

Q1 An element has three naturally occurring isotopes with the following masses and fractional abundances:

| Isotopic Mass (amu) | Fractional Abundance |
|---------------------|----------------------|
| 83.01 | 0.1495 |
| 83.91 | 0.6500 |
| 84.99 | 0.2005 |

What is the atomic mass of the element?

- a) 84.43
- b) 83.54
- c) 83.99
- d) 84.07
- e) 85.34

Q2 A phosphorous oxide compound is 43.64% phosphorous by mass. What is the empirical formula of this compound?

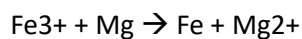
(molar mass of P = 30.97 g/mol, O = 16.0 g/mol)

- a) P_2O_3
- b) PO_3
- c) P_2O_5
- d) P_2O_7
- e) PO_2

Q3 What is the oxidation number of Cr in H_2CrO_4

- a) +5
- b) +7
- c) +6
- d) 0
- e) +3

Q4 When balanced with the smallest set of whole numbers, the coefficient of Mg in the following equation is:



- a) 4.
- b) 1.
- c) 2
- d) 3
- e) 5

Q5 A temperature of 400. K is the same as _____ °F.

(Given $^{\circ}\text{C} = (^{\circ}\text{F} - 32) / 1.800$)

- a) 260.
- b) 286
- c) 88
- d) 103
- e) 127

Q6 A precipitate is expected when an aqueous solution of potassium sulfate is added to an aqueous solution of:

- a) zinc nitrate
- b) ammonium nitrate
- c) barium hydroxide
- d) sodium hydroxide
- e) sodium chloride

Q7 The name of the compound CaS is

- a) calcium sulfate
- b) calcium sulfite
- c) calcium sulfide
- d) calcium persulfide
- e) calcium sulfur

Q8 The name of the molecular compound Cl_2O_3 is

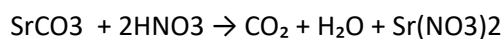
- a) dichloro trioxide
- b) dichloro oxide
- c) chlorine trioxide
- d) dichlorine trioxide
- e) trioxygen dichloride

Q9 Perform the following calculation and report the result to the correct number of significant figures:

$$(58.19 - 6.18) \times (3.388 - 3.011)$$

- a) 19.60
- b) 19.6
- c) 19.608
- d) 19.6077
- e) 20

Q10 The balanced net ionic equation for the following reaction is:



The balanced net ionic equation for the following reaction is:

$$\text{SrCO}_3 + 2\text{HNO}_3 \rightarrow \text{CO}_2 + \text{H}_2\text{O} + \text{Sr}(\text{NO}_3)_2$$

- a) $\text{CO}_3^{2-}(\text{aq}) + 2\text{H}^+ \rightarrow \text{CO}_2(\text{g}) + \text{H}_2\text{O}(\text{l})$
- b) $\text{SrCO}_3(\text{s}) + 2\text{HNO}_3(\text{aq}) \rightarrow \text{Sr}^{2+}(\text{aq}) + 2\text{NO}_3^-(\text{aq}) + \text{CO}_2(\text{g}) + \text{H}_2\text{O}(\text{l})$
- c) $\text{SrCO}_3(\text{s}) \rightarrow \text{Sr}^{2+}(\text{aq}) + \text{CO}_2(\text{g})$
- d) $\text{SrCO}_3(\text{s}) + 2\text{H}^+(\text{aq}) \rightarrow \text{Sr}^{2+}(\text{aq}) + \text{CO}_2(\text{g}) + \text{H}_2\text{O}(\text{l})$
- e) $\text{Sr}^{2+}(\text{aq}) + \text{CO}_3^{2-}(\text{aq}) + 2\text{H}^+(\text{aq}) + 2\text{NO}_3^-(\text{aq}) \rightarrow \text{Sr}(\text{NO}_3)_2(\text{aq}) + \text{CO}_2(\text{g}) + \text{H}_2\text{O}(\text{l})$

Q11 Calculate the mass % of Fe in Fe₂O₃ (molar mass of Fe = 55.93 g/mol , O= 16.00 g/mol)

- a) 30.03
- b) 34.97
- c) 69.97
- d) 77.76
- e) 65.01

Q12 What is the mass in grams of 20 Ni atoms?

