{m}$

Αρα  $S_{\text{ολ}} = S_1 + S_2 + S_3 \Rightarrow S_{\text{ολ}} = 140\text{m}$

ΣΩΣΤΟ τo (γ)

B4)



ΣΥΝΑΝΤΗΣΗ

$$d = s_1 + s_2 \Rightarrow 1000 = u_1 t + u_2 t \Rightarrow 1000 = 20t + 30t \Rightarrow 1000 = 50t \Rightarrow \boxed{t = 20 \text{ s}}$$

a) 1000

b)  $s_1 = u_1 t = 20 \cdot 20 \Rightarrow s_1 = 400 \text{ m}$ , Σ 0 Σ 10

ΘΕΜΑ Γ

Γ1) 0-25: Εοκ,  $\Delta x_1 = E_1 = 60 \text{ m}$ ,  $s_1 = 60 \text{ m}$

25-45: Ακίνητος,  $\Delta x_2 = 0$ ,  $s_2 = 0$

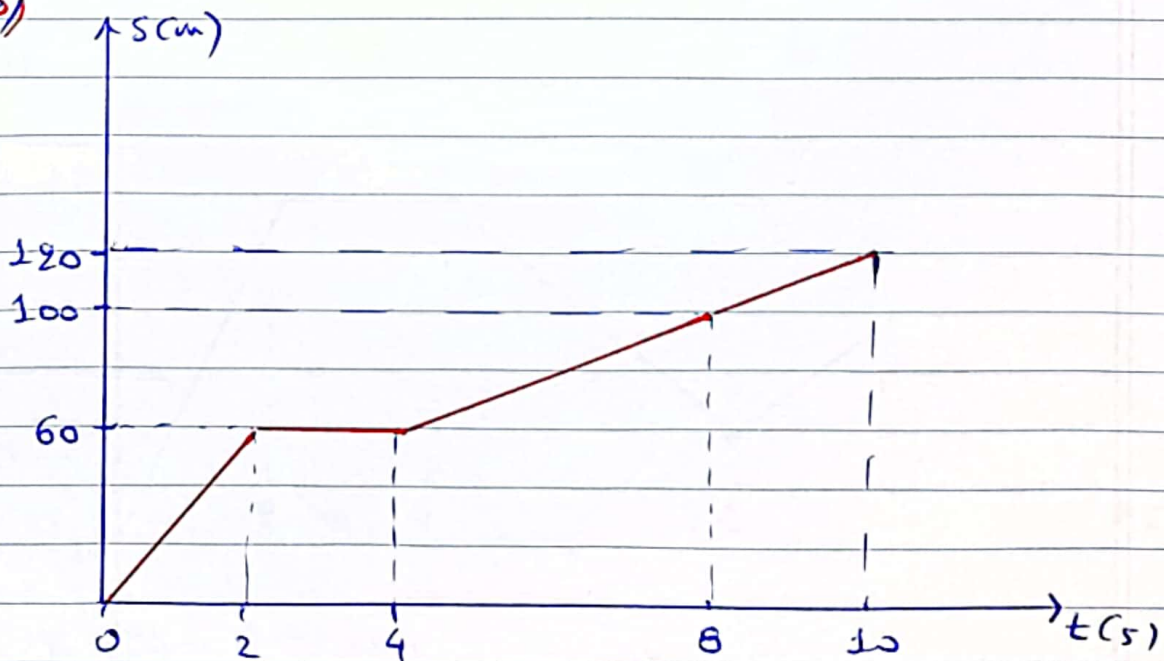
45-85: Εοκ με Αντιθετική Θώρα,  $\Delta x_3 = E_3 = -40 \text{ m}$ ,  $s_3 = 40 \text{ m}$

85-105: Εοκ,  $\Delta x_4 = E_4 = 20 \text{ m}$ ,  $s_4 = 20 \text{ m}$

$$s_{\text{ολ}} = s_1 + s_2 + s_3 + s_4 \Rightarrow s_{\text{ολ}} = 120 \text{ m}$$

Γ2)  $u_{\mu} = \frac{s_{\text{ολ}}}{t_{\text{ολ}}} = \frac{120 \text{ m}}{10 \text{ s}} \Rightarrow u_{\mu} = 12 \text{ m/s}$

Γ3)



Γ4)

$$x_0 = -10 \text{ m}$$

$$x_1 = \Delta x_1 + x_0 = 60 \text{ m} + (-10 \text{ m}) \Rightarrow x_1 = +50 \text{ m}$$

