length Change in
Volume

HW
22/12/22

1) Frequency ratio = 2:7

let n ratio be => 2n, 7n

λ Ratio = 3:4

Let λ Ratio be = 3λ, 4λ

$V_1 = \lambda n = 3\lambda \times 2n = 6\lambda n$

$V_2 = \lambda n = 4\lambda \times 7n = 28\lambda n$

a) Fork B Produce more velocity of Sound

b) (1) Shrill Sound than fork B

2) Practical uses of Echo:-
i) used by bats, dolphins to detect objects
ii) In SONAR and RADAR

3) i) Reverberation time of a hall is used for Speeches to Prevent multiple Echos which may interfere in the original Speech
ii) Because a Simple Pendulum Produce Sound with less than 20 Hz it is not audible
iii) By quality or timbre of Sound, Sounds of Same loudness & Pitch Produced by different musical instrument are distinguishable

4) height of tower = 125m
$g = 10 m/s^2$ Speed of Sound = 340 m/s
$u = 0$, $S = 125m$

$$S = ut_1 + \frac{1}{2} g t_1^2$$
$$125 = 5t_1^2$$
$$\Rightarrow t_1 = 5s$$

$$t_2 = \frac{2d}{v} = \frac{2 \times 125}{340} = \frac{25}{34} = 0.7s$$

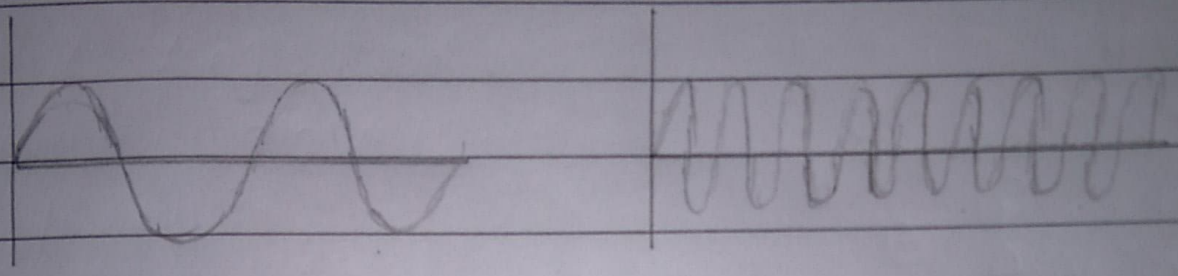
Total time for Splash to be heard at top
$$\Rightarrow t_1 + t_2 = 5.7s$$

5) i) Frequency higher than 20kHz are Called ultrasonic Sound

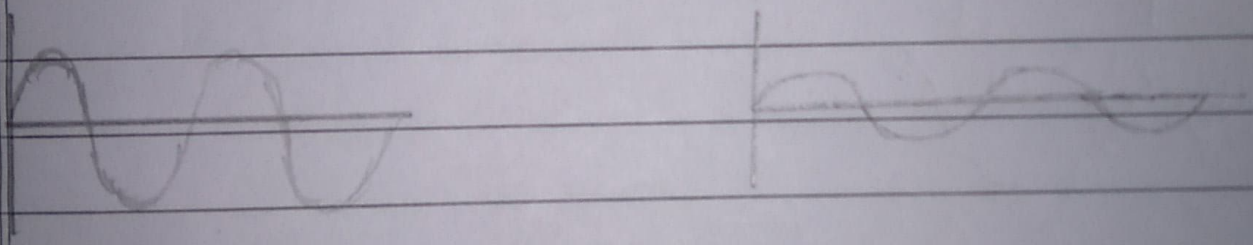
ii) Bats & Dolphins Produce Ultra Sound

iii) Ultrasonic waves are used in SONAR

6) i) Same amplitude & different frequencies



ii) Same frequency & Different amplitude



iii) Different amplitude & wavelength