

The 3<sup>rd</sup> string of guitar 'X' having correct tension produces 'G' note of frequency 196 Hz. However, due to sudden reduction in outside temperature, guitar 'Y' produces 4 beats per second with guitar 'X' playing in identical manner. The frequency produced by the guitar 'Y' is:

- (A) 196 Hz      (B) 192 Hz      (C) 200 Hz      (D) G

*Solution*

We have,  $\nu_X = 196\text{Hz}$

When temperature reduces, tension increases thereby increasing frequency.

$$\therefore \nu_Y > \nu_X$$

$$\text{So, } \nu_Y - \nu_X = 4$$

$$\therefore \nu_Y = 196 + 4 = 200\text{Hz}$$

Hence, (C)