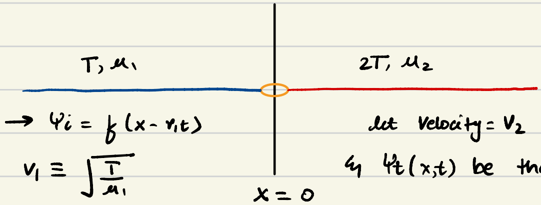

let velocity $= V_2$

& $\psi_t(x,t)$ be the transmitted wave

a) According to the question, there is no reflected wave. Hence, the reflection coeffecient $(R) = 0$

we know $R = \dfrac{Z_1 - Z_2}{Z_1 + Z_2}$, where Z_1 & Z_2 are the impedence of the 1st & 2nd string respectively.

$$\therefore \quad \frac{Z_1 - Z_2}{Z_1 + Z_2} = 0$$

$$\Rightarrow \quad Z_1 = Z_2$$

$$\therefore \quad \sqrt{T\mu_1} = \sqrt{2T\mu_2}$$

$$\Rightarrow \quad T\mu_1 = 2T\mu_2$$

$$\therefore \quad \boxed{\mu_2 = \frac{1}{2}\mu_1}$$

b) we know that : $\psi_t(x,t) = Tr\, \psi_i\left(\frac{v_1}{v_2}x, t\right)$, where Tr is the transmission coeffecient. $Tr \equiv \frac{2z_1}{z_1+z_2}$. From the previous part, we know that $z_1 = z$

$$\therefore Tr = \frac{2z_1}{2z_1} = 1.$$

According to question,

$$\psi_t(x,t) = a f(bx - cv_1 t)$$

& $\psi_i(x,t) = f(x - v_1 t)$

$$\therefore \frac{v_1}{v_2} = \sqrt{\frac{T}{\mu_1}} \div \sqrt{\frac{2T}{\mu_2}} = \sqrt{\frac{T}{\mu_1}} \times \sqrt{\frac{\frac{1}{2}\mu_1}{2T}}$$

$$= \sqrt{\frac{1}{4}} = \underline{\underline{\frac{1}{2}}}$$

$\therefore$ plugging these into the relationship between ψ_t & ψ_i

$$\Rightarrow a f(bx - cv_1 t) = 1 \cdot f\left(\frac{1}{2}x - v_1 t\right).$$

Comparing the left and right, we get that :

$$\boxed{(a,b,c) = (1, 1/2, 1).}$$