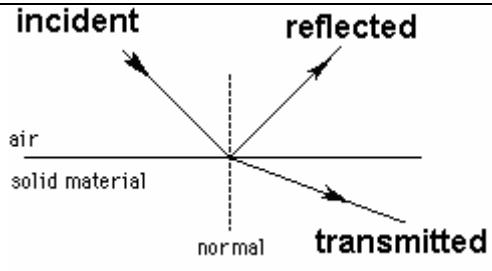


GCSE Science/ Physics
Internally Assessed Activity Unit P1b
Topic 11 - Now You See It, Now You don't

Ultrasound

1	a	i	Refracted; Reflected;	1 1	
		ii	incident reflected  air solid material normal transmitted ;	3	
	c		<input type="checkbox"/> <input checked="" type="checkbox"/> ; <input checked="" type="checkbox"/> ; <input type="checkbox"/> <input checked="" type="checkbox"/> ; <input type="checkbox"/> (Each tick over three reduces score by 1)	3	
					Total 8 marks

2	a	i	8%;	1	
		ii	90%;	1	
		ii	less than 1%;	1	
	b	i	Two from: With the gel very little ultrasound is reflected (from the skin); (With the gel) most passes into the skin; Without the gel most ultrasound is reflected (from the skin); (Without the gel) very little passes into the skin;	2	
		ii	Accept any value less than 10%;	1	
		iii	Two from: With air (in the bowels); Reflections are a problem; Prevents ultrasound from reaching the womb; A full bladder brings the womb nearer to the surface;	2	
					Total 8 marks

3	a		Air molecules or particles are far apart/density of air is low/vibrations not passed on easily in air;	1	
	b		Brain time = $0.10 / 1540$; = $6.5 \times 10^{-5}(s)$;	2	
	c		Brain \Rightarrow Blood (or vice-versa); The speeds (of the waves) are similar/not very different;	2	
	d		wavelength = velocity/frequency; = $1540/1 \times 10^6$; = $1.5(4) \times 10^{-4} \text{ m}$; (Must have units to credit this mark)	3	
					Total 8 marks

4	a		Energy has been absorbed / reflected en route (OWTTE) OR the density / acoustic impedance differences are greater at the second boundary;	1	
	b		Divide speed in body (1540) by time before P arrives; Divide this distance by 2;	2	
					Total 3 marks

					Overall total 27 marks
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