Acyl Substitution — Practice Worksheet

Name: _____ Date: _____

Directions: Select the best answer for Questions 1–8. For Questions 9–10, explain your reasoning using chemical structures, reagents or electron-flow ideas where useful.

1. Acetyl chloride + ethanol gives mainly:

A. Ethyl ethanoate
B. Ethanal
C. Ethanol
D. Ethene

Answer: _____

2. Nucleophilic acyl substitution typically involves:

A. Tetrahedral intermediate then leaving-group loss
B. Direct removal of carbonyl carbon
C. Only radical steps
D. No C=O reformation

Answer: _____

3. Which is usually more reactive toward acyl substitution?

A. Acetamide
B. Acetyl chloride
C. Ethyl acetate
D. Acetic acid

Answer: _____

4. Ester aminolysis with NH_3 under suitable conditions forms:

A. An amide
B. An alkene
C. An acetal
D. An aldehyde

Answer: _____

5. Why are amides relatively unreactive compared with acyl chlorides?

A. Strong C–N resonance stabilization and poor leaving group
B. Amides lack carbonyl oxygen
C. They are always radicals
D. They contain multiple halogens

Answer: _____

6. What bond reforms as tetrahedral acyl intermediate collapses?

A. C=O
B. O–O
C. N=N
D. C≡C

Answer: _____

7. An ester has which acyl substituent?

A. –OR
B. –Cl
C. $–NR_2$ only
D. –H only

Answer: _____

8. Reaction of an acid chloride with excess water generally produces:

A. Carboxylic acid
B. Ketone
C. Alkyne
D. Ether only

Answer: _____

9. What happens after attack on an acyl derivative?

_____

_____

_____

10. Which is generally more reactive to substitution, acetyl chloride or acetamide?

_____

_____

_____