

Part B True-False

Classify each of these statements as always true, AT; sometimes true, ST; or never true, NT.

- _____ 12. The concentrations of reactants and products in a system at dynamic equilibrium are always changing.
- _____ 13. A change in the pressure on a system can cause a shift in the equilibrium position.
- _____ 14. For a chemical equilibrium to be established, the chemical reaction must be irreversible.
- _____ 15. The K_{eq} for a certain reaction was 2×10^{-7} . For this reaction at equilibrium, the concentration of the reactants is greater than the concentration of the products.

Part C Matching

Match each description in Column B to the correct term in Column A.

Column A	Column B
_____ 16. reversible reactions	a. state of balance in which forward and reverse reactions take place at the same rate
_____ 17. chemical equilibrium	b. measurement of the amount of solute that is dissolved in a given quantity of solvent
_____ 18. equilibrium position	c. relative concentrations of reactants and products of a reaction that has reached equilibrium
_____ 19. Le Châtelier's principle	d. When stress is applied to a system at equilibrium, the system changes to relieve the stress.
_____ 20. equilibrium constant	e. reaction in which conversion of reactants to products and products to reactants occur simultaneously
_____ 21. concentration	f. ratio of product concentrations to reactant concentrations with each raised to a power given by the number of moles of the substance in the balanced equation

Part D Questions and Problems

Solve the following problem in the space provided. Show your work.

22.
$$2\text{SO}_3(\text{g}) \rightarrow 2\text{SO}_2(\text{g}) + \text{O}_2(\text{g})$$

Calculate K_{eq} for this reaction if the equilibrium concentrations are:
 $[\text{SO}_2] = 0.42\text{M}$, $[\text{O}_2] = 0.21\text{M}$, $[\text{SO}_3] = 0.072\text{M}$