NAME	**INDEX NUMBER**
SCHOOL	**DATE**

SOUND

1. 1995 Q31 P1

State a characteristic of sound, which is determined by overtone (1 mark)

……

2. 1996 Q10 P1

The pitch of the note produced by a wire depends on the tension in the wire. State the other factor that affects the pitch (1 mark)

……

3. 1996 Q18 P1

What characteristic of sound is applied in turning pianos? (1 mark)

……

……

4. 1996 Q28 P1

An observer A is in a moving vehicle with a siren on while an observer B is stationary on the side of the road. State the difference between the sound heard by A and B as the vehicle approaches B at a high constant speed (2 marks)

……

……

……

5. 1996 Q5b P2

(b) A mineworker stands between two vertical cliffs 400m from the nearest cliff. The cliffs are X distance apart. Every time he strikes the rock once, he hears two echoes, the first one after 2.5 s, while the second follows 2s later. From this information; calculation:

(i) The speed of the sound in air (2 marks)

……

……

……

……

(ii) The value of X (3 marks)

……

……

……

……..

……

……

6. 1997 Q17 P1

An observer watching a fireworks displays sees the light from an explosion and hears the sound 2 seconds later. How far was the explosion from the observer?

……

……

……

……..……

7. 1997 Q32 P1

Two turning forks are sounded together. What is the condition for the beats to be heard?

……

……

8. 1998 Q28 P1

What determines the quality of a musical note?

……

……

9. 1999 Q18 P1

Two tuning forks of frequencies 256Hz and 258 Hz are sounded simultaneously and then placed close to each other, calculate the beat frequency.

……

……

……

……..

……

……

……

……

……..

……

10. 2000 Q21 P1

A wire is stretched between two fixed points such that when it is plucked, it produces sound. Explain why the pitch of the sound produced may become lower when the temperature of the surrounding rises.

……

……

……

……..……

11. 2002 Q17 P1

Name two factors other than tension, which determine the frequency of sound form stretched wire at room temperature.

……

……

……

12. 2002 Q24 P1

The audible frequency range for a certain person is 30 Hz and 16,500 Hz. Determine the largest wavelength of sound in air the person can detect. (Speed of sound in air = 330m/s)

……

……

……

……..

……

……

……

……

……..

……

13. 2003 Q21 P1

A girl standing 600m away from a cliff bangs two pieces of wood together and hears and echo 3.5 seconds later. Determine the speed of sound in air at that place.

……

……

……

……..

……

……

……

……

14. 2005 Q17 P1

An electronic siren producing sound continuously at a certain frequency is dropped from the top to a deep hole. State and explain what is observed about the pitch of the sound reaching the observer at the top. (3 marks)

……

……

……

……

15. 2004 Q6 P2

a) You are provided with two identical tuning forks and some plasticine. Describe how you would demonstrate beats in sound.

……

……

……

……

……

……

……

b) Fig 8 shows a set up that was used in an experiment to determine the speed of sound air

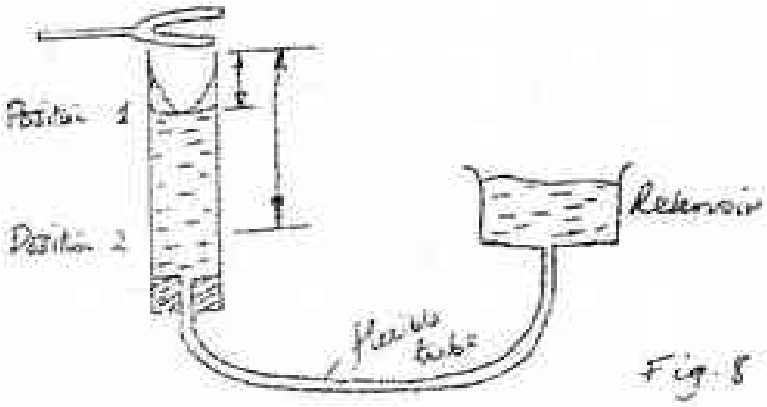


Fig. 8

Turning forks of different frequencies were sounded near the mouth of the open tube and by lowering the reservoir, the list two resonant lengthsL_1 L_2 were ensured for each frequency.
Table 1 shows the results obtained.

