


A Level • OCR • Physics

 3 mins 3 questions

Multiple Choice Questions

Ultrasound

Ultrasound / The Piezoelectric Effect & the Ultrasound Transducer / Acoustic Impedance / Reflection of Ultrasound / Doppler Effect in Ultrasound

Easy (1 question)	/1
Medium (2 questions)	/2
Total Marks	/3

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Easy Questions

- 1 The Doppler effect is used to measure the speed of blood flow in arteries.

Which medical diagnostic method uses this technique?

- A.** barium scan
- B.** CAT scan
- C.** PET scan
- D.** ultrasound scan

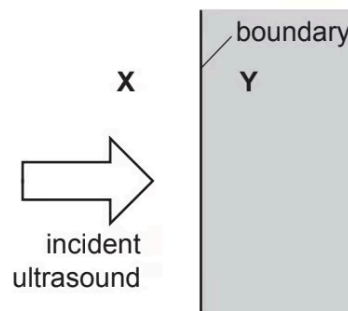
(1 mark)

Medium Questions

- 1 The table shows some data on two tissues in a patient.

Tissue	Density	Acoustic impedance
X	ρ	$1.5 Z$
Y	1.3ρ	Z

Ultrasound in tissue X is incident at the boundary between the tissues **X** and **Y**.



What is the percentage of the ultrasound intensity reflected at the boundary?

- A.** 1.7 %
- B.** 4.0 %
- C.** 13 %
- D.** 20 %

(1 mark)

- 2 A beam of ultrasound is incident normally at a boundary between two tissues **F** and **G**.

The table below shows some data on the two tissues.

	Tissue F	Tissue G
Density of tissue	ρ	1.2ρ
Speed of ultrasound in tissue	c	$1.5c$

What percentage of the intensity of the ultrasound is reflected at the boundary?

- A. 0.83%
- B. 8.2%
- C. 9.1%
- D. 29%

(1 mark)