1. Problem 5

$$\lambda\nu = c$$
$$\nu = \frac{c}{\lambda}$$
$$c = 3 \cdot 10^8 \text{ m/s}$$
$$1 \text{ eV} = 1.602 \cdot 10^{-19} \text{ J}$$

Convert wavelength to frequency and kinetic energy from eV to J.

Tabulated values:

λ (nm)	KE (eV)	ν (Hz)	KE (J)
261	0.13	$1.15{\cdot}10^{15}$	$2.08{\cdot}10^{-20}$
250	0.33	$1.20{\cdot}10^{15}$	$5.29{\cdot}10^{-20}$
234	0.68	$1.28{\cdot}10^{15}$	$1.09{\cdot}10^{-19}$
218	1.08	$1.38{\cdot}10^{15}$	$1.73{\cdot}10^{-19}$
184	2.13	$1.63{\cdot}10^{15}$	$3.41{\cdot}10^{-19}$

$$E_k = h\nu - \phi$$

Fitting the data to the above equation yields:

$$E_k = 6.68 \cdot 10^{-34} \cdot \nu - 7.48 \cdot 10^{-19}$$

$\boxed{h = 6.68 \cdot 10^{-34} \text{ J·s}}$

$\phi = 7.48 \cdot 10^{-19}$

$\boxed{\phi = 4.67 \text{ eV}}$