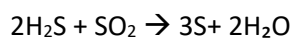
(molar mass of Ni=58.69 g/mol

Avogadro's number = 6.02×10^{23})

- a) 3.90×10^{-22}
- b) 3.32×10^{-23}
- c) 7.80×10^{-23}
- d) 1.95×10^{-21}

e) 1.00×10^{-23}

Q13 Calculate the mass of S produced when 5.50 g of H_2S is reacted with 12.75 g of SO_2 according to the following equation. (molar mass (g/mol): S = 32.07 ; H_2S = 34.08 ; SO_2 = 64.07



a) 7.07

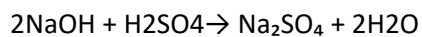
b) 6.38

c) 7.76

d) 3.52

e) 7.25

Q14 If 76.94 mL of 0.584 M NaOH were required to neutralize 14.68 mL of H_2SO_4 solution. Calculate the molar concentration of the H_2SO_4 solution.



a) 6.12

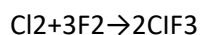
b) 3.06

c) 1.53

d) 0.190

e) 5.24

Q15 The reaction of 15.0 g F_2 with excess Cl_2 produced 18.2 g ClF_3 . Calculate the percent yield of ClF_3 obtained (molar mass of F_2 = 38.00 g/mol, Cl_2 = 70.91 g/mol, ClF_3 = 92.45 g/mol)



a) 43.9

d) 49.9

b) 39.5

e) 74.8

c) 20.2

First term Exam 2023

1- Air is considered as:

- a) Compound
- b) Homogeneous mixture
- c) Heterogeneous mixture
- d) Element

2- tested explanation for a natural phenomenon is:

- A) test
- B) theory
- C) law
- D) hypothesis
- E) explanation

3- A sample of 200 g contains H,C and O. When analyzed it was found that it contains 70.60 g of Oxygen and 103.60 g of Carbon , write its empirical formula:

4- An excess of Na_2CO_3 was added to a 100 ml. sample of the water containing Pb ions. The mass of PbCO_3 (267.0 g/mol) that precipitated was 0.1443 g. what was the mass of Pb^{2+} (207.2 g/mol) in the original sample?

- A) 0.1220 g
- B) 11.80 g
- C) 0.3855 g
- D) 0.001443 g
- E) 185.1 g

5- Which compound will give the highest concentration of Cl^{-1} if they all contain 0.1 mole and are in same volume of water?

1) Hg_2Cl_2

2) PbCl_2

3) CaCl_2

4) MgCl_2

5) CoCl_3

6- The name of MnO_2 :-

a) Manganese dioxide

B) manganese(II) oxide

C) manganese(I) oxide

D) manganese(4) oxide

7- The name of Co_2S_3 :-

Ans : Cobalt (III) sulfide

8- The name of Cr_2O_3 :-

Ans : Chromium (III) oxide

9- Which of the following compounds is named incorrectly:

Ans : Cl_2O_5 chlorine (V) oxide

Ans : NO_2 Nitrate

Note)) One of the options was Na_2HPO_4 (sodium hydrogen phosphate) without "mono".

10- Which of the following statements is incorrect:

- 1) tap water is heterogeneous
- 2) paint is homogeneous
- 3) helium in a balloon is an element
- 4) mercury in the thermometer is an element
- 5) soft drinks are homogeneous

11- Which of the following is Homogeneous and gives two or more substances when physically separated :

- A- Element
- B- Compound
- C- Heterogeneous mixture
- D- Solution

12- Convert 575 K to F ?

13- Convert 124 F to K ?

14- Rb has two isotopes, (Rb 85= 84.119 g/mol) and Rb 87
the average atomic mass = 85

Rb 85 abundance = 0.6 Rb 87 abundance = 0.3

What is the atomic mass of Rb87?

15- How many grams of $\text{Al}(\text{OH})_3$ contains 5.85 g of oxygen?

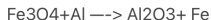
16- How many atoms in 2.4×10^{-2} g of silicon (molar mass=28 g)?

