Question			Expected response	Max mark	Additional guidance
5.	(a)	(i)	Doppler (effect)	**1**	
		(ii)	$f_0 = f_s\left(\frac{v}{v \pm v_s}\right)$ **(1)** $f_0 = 510\left(\frac{340}{340-12}\right)$ **(1)** $f_0 = 530\,\text{Hz}$ **(1)**	**3**	Accept: 500, 529, 528·7 Accept: $f_0 = f_s\left(\frac{v}{v - v_s}\right)$
	(b)		$\Delta f = \frac{2f\ v_{rbc}\cos\theta}{v}$ $286 = \frac{2\times 3{\cdot}70\times 10^6 \times v_{rbc}\cos 60{\cdot}0}{1540}$ **(1)** $v_{rbc} = 0{\cdot}119\,\text{m s}^{-1}$ **(1)**	**2**	Accept: 0·12, 0·1190, 0·11904