

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.