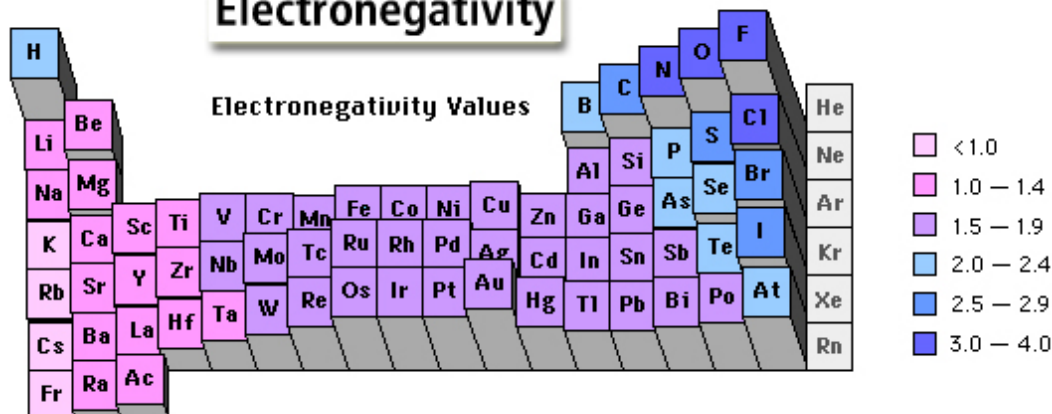


The Periodic Table

IA H 1 1.01																	VIII A He 2 4.00															
IIA Li 3 6.94		Be 4 9.01												III A B 5 10.81	IV A C 6 12.01	V A N 7 14.01	VI A O 8 16.00	VII A F 9 19.00	Ne 10 20.18													
Na 11 22.99		Mg 12 24.31		IIIB Sc 21 44.96	IVB Ti 22 47.88	VB V 23 50.94	VIB Cr 24 52.00	VIIB Mn 25 54.94	VIIIB Fe 26 55.85	VIIIB Co 27 58.93	VIIIB Ni 28 58.69	IB Cu 29 63.55	IIB Zn 30 65.39	III A Ga 31 69.72	IV A Ge 32 72.61	V A As 33 74.92	VI A Se 34 78.96	VII A 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

Electronegativity



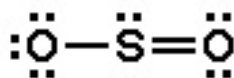
SID

Last _____

First _____

Question 1

8 Points

To answer the questions, interpret the following Lewis diagram for SO_2 

- a) The number of **lone pair** on central atom _____
- b) The number of **single bond(s)** _____
- c) The number of **double bond(s)** _____
- d) The number of **equivalent Lewis structures** _____

Question 2

8 Points

Draw a Lewis structure for each of the following where the central atom obeys the **octet rule**.**Question 3**

6 Points

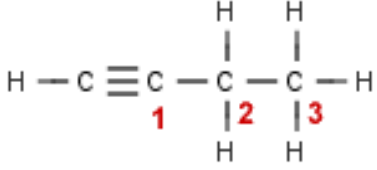
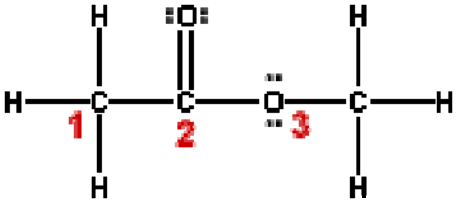
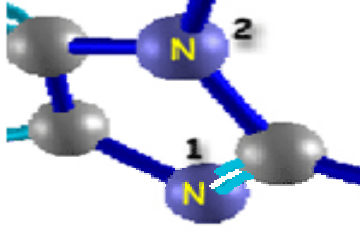
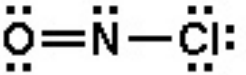
On the rough work paper provided - draw a **Lewis structure** for NO_2^- in which the central N atom **obeys the octet rule**, and answer the questions on the right based on your drawing.

- a) The number of **unshared pairs (lone pairs)** on the central N atom is: _____
- b) The central N atom forms _____ **single bonds**.
- c) The central N atom forms _____ **double bonds**.

Question 4

8 Points

Draw a **Lewis structure** for each of the following **organic molecules**.

