

<물리화학 Homework #3>

1. Suggest a physical interpretation of the dependence of the Gibbs energy on the pressure and temperature.

2. A sample consisting of 3.00 mol of diatomic perfect gas molecules at 300K is compressed reversibly and adiabatically until its temperature reaches 400K. Given that $C_{V,m} = 27.5 \text{ J/K} \cdot \text{mol}$, calculate q , w , ΔU , ΔH , and ΔS .

3. At 200K, the compression factor of oxygen varies with pressure as shown below. Evaluate the fugacity of oxygen at this temperature and 100 atm

p/atm	1.0000	4.0000	7.0000	10.0000	40.000	70.000	100.00
z	0.9971	0.98796	0.97880	0.96956	0.87340	0.77640	0.68710

4. Entropy개념을 활용하여 다음 (가)~(라) 공정의 가능성을 각각 판단하시오. 또한 각 공정의 효율을 정의하고 그 값을 구하시오.

