QUES 02:-

Two sitar strings A and B playing the note Ga are slightly out of tune and produce beats of frequency 6 Hz. The tension in the string A is slightly reduced and the beat frequency is found to reduce to 3 Hz. If the original frequency of A is 324 Hz, what is the frequency of B?

Sol. Given:

Frequency of string A is given by, f_A = 324 Hz

Frequency of string B is given by = f_B

Beat's frequency, n = 6 Hz

Beat's frequency is given as:

$\Rightarrow n = |f_A \pm f_B|$

$\Rightarrow 6 = 324 \pm f_B$

$\Rightarrow f_B$ = 330 HZ or 318 HZ

Frequency decreases with a decrease in the tension in a string. This is because the frequency is directly proportional to the square root of the tension. It is given as:

$\Rightarrow v \propto \sqrt{T}$

Hence, the beat frequency cannot be 330 Hz

$\therefore f_B$ = 318 HZ