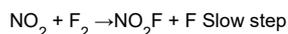


AP Chemistry Practice Test 5

Real AP Past Papers with Multiple-Choice Questions

1. A proposed mechanism for a reaction is as follows:



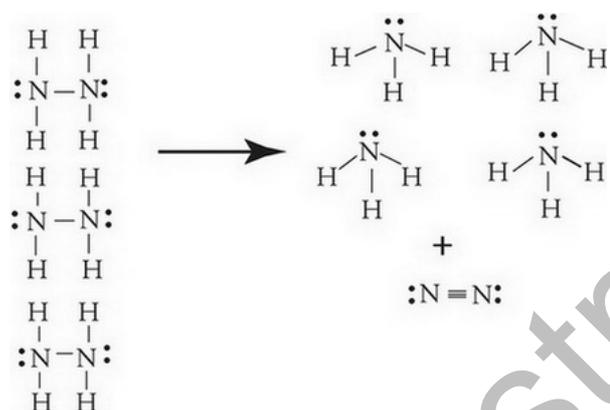
What is the order of the overall reaction?

- A. Zero order
- B. First order
- C. Second order
- D. Third order

2. Starting with a stock solution of 18.0 M H_2SO_4 , what is the proper procedure to create a 1.00 L sample of a 3.0 M solution of H_2SO_4 in a volumetric flask?

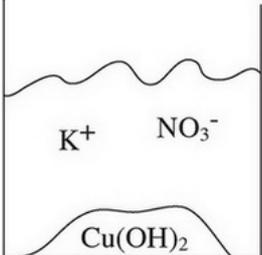
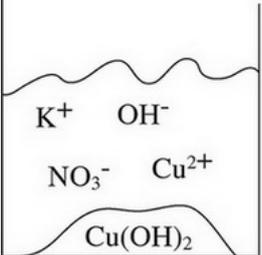
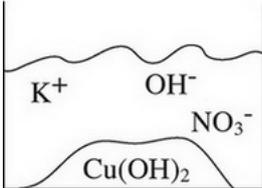
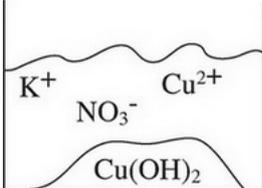
- A. Add 167 mL of the stock solution to the flask, then fill the flask the rest of the way with distilled water while swirling the solution.
- B. Add 600 mL of the stock solution to the flask, then fill the flask the rest of the way with distilled water while swirling the solution.
- C. Fill the flask partway with water, then add 167 mL of the stock solution, swirling to mix it. Last, fill the flask the rest of the way with distilled water.
- D. Fill the flask partway with water, then add 600 mL of the stock solution, swirling to mix it. Last, fill the flask the rest of the way with distilled water.

3. The reaction shown in the following diagram is accompanied by a large increase in temperature. If all molecules shown are in their gaseous state, which statement accurately describes the reaction?

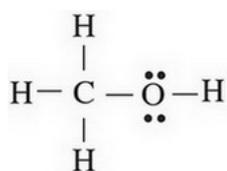


- A. It is an exothermic reaction in which entropy increases.
- B. It is an exothermic reaction in which entropy decreases.
- C. It is an endothermic reaction in which entropy increases.
- D. It is an endothermic reaction in which entropy decreases.

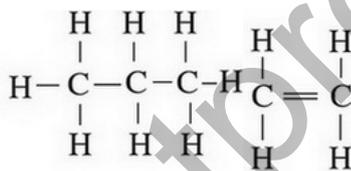
4. A student mixes equimolar amounts of KOH and $\text{Cu}(\text{NO}_3)_2$ in a beaker. Which of the following particulate diagrams correctly shows all species present after the reaction occurs?

- A. 
- B. 
- C. 
- D. 

Questions 5-7 refer to the following information.

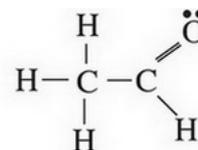


Methanol



Propane

Ethene



Ethanal

5. Based on the strength of the intermolecular forces in each substance, estimate from greatest to smallest the vapor pressures of each substance in liquid state at the same temperature.