17- Which of the following is insoluble :

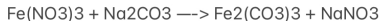
- a) $\text{Ca}(\text{CO}_3)$
- b) $\text{Ag}(\text{NO}_3)$
- c) $\text{Na}_2(\text{SO}_4)$

18- The net ionic equation of reaction between HCl and $\text{Al}(\text{OH})_3$? Between $\text{HBr} + \text{Mn}(\text{OH})_2$? Between HNO_3 and Al_2S_3 ?!

19- What is the coefficient of Fe after balancing the equation?



20- The coefficient of $\text{Fe}_2(\text{CO}_3)_3$ after balancing the following equation is :



21 - a statement, could be written as mathematical equation?

Ans: Law

22- A cube of 1.1 inch has a mass of 36g , what's the density in g/cm^3 ?

The Ans with the right significant figures

23- The 5 balls have mass of 2.000 g and a volume of 1.55 mL, find the ball density with the right number of significant figures :

- A) 1.3
- B) 1.2900
- C) 1.300
- D) 1.290323
- E) 1.29

Ans : E

24- $(2.5000-0.1000)/1.10$?

find the Ans with the right number of significant figures

25- 6.0 g of Hg_2Cl_2 is reacted with 6.0 g of KMnO_4 with an excess of HCl according to the equation (equation) , the limiting reagent is :

a) HCl

b) KMnO_4

c) Hg_2Cl_2

d) HgCl_2

26- A question giving an equation of the reaction of wastewater with (?)

$2\text{Cl}^- + \dots + \dots \rightarrow \text{PbCl}_2 + \dots$

Mass of PbCl_2 precipitated is given, volume of initial Wastewater is given, the concentration of Cl^- ?

27&28 -

2 questions relating to dilution

One was changing the volume for HCl and asking for the final concentration , the other was asking for volume in mL.

29 - Anion of nitric acid :

A) HNO_3

B) NO_2^-

C) HNO_3^-

D) NO_3^-

E) HNO_2

Ans : D

30 - A sample of 150 g contains only Nitrogen and Oxygen. When analyzed it was found that it contains 55.29 g of nitrogen, write its empirical formula:

Ans : N₂O₃

31 - Actual yield 97.3% of theor., if there was 2.03 moles if the actual yield. Calculate the mass of the theor. Yield.

(Mr=68.__) 135

32 - What is a homogeneous mixture:

- A) sand with water
- B) 70% ethanol with water
- C) oil with water
- D) sand and salt

Ans : 70% ethanol with water.

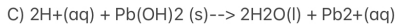
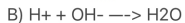
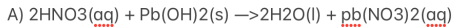
33 - $\text{Fe}_3\text{O}_4 + \text{Al} \rightarrow \text{Al}_2\text{O}_3 + \text{Fe}$ When the following equation is balanced what is the sum of coefficients of Al₂O₃

- A) 7
- B) 16
- C) 9
- D) 4

Ans : 4

34 - What mass of Al₂O₃ contains $1.69 \cdot 10^{-1}$ g of aluminum.

35 - Write the net equation of the reaction between HNO₃ and Pb(OH)₂.



Ans : C

GOOD LUCK

Past papers- first Exam 022

1. If the mass percentage of Phosphorus in a phosphorus oxide compound is 39.9%, then find the empirical formula for this compound.
2. What is the following compound called CaS / Cl_2O_6 / K_2S / Cl_2O / Br_2S_7 / K_2SO_4 / N_2O_5 / NaNO_3
3. What is the mass of 20 Ni atoms?
4. How many oxygen atoms are there in 8.5g of $\text{Mg}_3(\text{PO}_4)_2$?
5. Which of the following is a weak electrolyte:
 - A) NaOH
 - B) KOH
 - C) H_2SO_4
 - D) HNO_3
 - E) HCN

6. We can expect a precipitate to form when potassium sulfate is added to an aqueous solution of:

- A) Sodium carbonat
- B) Sodium phosphate
- C) Barium hydroxide
- D) ammonium hydroxide
- E) zinc chloride

7. what the coefficient of

Mg after balancing ($\text{Mg}^{+2} + \text{Al} \rightarrow \text{Mg} + \text{Al}^{+3}$)?