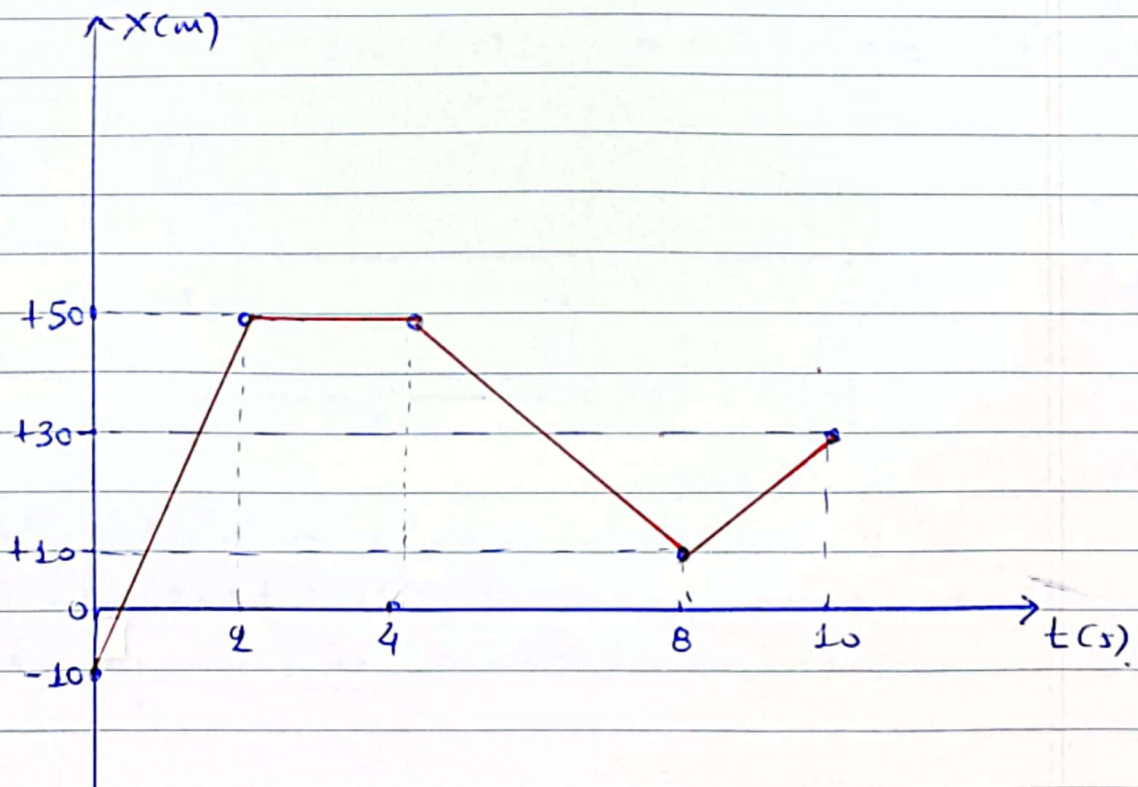
$$x_2 = \Delta x_2 + x_1 = 0 + 50 \text{ m} \Rightarrow x_2 = +50 \text{ m}$$

$$x_3 = \Delta x_3 + x_2 = -40 \text{ m} + (+50 \text{ m}) \Rightarrow x_3 = +10 \text{ m}$$

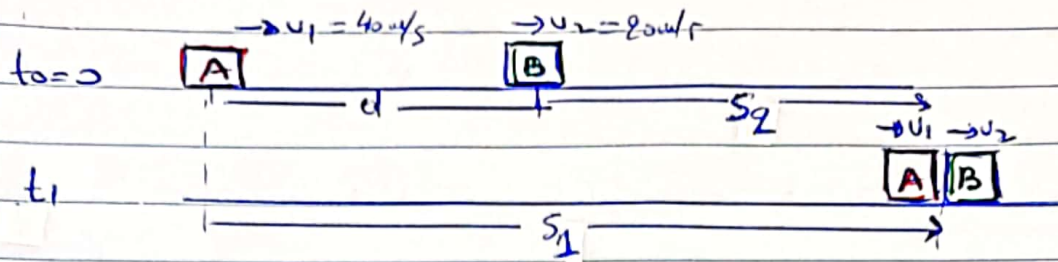
$$x_4 = \Delta x_4 + x_3 = +20 \text{ m} + (+10 \text{ m}) \Rightarrow x_4 = +30 \text{ m}$$

$x_{\text{app}}$	$\Delta t$	$t_{\text{exp}}$	$t_{\text{rea}}$	$x_{\text{rea}}$	$\Delta x$
$-10 \text{ m}$	$0 - 25$	$0 \text{ s}$	$2 \text{ s}$	$+50 \text{ m}$	$60 \text{ m}$
$+50 \text{ m}$	$25 - 45$	$2 \text{ s}$	$4 \text{ s}$	$+50 \text{ m}$	$0 \text{ m}$
$+50 \text{ m}$	$45 - 85$	$4 \text{ s}$	$8 \text{ s}$	$+10 \text{ m}$	$-40 \text{ m}$
$+10 \text{ m}$	$85 - 105$	$8 \text{ s}$	$10 \text{ s}$	$+30 \text{ m}$	$+20 \text{ m}$

