

NCERT ANALOG 11.15. Q20

EE23BTECH11214 - Harsha Vardhan Kumar

Question: A travelling harmonic wave on a string is described by

$$y(x, t) = 7.5 \sin(0.0050x + 12t + \frac{\pi}{4})$$

(a) What are the displacement and velocity of oscillation of a point at $x = 1 \text{ cm}$ and $t = 1 \text{ s}$? Is this velocity equal to the velocity of wave propagation?

(b) Locate the points of the string which have the same transverse displacements and velocity as the $x = 1 \text{ cm}$ point at $t = 2 \text{ s}$, $t = 5 \text{ s}$, and $t = 11 \text{ s}$.