Fe^{+3} after balancing ($\text{Fe} + \text{Cl}_2 \rightarrow \text{Fe}^{+3} + \text{Cl}^{-1}$)?

Al after balancing ($\text{Zn}^{+2} + \text{Al} \rightarrow \text{Al}^{+3} + \text{Zn}$) ?

8- what the oxidation number

for p in NaH_2PO_4 ?

for Cl in Cl_2O_7 ?

for S in NaHSO_4 ?

for Cr in $\text{Na}_2\text{Cr}_2\text{O}_7$?

9. what number of Neutrons if $A:42 - - Z:20$?

10. Convert 70.5 mi/hr to km/min?

11. Convert 117 C to F // 205 F to K ?

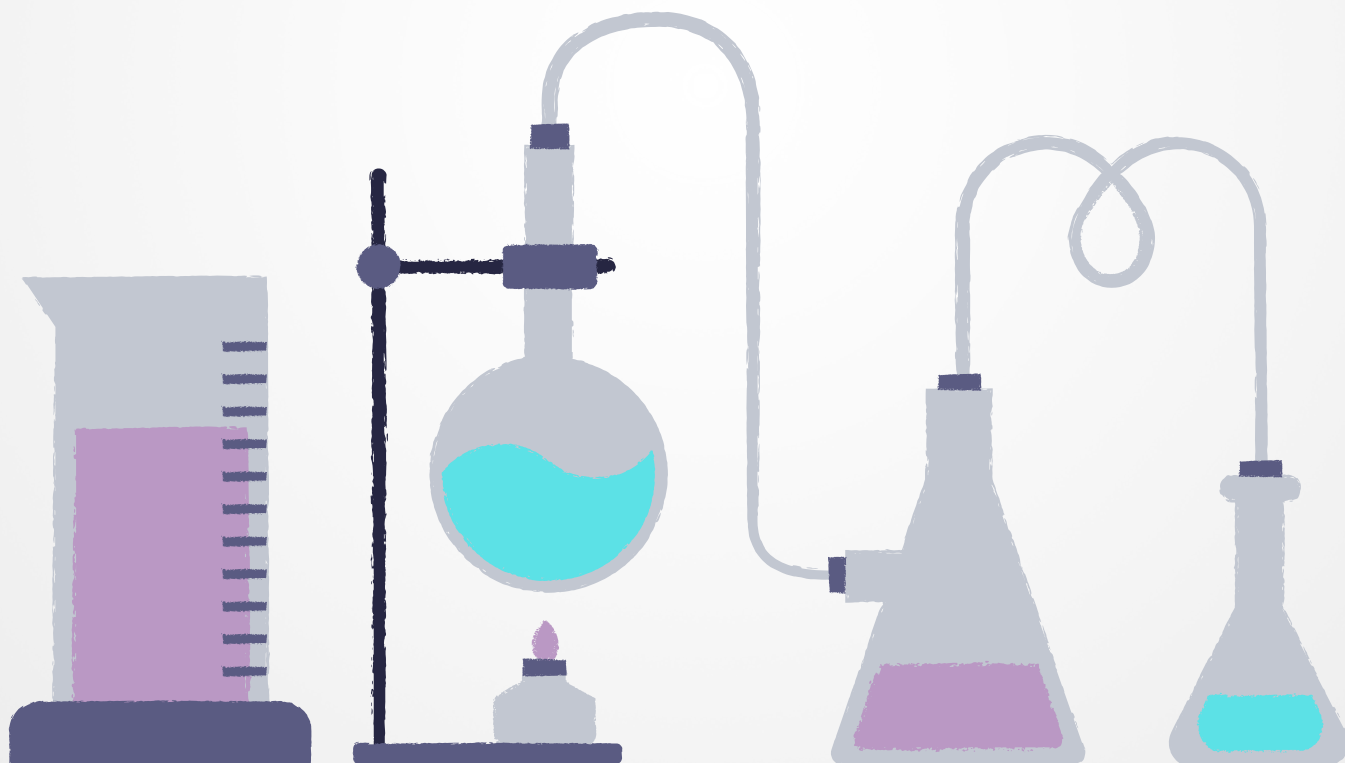
12. which one of the following can be added to KBr to expect a precipitate? Mercury(I)
nitrate

