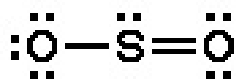


SID Last KeyFirst Answer**Question 1**
8 PointsTo answer the questions, interpret the following Lewis diagram for SO_2 

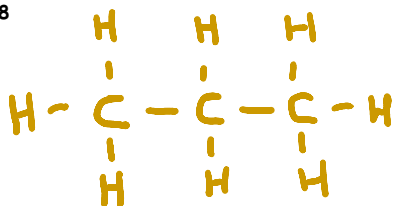
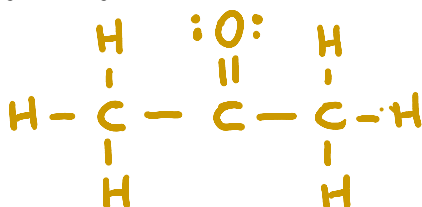
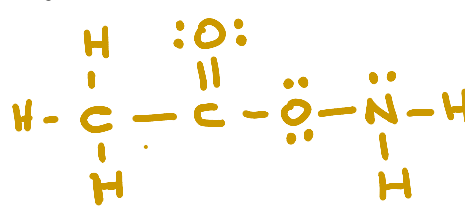
- a) The number of **lone pair** on central atom 1
- b) The number of **single bond(s)** 1
- c) The number of **double bond(s)** 1
- d) The number of **equivalent Lewis structures** 2

Question 2
8 PointsDraw a Lewis structure for each of the following where the central atom obeys the **octet rule**. O_2 

Carbon dioxide

 ClO_3^-  F_2CO **Question 3**
6 PointsOn 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: 1
- b) The central N atom forms 1 **single bonds**.
- c) The central N atom forms 1 **double bonds**.

Question 4
8 PointsDraw a **Lewis structure** for each of the following **organic molecules**. C_3H_8  HCOOH  CH_3COCH_3  $\text{CH}_3\text{COONH}_2$ 

Question 11
8 Points

The **electron-pair geometry** around the **S** atom in **SBr₂**? Tetrahedron. There is/are 2 lone pair(s) around the central atom, so the **molecular geometry** of the **SBr₂** molecule is predicted to be Angular/Bent (~109°).
SBr₂ is _____ . (Polar/Nonpolar)

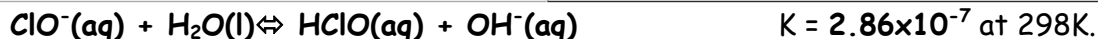
Question 12
4 Points

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

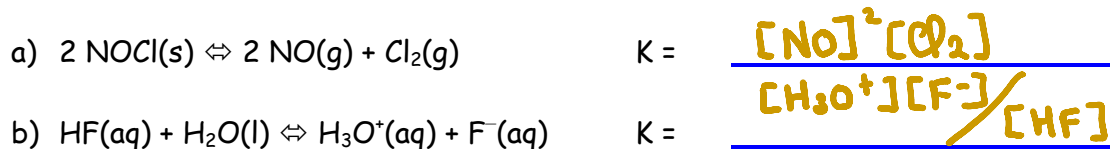


Assuming you start with **ClO⁻** and no **HClO** or **OH⁻**, **circle** those of the following that **best** describes the **equilibrium system**?

- 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.

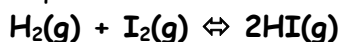
Question 14
6 Points

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:

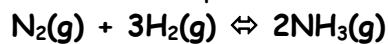
- d) Run in the **forward** direction.
- e) Run in the **reverse** direction.
- f) Remain the **same**.

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

Exam II Score