

24 Pulse-echo imaging – Part 2 —Answers

Answers

Work through these after trying the questions yourself.

24.1 A short pulse of ultrasound.

24.2 Part of it is reflected (and part goes on).

24.3 $d = ct/2$.

24.4 Because the pulse travels there *and* back.

24.5 $d = ct/2 = (1500)(8.0 \times 10^{-5})/2 = 0.060 \text{ m}$ (6.0 cm).

24.6 To push out the air, so the ultrasound enters the body instead of reflecting off the skin.

24.7 Ultrasound is not ionising —it does not have enough energy to damage cells or DNA, so it is safe for a developing baby. X-rays are ionising and could harm the cells, so they are avoided.