- 1) A uniform matter that is a combination of two or more substances is considered to be _____.
- A) heterogeneous mixture B) element C) mixture of elements D) compound E) homogen
- 2) Give the correct number of significant figures for the following mathematical operation $(2.50 - 0.100)/1$.
- A) 2.182 B) 2.18 C) 2. D) 2.2 E) 2.1818
- 3) A board that is 9.80 inches long and 7.21 inches wide (1 inch = 2.54 cm) then the area of the board in cm^2
- A) 456 cm^2 B) 409 cm^2 C) 296 cm^2 D) 329 cm^2 E) 119 cm^2
- 4) The correct formula for chromium(IV) hypochlorite is _____.
- A) $\text{Cr}(\text{ClO}_3)_4$ B) $\text{Cr}(\text{ClO})_4$ C) $\text{Cr}(\text{ClO}_2)_4$ D) $\text{Cr}(\text{ClO}_4)_4$ E) CrCl_4
- 5) What is the coefficient of H_2SO_4 when the following equation is properly balanced with the smallest set numbers:
- $$___ \text{Ca}_3(\text{PO}_4)_2 + ___ \text{H}_2\text{SO}_4 \rightarrow ___ \text{CaSO}_4 + ___ \text{H}_3\text{PO}_4$$
- A) 12 B) 4 C) 6 D) 3 E) 24
- 6) How many moles Na_2SO_3 are contained in a 35.0-g sample of this substance?
- A) 0.292 mol B) 0.990 mol C) 2.16 mol D) 0.278 mol E) 0.246 mol
- 7) A 6.00 g of CaF_2 (78.07 g/mol) are treated with 15.0 g of H_2SO_4 (98.07 g/mol) and yield 2.86 g of HF (20.01 in the following reaction: $\text{CaF}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{CaSO}_4 + 2\text{HF}$. Calculate the percent yield of HF?
- A) 46.1% B) 32.4% C) 93.0% D) 71.3% E) 33.0%
- 8) What is the mass of one atom of copper in grams? ($N_A = 6.022 \times 10^{23}$)
- A) 6.35×10^{-22} B) 3.20×10^{-22} C) 5.89×10^{-22} D) 4.54×10^{-22} E) 1.06×10^{-22}
- 9) An organic compound contains by mass, 64.3% C, 7.2% H, and 28.5% O, and its molar mass is 112 g/mol. What is its molecular formula?
- A) $\text{C}_6\text{H}_8\text{O}_2$ B) $\text{C}_9\text{H}_{10}\text{O}$ C) $\text{C}_{16}\text{H}_{20}\text{O}_4$ D) $\text{C}_{20}\text{H}_{12}\text{O}_2$ E) $\text{C}_{18}\text{H}_{16}\text{O}_2$
- 10) How many moles of C_2H_6 that contain 4.95×10^{24} of hydrogen atoms? ($N_A = 6.022 \times 10^{23}$)
- A) 8.22 mol B) 6.58 mol C) 1.03 mol D) 3.09 mol E) 9.73 mol
- 11) Which one of the following substances is a strong electrolyte?
- A) Ne B) NaOH C) NH_3 D) $\text{C}_6\text{H}_{12}\text{O}_6$ E) CH_3COOH
- 12) Which of the following is a precipitation reaction?
- A) $\text{K}_2\text{SO}_4(\text{aq}) + \text{Pb}(\text{NO}_3)_2(\text{aq})$ B) $\text{NaNO}_3(\text{aq}) + \text{NH}_4\text{OH}(\text{aq})$ C) $\text{Cu}(\text{s}) + \text{HI}(\text{aq})$
 D) $\text{NH}_4\text{NO}_3(\text{aq}) + \text{FeCl}_3(\text{aq})$ E) $\text{H}_2\text{SO}_4(\text{aq}) + \text{MgF}_2(\text{aq})$
- 13) The net ionic equation for the reaction between HF and KOH is
- A) $\text{HF} + \text{KOH} \rightarrow \text{H}_2\text{O} + \text{K}^+ + \text{F}^-$ B) $\text{HF} + \text{OH}^- \rightarrow \text{H}_2\text{O} + \text{F}^-$ C) $\text{HF} + \text{K}^+ + \text{OH}^- \rightarrow \text{H}_2\text{O} + \text{KF}$
 D) $\text{H}^+ + \text{OH}^- \rightarrow \text{H}_2\text{O}$ E) $\text{H}^+ + \text{F}^- + \text{K}^+ + \text{OH}^- \rightarrow \text{H}_2\text{O} + \text{K}^+ + \text{F}^-$
- 14) An excess of Na_2SO_4 was added to a 1.000-L sample of water containing Pb ions. The mass of PbSO_4 (303.3 g/mol) that precipitated was 308.88 mg. Determine the mass of Pb (207.2 g/mol) present in the original sample?
- A) 108.1 mg B) 88.02 mg C) 180.1 mg D) 145.5 mg E) 211.0 mg
- 15) If you have 505 mL of 0.125 M HCl solution, what is the final volume of this solution when diluted to 0.100 M?
- A) 100 mL B) 404 mL C) 631 mL D) 125 mL E) 789 mL



