Homework for test 4 – titration with a solid copy 111

NAME:_____

Write the Brønsted–Lowry reaction for each of the following Arrhenius reactions. ("$H^+$" is an acceptable substitute for "$H_3O^+$". In either case, balance the reaction.)

Reaction 1: $H_3PO_4 + NaOH \rightarrow NaH_2PO_4 + H_2O$

Reaction 2: $CH_3NH_2 + HNO_3 \rightarrow CH_3NH_3NO_3$

Reaction 3: $HClO_4 + RbOH \rightarrow RbClO_4 + H_2O$

Reaction 4: $HCl + H_2NNH_2 \rightarrow H_2NNH_3Cl$

Reaction 1: _____ → _____

Reaction 2: _____ → _____

Reaction 3: _____ → _____

Reaction 4: _____ → _____

Homework for test 4 – titration with a solid copy 112

NAME:_____

Write the Brønsted–Lowry reaction for each of the following Arrhenius reactions. ("$H^+$" is an acceptable substitute for "$H_3O^+$". In either case, balance the reaction.)

Reaction 1: $HIO_3 + KOH \rightarrow KIO_3 + H_2O$

Reaction 2: $CH_3COOH + NH_3 \rightarrow CH_3COONH_4$

Reaction 3: $H_2CO_3 + NH_3 \rightarrow NH_4HCO_3$

Reaction 4: $HNO_3 + KOH \rightarrow KNO_3 + H_2O$

Reaction 1: _____ → _____

Reaction 2: _____ → _____

Reaction 3: _____ → _____

Reaction 4: _____ → _____

Homework for test 4 – titration with a solid copy 113

NAME:_____

Write the Brønsted–Lowry reaction for each of the following Arrhenius reactions. ("$H^+$" is an acceptable substitute for "$H_3O^+$". In either case, balance the reaction.)

Reaction 1: $HF + NaOH \rightarrow NaF + H_2O$

Reaction 2: $HIO_3 + KOH \rightarrow KIO_3 + H_2O$

Reaction 3: $CH_3COOH + NH_3 \rightarrow CH_3COONH_4$

Reaction 4: $H_2CO_3 + NH_3 \rightarrow NH_4HCO_3$

Reaction 1: _____ → _____

Reaction 2: _____ → _____

Reaction 3: _____ → _____

Reaction 4: _____ → _____

Homework for test 4 – titration with a solid copy 114

NAME:_____

Write the Brønsted–Lowry reaction for each of the following Arrhenius reactions. ("$H^+$" is an acceptable substitute for "$H_3O^+$". In either case, balance the reaction.)

Reaction 1: $HF + NaOH \rightarrow NaF + H_2O$

Reaction 2: $HIO_3 + KOH \rightarrow KIO_3 + H_2O$

Reaction 3: $CH_3COOH + NH_3 \rightarrow CH_3COONH_4$

Reaction 4: $H_2CO_3 + NH_3 \rightarrow NH_4HCO_3$

Reaction 1: _____ → _____

Reaction 2: _____ → _____

Reaction 3: _____ → _____

Reaction 4: _____ → _____

Homework for test 4 – titration with a solid copy 115

NAME:_____

Write the Brønsted–Lowry reaction for each of the following Arrhenius reactions. ("$H^+$" is an acceptable substitute for "$H_3O^+$". In either case, balance the reaction.)

Reaction 1: $H_3PO_4 + NaOH \rightarrow NaH_2PO_4 + H_2O$

Reaction 2: $CH_3NH_2 + HNO_3 \rightarrow CH_3NH_3NO_3$

Reaction 3: $HClO_4 + RbOH \rightarrow RbClO_4 + H_2O$

Reaction 4: $HCl + H_2NNH_2 \rightarrow H_2NNH_3Cl$

Reaction 1: _____ → _____

Reaction 2: _____ → _____

Reaction 3: _____ → _____

Reaction 4: _____ → _____

Homework for test 4 – titration with a solid copy 116

NAME:_____

Write the Brønsted–Lowry reaction for each of the following Arrhenius reactions. ("$H^+$" is an acceptable substitute for "$H_3O^+$". In either case, balance the reaction.)

Reaction 1: $HClO + NaOH \rightarrow NaClO + H_2O$

Reaction 2: $H_3PO_4 + NaOH \rightarrow NaH_2PO_4 + H_2O$

Reaction 3: $CH_3NH_2 + HNO_3 \rightarrow CH_3NH_3NO_3$

Reaction 4: $HClO_4 + RbOH \rightarrow RbClO_4 + H_2O$

Reaction 1: _____ → _____

Reaction 2: _____ → _____

Reaction 3: _____ → _____

Reaction 4: _____ → _____

Homework for test 4 – titration with a solid copy 117

NAME:_____

Write the Brønsted–Lowry reaction for each of the following Arrhenius reactions. ("$H^+$" is an acceptable substitute for "$H_3O^+$". In either case, balance the reaction.)

Reaction 1: $HIO_3 + KOH \rightarrow KIO_3 + H_2O$

Reaction 2: $CH_3COOH + NH_3 \rightarrow CH_3COONH_4$

Reaction 3: $H_2CO_3 + NH_3 \rightarrow NH_4HCO_3$

Reaction 4: $HNO_3 + KOH \rightarrow KNO_3 + H_2O$

Reaction 1: _____ → _____

Reaction 2: _____ → _____

Reaction 3: _____ → _____

Reaction 4: _____ → _____

Homework for test 4 – titration with a solid copy 118

NAME:_____

Write the Brønsted–Lowry reaction for each of the following Arrhenius reactions. ("$H^+$" is an acceptable substitute for "$H_3O^+$". In either case, balance the reaction.)

