

Revised August 2011



HONORS WORKSHEET 2a: Atomic Structure



Use the periodic table here; <http://www.adriandingleschemistrypages.com/apptable.pdf> to help you answer this worksheet.

1. What is the charge on a sodium **atom**? (1)
2. What is the charge on a sodium **nucleus**? (1)
3. What is the atomic number of potassium? (1)
4. How many protons are there in the **nucleus** of a potassium atom? (1)
5. How many electrons in the potassium **nucleus**? (1)

Revised August 2011



6. Many elements have a number of isotopes.

(a) Define the term **isotope**. (2)

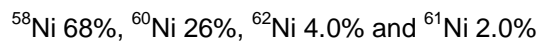
(b) Complete the following table. (22)

Row	Isotope symbol	Atomic #	# Protons	# Neutrons	Mass #
1	$^{13}\text{C}_6$				
2		17		18	
3			26		56
4			17		37
5				2	3
6		52			128
7			50	70	

(c) Consider the 2nd and 4th row in the table. What three things do they have in common? (3)

(d) Consider the 2nd and 4th row in the table. Give two differences? (2)

(e) Naturally occurring Ni is found to have the following approximate isotopic abundance;



Calculate the average relative atomic mass of Ni to two decimal places. (2)

Revised August 2011



7. The results taken from a mass spectrum of chlorine gas show peaks at m/e 35.00 and m/e 37.00 (The m/e peaks on a mass spectrum identify the different isotopes of an element that are present in the sample).
- (a) Given that the relative abundances of Cl 35.00 and Cl 37.00 are 77.50% and 22.50% respectively, calculate the average relative atomic mass of chlorine atoms to **four significant figures**. (2)
- (b) Suggest all the possible masses of Cl₂ **molecules** that are made when two chlorine atoms bond together. (3)
- (c) Which of the molecules you have suggested in (b) will be the most abundant? Explain your answer. (2)