

University of Missouri-St. Louis

Name _____

Chemistry 2633

April 2020

Exam 1

Delete the wrong answers

- | | | | |
|------------|---|----|-----------------------|
| 1A. | The limiting reagent is | a) | 2-hydroxybenzoic acid |
| | | b) | |
| | | c) | |
| | | d) | |
| 1B | The theoretical yield of aspirin in grams is | a) | |
| | | b) | |
| | | c) | 5.22 |
| | | d) | |
| 1C | The % yield.of aspirin is? | a) | 47.9 |
| | | b) | |
| | | c) | |
| | | d) | |
| 1D | The main purpose of dissolving the crude aspirin in sodium bicarbonate and then re-precipitating with HCl was to? | a) | |
| | | b) | to remove the polymer |
| | | c) | |
| 2. (8pts)A | The R _f value of each spot is | a) | |
| b) | 0.167 and 0.633 | | |
| 2.B | The likely number of compounds present is | a) | |
| | | b) | 3 |
| | | c) | |
| B | Which spot in 2A was likely a mixture? | a) | Question not graded |
| | | b) | |

3.(18) A In 100 mL of a 1:1 volume mixture you could dissolve: a)
b) 5.5

B The equilibrium constant for the solubility of caffeine in water/methylene chloride is a) 0.1
b)
c)

C The amount in the methylene chloride layer would be a)
b) 0.909
c)

4. (32) Choose the statement which is most accurate

A. Boiling only occurs when a)
b) The vapor pressure equals the external pressure
c)

B. The vapor pressure of a liquid a)
b) increases exponentially with temperature
c)

C. The solubility of a solid usually a) increases with temperature
b)
c)

D. A pure compound a)
b) melts sharply

E. In purification, allowing a solid to recrystallize slowly a)
b) creates fewer imperfections in the crystal lattice

- c)
- F. In the synthesis of acetaminophen, HCl is added followed by sodium acetate
 - a)
 - b)
 - c) to increase solubility and increase reactivity
- G. A boiling stone often added to a solution before heating
 - a) to provide a surface area for bubble formation
 - b)
 - c)
- H. Calcium carbonate added in the isolation of caffeine from tea?
 - a)
 - b) to precipitate the tannins
 - c)
- I. The ferric chloride test in the synthesis of aspirin is used to confirm the presence of:
 - c) salicylic acid
- J. In TLC on silica gel, separation is based on competition between
 - a) the solvent and solute for the polar sites of the silica gel