Chemical Reactions Review

IDENTIFY THE TYPE OF REACTION AND BALANCE THE EQUATION:

1. $Sb + I_2 \rightarrow SbI_3$
2. $Li + H_2O \rightarrow LiOH + H_2$
3. $AlCl_3 \rightarrow Al + Cl_2$
4. $C_6H_{12} + O_2 \rightarrow CO_2 + H_2O$
5. $AlCl_3 + Na_2CO_3 \rightarrow Al_2(CO_3)_3 + NaCl$
6. $HNO_3 + Ba(OH)_2 \rightarrow Ba(NO_3)_2 + H_2O$
7. $Al + Pb(NO_3)_2 \rightarrow Al(NO_3)_3 + Pb$

IDENTIFY THE TYPE OF REACTION & WRITE A BALANCED EQUATION (INCL. STATES):

8. Aqueous solutions of ammonium chloride and lead(II) nitrate produce lead(II) chloride precipitate and aqueous ammonium nitrate.
9. Solid carbon disulfide burns in oxygen to yield carbon dioxide and sulfur dioxide gases.
10. Iron metal reacts with aqueous silver nitrate to produce aqueous iron(III) nitrate and silver metal.
11. Solid potassium nitrate yields solid potassium nitrite and oxygen gas.
12. Calcium metal reacts with chlorine gas to produce solid calcium chloride.
13. Fluorine gas added to aqueous potassium chloride produces aqueous potassium fluoride and chlorine gas.
14. Phosphorous reacts with oxygen gas to produce solid diphosphorous pentoxide.

IDENTIFY THE TYPE OF REACTION, PREDICT THE PRODUCTS (STATES NOT REQUIRED), AND BALANCE THE EQUATION:

15. $Al(s) + NaOH(aq) \rightarrow$
16. $C_2H_4(g) + O_2(g) \rightarrow$
17. $FeCl_2(aq) + K_2S(aq) \rightarrow$
18. $Ba(s) + O_2(g) \rightarrow$
19. $NH_4NO_3(aq) + NaCl(aq) \rightarrow$
20. $SO_2(g) \rightarrow$
21. Magnesium metal is added to aqueous hydrochloric acid.
22. Potassium metal is combined with chlorine gas.
23. Aqueous solutions of potassium bromide and silver nitrate are combined.
24. Solid mercury(II) oxide breaks down into its component elements.

CLASSIFY EACH REACTION AS EXOTHERMIC OR ENDOTHERMIC:

25. $PCl_3 + Cl_2 \rightarrow PCl_5 + energy$
26. $P_4O_{10} \xrightarrow{\Delta} P_4 + 5O_2$
27. $2Sb + 3I_2 + heat \rightarrow 2SbI_3$
28. $CaO + H_2O \rightarrow Ca(OH)_2 + heat$
29. $CaCO_3 + energy \rightarrow CaO + CO_2$
30. $2C_8H_{18} + 25O_2 \rightarrow 16CO_2 + 18H_2O + heat$

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ANSWER KEY

1.	synthesis	$2Sb + 3I_2 \rightarrow 2SbI_3$
2.	single replacement	$2Li + 2H_2O \rightarrow 2LiOH + H_2$
3.	decomposition	$2AlCl_3 \rightarrow 2Al + 3Cl_2$
4.	combustion	$C_6H_{12} + 9O_2 \rightarrow 6CO_2 + 6H_2O$
5.	double replacement	$2AlCl_3 + 3Na_2CO_3 \rightarrow Al_2(CO_3)_3 + 6NaCl$
6.	double replacement	$2HNO_3 + Ba(OH)_2 \rightarrow Ba(NO_3)_2 + 2H_2O$
7.	single replacement	$2Al + 3Pb(NO_3)_2 \rightarrow 2Al(NO_3)_3 + 3Pb$
8.	double replacement	$2NH_4Cl(aq) + Pb(NO_3)_2(aq) \rightarrow PbCl_2(s) + 2NH_4NO_3(aq)$
9.	combustion	$CS_2(s) + 3O_2(g) \rightarrow CO_2(g) + 2SO_2(g)$
10.	single replacement	$Fe(s) + 3AgNO_3(aq) \rightarrow Fe(NO_3)_3(aq) + 3Ag(s)$
11.	decomposition	$2KNO_3(s) \rightarrow 2KNO_2(s) + O_2(g)$
12.	synthesis	$Ca(s) + Cl_2(g) \rightarrow CaCl_2(s)$
13.	single replacement	$F_2(g) + 2KCl(aq) \rightarrow 2KF(aq) + Cl_2(g)$
14.	comb, synthesis	$4P(s) + 5O_2(g) \rightarrow 2P_2O_5(s)$
15.	single replacement	$Al(s) + NaOH(aq) \rightarrow$ N.R.
16.	combustion	$C_2H_4(g) + 3O_2(g) \rightarrow 2CO_2(g) + 2H_2O(g)$
17.	double replacement	$FeCl_2(aq) + K_2S(aq) \rightarrow FeS(s) + 2KCl(aq)$
18.	comb, synthesis	$2Ba(s) + O_2(g) \rightarrow 2BaO(s)$
19.	double replacement	$NH_4NO_3(aq) + NaCl(aq) \rightarrow$ N.R.
20.	decomposition	$SO_2(g) \rightarrow S(s) + O_2(g)$
21.	single replacement	$Mg(s) + 2HCl(aq) \rightarrow MgCl_2(aq) + H_2(g)$
22.	synthesis	$2K(s) + Cl_2(g) \rightarrow 2KCl(s)$
23.	double replacement	$KBr(aq) + AgNO_3(aq) \rightarrow AgBr(s) + KNO_3(aq)$
24.	decomposition	$2HgO(s) \rightarrow 2Hg(l) + O_2(g)$
25.	synthesis	exothermic
26.	decomposition	endothermic
27.	synthesis	endothermic
28.	synthesis	exothermic
29.	decomposition	endothermic
30.	combustion	exothermic