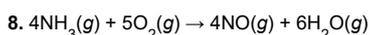
- A. propane > ethanal > ethene > methanol
- B. ethene > propane > ethanal > methanol
- C. ethanal > methanol > ethene > propane
- D. methanol > ethanal > propane > ethene

6. When in liquid state, which two substances are most likely to be miscible with water?

- A. propane and ethene
- B. methanol and propane
- C. ethene and ethanal
- D. methanol and ethanal

7. Between propane and ethene, which will likely have the higher boiling point and why?

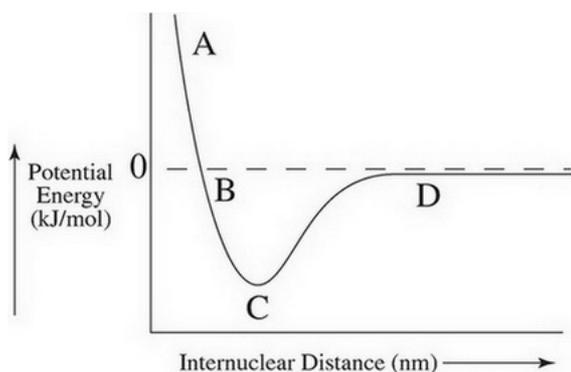
- A. propane, because it has a greater molar mass
- B. propane, because it has a more polarizable electron cloud
- C. ethene, because of the double bond
- D. ethene, because it is smaller in size



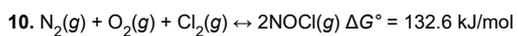
The above reaction will experience a rate increase by the addition of a catalyst such as platinum. Which of the following best explains why?

- A. The catalyst increases the overall frequency of collisions in the reactant molecules.
- B. The catalyst increases the frequency of collisions that occur at the proper orientation in the reactant molecules.
- C. The catalyst introduces a new reaction mechanism for the reaction.
- D. The catalyst increases the activation energy for the reaction.

9. The graph below shows the amount of potential energy between two hydrogen atoms as the distance between them changes. At which point in the graph would a molecule of H_2 be the most stable?

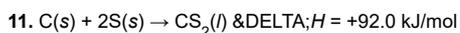


- A. Point A
- B. Point B
- C. Point C
- D. Point D



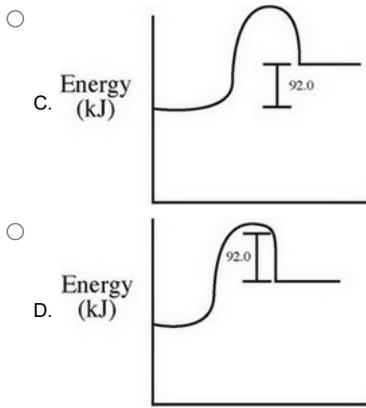
For the equilibrium above, what would happen to the value of ΔG° if the concentration of N_2 were to increase and why?

- A. It would increase as the reaction would become more thermodynamically favored.
- B. It would increase as the reaction would shift right and create more products.
- C. It would decrease because there are more reactants present.
- D. It would stay the same because the value of K_{eq} would not change.

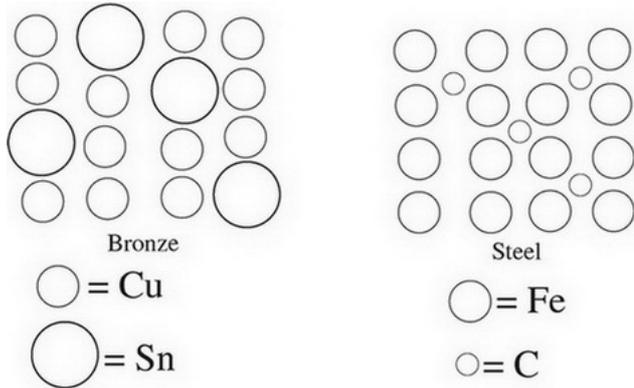


Which of the following energy level diagrams gives an accurate representation of the above reaction?

- A. Energy (kJ) vs. reaction progress diagram showing a peak. The reactants are at a higher energy level than the products. The energy difference between the reactants and products is labeled as 92.0.
- B. Energy (kJ) vs. reaction progress diagram showing a peak. The reactants are at a lower energy level than the products. The energy difference between the reactants and products is labeled as 92.0.



12. Two alloys are shown in the diagrams below—bronze, and steel. Which of the following correctly describes the malleability of both alloys compared to their primary metals?



- A. Bronze's malleability would be comparable to that of copper, but steel's malleability would be significantly lower than that of iron.
- B. Bronze's malleability would be significantly higher than that of copper, but steel's malleability would be comparable to that of iron.
- C. Both bronze and steel would have malleability values similar to those of their primary metals.
- D. Both bronze and steel would have malleability values greater than those of their primary metals.

TestprepKart