

Summary A	nsv	vei	r Sł	iee	t
Student Code					

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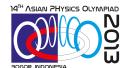
Relativistic Correction on GPS Satellite (13 points)

Part A. Single accelerated particle (2.8 points)

Question	Answer	Marks
1. 0.5 pts	<i>a</i> =	
2. 0.5 pts	$\beta(t) =$	
3. 0.3 pts	x(t) =	
4. 0.7 pts		
5. 0.4 pts	$\beta(au)$ =	
6. 0.4 pts	t(au) =	

Part B. Flight Time (2.0 points)

Question	Answer	Marks
1. 1.2 pts	$t_0(\tau)$ = Will it freeze ? Yes or No If yes, $t_0(\tau \to \infty)$ =	
2. 0.8 pts	$ au_0(t)$ = Will it freeze ? Yes or No If yes, $ au_0(t o \infty)$ =	



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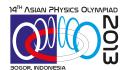
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Part C. Minkowski Diagram (1.0 points)

Question	Answer	Marks
1. 0.5 pts	Plot of the Minkowski diagram:	
2. 0.5 pts	L' =	

Part D. Two Accelerated Particles (2.3 points)

Question	Answer	Marks
1. 0.3 pts	τ_2 =	
2. 1.0 pts	C_1 =	
3. 1.0 pts	$C_2 =$	



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Part E. Uniformly Accelerated Frame (2.7 points)

Question	Answer	Marks
1. 0.8 pts	$x_{\rm p} =$	
2. 1.3 pts	g_2 =	
3. 0.6 pts	$\frac{d\tau_2}{d\tau_1} =$	

Part F. Correction for GPS (2.2 pts)

Question	Answer	Marks
1. 0.6 pts	r = = (numerical value)	
	v = = (numerical value)	
2. 1.2 pts	$\Delta \tau_g =$ = (numerical value) $\Delta \tau_s =$ = (numerical value) $\Delta \tau =$ (numerical value) Which clock is faster? earth's clock or satellite's clock.	
3. 0.4 pts	$\Delta L =$ (numerical value)	