Question number	Answer	Notes	Marks
8 (a) (i)	reflection;		1
(ii)	substitution into speed = distance / time; rearrangement; evaluation of correct total distance; halved to find distance to fish; e.g. 1500 = distance / 0.043 distance = speed × time (distance =) 64.5 (distance = 64.5 ÷ 2) = 32 (m)	ignore units condone incorrect conversion of time from 43 ms i.e. 43, 43/60, 43 × 1000, 43 × 60 accept wherever applied i.e. to the time or to the distance travelled. 64.5, 65 = 3 marks (no halving) 32250 etc = 3 marks (POT) 64500 etc = 2 marks (POT and no halving)	4
(b) (i)	3.0 ± 0.5 (cm);	accept '3'	1
(ii)	any three from: MP1. all frequencies show reduction in amplitude or intensity with distance; MP2. this reduction is non-linear; MP3. penetration decreases with increasing frequency; MP4. use of data from graph to justify MP3;	ignore 'inverse proportion' condone '(negative) exponential' however expressed e.g. 2MHz penetrates more than 4 MHz which penetrates more than 10MHz e.g. relative values at a given distance or distances at which the frequencies are at a given value	3

Total for Question 8 = 9 marks