3.4 Organic Reactions



3.4 Assignment KEY

- Classify each of the following reactions as either substitution, elimination, addition, or condensation.
 - addition a. CH₃CH=CHCH₂CH₃ + H₂ → CH3CH2-CH2CH2CH3

b.
$$CH_3CH_2CH_2CHCH_3 \rightarrow CH_3CH_2CH = CHCH_3 + H_2O$$

OH elimination

- Identify the type of organic reaction that would best accomplish each of the following conversions.
 - a. alkyl halide → alkene elimination
 - alkene → alcohol addition
 - alcohol + carboxylic acid → ester condensation
- 3. Complete each of the following equations by writing the condensed structural formula for the product that is most likely to form.
 - a. CH₃CH=CHCH₂CH₃ + H₂ →
- a. CH₂CH₂CH₂CH₂CH₃
- b. CH₃CH₂CHCH₂CH₃ + OH⁻ → b. CH₃CH₂CH(OH)CH₂CH₃
- c. $CH_3CH_2C=CCH_3 + 2H_2 \rightarrow$
- c. CH₂CH₂CH₂CH₂CH₃
- Dehydration d. CH₃CH₂CHCH₂CH₃ OH
- d. CH₃CH=CHCH₂CH₃
- 4. Identify the type of organic reaction seen below then predict the product(s).
- a) ethene + HBr --> bromoethane (addition)
- b) 1-bromopropane + OH- --> 1-propanol (substitution)
- c) ethanol + propanoic acid --> ethyl-propanoate (condensation)
- d)2,3-dimethyl-1-butene + H₂ --> 2,3-dimethylbutane (addition)



3.4 Assignment KEY Cont...

5. Explain why the hydration reaction involving 1-butene may yield two distinct products whereas the hydration of 2-butene yields only 1 product.

hydrating 1-butene may yield 1-butanol or 2-butanol because the OH group may bond to carbon 1 or 2 of the 4-carbon chain. hydrating 2 butene however, yields only 2-butanol

Elimination reaction-one organic molecule loses atoms or groups of atoms to form smaller molecules

Condensation reaction - two organic molecules combine to form a larger one

Therefore, this one is elimination

7. Functional groups give organic compounds distinct properties that may be used to identify the type of compound present. Suppose to examined the properties of several compounds and made the following observations:

Compound 1-liquid that has a pungent odour. It is miscible with water and the solution is a weak electrolyte.

Compound 2-is a liquid that has a strong aroma resembling apricots.

Using your observations, classify the functional group in each compound.

compound 1 - Carboxylic acid compound 2 - ester