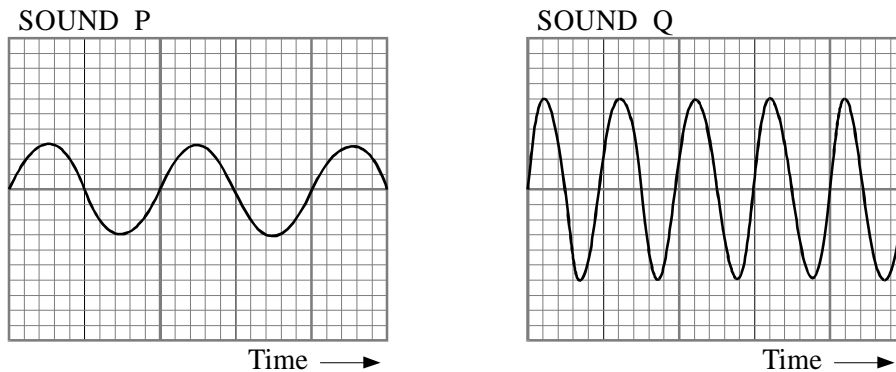


## Ultrasound - GCSE Question Practice

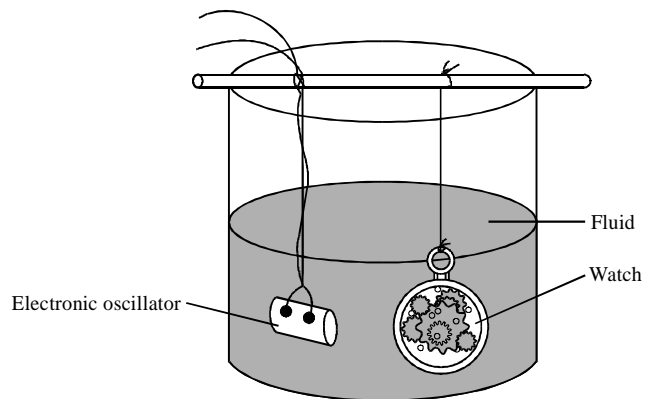
1. The diagram shows the oscilloscope traces of two different sounds P and Q. The oscilloscope setting is exactly the same in both cases.



P and Q **sound** different. Write down **two** differences in the way they sound. Explain your answers as fully as you can.

**(Total 5 marks)**

2. The diagram shows how ultrasonic waves can be used to clean a watch.



Suggest how this method cleans the watch.

**(Total 2 marks)**

3. Pigs have a layer of fat in their skin. Underneath the fat is a layer of muscle. Ultrasonic waves are used to measure the thickness of the layer of fat. An ultrasound transmitter and detector are attached to the skin of the pig.

(a) Explain why ultrasound can be used to measure the thickness of the layer of fat.

**(2)**

(b) The oscilloscope does not measure distance directly.

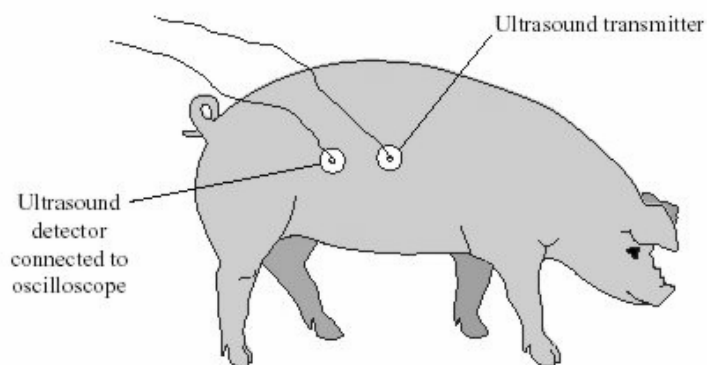
(i) What does the oscilloscope measure in this case?

**(1)**

(ii) What other information is needed to calculate the thickness of the layer of fat in a pig?

