Answer on Question #47925-Physics-Mechanics-Kinematics-Dynamics

A musical instrument can be tuned by comparing its frequency to that of a standard such as a tuning fork. Let's say that you hear a beat frequency of 6 Hz when comparing your instrument to a 900-Hz tuning fork. What is the frequency of your instrument?

A) 894 Hz

B) 900 Hz

C) 906 Hz

D) Either 906 Hz or 894 Hz but we can't tell which

Solution

A beat frequency equals the difference in frequency between two sources:

$$f_b = |f_1 - f_2|.$$

Therefore the frequency of the instrument is

$$f_1 = f_2 \pm f_b = (900 \pm 6)Hz.$$

It can be either $(900 + 6) = 906\ Hz$ or $(900 - 6) = 894\ Hz$ but we can't tell which.

Answer: D) Either 906 Hz or 894 Hz but we can't tell which.