CHEMISTRY

FIRST EXAM 021



Done By : Rand Al-Atiyat

1. If matter is uniform throughout and cannot be separated into other substances by physical processes, but can be decomposed into other substances by chemical processes, it is called a:

- A) heterogeneous mixture
- B) element
- C) Homogeneous mixture
- D) compound
- E) mixture of elements

2. Give the correct number of significant figures for the following mathematical operation $(2.50 - .100)/1.10$:

- A) 2.2
- B) 2.
- C) 2.18
- D) 2.182
- E) 2.1818

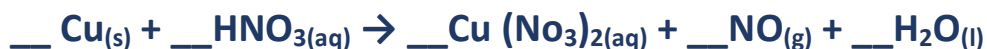
3. Convert 1000. f/hr to m/s? (1 ft = 0.3048 m / 1 hr=3600 s) :

- A) 0.007060
- B) 0.02450
- C) 0.08467
- D) 0.00106
- E) 0.01270

4. The name of the following compound V_2O_2 is :

- A) vanadium (III) oxide
- B) vanadium oxide
- C) vanadium (II) oxide
- D) vanadium (I) trioxide
- E) divanadium trioxide

5. What the coefficient of HNO_3 , when the following equation is properly balanced with the smallest set of whole



- A) 3
- B) 8
- C) 6
- D) 12
- E) 4

6. How many moles of Na_2SO_4 are contained in a 35.0 g sample of this substance ?

- A) 0.292 mol
- B) 0.990 mol
- C) 0.278 mol
- D) 2.16 mol
- E) 0.246 mol

7. 2.50 g of $C_7H_6O_3$ (138.12 g/mol) is reacted with 10.31 g of CH_3OH (32.04 g/mol) according to the following reaction

$C_7H_6O_3 + CH_3OH \rightarrow C_8H_8O_3 + H_2O$, the yield of $C_8H_8O_3$:

- A) 46.1%
- B) 32.4%
- C) 75.0%
- D) 71.3 %
- E) 23.05%

8. what is the mass of one atom of zinc in grams ? ($N_A = 6.02 \times 10^{23}$)

- A) 6.35×10^{22}
- B) 3.20×10^{22}
- C) 5.89×10^{22}
- D) 1.09×10^{22}
- E) 4.05×10^{22}

9. An organic compound contains by mass its composition is 68.85% C , 4.95% H and 26.2% O , and its molecular weight is 122.12 g/mol . what is its molecular formula ?

- A) $C_8H_6O_2$
- B) $C_2H_2O_2$
- C) $C_{18}H_{20}O_4$
- D) $C_{20}H_{12}O_2$
- E) $C_{18}H_{30}O_2$

10. How many moles of C_3H_8 that contain 3.17×10^{25} of hydrogen atoms ?
($N_A = 6.02 \times 10^{23}$).

- A) 8.22 mol
- B) 6.58 mol
- C) 1.03 mol
- D) 3.09 mol
- E) 9.73 mol

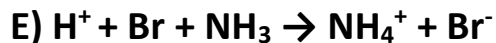
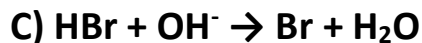
11. which one of the following substance is weak electrolyte ?