Frequency, f (HZ)	256	288	341	427	480	512
L_1(cm)	30,8	27.2	22.8	17.9	15.8	14.7
L_2(cm)	95.5	84.5	71.2	56.6	50.2	46.9
$^1/_f$ (HZ^{-1})						
$L_2 - l_{1(m)}$						

(i) Complete the table. On the grid provided, plot the graph of $l_2 - l_1$ (y-axis) against $^1/_f$

(ii) From the graph determine the speed V of sound in air given that 1_2-1_1 = v/2r. Therefore V= $2f(1_2 - 1_1)$

……

……

……

……

(iii) Explain how resonance is attained in this set up.

……

……

……

……..

……

……

……

……

……

16. 2006 Q8 P2

S soldier standing some distance from a wall, blows a whistle and hears its echo 1 seconds later. How far is the wall from the soldier?
(speed of sound in air is $330ms^{-1}$) (3 marks)

……

……

……

……..

……

……

……

……

……..

……

……

……

……

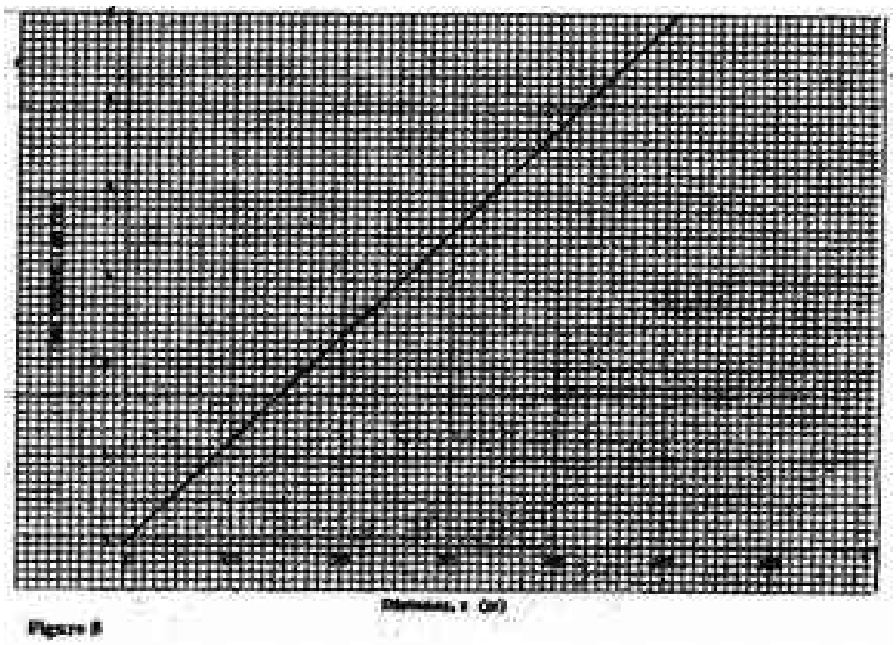
……

17. 2008 Q15 P2

a) State one factor that affects the speed of sound in a solid. (1 mark)

b) An observer stands half-way between two vertical cliffs that are L metres apart. He moves directly towards one cliff and after a distance x=10cm from the centre, he strikes a gong and measures the time interval, t, between the echoes heard from the two cliffs. He moves a further 10m and again strikes the gong and measure the time interval between the echoes. The process is repeated several times.

The graph in Figure 8 shows the relation between the time interval, t and the distance, x from the centre.



(i) From the graph, determine the value of x for which the time interval was 0.55. (1mark)

……

……

(ii) Given that $t = {}^{4}/_{v}x$ where v is the speed of sound in air, determine the value of v from the graph. (3marks)

……

……

……

……..

……

……

……

(iii) If the maximum time measured by the observer was t=4.7s, determine the distance L between the cliffs. (3marks)

……

……

……

……..

……

……

……

……

……

……..

……

(c) A search boat uses a signal of frequency 6.0×10^4 H_z to detect a sunken ship directly below. Two reflected signals are received; one after 0.1 seconds from sunken boat and the other after 0.14 seconds from the sea bed. If the sea bed is 98 m below the boat, determine:-

(i) The speed of the signal in water. (3 marks)
You may use the value of v from (ii) above.

……

……

……

……

……

(ii) The depth of the sunken ship below the boat (2 marks)

……

……

……..……

18. 2009 Q12 P2

A boy standing in front of a cliff blows a whistle and hears the echo after 0.6s determine the speed of the sound (3 marks)

……

……

……

……..

……

……

……..

……