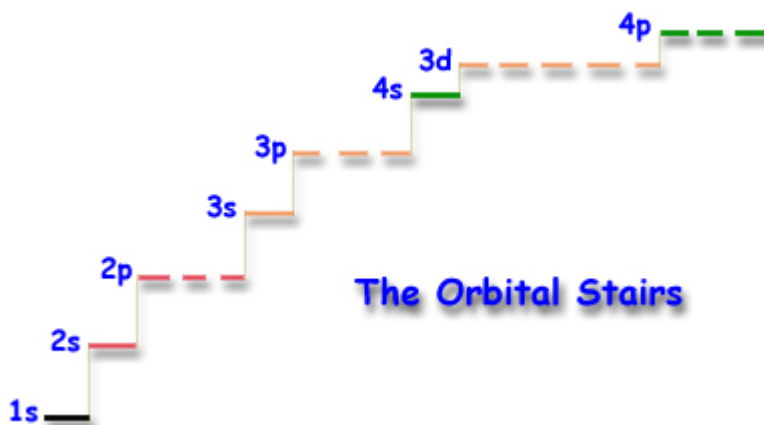


The Periodic Table

<i>IA</i> H 1 1.01																	<i>VIIIA</i> He 2 4.00
<i>IIA</i> Li 3 6.94	Be 4 9.01											<i>IIIA</i> B 5 10.81	<i>IVA</i> C 6 12.01	<i>V</i> N 7 14.01	<i>VIA</i> O 8 16.00	<i>VIIA</i> F 9 19.00	Ne 10 20.18
Na 11 22.99	Mg 12 24.31	<i>IIIB</i>	<i>IVB</i>	<i>VB</i>	<i>VIB</i>	<i>VII B</i>	<i>VIII B</i>	<i>VIII B</i>	<i>VIII B</i>	<i>IB</i>	<i>IIB</i>	<i>IIIA</i> Al 13 26.98	<i>IVA</i> Si 14 28.09	<i>V</i> P 15 30.97	<i>VIA</i> S 16 32.07	<i>VIIA</i> Cl 17 35.45	Ar 18 39.95
K 19 39.10	Ca 20 40.08	Sc 21 44.96	Ti 22 47.88	V 23 50.94	Cr 24 52.00	Mn 25 54.94	Fe 26 55.85	Co 27 58.93	Ni 28 58.69	Cu 29 63.55	Zn 30 65.39	Ga 31 69.72	Ge 32 72.61	As 33 74.92	Se 34 78.96	Br 35 79.90	Kr 36 83.80
Rb 37 85.47	Sr 38 87.62	Y 39 88.91	Zr 40 91.22	Nb 41 92.91	Mo 42 95.94	Tc 43 (97.9)	Ru 44 101.07	Rh 45 102.91	Pd 46 106.42	Ag 47 107.87	Cd 48 112.41	In 49 114.82	Sn 50 118.71	Sb 51 121.76	Te 52 127.60	I 53 126.90	Xe 54 131.29
Cs 55 132.91	Ba 56 137.33	La 57 138.91	Hf 72 178.49	Ta 73 180.95	W 74 183.85	Re 75 186.21	Os 76 190.2	Ir 77 192.22	Pt 78 195.08	Au 79 197.97	Hg 80 200.59	Tl 81 204.38	Pb 82 207.2	Bi 83 208.98	Po 84 (209)	At 85 (210)	Rn 86 (222)
Fr 87 223.02	Ra 88 226.03	Ac 89 227.03	Rf 104 (261)	Db 105 (262)	Sg 106 263	Bh 107 (262)	Hs 108 (265)	Mt 109 (266)	Ds 110 (271)	Rg 111 (272)	Uub 112 (285)	Uut 113 (284)	Uuq 114 (289)	Uup 115 (288)			

Ce 58 140.12	Pr 59 140.91	Nd 60 144.24	Pm 61 (145)	Sm 62 150.36	Eu 63 152.97	Gd 64 157.25	Tb 65 158.93	Dy 66 162.50	Ho 67 164.93	Er 68 167.26	Tm 69 168.93	Yb 70 173.04	Lu 71 174.97
Th 90 232.04	Pa 91 231.04	U 92 238.03	Np 93 237.05	Pu 94 (240)	Am 95 243.06	Cm 96 (247)	Bk 97 (248)	Cf 98 (251)	Es 99 252.08	Fm 100 257.10	Md 101 (257)	No 102 259.10	Lr 103 262.11



