11.15-24

EE23BTECH11023-ABHIGNYA GOGULA

Question:

One end of a long string of linear mass density $8.0 \times 10^{-3}\,\text{kg m}^{-1}$ is connected to an electrically driven tuning fork of frequency 256 Hz. The other end passes over a pulley and is tied to a pan containing a mass of 90 kg. The pulley end absorbs all the incoming energy so that reflected waves at this end have negligible amplitude. At $t = 0$, the left end (fork end) of the string $x = 0$ has zero transverse displacement ($y = 0$) and is moving along positive y-direction. The amplitude of the wave is 5.0 cm. Write down the transverse displacement y as a function of x and t that describes the wave on the string.