<p>Question 5 6 Points</p>	<p>O_3 has resonance structures - draw them.</p>	
<p>Question 6 8 Points</p>	<p>What is the name of the compound with the formula:</p> <p>a) N_2O _____</p> <p>b) BBr_3 _____</p>	<p>What is the formula for:</p> <p>a) Phosphorus pentachloride _____</p> <p>b) Sulfur hexafluoride _____</p>
<p>Question 7 6 Points</p>		<p>What is the electron pair geometry about:</p> <p>a) Atom 1: _____</p> <p>b) Atom 2: _____</p> <p>c) Atom 3: _____</p>
<p>Question 8 6 Points</p>		<p>What is the predicted bond angle about:</p> <p>a) Atom 1: _____</p> <p>b) Atom 2: _____</p> <p>c) Atom 3: _____</p>
<p>Question 9 4 Points</p>		<p>What is the predicted bond angle about the following atoms?</p> <p>a) Nitrogen 1 _____</p> <p>b) Nitrogen 2 _____</p>
<p>Question 10 6 Points</p>	<p>The Lewis Dot Structure for $NOCl$ is depicted on the right.</p> <div style="text-align: right;">  </div> <p>a) The electron pair geometry around N is: _____</p> <p>b) The molecular geometry around N is: _____</p>	

Question 11
8 Points

The **electron-pair geometry** around the **S** atom in **SBr₂**? _____. There is/are _____ **lone pair(s)** around the central atom, so the **molecular geometry** of the **SBr₂** molecule is predicted to be _____.

SBr₂ is _____. (Polar/Nonpolar)

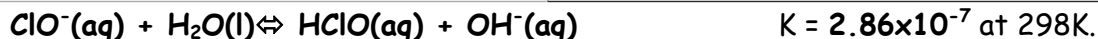
Question 12
4 Points

In our discussion on the **consequences of molecular polarity**, the data shown below was used to discuss:

Solubility of Some Common Substances		
Compound	Solubility in H ₂ O g/100mL	
O ₂	4.5x10 ⁻³	18°C
N ₂	2.0x10 ⁻³	18°C
NH ₃	89.5	0°C
CO ₂	0.179	18°C
HCl	72.1	20°C

- a) Membranes
- b) Micelle action
- c) Fabric softeners
- d) Like dissolves like
- e) Detergents

Question 13
4 Points

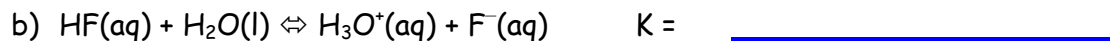


Assuming you start with **ClO⁻** and no **HClO** or **OH⁻**, **circle** those of the following that **best** describes the **equilibrium system**?

- a) The **reverse** reaction is favored at equilibrium.
- b) **Appreciable** quantities of **all species** are present at equilibrium.
- c) The **forward** reaction is favored at equilibrium.
- d) **Very little HClO** will be present at equilibrium.

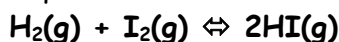
Question 14
6 Points

Write the **equilibrium constant expression**, **K**, for the following reactions:



Question 15
4 Points

Consider the following system at equilibrium at 698K:



When some **I₂(g)** is added to the equilibrium system at constant temperature:

The reaction must:

- a) Run in the **forward** direction.
- b) Run in the **reverse** direction.
- c) Remain the **same**.

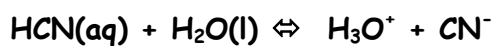
The concentration of **H₂** will:

- a) **Increase**
- b) Remain the **same**
- c) **Decrease**

Question 16

4 Points

HCN is a weak acid -

When some OH^- is added to the equilibrium system at constant temperature:

The reaction must:

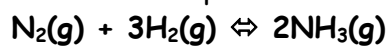
- d) Run in the **forward** direction.
- e) Run in the **reverse** direction.
- f) Remain the **same**.

The concentration of CN^- will:

- d) **Increase**
- e) Remain the **same**
- f) **Decrease**

Question 17

4 Points

The production of ammonia is an **exothermic** process -The **production** of NH_3 at equilibrium is facilitated by:

- | | |
|-----------------------------------------------------------------|------------------------------------------------------|
| <input type="checkbox"/> Removing $\text{N}_2(\text{g})$ | <input type="checkbox"/> Cooling the reaction |
| <input type="checkbox"/> Adding $\text{H}_2(\text{g})$ | <input type="checkbox"/> Heating the reaction |

Exam II Score