

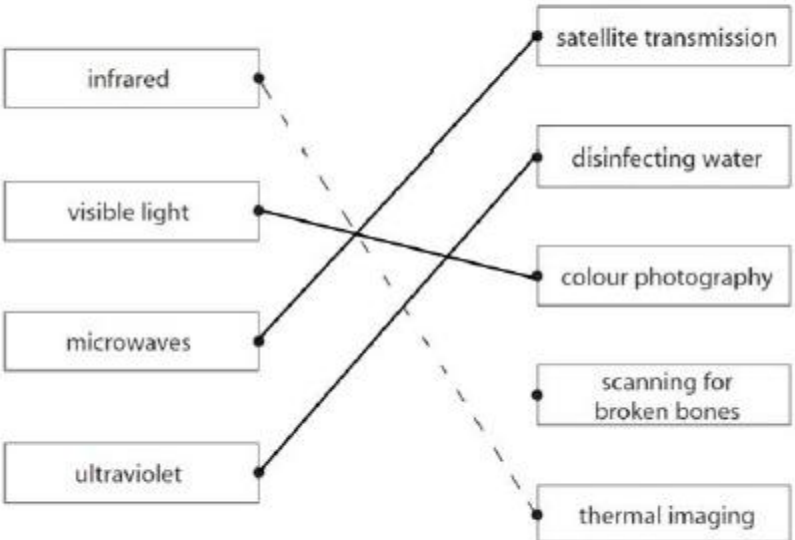
Name of the Student: _____

Max. Marks : 17 Marks

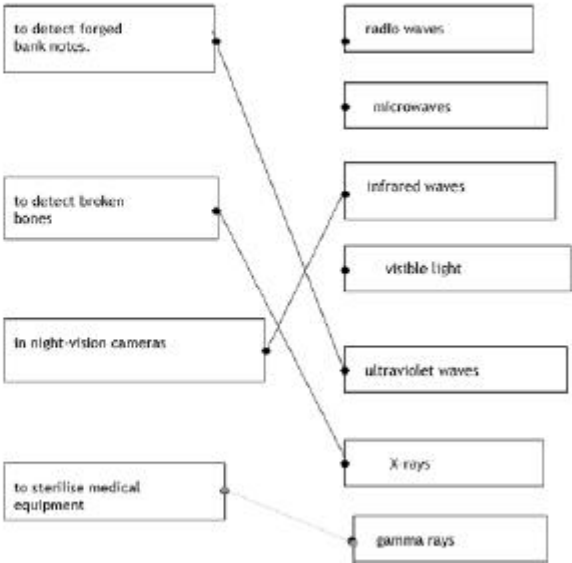
Time : 17 Minutes

Mark Schemes

Q1.

Question Number	Answer	Additional guidance	Mark
(i)	type of radiation infrared visible light microwaves ultraviolet use of radiation satellite transmission disinfecting water colour photography scanning for broken bones thermal imaging 	award one mark for each correct line up to three marks reject for a mark two lines starting or ending at the same box	(3) AO1
Question Number	Answer	Mark	
(ii)	C ultraviolet A (infrared), B (microwaves) and D (visible light) all have frequencies below that of ultraviolet	(1) AO1	

Q2.

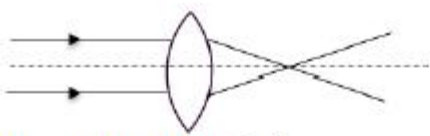
Question number	Answer	Additional guidance	Mark
		award 1 mark for each line from the three left-hand boxes more than one line from a box loses the mark for that box	(3)

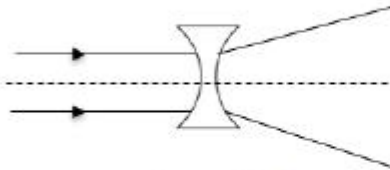
	Answer	Additional guidance	Mark
(i)	diagram to include: a reflected ray drawn (1) angle of reflection = angle of incidence (1)	judge by eye	(2) AO2

	Answer	Additional guidance	Mark
(ii)	diagram to include: a refracted ray drawn (1) angle of refraction < angle of incidence (1)	Ray drawn in bottom right quadrant of diagram ignore reflected rays judge by eye	(2) AO2

	Answer	Additional guidance	Mark
(iii)	diagram to include: ray drawn showing total internal reflection (1) angle of reflection = angle of incidence (1)	REJECT any refracted ray for this mark judge by eye	(2) AO2

Q4.

Question number	Answer	Additional guidance	Mark
(i)	rays converging	 arrows not needed	(1)

Question number	Answer	Additional guidance	Mark
(ii)	rays diverging	 arrows not needed award 1mark if convergence and divergence are shown but with the wrong lenses	(1)

Question number	Answer	Additional guidance	Mark
(iii)	substitution (1) $\frac{1}{25(\times 10^{-2})}$ evaluation (1) 4(.0)	or 0.04 seen ignore powers of ten until evaluation award full marks for the correct answer without working	(2)