

Dual Aspects

No.	Answer
1.	$E = 2.07 \text{ eV}$
2.	$v_{\max} = 1.67 \cdot 10^6 \text{ m/s}$ $P_{\text{TARGET}} = 1.52 \cdot 10^{-24} \text{ kg.m/s}$ $E_{\text{TARGET}} = 1.15 \cdot 10^{-47} \text{ J}$ $E_{\text{TARGET}} / E_{\text{PHOTON}} = 5.822 \cdot 10^{-30}$
3.	(a) $\text{K.E} = 1.973 \cdot 10^{-15} \text{ J}$ $v = 65.8 \cdot 10^6 \text{ m/s}$ (b) $P_{\text{PROTON}} = 5.33 \cdot 10^{-23} \text{ kg.m/s}$ $E_{\text{PROTON}} = 5.3 \text{ eV}$
4.	$\lambda_0 = 2667.77 \text{ \AA}$ $E_s = 15.826 \text{ eV}$
5.	(a) $V_0 = 2.5 \text{ volt}$ (b) $\lambda_0 = 7570 \text{ \AA}$
6.	$\text{K.E}_{\max} = 2.7 \text{ eV}$ No. of electrons = $2.5 \cdot 10^{18} \text{ \acute{e}/m}^2 \cdot \text{s}$ $J = 0.04024 \text{ mA/cm}^2$
7.	$h = 6.619 \cdot 10^{-34} \text{ J.s}$ $W_0 = 2.08 \text{ eV}$ $\nu_0 = 5 \cdot 10^{14} \text{ Hz}$
8.	$d = 0.3576 \text{ nm}$
9.	$\theta = 2.866^\circ$
10.	$P = 4.18 \cdot 10^{-23} \text{ kg.m/s}$ $\theta = 67^\circ$
11.	(i) $\lambda_{\text{De}} = 6.86 \cdot 10^{-12} \text{ m}$ (ii) $\lambda_{\text{De}} = 2.7 \cdot 10^{-12} \text{ m}$
12.	$v_G = \frac{1}{2} \sqrt{\frac{g \lambda}{2 \pi}} \text{ m/s}$
13.	$\Phi = 142.67^\circ$
14.	$\lambda_{\text{DE}} = \frac{hc}{\sqrt{eV(eV + 2m_0c^2)}} \text{ m}$