Answers To Problems on Special Theory Of Relativity

No.	Answer
1.	(a) $T = \frac{2L}{C}$ (b) $T = \frac{2LC}{C^2 - V^2}$ (c) $T = \frac{2L}{\sqrt{C^2 - V^2}}$
2.	$\gamma = 1.667$ $x' = 366.667$ km $y' = 10$ km $z' = 1$ km $t' = 1.2778*10^{-3}$ sec
3.	(a) $v = -0.5C$ m/s (b) $\Delta x' = 5.196*10^{4}$ m
4.	$\gamma \approx 1$ $D' = 12749.99 \approx 12750$ km
5.	T (rest) $= 1.8735*10^{-6}$ sec
6.	$\gamma = 1.25$ $t_O = 111.11$ nsec $L' = 16$ $t' = 88.889$ nsec
7.	$\gamma = 1.25$ $\Delta t = 37.5$ min $\Delta x' = 3.24*10^{11}$ m $\Delta x = 4.05*10^{11}$ m
8.	$\Delta t' = 2.679$ min
9.	$v = \pm 0.9396C$ m/s
10.	$u_x = -30*10^{6}$ m/s $\Delta x = -6.67$ m
12.	$P = 2.24*10^{-19}$ kg.m/s $E = 6.72*10^{-11}$ Joule
14.	$v = \frac{\sqrt{3}}{2} C$ m/s
15.	$E = 1.0125*10^{-13}$ J $= 632.8125*10^{3}$ ev $E_O = 8.1*10^{-14}$ J $= 506.25*10^{3}$ ev
16.	$v = \frac{2\sqrt{2}}{3} C$ m/s
17.	f = 1234 pulses/sec
18.	$\Delta f \approx 3.89$ MHz