Chapter Summary Worksheet

Chapter 12
Introduction to kinetics

Print out and complete this worksheet to generate a summary for Chapter 12.

1 Consider the reaction between zinc and dilute sulfuric acid:

$Zn(s) + H_2SO_4(aq) \rightarrow ZnSO_4(aq) + H_2(g)$

Which would **not** alter the rate of this reaction?

- ☐ **A** an increase in temperature
- ☐ **B** an increase in pressure
- ☐ **C** the addition of a copper catalyst
- ☐ **D** an increase in the concentration of the acid

2 Consider the reaction:

$Ca(HCO_3)_2(aq) \rightarrow CaCO_3(s) + H_2O(l) + CO_2(g)$

Which would cause the greatest decrease in the rate of this reaction?

- ☐ **A** a lower temperature and a lower pressure
- ☐ **B** a lower temperature and an increase in pressure
- ☐ **C** a lower concentration of the reactant and a lower temperature
- ☐ **D** an increase in the concentration of the reactant and a lower temperature

3 Consider the reaction between chalk and hydrochloric acid:

$CaCO_3(s) + 2HCl(aq) \rightarrow$
$CaCl_2(aq) + H_2O(l) + CO_2(g)$

Which would result in the shortest time to produce $10\,cm^3$ of gaseous carbon dioxide?

- ☐ **A** large lumps of chalk, $1\,mol\,dm^{-3}$ acid and a temperature of 25°C
- ☐ **B** small pieces of chalk, $1\,mol\,dm^{-3}$ acid and a temperature of 45°C
- ☐ **C** small pieces of chalk, $0.5\,mol\,dm^{-3}$ acid and a temperature of 35°C
- ☐ **D** large lumps of chalk, $0.5\,mol\,dm^{-3}$ acid and a temperature of 45°C

4 Consider the reaction between gaseous sulfur dioxide and oxygen mixed in a syringe. The equation is:

$2SO_2(g) + O_2(g) \rightarrow 2SO_3(g)$

Which will **not** increase the rate of this reaction?

- ☐ **A** reduction of the volume by pushing in the plunger of the syringe
- ☐ **B** increasing the temperature by heating the syringe in an oven
- ☐ **C** adding $NO_2(g)$ as a catalyst
- ☐ **D** increasing the pressure by adding argon to the syringe at constant volume

5 Which is a true statement?

- ☐ **A** A fast reaction has a high activation energy, E_a.
- ☐ **B** A fast reaction has a low activation energy, E_a.
- ☐ **C** Exothermic reactions are fast.
- ☐ **D** A catalyst increases the proportion of successful collisions by increasing the mean kinetic energy of the molecules.

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