

# Participation Assignment

## CHEM 1100-General Chemistry II

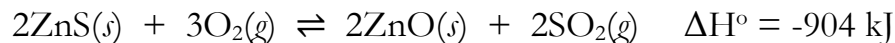
Name:

#11

Section: 31, TR

Due Date: Tuesday 2/25/2020

1. Assume the reaction between zinc sulfide, ZnS, and oxygen is at equilibrium and predict what will happen to the concentration of SO<sub>2</sub> in each of the following cases:



a. Add more O<sub>2</sub>

e. The temperature is raised

b. Remove some O<sub>2</sub>

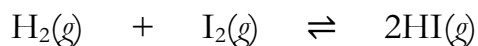
f. The temperature is lowered

c. Container volume is decreased

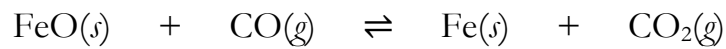
g. Some ZnS is removed.

d. Overall pressure is decreased

2. At 430 °C, 0.500 mol of HI is added to a 2.00 L container and allowed to come to equilibrium. Calculate the equilibrium concentrations of all the chemical species. K<sub>c</sub> is 54.3 at this temperature.



3. At 900 K the equilibrium constant,  $K_p$ , for the reduction of iron(II) oxide to iron metal is 0.287. Calculate the equilibrium pressures of CO and  $\text{CO}_2$  if the initial pressures are 1.500 atm for CO and 0.500 atm for  $\text{CO}_2$ .



4. A mixture of 0.0500 M  $\text{NO}_2$  and 0.0500 M  $\text{N}_2\text{O}_4$  is allowed to come to equilibrium. Calculate the equilibrium concentrations of all the chemical species.  $K_c$  is 216 at 25 °C.

