

Exercise 9.41 – Properties of halogenoalkanes II

Q941-01 Which substance is most likely to react with ethoxide ions producing an alkene?

- A. $\text{C}_6\text{H}_5\text{Cl}$
 - B. $(\text{CH}_3)_3\text{CCl}$
 - C. $(\text{CH}_3)_3\text{CCH}_2\text{Cl}$
 - D. $\text{CH}_3\text{CH}_2\text{C}(\text{OH})\text{CHCl}$
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Q941-02 Which of the following compounds is produced by reaction of a halogenoalkane with sodium hydroxide in ethanol.

- A. CH_3CH_3
 - B. CH_2CH_2
 - C. $\text{CH}_3\text{CH}_2\text{OH}$
 - D. $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$
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Q941-03 The formula $\text{C}_4\text{H}_9\text{Br}$ represents more than one compound. Using this formula draw a structure (showing all bonds) to represent a halogenoalkane that is:

- a) Primary
 - b) Secondary
 - c) Tertiary
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Q941-04 Identify one of the isomers in question 3, above, that undergoes nucleophilic substitution mainly by an $\text{S}_{\text{N}}2$ mechanism.

Q941-05 Write the $\text{S}_{\text{N}}2$ mechanism for the reaction that occurs in question 4, when the isomer identified above reacts with dilute sodium hydroxide use curly arrows to represent the movement of electron pairs.

Q941-06 What is the product of the reaction between potassium cyanide in a water/ethanol solution and iodomethane?

- A. hydrogen cyanide
 - B. methanoic acid
 - C. ethanoic acid
 - D. ethanonitrile
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Q941-07 An experiment to measure hydrolysis was carried out on four halogenoalkanes, and the appearance of the liquid three minutes after the start of the heating was noted. Here are the results:

1-chlorobutane: Clear
1-bromobutane: Cloudy
1-iodobutane: Heavy precipitate

Which of the following best explains these results?

- A. The solubility products of the silver halides decreases as you go down the halogens from chlorine to iodine.
 - B. The strength of a carbon-chlorine bond is stronger than that of a carbon-bromine bond, which is in turn greater than a carbon-iodine bond.
 - C. The three reactions occur through three totally different mechanisms.
 - D. The electronegativities of the halogens decrease as you go down the group from chlorine to iodine.
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Q941-08 Suggest a two step reaction to form ethylamine from iodomethane.

Q941-09 Suggest a two step reaction that could be used to prepare a sample of propanone from 2-bromopropane.

Q941-10 When ammonia reacts with halogenoalkanes, amines are formed. Which of the following substances could be used to separate the amine from any excess remaining halogenoalkane?

- A. dilute acid
 - B. dilute base
 - C. water
 - D. hexane
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