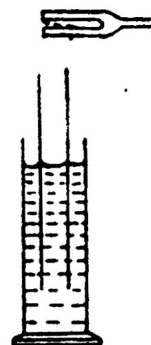


Diagram shows an experimental setup which can be used to find the velocity of sound in air using resonating air columns.



- (a) Briefly explain the procedure you follow to find out the fundamental frequency of the vibrating air columns.

- (b) If the length of the air column measured in above (a) is l and the wavelength of the sound waves in air is λ , write down the relationship between l and λ . (Ignore the end correction of the tube).

- (c)(i) Rewrite the expression obtained in (b) in association with, velocity of sound in air V , frequency of the tuning fork n and l .

- (ii) You are given tuning forks with known frequencies and asked to plot a graph in order to find out V . State the properties you used in the graph.

Independent variable : -----

Dependent variable : -----

- (d) The l length for the given tuning fork is observed as 35cm. If the length of the tube is 75cm, state whether there is any possibility to find out another point on the tube in water, resonating with this tuning fork.

- (e) If the value of the room temperature increases, will the corresponding l value you are expecting decrease? Not change? Or increase? Explain the reason.

- (f) If you used alcohol instead of water for this experiment would you obtain the same V value you got as in c(ii)? Explain the answer.

- (g) For the accurate calculations, the end correction is applied only for the open end of the tube and not for the closed end. Explain the reason for that?