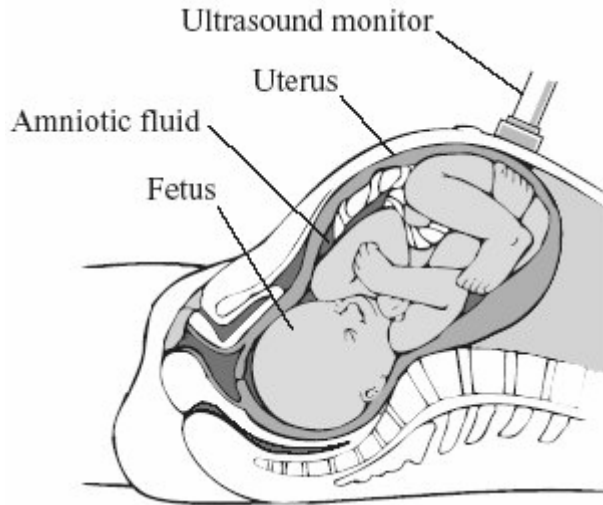
**(1)**

**(Total 4 marks)**



## Ultrasound - GCSE Question Practice

4. The diagram shows an ultrasound monitor being used to scan a fetus.



The table shows the velocity of ultrasound waves in different tissues of the fetus.

Tissue	Velocity of ultrasound in m/s
Amniotic fluid (liquid surrounding fetus)	1540
Bone	3080
Kidney	1561
Liver	1549
Muscle	1585

Explain why we are able to see the different parts of the fetus in an ultrasound scan. You may use information from the table in your answer.

**(Total 4 marks)**

5. (a) Copy and complete the following sentence:

Sound is produced when an object .....

**(1)**

- (b) Choose words from the list to complete the following sentences:

**higher            louder            lower            quieter**

(i) If the frequency is increased, the pitch of the sound becomes .....

(ii) If its amplitude is increased, the sound becomes .....

**(2)**

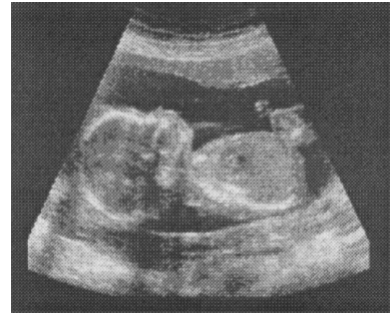
## Ultrasound - GCSE Question Practice

(c) The diagram shows a pre-natal scan.

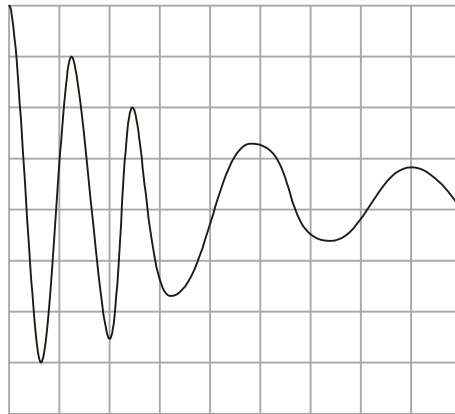
(i) What type of waves are used for pre-natal scanning?  
(1)

(ii) Explain why we cannot hear these waves.  
(2)

(Total 6 marks)



6. (a) A microphone connected to an oscilloscope picks up the sound from a siren. The trace produced on the oscilloscope screen is shown below.



Describe how the wave changes as it goes across the screen from left to right.  
(3)

(b) An African bat produces a sound wave with a frequency of 212 kHz and a wavelength of 1.6 mm.

(i) The sound made by the bat is above the limit of human hearing. What name is given to this type of sound?  
(1)

(ii) Given that **wavespeed = frequency × wavelength** calculate the speed of this sound wave through the air. Show clearly how you work out your final answer.

Wave speed = ..... m/s  
(3)

(Total 8 marks)

**27 marks - time allocation 30 mins**