

SOUND

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?
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 an echo 3.5 seconds later. Determine the speed of sound in air at that place.
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 $x=10\text{cm}$ 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.
- (c) A search boat uses a signal of frequency $6.0 \times 10^4 \text{ Hz}$ 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)
- (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)