

Question 1

The compound BaSO_4 precipitates when aqueous solutions of Cs_2SO_4 and BaCl_2 are mixed. (Indicate whether this statement is **True** or **False**. See the solubility table below.)

Solubility Rules for Ionic Compounds	
Usually Soluble	
Li^+ , Na^+ , K^+ , Rb^+ , Cs^+ , NH_4^+	All alkali metals and ammonium salts are soluble.
NO_3^-	All nitrates are soluble.
Cl^- , Br^- , I^-	All chlorides, bromides, and iodides are soluble except for AgCl , Hg_2Cl_2 , PbCl_2 , AgBr , Hg_2Br_2 , PbBr_2 , AgI , Hg_2I_2 , PbI_2
SO_4^{2-}	All sulfates are soluble except for CaSO_4 , SrSO_4 , BaSO_4 , PbSO_4 .
$\text{C}_2\text{H}_3\text{O}_2^-$	All acetates are soluble.
Usually Insoluble	
PO_4^{3-}	All phosphates are insoluble except for ammonium and alkali metal compounds.
CO_3^{2-}	All carbonates are insoluble except for ammonium and alkali metal compounds.
OH^-	All hydroxides are insoluble except for ammonium and alkali metal compounds. $\text{Sr}(\text{OH})_2$, $\text{Ba}(\text{OH})_2$, and $\text{Ca}(\text{OH})_2$ are only slightly soluble.
S^{2-}	All sulfides are insoluble except for ammonium, alkali metal, and alkaline-earth compounds. MgS , CaS , and BaS are only slightly soluble.

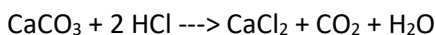
True

False

2 points

Question 2

Consider the balanced chemical equation shown below.



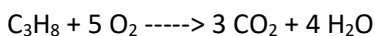
How many grams of carbon dioxide (CO_2) would be formed if 5 grams of calcium carbonate (CaCO_3) reacted in this reaction?

2.2 grams
20 grams
44 grams
100 grams

2 points

Question 3

Consider the following balanced chemical equation.



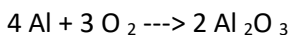
Calculate the **mass in grams** of O₂ needed to react with 1.000 mole of C₃H₈.

80.0 grams
320.0 grams
32.00 grams
160.0 grams

2 points

Question 4

Identify what is being oxidized and what is being reduced in the reaction shown below?

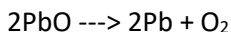


Aluminum metal is being oxidized and oxygen gas is being reduced.
Aluminum metal is being reduced and oxygen gas is being oxidized.
Aluminum oxide is being reduced and oxygen gas is being oxidized.
Aluminum oxide is being oxidized and oxygen gas is being reduced.

2 points

Question 5

Consider the reaction shown below. What is the percent yield for the reaction if 20.0 g of PbO reacts and 10.0 g Pb was collected at the end of the reaction?

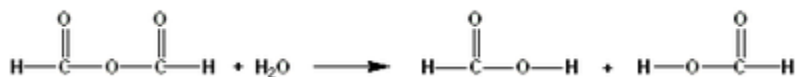


30.0 %
45.8 %
18.6 %
53.8 %

2 points

Question 6

The reaction shown below is an example of a combustion reaction.

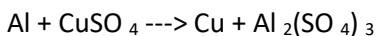


True

False

Question 7

When you balance the following chemical equation, the coefficient for Al is a "2".



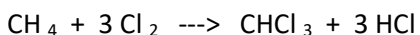
True

False

2 points

Question 8

Consider the chemical equation shown below. You react 2.00 g of CH_4 with 7.00 g of Cl_2 . How many grams of CHCl_3 will form?



3.93 g
6.93 g
14.9 g
19.3 g

2 points

Question 9

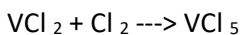
What is the molar mass of carbon dioxide (CO_2)?

28.01 g/mol
44.01 g/mol
12.01 g/mol
16.00 g/mol

2 points

Question 10

Balance the chemical equation shown below.



$\text{VCl}_2 + 3 \text{Cl}_2 \rightarrow 2 \text{VCl}_5$
$3 \text{VCl}_2 + 4 \text{Cl}_2 \rightarrow 3 \text{VCl}_5$
$\text{VCl}_2 + 2 \text{Cl}_2 \rightarrow 1 \text{VCl}_5$
$2 \text{VCl}_2 + 3 \text{Cl}_2 \rightarrow 2 \text{VCl}_5$

2 points

Question 11

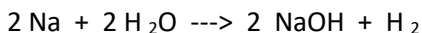
You are given 5.0 grams of one liquid labeled A and 10.0 grams of another liquid labeled B. You pour the liquids together and stir. You are trying to determine if a chemical reaction takes place when you mix the two liquids. Which of the following observations is the best indication of a chemical reaction?

A gas forms when the two liquids are mixed.
The two liquids dissolve in each other when they are mixed.
After boiling the mixture, all of liquid A evaporates leaving 10.0 grams of liquid B in the container.
The total mass of the resulting mixture is 15.0 grams.

2 points

Question 12

2 moles of Na react with 4 moles H_2O according to the following chemical equation. How much H_2 is formed?

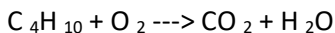


1 mole
2 moles
3 moles
4 moles

2 points

Question 13

What is the coefficient of CO_2 when the following equation is properly balanced?



1
4
6
12
8

2 points

Question 14

What is the molecular weight of P_4O_{10} ?

283.89
46.973
316.39
287.01

2 points

Question 15

A mole of H₂:

contains 6×10^{23} atoms
contains 6×10^{23} molecules
contains 1 gram of hydrogen
is 6×10^{23} grams of hydrogen

2 points

Question 16

How many molecules are in 137 grams of the B vitamin Nicotinamide.(molecular formula = C₆H₆N₂O)?

6.76×10^{23}
6.81×10^{23}
6.74×10^{23}
6.77×10^{22}

2 points

Question 17

How many moles of sodium can be made from 4.37×10^{18} atoms of sodium?

6.02×10^{23} moles
2.63×10^{42} moles
1.23×10^{17} moles
7.26×10^{-6} moles

2 points

Question 18

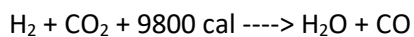
The formula for aluminum chloride is AlCl₃. How many moles of chloride ions are in 6.0 moles of aluminum chloride?

18 moles of chloride ions
2.0 moles of chloride ions
6.02×10^{23} moles of chloride ions
1.1×10^{25} moles of chloride ions

2 points

Question 19

Consider the following chemical reaction.



How much heat would be required if 2.0 moles of H_2 reacted in this reaction?

9800 calories
19600 calories
4900 calories
2450 calories

2 points

Question 20

A lot of heat is given off when you burn a piece of wood. The chemical reaction that is taking place is exothermic.

True

False