Year 13 Science: Substitution reactions: from haloalkanes to amides

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. Name the organic product when 2-bromobutane is heated with KOH(aq).

2. Name the organic product when propanoic acid reacts with $SOCl_2$.

3. Name the organic product when ethanoyl chloride reacts with propan-1-ol.

4. Give the organic products when propanamide is heated with NaOH(aq).

5. What is seen when water is added to ethanoyl chloride, and why?

Exam-style question: a family of propyl compounds

1-bromopropane is heated with concentrated NH_3 to give compound A. 1-bromopropane is also heated with KOH(aq) to give compound B. Propanoic acid reacts with $SOCl_2$ to give compound C.

6. Name compound A, and say what it does to damp red litmus paper.

7. Name compound B.

8. Compound C reacts with A. Name the organic product and the type of link it contains.

9. Compound C reacts with B. Name the organic product.

10. The product from part 3 is heated under reflux with dilute HCl. Give the two organic products and explain why one of them is an ion.

Fix the mistake

11. Correct this statement: "1-bromopropane with KOH always gives propan-1-ol."

12. Correct this statement: "Hydrolysing an amide in acid gives the carboxylic acid and ammonia."

13. Correct this statement: "The ester from propanoic acid and methanol is propyl methanoate."

14. Correct this statement: "An acyl chloride dissolves in water to give a solution of the acyl chloride."