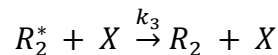
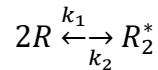


Assignment - 2
Combustion Explosion and Detonation (AS 5640)
 Department of aerospace Engineering, IIT Madras
 Due date: **12/02/2019**

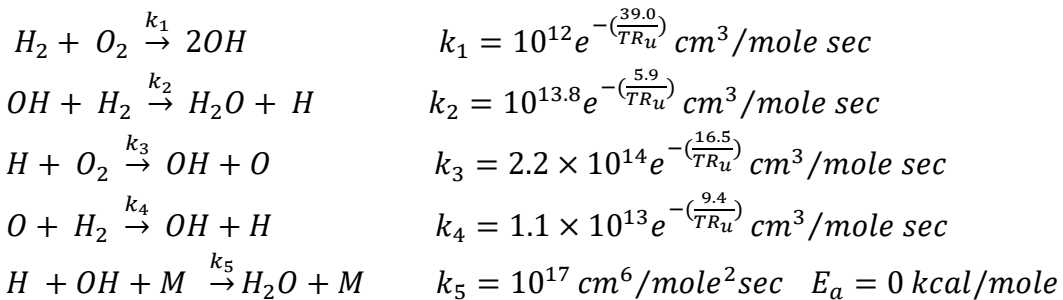
Assignment is to be submitted latest by 4pm on the above due date

1. One of the mechanisms of atom and radical combinations, called the energy-transfer mechanism, is described by the following chemical steps:



Where R represents a radical or an atom and X is a third body. Use the steady-state treatment for R_2^* to determine the rate of consumption of R . What is the order of recombination reaction when the concentration of X is sufficiently large such that $k_3 C_X \gg k_2$? What is the order of the recombination reaction at very low pressures?

2. At low pressure, assuming no wall reaction, the H_2 - O_2 reaction may be accounted for by the mechanism



Using the steady state hypothesis, derive the differential equations expressing rate of formation of water (dC_{H_2O}/dt) in terms of C_{H_2} and C_{O_2} .