- A) Ne
- B) NaOH
- C) NH_3
- D) $C_8H_{12}O_2$
- E) CH_3OH

12. Which of the following is an oxidation-reduction reaction ?

- A) $CaCl_2(aq) + FeSO_4(aq)$
- B) $Fe(s) + H_2SO_4(aq)$
- C) $NaOH(aq) + HC_2H_5O_2(aq)$
- D) $(NH_4)_2SO_4(aq) + CaCl_2(aq)$
- E) $Mg(NO_3)_2(aq) + CSBr(aq)$

13. The net ionic equation for the reaction between aqueous NH_3 and HBr is :



14. An excess of Na_2CO_3 was added to a 100 ml . sample of the water containing Pb ions . The mass of PbCO_3 (267.0 g/mol) that precipitated was 0.1443 g . what was the mass of Pb^{2+} (207.2 g/mol) in the original sample ?

A) 0.1220 g

B) 11.80 g

C) 0.3855 g

D) 0.001443 g

E) 185.1 g

15. If you have 25.0 ml of 13.5 M HNO_3 solutions , what is the final concentration when diluted to 500 ml ?

A) 0.270 M

B) 1.48 M

C) 0.958 M

D) 0.439 M

E) 0.675 M

16. A uniform matter that is a combination of two or more substances is considered to be:

- A) heterogeneous mixture
- B) element
- C) homogeneous mixture
- D) compound
- E) mixture of elements

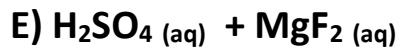
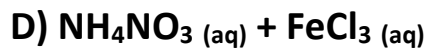
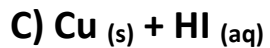
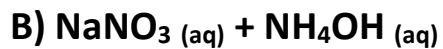
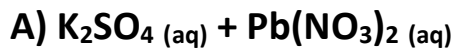
17. A board that is 9.80 inches long and 7.21 inches wide (1 inch = 5.54 cm) then the area of the board in cm^2 :

- A) 465 cm^2
- B) 409 cm^2
- C) 296 cm^2
- D) 329 cm^2
- E) 119 cm^2

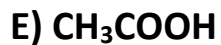
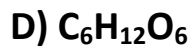
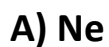
18. The correct formula for chromium (IV) hypochlorite is :

- A) $\text{Cr}(\text{ClO}_3)_4$
- B) $\text{Cr}(\text{ClO})_4$
- C) $\text{Cr}(\text{ClO}_2)_4$
- D) $\text{Cr}(\text{ClO}_4)_4$
- E) CrCl_4

19. which of the following is a precipitation reaction ?



20. which one of the following substance is strong electrolyte ?



ANSWERS

| | |
|----|---|
| 1 | D |
| 2 | C |
| 3 | C |
| 4 | C |
| 5 | B |
| 6 | E |
| 7 | A |
| 8 | D |
| 9 | A |
| 10 | B |

| | |
|----|---|
| 11 | C |
| 12 | B |
| 13 | D |
| 14 | A |
| 15 | E |
| 16 | C |
| 17 | A |
| 18 | B |
| 19 | A |
| 20 | B |

GOOD LUCK 



Chemistry 101

First Exam 020

Done by:

Shahed Atiyat

1. Which of the following is the greatest mass?

- a. 2.5×10^{-2} mg
- b. 2.5×10^{10} ng
- c. 2.5×10^{-3} cg
- d. 25 kg
- e. 2.5×10^{15} pg

2. When the following equation is balanced and written with the smallest whole number coefficients, what is the coefficient of O_2 ?



- a. 3
- b. 13
- c. 15
- d. 1
- e. 5

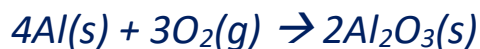
3. Which of the following statements is correct regarding some selected SI-prefixes?