The Orbital Stairs

Question 8
5 Points

A certain element consists of two stable isotopes:

	Exact Mass (amu)	Abundance (%)
#1	112.9043	4.28
#2	114.9041	95.72

What is the average atomic mass of this element? Give answer to 4 decimal places
Show Work

$$112.9043(0.0428) + 114.9041(0.9572)$$

114.8185 amu

Question 9
6 Points

How many **MOLES** of chlorine are present in 4.05 grams of carbon tetrachloride?

Show Work

$$\text{CCl}_4: \text{C} + 4(\text{Cl}) = 12.01 + 4(35.45) = 153.81\text{g}$$

$$\frac{4.05 \text{ g}}{153.81 \text{ g}} \times \frac{1 \text{ mol}}{1} = 0.0263 \text{ mol}$$

$$\frac{0.0263 \text{ mol}}{1} \times \frac{4 \text{ Cl}}{1 \text{ CCl}_4} = 0.105 \text{ mol}$$

0.105 moles

Question 10
5 Points

How many **GRAMS** of I^- are present in 2.03 moles of copper(II) iodide?

Show Work

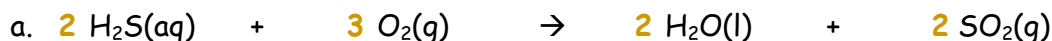
$$\frac{2.03 \text{ mol CuI}_2}{1} \times \frac{2 \text{ I}^-}{1 \text{ CuI}_2} = 4.06 \text{ mol I}^-$$

$$\frac{4.06 \text{ mol I}^-}{1} \times \frac{126.9 \text{ g}}{1 \text{ mol}} = 515 \text{ g}$$

515 grams

Question 11
9 Points

Balance the following chemical equations using the **smallest possible integer coefficients**.



b. Write a balanced equation for the **complete oxidation** reaction that occurs when **ethane** (C_2H_6) burns in air.

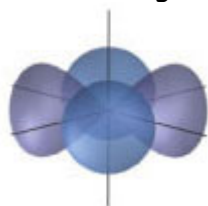


c. When **sulfur dioxide** reacts with **oxygen**, **sulfur trioxide** is formed.

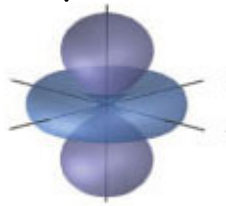


Question 12
6 Points

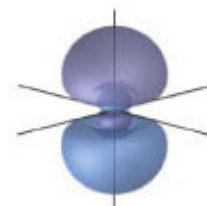
Label the following orbital drawings as **s**, **p**, **d** or **f**.



d

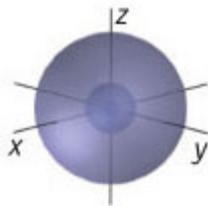


d



p

Question 13
4 Points



The orbital depicted on the left is not:


(Circle those that apply)

2p

1s

3s

Question 14
10 Points

1. Write the **complete** electronic configuration for **phosphorus**? $1s^2 2s^2 2p^6 3s^2 3p^3$
2. Write the **noble gas** configuration for **vanadium, (V)**? $[\text{Ar}]4s^2 3d^3$
3. The **element** with an **electron configuration** of $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^5$ **Mn**
4. **Se**, $[\text{Ar}]4s^2 3d^{10} 4p^4$, has how many **valence electrons**? **6**
5. The element in period **4** that has the Lewis diagram,  **Ge**

Question 15
4 Points

Using only the periodic table arrange the following elements in order of increasing atomic radius:
Mg, O, Na, K

O

Smallest

Mg

Na

K

Largest

Question 16
4 Points

Using only the periodic table **arrange** the following elements in order of **increasing electronegativity**:
Ga, N, Al, P

Ga

Least

Al

P

N

Largest

Exam I Score