Practice Test #1 KEY

PART 1			
#	Ans	#	Ans
1	E	11	B
2	C	12	A
3	C	13	C
4	D	14	A
5	B	15	D
6	E	16	C
7	B	17	B
8	C	18	C
9	B	19	B
10	E	20	D

PART 2			
#	Ans	#	Ans
1	B	14	E
2	C	15	D
3	E	16	C
4	B	17	C
5	B	18	B
6	E	19	A
7	D	20	B
8	B	21	D
9	A	22	A
10	D	23	E
11	C	24	C
12	D	25	B
13	A		

PART 3			
#	Ans	#	Ans
1	E	11	A
2	B	12	D
3	D	13	B
4	C	14	C
5	A	15	E
6	B	16	A
7	C	17	B
8	D	18	C
9	A	19	D
10	E	20	E

PART 4			
#	Ans	#	Ans
1	A	14	D
2	B	15	E
3	C	16	D
4	D	17	B
5	E	18	C
6	D	19	A
7	A	20	A
8	B	21	B
9	C	22	C
10	E	23	B
11	A	24	C
12	B	25	B
13	C	26	E

PART 5			
#	Ans	#	Ans
1	A	11	A
2	C	12	E
3	B	13	D
4	D	14	A
5	D	15	B
6	D	16	C
7	E	17	B
8	C	18	D
9	C	19	A
10	B	20	E

Practice Test #2 KEY

#	Ans	#	Ans	#	Ans	#	Ans
1	C	16	A	31	D	46	C
2	A	17	D	32	A	47	D
3	A	18	B	33	A	48	B
4	C	19	B	34	B	49	A
5	D	20	C	35	B	50	B
6	A	21	A	36	A	51	C
7	D	22	A	37	A	52	B
8	D	23	D	38	D	53	D
9	B	24	A	39	A	54	A
10	A	25	D	40	B	55	C
11	D	26	A	41	B	56	B
12	A	27	C	42	D	57	C
13	C	28	C	43	B	58	D
14	C	29	C	44	C	59	C
15	D	30	B	45	C	60	B

Free Response Q's

1a – 4.00 cm x 3.50 cm
b – 1.26×10^{-2} cm
c – 0.263 lb/in^3

2a – 2.42 atm
b – 0.0750 mol
c – 0.40 atm

3a – 46.0 J
b – 0.401 kJ

4a – The attractions btwn water vapor particles are strengthening as the liquid is forming
b – The temperature of the surroundings is cooler than that of the container because the condensation process is exothermic and energy moves from hot to cold, leaving the container
4c – because energy must leave the container, the forming of liquid water is exothermic

5 –

Isotope	Atomic Number	Mass Number	# of Protons
$^{69}Zn^{2+}$	30	69	30
$^{127}Te^{2-}$	52	127	52

# of Neutrons	#of Electrons	Net Charge
39	28	+2
75	54	−2

6 – 75.8% Cl-35, 24.2% Cl-37

7a - $^{44}_{22}\text{Ti} + {}^{0}_{-1}\text{e}^- \rightarrow {}^{44}_{21}\text{Sc}$

b – 300 years

8a - $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^{10}\ 4p^6\ 5s^2\ 4d^{10}\ 5p^6\ 6s^2\ 4f^{14}\ 5d^{10}\ 6p^1$

b – 3
c – Tl^{3+}
d - $[Xe]\ 4f^{14}\ 5d^{10}$
e – Outer electron of both Tl and Pb are in the 6p subshell. However, Tl has 81 protons, while Pb has 82 protons. Outer electrons are more attracted to a nucleus with more protons, requiring more energy to remove. Because Pb has more protons than Tl, Pb has a higher first ionization energy.
f – 2.7×10^{24} atoms

Practice Test #3 KEY

#	Ans	#	Ans	#	Ans	#	Ans
1	C	19	C	37	C	55	D
2	D	20	D	38	D	56	B
3	D	21	C	39	D	57	B
4	D	22	C	40	C	58	B
5	A	23	A	41	B	59	A
6	B	24	A	42	C	60	C
7	B	25	A	43	C	61	A
8	B	26	D	44	D	62	D
9	A	27	A	45	B	63	A
10	D	28	D	46	C	64	B
11	B	29	B	47	D	65	C
12	B	30	B	48	B	66	A
13	D	31	D	49	C	67	D
14	B	32	B	50	B	68	A
15	D	33	A	51	B	69	B
16	D	34	A	52	B	70	B
17	B	35	A	53	B		
18	A	36	A	54	A		

Free Response Q's

1a – ClO2

b – ClO2

c – 4.52 x 10^{22} molecules

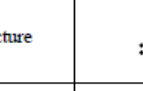
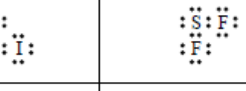
2 -

Compound:	CO	CaO
Lewis Structures:		
Type of Solid Formed:	Molecular Solid	Ionic Solid
Inter-Particle Forces	Dipole-dipole Interactions	Ionic Bonds

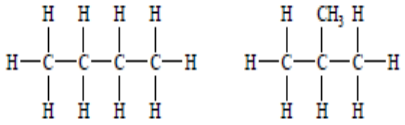
10a – $\text{Rate} = k[NH_3]^2[H_2O_2]^1$

b – $3.6 \times 10^6\ \underline{M}^{-2}\ \text{min}^{-1}$

3 –

Compound:	BI_3	SF_2
Lewis Structure		
Molecular Shape	Trigonal Planar	Bent
Bond Angles	120°	104°
Molecule is	Polar | Non-Polar	Polar | Non-Polar
Type of IMF:	London Dispersion Forces	Dipole-dipole Interactions

