Chemical Equilibria Quiz

1. If the reaction $H_2 + I_2 = 2$ HI is conducted at such a temperature that the reaction is 72% complete, then if 1.0 mole of H₂ and 1.0 mole of I₂ were initially reacted, the moles of HI at equilibrium will be:

0.72 moles

72 moles



2.0 moles

B 1.44 moles

- 2. If the reaction A + B = C + D is initially at equilibrium, and then more A is added, which of the following is not true?

The equilibrium will shift to the right. More collisions of A with B will occur, and the rate of the forward reaction will increase.

B

The moles of D will be increased.

The moles of B will be increased.

3. For the reaction N_2O_4 (g) \neq 2 NO₂ (g), the expression for the equilibrium constant would be:

	$\frac{[N_2O_4]}{[NO_2]^2}$	C	[NO ₂] ² [N ₂ O ₄]
B	$\frac{\left[NO_2\right]^2}{\left[N_2O_4\right]}$	D	$\frac{[NO_2]}{[N_2O_4]}$

- **4.** For the reaction 3 $H_{2(g)}$ + $N_{2(g)} = 2 NH_{3(g)}$ + heat, the best set of conditions to produce more product are:

 - A high temperature and low pressure C low temperature and low pressure
 - **B** low temperature and high pressure **D** high temperature and high pressure

F

- 5. The study of reaction rates is known as chemical kinetics.
 - T true
- **6.** For the reaction: $H_{2(g)} + I_{2(g)} + 52 \text{ kJ} \rightarrow 2 \text{ HI}_{(g)}$, the product has a greater amount of stored potential energy than do the reactants.

T	true
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F	false
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false



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7.	The chen reac	The change in enthalpy during a chemical reaction is the difference between the chemical potential energy of the products and the chemical potential energy of the reactants.				
	T	true	F	false		
8.	Whe gene	n the concentration of the reactants erally decreases.	is de	ecreased, the forward reaction rate		
	T	true	F	false		
9.	A ca	talyst is consumed in a chemical rea	actior	۱.		
	T	true	F	false		
10	At eo reac	quilibrium, the concentration of the p tants.	rodu	cts is equal to the concentration of the		
	T	true	F	false		
11.	A rev reac	versible reaction is one in which the to produce the original reactants.	prod	ucts formed in a chemical reaction can		
	T	true	F	false		
12	.lf a r the t	eaction is exothermic, the speed of temperature.	that r	reaction can be increased by increasing		
	T	true	F	false		
13	After stop	the establishment of a chemical eq	uilibr	ium, the forward and reverse reactions		
	T	true	F	false		
14.	Whe incre	n the temperature of a chemical rea	ction	decreases, the reaction rate generally		
	T	true	F	false		
15	.For t incre	he equilibrium: $2 \text{ NO}_2 (g) \rightleftharpoons \text{N}_2\text{O}_4 (g)$ ease the rate of the reverse reaction.	+ 57	kJ, decreasing the pressure will initially		
	T	true	F	false		
16	Whe favo	n heat is applied to a system in equi ured.	ilibriu	im, the reaction that absorbs heat is		
	T	true	F	false		



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17. For the reaction: $H_{2(g)} + I_{2(g)} + 52 \text{ kJ} \rightarrow 2 \text{ HI}_{(g)}$, 52 kJ is the activation energy. **F** false **T** true **18.** The equilibrium in the reaction $N_2 + 3 H_2 = 2 NH_3$ will be shifted towards the left by an increase in pressure. T F true false **19.**The equation $Ba(OH)_2 + H_2SO_4 = 2 H_2O + BaSO_4$ implies that: If you start with 1 mol Ba(OH)₂ and \mathbf{C} If H₂O and BaSO₄ and mixed. 1 mol H₂SO₄, then 1 mol H₂O and Ba(OH)₂ and H₂SO₄ will be formed. 1 mol BaSO₄ will be produced. **B** The reaction proceeds all the way At equilibrium, equal molar amounts to the products, then reverses, going of all four substances will exist. all the way to the reactants. 20. Solids are not included in the equilibrium constant because: **C** their concentrations are relatively of their molecular geometry. constant B **D** they are very often ionic in nature. their concentrations vary a great deal.

SOLUT	IONS			
(1)	В	(2) D	(3) B	(4) B
(5)	Т	(6) T	(7) T	(8) T
(9)	F	(10) F	(11) T	(12) T
(13)	F	(14) F	(15) T	(16) T
(17)	F	(18) F	(19) C	(20) C

