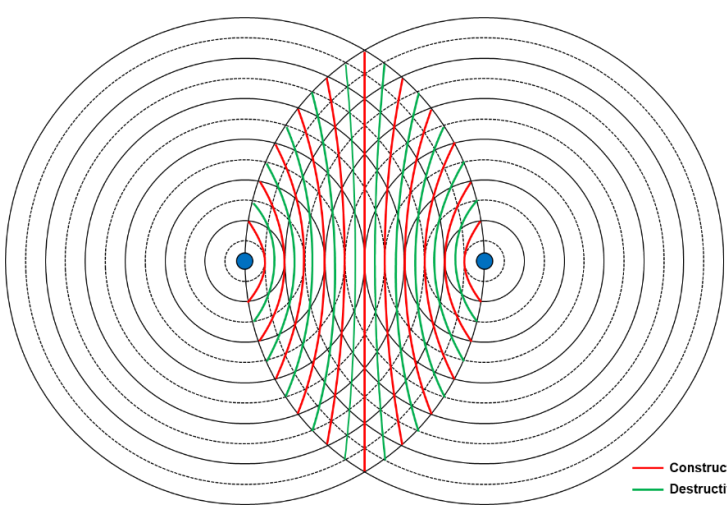


206	(a)	As the light bulb emits many different frequencies of electromagnetic radiation.	1
	(b)	$f = \frac{c}{\lambda}$	1
		$f = \frac{3 \times 10^8}{1183 \times 10^{-9}}$	1
		$f = 2.5 \times 10^{14} \text{ Hz}$	1
	(c)	The graph shows that most of the wavelengths emitted fall outside the visible range of the electromagnetic spectrum. Hence, much of the energy is wasted as heat and very little is emitted as useful visible light.	1 1
(d)	The emitted waves have different frequencies. The emitted waves do not maintain a constant phase relationship.	1 1	
207	(a)	The wave sources emit waves of the same frequency.	1
		The wave sources oscillate in unison and emit the same component of a wave at the same time such that the emitted waves maintain a constant phase relationship.	1
	(b)	(1) Constructive	1
		(2)	
(3)	The distance between crests is the same for both waves.	1	
208	(a)	$d \sin \theta = m \lambda$	
		$\theta = \sin^{-1} \left(\frac{m \lambda}{d} \right)$	1
		$\theta = \sin^{-1} \left(\frac{2 \times 632.8 \times 10^{-9}}{75 \times 10^{-6}} \right)$	1
(b)	$\theta = 0.97^\circ$	1	
	$d \sin \theta = m \lambda$		
	$m = \frac{d \sin \theta}{\lambda}$	1	
(c)	$m = \frac{75 \times 10^{-6} \times \sin 2.42}{632.8 \times 10^{-9}}$	1	
	$m = 5$	1	
	$\Delta y = \frac{\lambda L}{d}$		
$\Delta y = \frac{632.8 \times 10^{-9} \times 0.6}{75 \times 10^{-6}}$	1		
$\Delta y = 5.06 \times 10^{-3} \text{ m}$	1		