

IB FRQ #1

	# of protons	# of neutrons	# of electrons
$^{23}\text{Na}^+$			
$^{24}\text{Na}^+$			
^{23}Na			

A. Complete the preceding chart. (2 pts)

B. Describe the paths that each sodium atom or ion would take in a mass spectrometer (3 pts)

C. Explain the light absorption and emission process and why $^{23}\text{Na}^+$ and $^{24}\text{Na}^+$ would have the same light frequency emissions. (3 pts)

D. If the $3s^1$ electron is promoted to the 5s orbital state light is _____ (1 pt).

E. Write out the quantum numbers for the valence electron in its ground state, and the excited state in part D. (4 pts)