22 Standing waves are set up in a tube of length L, which is closed at one end. The speed of sound in the air in the tube is v.

When the tube resonates, which series of frequencies is generated?

A $\quad \dfrac{1}{4}\dfrac{v}{L}, \dfrac{1}{2}\dfrac{v}{L}, \dfrac{3}{4}\dfrac{v}{L}, \dfrac{v}{L}, \ldots$

B $\quad \dfrac{1}{4}\dfrac{v}{L}, \dfrac{3}{4}\dfrac{v}{L}, \dfrac{5}{4}\dfrac{v}{L}, \dfrac{7}{4}\dfrac{v}{L}, \ldots$

C $\quad \dfrac{1}{2}\dfrac{v}{L}, \dfrac{v}{L}, \dfrac{3}{2}\dfrac{v}{L}, 2\dfrac{v}{L}, \ldots$

D $\quad \dfrac{1}{2}\dfrac{v}{L}, \dfrac{3}{2}\dfrac{v}{L}, \dfrac{5}{2}\dfrac{v}{L}, \dfrac{7}{5}\dfrac{v}{L}, \ldots$