Unit 15 - Week 12: Chemical Reaction Equilibrium

Assignment 12

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

1) The standard enthalpy of formation $\Delta H_f^{\circ}$ for NO (g) and NO₂ (g) are 90.3 and 3 kJ mol⁻¹ respectively. The standard enthalpy $\Delta H_f^{\circ}$ of the following reaction in kJ is

$$2\text{NO(g)} + \text{O}_2(g) \rightleftharpoons 2\text{NO}_2(g)$$

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) -114.3, -114.1

5 points

2) The standard Gibbs' free energy of formation $\Delta G_f^{\circ}$ for NO (g) and NO₂ (g) are 83 and 51.3 kJ mol⁻¹ respectively. The logarithm of the equilibrium constant (ln $K$) for the following reaction at 298 K is

$$2\text{NO(g)} + \text{O}_2(g) \rightleftharpoons 2\text{NO}_2(g)$$

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 28.3, 30.3

5 points

3) Use the data given in questions 1 and 2. Assume that the enthalpy of the reaction is independent of the temperature. The value of the equilibrium constant for the follow...
4) Consider the following reactions occurring in a system CH₄ + H₂O → CO + 3H₂ and CH₄ + 2H₂O → CO₂ + 4H₂. 4 moles of methane and 6 moles of water are initially fed into the system. The reactions proceed and after certain time, 0.4 moles of CO and 0.2 moles of CO₂ are present in the system. The mole-fraction of hydrogen at this time is

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 400,500

5) Consider the reaction CH₄ + H₂O → CO + 3H₂. At the start of the reaction the reactor charged with 10 moles. This feed mixture contained 2 moles of each of CH₄, H₂O, CO, H₂ and an inert, N₂. The mole-fraction of CO expressed in terms of the reaction coordinate ε is

No, the answer is incorrect.
Score: 0
Accepted Answers:

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\frac{2 + \varepsilon}{10 + 2\varepsilon}
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