

Exercises of Organic reactions

- 1) Fill in the blanks in the following organic equations, give names for all compounds and indicate the type of reaction:
 - a) $CH_3CH_2CH_2OH + CH_3CH_2CH_2OH \rightarrow \dots + H_2O$
 - **b**) CH_3 -CH=CH- CH_3 + HI \rightarrow
 - c) CH_3 - $CH_2OH + HF \rightarrow \dots + H_2O$
 - **d**) $CH_3-CH_2-CH=CH_2 + H_2O \rightarrow \dots$

e)
$$\left\langle \begin{array}{c} \\ \\ \end{array} \right\rangle$$
 $-$ H + CH₂Cl(CH₂)₃CH₃ \rightarrow + HCl

- **f**) $CH_2BrCH_2CH_3 + NaOH \rightarrow \dots + H_2O + NaBr$
- g) $CH_2=CH_2 + H_2 \rightarrow \dots$
- **h**) $CH_3CH_2CH_2COOH + 5O_2 \rightarrow \dots$



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Answers:

1) a) $CH_3CH_2CH_2OH + CH_3CH_2CH_2OH \rightarrow CH_3CH_2CH_2-O-CH_2CH_2CH_3 + H_2O$

1-propanol + 1-propanol \rightarrow dipropyl ether + water.

Elimination reaction.

b) CH_3 -CH=CH- CH_3 + $HI \rightarrow CH_3$ - CH_2 -CHI- CH_3

2-butene + hydrogen iodide \rightarrow 2-iodobutane.

Addition reaction.

c) CH_3 - $CH_2OH + HF \rightarrow CH_2F$ - $CH_3 + H_2O$

ethanol + hydrogen fluoride → fluoroethane + water.

Substitution reaction.

d) $CH_3-CH_2-CH=CH_2 + H_2O \rightarrow CH_3-CH_2-CHOH-CH_3$

1-butene + water \rightarrow 2-butanol.

Addition reaction.

e)
$$\langle \bigcirc \rangle$$
 -H + $CH_2Cl(CH_2)_3CH_3 \rightarrow \langle \bigcirc \rangle$ - $CH_2(CH_2)_3CH_3$ + $HCl(CH_2)_3CH_3$

benzene + 1-chloropentane → pentylbenzene + hydrogen chloride.

Substitution reaction (Friedel-Crafts reaction).

f)
$$CH_2BrCH_2CH_3 + NaOH \rightarrow CH_2=CH-CH_3 + H_2O + NaBr$$

1-bromopropane + sodium hydroxide → propene + water + sodium bromide.

Elimination reaction.

g)
$$CH_2 = CH_2 + H_2 \rightarrow CH_3 - CH_3$$

ethene + hydrogen \rightarrow ethane.

Addition reaction.

h)
$$CH_3CH_2CH_2COOH + 5O_2 \rightarrow 4CO_2 + 4H_2O$$

butanoic acid + oxygen \rightarrow carbon dioxide + water.

Combustion reaction.