5) Ozone decomposes to oxygen according to the balance chemical equation below:

2O3 3O2

If the rate of disappearance of the ozone is -7.2E-4 M/s, what is the rate of formation of oxygen?

6) If 100kJ of heat is added to 54.0 g of water at 100°C, what is the final state of the water?

MW H2O = 17.9 g/mole

7) How many grams of NaCl do you need to add to 5.00 kg of water to make a solution that freezes at -

10.0°C (assume an ideal solution)? MW NaCl = 58.4 g/mole

8) If an individual records a blood alcohol level of 0.0267M (0.16% by volume), what will this person’s

blood alcohol level be 4 hours later if the rate constant for the oxidation of ethanol in the liver is 0.00425

M/hour?

10) The reaction of NO and O2 produces NO2

2NO(g) + O2(g) -2 NO2(g)

The rate constant is second order with respect to NO(g) and first order with respect to O2(g). At a given temperature, the rate constant, k, equals 6.1E3 M-2S-1. What is the rate of reaction when the initial concentrations of NO and O2 are 0.020 M and 0.015 M respectively?

Potentially useful information

PV = nRT

ln(A/Ao) = -kt

1 atm = 760 mmHg

lnP = (- H/RT) + c

1/A - 1/Ao = kt

Room temperature = 25°C = 298K

ln (P2/P1) = (H/R)(1/T1-1/T2)

Ao - A = kt

R = 8.31 J/(mol K) = 0.0821 (L atm)/(mol K)

T = K*m*i

t1/2 = 0.693/k

Kbp for water: 0.512°C/*m*

Pa = *X*a Pa

o

kH for N2 = 8.42E-7 M/ mmHg

Kfp for water: -1.86°C/*m*

= cRTi

kH for O2 = 1.66E-6 M/ mmHg

Psolvent = -*X*solute Po

solvent

Sg= kH Pg

kH for CO2 = 4.48E-5 M/ mmHg

Hvap for water = 40.7 kJ/mole