Reaction 1: $CH_3COOH + NH_3 \rightarrow CH_3COONH_4$

Reaction 2: $H_2CO_3 + NH_3 \rightarrow NH_4HCO_3$

Reaction 3: $HNO_3 + KOH \rightarrow KNO_3 + H_2O$

Reaction 4: $HClO + NaOH \rightarrow NaClO + H_2O$

Reaction 1: _____ → _____

Reaction 2: _____ → _____

Reaction 3: _____ → _____

Reaction 4: _____ → _____

Homework for test 4 – titration with a solid copy 119

NAME:_____

Write the Brønsted–Lowry reaction for each of the following Arrhenius reactions. ("$H^+$" is an acceptable substitute for "$H_3O^+$". In either case, balance the reaction.)

Reaction 1: $HClO_4 + RbOH \rightarrow RbClO_4 + H_2O$

Reaction 2: $HCl + H_2NNH_2 \rightarrow H_2NNH_3Cl$

Reaction 3: $HF + NaOH \rightarrow NaF + H_2O$

Reaction 4: $HIO_3 + KOH \rightarrow KIO_3 + H_2O$

Reaction 1: _____ → _____

Reaction 2: _____ → _____

Reaction 3: _____ → _____

Reaction 4: _____ → _____

Homework for test 4 – titration with a solid copy 120

NAME:_____

Write the Brønsted–Lowry reaction for each of the following Arrhenius reactions. ("$H^+$" is an acceptable substitute for "$H_3O^+$". In either case, balance the reaction.)

Reaction 1: $CH_3NH_2 + HNO_3 \rightarrow CH_3NH_3NO_3$

Reaction 2: $HClO_4 + RbOH \rightarrow RbClO_4 + H_2O$

Reaction 3: $HCl + H_2NNH_2 \rightarrow H_2NNH_3Cl$

Reaction 4: $HF + NaOH \rightarrow NaF + H_2O$

Reaction 1: _____ → _____

Reaction 2: _____ → _____

Reaction 3: _____ → _____

Reaction 4: _____ → _____

Homework for test 4 – titration with a solid

copy 111
$H_3PO_4 + OH^- \rightleftharpoons H_2PO_4^- + H_2O$
$CH_3NH_2 + H_3O^+ \rightleftharpoons CH_3NH_3^+ + H_2O$
$H_3O^+ + OH^- \rightleftharpoons 2H_2O$
$Cl + H_2NNH_2 \rightleftharpoons H_2NNH_3^+$

copy 112
$H_3O^+ + OH^- \rightleftharpoons 2H_2O$
$CH_3COOH + NH_3 \rightleftharpoons CH_3COO + NH_4^+$
$H_2CO_3 + NH_3 \rightleftharpoons NH_4^+ + HCO_3^-$
$H_3O^+ + OH^- \rightleftharpoons 2H_2O$

copy 113
$HF + OH^- \rightleftharpoons F^- + H_2O$
$H_3O^+ + OH^- \rightleftharpoons 2H_2O$
$CH_3COOH + NH_3 \rightleftharpoons CH_3COO + NH_4^+$
$H_2CO_3 + NH_3 \rightleftharpoons NH_4^+ + HCO_3^-$

copy 114
$HF + OH^- \rightleftharpoons F^- + H_2O$
$H_3O^+ + OH^- \rightleftharpoons 2H_2O$
$CH_3COOH + NH_3 \rightleftharpoons CH_3COO + NH_4^+$
$H_2CO_3 + NH_3 \rightleftharpoons NH_4^+ + HCO_3^-$

copy 115
$H_3PO_4 + OH^- \rightleftharpoons H_2PO_4^- + H_2O$
$CH_3NH_2 + H_3O^+ \rightleftharpoons CH_3NH_3^+ + H_2O$
$H_3O^+ + OH^- \rightleftharpoons 2H_2O$
$Cl + H_2NNH_2 \rightleftharpoons H_2NNH_3^+$

copy 116
$HClO + OH^- \rightleftharpoons ClO^- + H_2O$
$H_3PO_4 + OH^- \rightleftharpoons H_2PO_4^- + H_2O$
$CH_3NH_2 + H_3O^+ \rightleftharpoons CH_3NH_3^+ + H_2O$
$H_3O^+ + OH^- \rightleftharpoons 2H_2O$

copy 117
$H_3O^+ + OH^- \rightleftharpoons 2H_2O$
$CH_3COOH + NH_3 \rightleftharpoons CH_3COO + NH_4^+$
$H_2CO_3 + NH_3 \rightleftharpoons NH_4^+ + HCO_3^-$
$H_3O^+ + OH^- \rightleftharpoons 2H_2O$

copy 118
$CH_3COOH + NH_3 \rightleftharpoons CH_3COO + NH_4^+$
$H_2CO_3 + NH_3 \rightleftharpoons NH_4^+ + HCO_3^-$
$H_3O^+ + OH^- \rightleftharpoons 2H_2O$
$HClO + OH^- \rightleftharpoons ClO^- + H_2O$

copy 119
$H_3O^+ + OH^- \rightleftharpoons 2H_2O$
$Cl + H_2NNH_2 \rightleftharpoons H_2NNH_3^+$
$HF + OH^- \rightleftharpoons F^- + H_2O$
$H_3O^+ + OH^- \rightleftharpoons 2H_2O$

copy 120
$CH_3NH_2 + H_3O^+ \rightleftharpoons CH_3NH_3^+ + H_2O$
$H_3O^+ + OH^- \rightleftharpoons 2H_2O$
$Cl + H_2NNH_2 \rightleftharpoons H_2NNH_3^+$
$HF + OH^- \rightleftharpoons F^- + H_2O$