Γ5)



# ΘΕΜΑ Δ

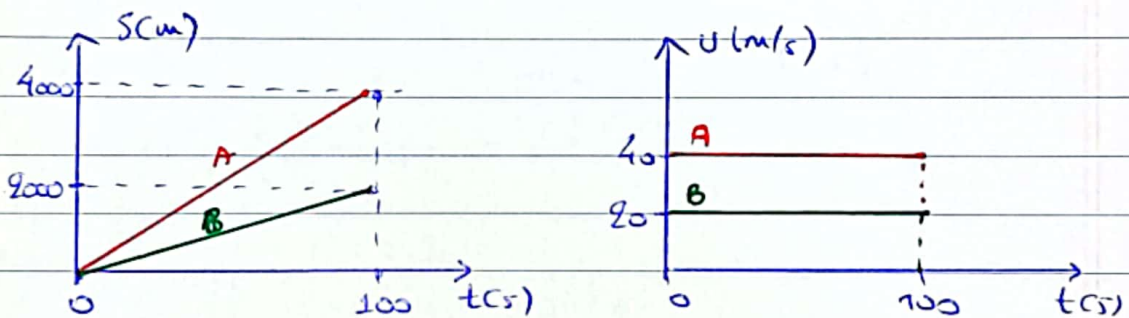


$\Delta 1)$   $S_1 = S_2 + d \Rightarrow u_1 t_1 = u_2 t_1 + d \Rightarrow$   
 $40 t_1 = 20 t_1 + 2000 \Rightarrow 20 t_1 = 2000 \Rightarrow$   
 $\Rightarrow \boxed{t_1 = 100 \text{ s}}$

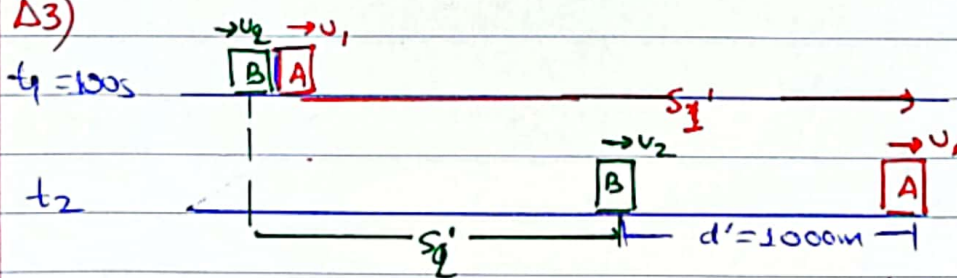
$S_1 = u_1 t_1 = 40 \cdot 100 \Rightarrow \boxed{S_1 = 4000 \text{ m}}$

$S_2 = u_2 t_1 = 20 \cdot 100 \Rightarrow \boxed{S_2 = 2000 \text{ m}}$

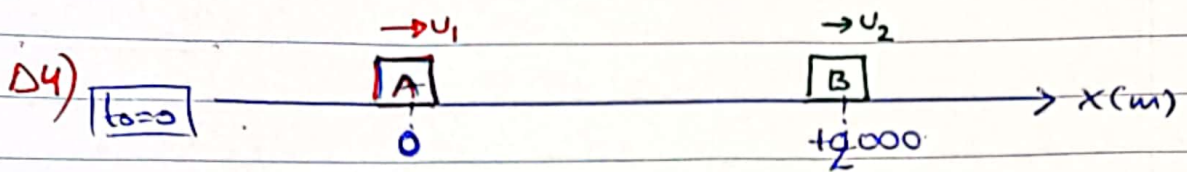
$\Delta 2)$



$\Delta 3)$



$S_1' = S_2' + d' \Rightarrow u_1' \Delta t = u_2' \Delta t + d' \Rightarrow$   
 $40 \Delta t = 20 \Delta t + 1000 \Rightarrow 20 \Delta t = 1000 \Rightarrow \boxed{\Delta t = 50 \text{ s}} \Rightarrow$   
 $t_2 - t_1 = 50 \text{ s} \Rightarrow t_2 - 100 \text{ s} = 50 \text{ s} \Rightarrow$   
 $\boxed{t_2 = 150 \text{ s}}$



$$x_B = x_{0B} + u_2 t \Rightarrow x_B = 2000 + 20t \text{ (SI)}$$

Γι  $t=0$  :  $x_B = +2000m$

Γι  $t=t_2=150s$  :  $x_B = 2000 + 20 \cdot 150 \Rightarrow x_B = 5000m$

