4 **(a)** State how a stationary wave is formed.

.....

.....

..... [2]

(b) A vibrating tuning fork is held above the top of a tube immersed in water, as shown in Fig. 4.1.

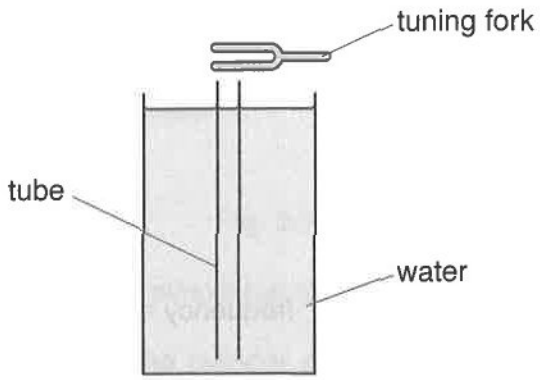

Fig. 4.1

The tube and tuning fork are gradually raised together until a loud sound is heard.

The loud sound indicates that a stationary wave is formed in the tube.
This longitudinal stationary wave is represented in Fig. 4.2.

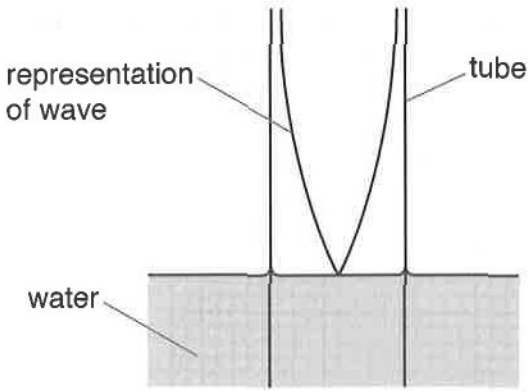

Fig. 4.2

Describe how the representation in Fig. 4.2 illustrates a longitudinal wave.

.....

.....

.....

..... [2]

(c) Complete Fig. 4.3 to represent the lowest frequency of a stationary sound wave in a tube that is open at both ends.

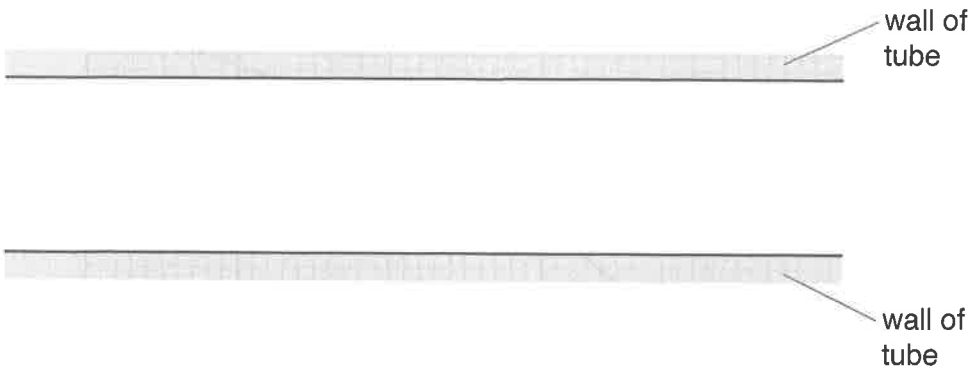

Fig. 4.3

[2]

(d) The frequency of the stationary sound wave in **(c)** is 540 Hz.

The frequency of the sound in the tube is now gradually increased until a stationary wave of the next highest frequency is formed.

Determine this frequency.

frequency = ... Hz [2]

[Total: 8]