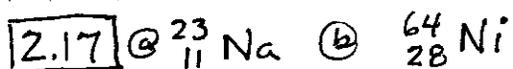


CHEM1 REVIEW - CHANG, Chpt. 2

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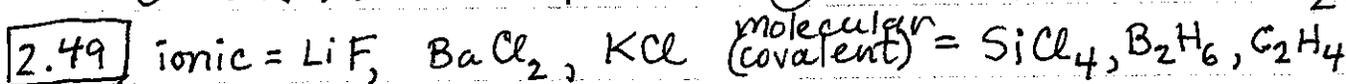
2.7  $1 \text{ cm} \times \frac{10^{12} \text{ pm}}{10^2 \text{ cm}} \times \frac{1 \text{ atom}}{10^2 \text{ pm}} = 10^8 \text{ atoms}$  100 000 000 atoms or  $1 \times 10^8 \text{ atoms}$

2.15	${}^3_2\text{He}$	$p^+$	$n$	${}^{48}_{22}\text{Ti}$	$p^+$	$n$
		2	1		22	26
	${}^4_2\text{He}$	2	2	${}^{79}_{35}\text{Br}$	35	44
	${}^{24}_{12}\text{Mg}$	12	12	${}^{195}_{78}\text{Pt}$	78	117
	${}^{25}_{12}\text{Mg}$	12	13			



2.31 diatomic = c, polyatomic = abc, not compounds = a  
compounds = b & c element = a

2.35	$p^+$	$e^-$		$p^+$	$e^-$		$p^+$	$e^-$	
	$\text{Na}^+$	11	10	$\text{Fe}^{2+}$	26	24	$\text{S}^{2-}$	16	18
	$\text{Ca}^{2+}$	20	18	$\text{I}^-$	53	54	$\text{O}^{2-}$	8	10
	$\text{Al}^{3+}$	13	10	$\text{F}^-$	9	10	$\text{N}^{3-}$	7	10



- 2.57
- |                                 |                                 |
|---------------------------------|---------------------------------|
| a) sodium chromate              | b) phosphorus trifluoride       |
| c) potassium hydrogen phosphate | d) phosphorus pentafluoride     |
| e) hydrogen monobromide         | f) tetraphosphorus hexoxide     |
| g) hydrobromic acid             | h) cadmium(II) iodide           |
| i) lithium carbonate            | j) strontium sulfate            |
| k) potassium dichromate         | l) aluminum hydroxide           |
| m) ammonium nitrite             | n) sodium carbonate decahydrate |

2.59 a)  $RbNO_2$

b)  $K_2S$

c)  $NaHS$

d)  $Mg_3(PO_4)_2$

e)  $CaHPO_4$

f)  $KH_2PO_4$

g)  $IF_7$

h)  $(NH_4)_2SO_4$

i)  $AgClO_4$

j)  $BCl_3$

2.61  $SF_6$

1g S = 3.55g F

$SF_n$

1g S = 2.37g F

$$\frac{2.37g}{3.55g} = \frac{n}{6}$$

$$n = \frac{6 \cdot 2.37}{3.55} = 4$$

$n = 4$

$SF_4$

2.69 a) molecular formula

b) empirical formula

c)  $C_3H_8$   
 $C_3H_8$

d)  $C_2H_2$   
 $CH$

e)  $C_2H_6$   
 $CH_3$

f)  $C_6H_6$   
 $CH$

2.75 a)  $BaO$  barium oxide

b)  $Al_2S_3$  aluminum sulfide

c)  $Ca_3P_2$  calcium phosphide

d)  $Li_3N$  lithium nitride

2.89

	$p^+$	$n$	Ratio ( $\frac{n}{p^+}$ )
$^4_2He$	2	2	1.0
$^{20}_{10}Ne$	10	10	1.0
$^{40}_{18}Ar$	18	22	1.2
$^{84}_{36}Kr$	36	48	1.3
$^{132}_{54}Xe$	54	78	1.4

Generally

As the atomic number increases, the ratio of  $n$  to  $p^+$  increases.

(More specific - once we reach the 3rd energy level,  $\frac{n}{p^+}$  jumps by about  $\frac{2}{9}$  for Ar, then by successive  $\frac{1}{9}$  increments.)