FE Review - Chemistry

Pariodic Table (pg 79 NCEES)

(i) Columns are Valence shell ea) Label cols. on pg 79

(ii) Left-to-right

Alkali metals
Alkali carths
Transiton metals

Chailogens
Halogens
Noble clements

a) Lablel on pg 79

(iii) Elements in same column have similar chemical properties (& physical properties)

Know: Groups (columns)

Periods (rows)

Melals

Non-metals

Methaloids (semi-metals)

				64	_						
26.981 Abonic Muss 26.981 Epidems Time	**Actinide Series	*Lanthanide Series	87 Fr (223)	55 Cs 132.91	37 Rb 85.468	19 K 39.098	0.941 11 Na 22.990	1.0079 Li	H-K	7/80	
			88 Ra 226.02	56 Ba 137.33	38 Sr 87.62	20 Ca 40.078	4 Be 9.0122 12 Mg 24.305	Be 4	RA/	6	
			89** Ac 227.03	57* La 138.91	39 Y 88.906	21 Sc 44.956			N	Solida XA	ben ben
	90 Th 232.04	58 Ce 140.12	104 Rt (261)	72 Hf 178.49	40 Zr 91.224	22 Ti 47.88				2	a s tsu
	91 Pa 231.04	59 Pr 140.91	105 Ha (262)	73 Ta 180.95	41 Nb 92,906	23 V 50.941	thus Motals				əlir gni
	92 U 238.03	60 Nd 144.24		74 W 183.85	42 Mo 95.94	24 Cr 51.996		A	Λι		oin ich shi
	93 Np 237.05	61 Pm (145)		75 Re 186.21	43 Tc (98)	25 Mn 54.938		Atomic Weight	Atomic Number Symbol	PE	ical and not
	94 Pv (244)	62 Sm 150.36		76 Os 190.2	44 Ru 101.07	26 Fe 55.847		=	4	PERIODIC TABLE OF ELEMENTS	pas
	95 Am (243)	63 Eu 151.96	\	17 1r 192.22	45 Rh 102.91	27 Co 58.933				TABLE	ges, lent lent
	96 Cm (247)	64 Gd 157.25		Pt 195.08	Pd 106.42	28 Ni 58.69				OF EI	SI
	97 Bk (247)	65 Tb 158.92		79 Au 196.97	Ag 107.87	63.53				EMEN	əvi
	98 Cf (251)	06 Dy 162.50		80 Hg 200.59	48 Cd 112.41	30 Zn 65.39	7			TS	
	99 Es (252)	67 Ho 164.93		81 T1 204.38	49 In 114.82	Ga 69.723	13 Al 26.981	7	\		
	100 Fm (257)	68 Er 167.26		82 Pb 207.2	50 Sn 118.71	(S.6)	18.08	2006	W		- ne 2i 1 2im
	101 Md (258)	Tm 168.93		85 Bi 208.98	Sb)	74.92	15 P 30,974	14.007	4	_	ethe the
	No (259)	70 Yb 173.04		(200)	12776	34 Se 78.96	16 S 32.066	8 8	10/2	- Cross	g ns 10
	103 Lr (260)	7	CAY	(210)	53 I 126.90	35 Br 79,904	17 CI 35.453	9 F F 18.998	H.	- Hage	1
			semi mata	86 Rn (222)	Xe 131.29	83.80	18 Ar 39.948	10 Ne 20.179	He 4 000%	00 E8	
			ret.								1

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FE Review - Chamistry
   · Matter - 945, liquid, solid
   · Heterogeneous Homogeneous Mixture
                                            - Non uniterm/ uniterm
   · Substance - matter with fixed composition
   . Compared - decomposed into simpler substines by chamical means
    · Elowett - conhot ....
   · Intensive property - independent on amount material (density)
· Extensive property - dependent " (mass)
                   =/amu
  protun
                  2/amu all have muss.

2 1 amu c muss small relate to other two
  neutron
  clectron
 Atomic Number = # protens (Z)
Mass Number = # protons + # neutrons (A)
Sotopes = same clement different mass Number (A)
Atom = Neutral species
Ion = Charged species
      Cation + ion, attracted to Catnode (-)
Anion - ion, attracted to Anote (+)
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An atom with 34 protons, 43 neutrons & 34 electrons would have symbol

(a) 34 se

(b) 775e

(c) 77 Tc

(d) 43Tc

Atomic # is 34
Atomic mass & 34+43 = 77
Atomic mass & Se (stelenium), Col6
Am # 78.96

E198

Element Names

- Need to commit some to mamcry

H, He, C, N, O, Mg, S.

Fe, Na, K, P, Au, Ag, Cu, Pb

Ionic Vs Molewlar Ionic: 2 donors only and Metal + non-metal Molecular: If 2 elements and non-metal + non-metal If more than 2 elements, then reed to check known structural, active groups. CuCl2 - I PC/3-M Nacl- I Mg Brz - I PH3 - M KF-I

Polyatomic groups (memory)

NH4⁺ (N43) ammonia

NO3, NO2 nitrate, nitrite

304 sulfate

H2504 Sulfavic acid

2H+ Soy2
group chaye imper/int

in reacturs

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6.022.1023 atoms things in a mole.
 If things is atoms, then I make of "terms" "cleckrons".
Review naming lunvertens
   Important examples
                                      hypo - below
      HC10 - hypochlorous acid
     HCloz - chlorove acid
 -> HC103 - Chloric acid - root.
    Heloy - perchloric
    Heloz + corbonic
    Head Heaz - bi-carbanate
           103 - carbonate
Formula weight
                       EW = MW | A oxidatin number
Equivalent neight
```

mole/mass fractoms $\chi_{i} = \frac{m_{i}}{\frac{3}{2}m_{j}}$ For mixtures

What is oxidation state of C in
$$Na_2 co_3$$
?

(a) -4

(b) -2

(Na^+)₂ + Oo_3^{2-}

(c) +2

(d) +4

(d) +4

(e) +4

A compound is 68.94% 0, 31.06% unknown by Weight. MW is 69.7g/mol. What is compound?

- (a) NO2
- (6) F202
- (c) B203
- (d) 5:04

An

48g 0 3mol 0 21g? 1.9m B Guess "C" & check The readon b

At equilibrium the gas reaction has following activities $\chi = 5.73 \cdot 10^{-2} \text{m/L}$ $\chi = 2.67 \cdot 10^{-2} \text{m/L}$ $\chi = 4.59 \cdot 10^{-2} \text{m/L}$

2x=Y+2Z

What is Equilibrian constant for this reachen?

(9) 9.8.10-4m/L

(b) 1.7.10-2 m/L

(c) 2.1.10-2m/L

(d) 3.7.10-1m/L

 $K_{eq} = \frac{IYJ[ZJ^2]}{IXJ^2}$ $= \frac{(2.67 \cdot 10^{-2})(4.57 \cdot 10^{-2})^2}{(5.73 \cdot 10^{-2})^2}$ $= 1.71.10^{-2} \text{ m/L}$ Choose B