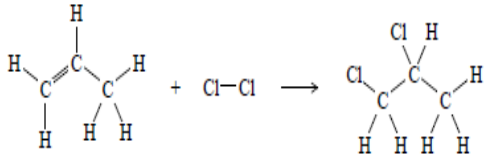
4a –



b –

$$2\ C_4H_{10} + 13\ O_2 \rightarrow 8\ CO_2 + 10\ H_2O$$

5 –



6 –

	Compound	Cabbage Juice Color [red | green | purple]	Conductivity [bright | dim | dark]	Dissociation Equation
(i)	HBr	RED	BRIGHT	$HBr \rightarrow H^+ + Br^-$
(ii)	$Mg(OH)_2$	GREEN	DIM	$Mg(OH)_2 \leftrightarrows Mg^{2+} + 2\ OH^-$
(iii)	NH_3	GREEN	DIM	$NH_3 + H_2O \leftrightarrows NH_4^+ + OH^-$

7 – 2.67

8a – $Pb\ (s) + 2\ HCl\ (aq) \rightarrow H_2\ (g) + PbCl_2\ (s)$

b – $Pb\ (s) + 2\ H^+ + 2\ Cl^- \rightarrow H_2\ (g) + PbCl_2\ (s)$

9a - $2\ C_3H_8O\ (l) + 9\ O_2\ (g) \rightarrow 6\ CO_2\ (g) + 8\ H_2O\ (l)$

b – 4.53 L

c – 93.8%

d - -4039 kJ/mol

e – 306.5 kJ/mol

11a - $K_{eq} = \dfrac{[HCl]_{eq}^2}{[H_2]_{eq}[Cl_2]_{eq}}$

b -

$$Q = \frac{[HCl]^2}{[H_2][Cl_2]} = \frac{(0.38)^2}{(0.020)(0.020)} = 361 < 841$$

Because $Q < K_{eq}$, the reaction will go in the forward direction.

c -

$$[H_2]_{eq} = [Cl_2]_{eq} = 0.014\ \underline{M};\ [HCl]_{eq} = 0.393\ \underline{M}$$

Practice Test #4 KEY

#	Ans	#	Ans	#	Ans	#	Ans	#	Ans
1	D	21	B	41	C	61	D	81	B
2	A	22	D	42	B	62	C	82	B
3	B	23	D	43	D	63	B	83	B
4	B	24	B	44	D	64	A	84	D
5	C	25	B	45	C	65	D	85	C
6	B	26	D	46	D	66	C	86	B
7	D	27	A	47	D	67	C	87	D
8	A	28	B	48	A	68	C	88	C
9	A	29	B	49	A	69	B	89	B
10	A	30	D	50	A	70	B	90	B
11	A	31	C	51	D	71	D	91	A
12	A	32	C	52	D	72	A	92	B
13	D	33	A	53	A	73	D	93	A
14	B	34	D	54	C	74	C	94	D
15	A	35	D	55	D	75	A	95	C
16	B	36	A	56	A	76	C	96	A
17	D	37	C	57	C	77	D	97	B
18	B	38	A	58	A	78	B	98	D
19	D	39	A	59	A	79	A	99	A
20	D	40	A	60	D	80	A	100	B

Practice Test #5 KEY

PART 1					
#	Ans	#	Ans	#	Ans
1	D	11	E	21	B
2	$C_6H_{12}O_2$	12	A	22	C
3	D	13	A	23	A
4	C	14	C	24	A
5	A	15	B	25	B
6	D	16	D	26	B
7	C	17	A	27	D
8	D	18	A	28	A
9	D	19	B	29	C
10	D	20	B		

PART 2											
#	Ans	#	Ans	#	Ans	#	Ans	#	Ans	#	Ans
1	B	16	-	31	D	46	A	61	C	76	B
2	C	17	A	32	B	47	B	62	C	77	D
3	C	18	C	33	B	48	A	63	D	78	A
4	C	19	B	34	D	49	A	64	D	79	B
5	A	20	D	35	A	50	B	65	D	80	B
6	C	21	C	36	D	51	A	66	A	81	-
7	B	22	A	37	D	52	C	67	-	82	-
8	D	23	B	38	A	53	B	68	B	83	-
9	C	24	C	39	B	54	B	69	-	84	-
10	A	25	C	40	B	55	C	70	-	85	-
11	B	26	D	41	B	56	B	71	-	86	-
12	B	27	B	42	C	57	B	72	-	87	-
13	C	28	C	43	B	58	C	73	B	88	-
14	D	29	D	44	C	59	A	74	A	89	-
15	C	30	A	45	B	60	A	75	C		

PART 3							
#	Ans	#	Ans	#	Ans	#	Ans
1	F	21	B	41	C	61	A
2	F	22	A	42	C	62	C
3	F	23	A	43	A	63	C
4	F	24	C	44	B	64	B
5	T	25	D	45	D	65	A
6	F	26	A	46	C	66	B
7	T	27	B	47	A	67	D
8	T	28	D	48	A	68	B
9	T	29	C	49	C	69	A
10	F	30	A	50	C	70	C
11	D	31	A	51	C	71	C
12	C	32	D	52	D	72	A
13	A	33	A	53	C	73	D
14	B	34	C	54	B	74	B
15	A	35	A	55	B	75	B
16	D	36	D	56	C	76	A
17	D	37	B	57	D	77	B
18	C	38	B	58	A	78	C
19	D	39	B	59	D	79	A
20	D	40	B	60	B		