- a. A milli is 100-fold less than a deci
- b. A deci is 100-fold greater than a centi
- c. A nano is a 1000-fold less than a pico
- e. A centi is 1000-fold greater than a deci

4. How many sodium ions are contained in 99.6 mg of Na₂SO₃? The molar mass of Na₂SO₃ is 126.05 g/mol.

- a. 2.10×10^{21} sodium ions
- b. 1.05×10^{21} sodium ions
- c. 1.52×10^{27} sodium ions
- d. 9.52×10^{20} sodium ions
- e. 4.76×10^{20} sodium ions

5. A 2.5 g of aluminium reacts with 2.5 g of oxygen to form only aluminium oxide (Al₂O₃), what mass of Al₂O₃ is formed?



- a. 5.3 g
- b. 7.4 g
- c. 5.0 g
- d. 9.4 g
- e. 4.7 g

6. What answer should be reported, with the correct number of significant figures, for the following calculation?

$$(249.362+41)/63.498$$

- a. 4.6
- b. 4.5728

c. 4.57277

e. 4.57

7. How many protons, neutrons, and electrons, respectively, are in the following ion? $^{59}\text{Ni}^{2+}$

a. 28, 31, and 26

b. 28, 31, and 30

c. 31, 28, and 28

d. 28, 87, and 28

e. 28, 31, and 28

8. Combustion analysis of 1.200 g of an unknown compound containing carbon, hydrogen, and oxygen produced 2.086 g of CO_2 and 1.134 g of H_2O . What is the empirical formula of the compound?

a. $\text{C}_3\text{H}_8\text{O}_2$

b. $\text{C}_2\text{H}_{10}\text{O}_3$

c. $\text{C}_2\text{H}_5\text{O}$

d. $\text{C}_2\text{H}_5\text{O}_2$

e. $\text{C}_3\text{H}_8\text{O}$

9. Which of the following is considered as a physical change?

a. Oxidation of metals under air

b. Burning of sulfur to produce sulfur dioxide

- c. combustion of gasoline
- d. Breaking of methane to form carbon and hydrogen
- e. Ethanol evaporates

10. A 0.25 mol KO₂ is reacted with 0.15 mol H₂O according to the chemical equation given, which one of the following statements is false?



- a. H₂O is the excess reactant
- b. The theoretical yield of oxygen is 10.1 g
- c. 0.45 g of H₂O are left over
- d. KO₂ is the limiting reactant
- e. Mass is conserved in this reaction

*11. How many moles of P₂O₅ contain 3.68*10²⁵ phosphorus atom? The molar mass of P₂O₅ is 283.89 g/mol.*

- a. 54.5 moles P₂O₅
- b. 16.4 moles P₂O₅
- c. 49.1 moles P₂O₅
- d. 61.1 moles P₂O₅
- e. 30.6 moles P₂O₅

12. Which of the following is the shortest length?

- a. 580 mm
- b. 3000 micrometer
- c. 0.450 dm
- d. 0.58 m
- e. 450 cm

13. A 5.00 g of silver nitrate (AgNO_3) reacts with 27.73 g of aluminium chloride (AlCl_3), what mass of AgCl is formed?



- a. 24.9 g
- b. 2.56 g
- c. 4.22 g
- d. 17.6 g
- e. 11.9 g

14. The correct name of $\text{Fe}(\text{NO}_2)_3 \cdot 10(\text{H}_2\text{O})$ is:

- a. Iron(III) nitrate hydrate
- b. Iron(III) nitrite decahydrate
- c. Iron(III) nitrate decahydrate
- d. Iron(III) nitride decahydride
- e. Iron(II) nitrite decahydrate

15. Which of the following of the is considered as a chemical change?

- a. Salt dissolving in water
- b. Freezing of water
- c. Oxidation of metal under air
- d. Melting of ice
- e. Sublimation of iodine

ANSWERS

| | |
|----|---|
| 1 | D |
| 2 | A |
| 3 | A |
| 4 | D |
| 5 | E |
| 6 | E |
| 7 | A |
| 8 | A |
| 9 | E |
| 10 | B |
| 11 | E |
| 12 | B |
| 13 | C |
| 14 | B |
| 15 | C |

GOOD LUCK 