

Part B True-False

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

NT 12. The concentrations of reactants and products in a system at dynamic equilibrium are always changing.ST 13. A change in the pressure on a system can cause a shift in the equilibrium position.NT 14. For a chemical equilibrium to be established, the chemical reaction must be irreversible.AT 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.

$$K_{eq} = \frac{[\text{products}]}{[\text{reactants}]}$$

$$= \frac{10}{1}$$

Part C Matching

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

Column A	Column B
<u>d</u> 16. reversible reaction	a. state of balance in which forward and reverse reactions take place at the same rate
<u>a</u> 17. chemical equilibrium	b. relative concentrations of reactants and products of a reaction that has reached equilibrium
<u>b</u> 18. equilibrium position	c. When stress is applied to a system at equilibrium, the system changes to relieve the stress.
<u>c</u> 19. Le Châtelier's principle	d. reaction in which conversion of reactants to products and products to reactants occur simultaneously
<u>e</u> 20. equilibrium constant	e. 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

$$= \frac{1}{10}$$

Part D Problem

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

Calculate K_{eq} for this reaction if the equilibrium concentrations are:

$[\text{SO}_2] = 0.42\text{M}, [\text{O}_2] = 0.21\text{M}, [\text{SO}_3] = 0.072\text{M}$

$$K_{eq} = \frac{[0.42\text{M}]^2 \times [0.21\text{M}]}{[0.072\text{M}]^2}$$

$$= 7.145 = 7.1 > 1, \text{ so favours products}$$