Name KEY
Date
Due Date

Mark /34

Correct and Hand in Again by _____

Chemistry 11

Hand In Assignment # 7—Chemical Equations

This Assignment will be marked and you are allowed to do one set of corrections.

1. Balance the following equations (1 mark each = 10 marks)

a. $2NH_3 + \frac{5}{2}O_2 \rightarrow 2NO + 3H_2O$ (4) (5) (4) (6)

b. $3(NH_4)_2C_2O_4 + 2AlCl_3 \rightarrow Al_2(C_2O_4)_3 + 6NH_4Cl$

c. $C_{13}H_{28} + 20O_2 \rightarrow 13CO_2 + 14H_2O$

d. $2Fe + 3H_2SO_4 \rightarrow Fe_2(SO_4)_3 + 3H_2$

e. $P_4 + 10Cl_2 \rightarrow 4PCl_5$

f. $Na_2Cr_2O_7 + 14HCl \rightarrow 2NaCl + 2CrCl_3 + 7H_2O + 3Cl_2$

g. $2H_3PO_4 + 3Ca(OH)_2 \rightarrow Ca_3(PO_4)_2 + 6H_2O$

h. $Ba(CH_3COO)_2 \rightarrow Ba + 4C + 3H_2 + 2O_2$

i. $C_6H_{13}OH + 9O_2 \rightarrow 6CO_2 + 7H_2O$

j. $MgSO_4 \cdot 6H_2O \rightarrow MgSO_4 + 6H_2O$

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2. Write a balanced chemical equation for each of the following. Don't forget ***diatomic*** elements! (2 marks each = 24 marks)

a. aluminum metal reacts with bromine to form aluminum bromide

Answer: $2Al + 3Br_2 \rightarrow 2AlBr_3$

2

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2

b. hydrochloric acid neutralizes aluminum hydroxide

Answer $3HCl + Al(OH)_3 \rightarrow 3H_2O + AlCl_3$

c. hexane (C_6H_{14}) burns in oxygen to produce carbon dioxide and water

2

Answer $C_6H_{14} + \frac{19}{2}O_2 \rightarrow 6CO_2 + 7H_2O$

(2) (19) (12) (14)

d. carbon dioxide and water are reacted to produce glucose ($C_6H_{12}O_6$) and oxygen in photosynthesis

2

Answer $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$

e. aluminum nitrate reacts with lithium sulphate to form aluminum sulphate and lithium nitrate

2

Answer $2Al(NO_3)_3 + 3Li_2SO_4 \rightarrow Al_2(SO_4)_3 + 6LiNO_3$

f. ammonia and phosphoric acid react to form ammonium phosphate

2

Answer $3NH_3 + H_3PO_4 \Rightarrow (NH_4)_3PO_4$

g. nitrogen dioxide reacts with water to form nitric acid and nitrogen monoxide

2

Answer $3NO_2 + H_2O \rightarrow 2HNO_3 + NO$

h. bromine reacts with sodium iodide to produce iodine and sodium bromide

2

Answer $Br_2 + 2NaI \rightarrow I_2 + 2NaBr$

i. calcium reacts in water to produce hydrogen gas and calcium hydroxide

2

Answer $Ca + 2H_2O \rightarrow H_2 + Ca(OH)_2$

j. butanol (C_4H_9OH) burns in oxygen to produce carbon dioxide and water

2

Answer $C_4H_9OH + 6O_2 \rightarrow 4CO_2 + 5H_2O$

k. hydrogen peroxide decomposes to form water and oxygen gas

2

Answer $2H_2O_2 \rightarrow 2H_2O + O_2$

l. aluminum bromide reacts with ammonium dichromate to produce aluminum dichromate and ammonium bromide

2

Answer $2AlBr_3 + 3(NH_4)_2Cr_2O_7 \rightarrow Al_2(Cr_2O_7)_3 + 6NH_4Br$

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Chemistry 11

Hand In Assignment # 8—Completing, Balancing & Classifying Chemical Equations

This Assignment will be marked and you are allowed to do one set of corrections.

1. **Complete, balance and classify the following equations as *synthesis*, *decomposition*, *single replacement*, *double replacement*, *neutralization* or *combustion*.**
(3 marks each = 51 marks)

a. $Ca + Zn(NO_3)_2 \rightarrow Zn + Ca(NO_3)_2$ (3)
Reaction Type SR

b. $C_2H_6 + \frac{7}{2}O_2 \rightarrow 2CO_2 + 3H_2O$ (3)
(2 7 4 6)
Reaction Type Combustion

c. $Na_2SO_4 + Ca(NO_3)_2 \rightarrow CaSO_4 + 2NaNO_3$ (3)
Reaction Type DR

d. $HgHPO_4 \rightarrow Hg + \frac{1}{2}H_2 + P + 2O_2$ (3)
(2 2 1 2 4)
Reaction Type Decomposition

e. $Cl_2 + 2KI \rightarrow I_2 + 2KCl$ (3)
Reaction Type SR

f. $2Al + 3Cl_2 \rightarrow 2AlCl_3$ (3)
Reaction Type Synthesis

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g. $Zn + Pb(ClO)_2 \rightarrow Pb + Zn(ClO)_2$ (3)

Reaction Type S.R

h. $2CoI_3 + 3(NH_4)_2CrO_4 \rightarrow Co_2(CrO_4)_3 + 6NH_4I$ (3)

Reaction Type DR

i. $C_{10}H_{21}OH + 15O_2 \rightarrow 10CO_2 + 11H_2O$ (3)

Reaction Type Combustion

j. $Ba(OH)_2 + 2HNO_3 \rightarrow 2H_2O + Ba(NO_3)_2$ (3)

Reaction Type neutralization (DR)

k. $2Cu + O_2 \rightarrow 2CuO$ (3)

(Assume combining capacity of Cu is 2+)

Reaction Type Synthesis & combustion

l. $Li_3AsO_4 \rightarrow 3Li + As + 2O_2$ (3)

Reaction Type decomposition

m. $3RbOH + H_3PO_4 \rightarrow 3H_2O + Rb_3PO_4$ (3)

Reaction Type neutralization (DR)

n. $3Fe(NO_3)_2 + 2Na_3PO_4 \rightarrow Fe_3(PO_4)_2 + 6NaNO_3$ (3)

Reaction Type DR

o. $2Al + 3H_2SO_4 \rightarrow Al_2(SO_4)_3 + 3H_2$ (3)

Reaction Type SR

p. $BeSO_4 + 2AgNO_3 \rightarrow Ag_2SO_4 + Be(NO_3)_2$ (3)

Reaction Type DR

q. $MnSO_4 + 6H_2O \rightarrow MnSO_4 \cdot 6H_2O$ (3)

Reaction Type Synthesis

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