



Philadelphia University  
Faculty: Science  
Department: Basic sciences  
Exam time 50 min .  
Date: 29/ 11/ 2017

General chemistry 0212101  
First exam

Name: .....

Student No. : .....

Section: .....

Professor Name : .....

**Q.1 (1 points each)**

**Direction:** Each of the question bellow is followed by four suggested answers. Select the one that is best in each case and type it in the above table.

1.	a.	b.	c.	d.	5.	a.	b.	c.	d.
2.	a.	b.	c.	d.	6.	a.	b.	c.	d.
3.	a.	b.	c.	d.	7.	a.	b.	c.	d.
4.	a.	b.	c.	d.	8.	a.	b.	c.	d.

Useful data: Avogadro's No =  $6.022 \times 10^{23}$

<table><tr><td>1 H Hydrogen 1.01</td><td colspan="14"></td><td>2 He Helium 4.00</td></tr><tr><td>3 Li Lithium 6.94</td><td>4 Be Beryllium 9.01</td><td colspan="14"></td><td>5 B Boron 10.81</td><td>6 C Carbon 12.01</td><td>7 N Nitrogen 14.01</td><td>8 O Oxygen 16.00</td><td>9 F Fluorine 19.00</td><td>10 Ne Neon 20.18</td></tr><tr><td>11 Na Sodium 22.99</td><td>12 Mg Magnesium 24.31</td><td colspan="14"></td><td>13 Al Aluminum 26.98</td><td>14 Si Silicon 28.09</td><td>15 P Phosphorus 30.97</td><td>16 S Sulfur 32.07</td><td>17 Cl Chlorine 35.45</td><td>18 Ar Argon 39.95</td></tr><tr><td>19 K Potassium 39.10</td><td>20 Ca Calcium 40.08</td><td>21 Sc Scandium 44.96</td><td>22 Ti Titanium 47.87</td><td>23 V Vanadium 50.94</td><td>24 Cr Chromium 52.00</td><td>25 Mn Manganese 54.94</td><td>26 Fe Iron 55.85</td><td>27 Co Cobalt 58.93</td><td>28 Ni Nickel 58.69</td><td>29 Cu Copper 63.55</td><td>30 Zn Zinc 65.39</td><td>31 Ga Gallium 69.72</td><td>32 Ge Germanium 72.61</td><td>33 As Arsenic 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1- Carry out the following answer with the correct number of significant figures?

$$(3.2 + 29.28)/3.10 =$$

- A) 10.483                      B) 10.5                      C) 10.4                      D) 10

2- Which of the following compounds is empirical formula?

- A)  $\text{N}_2\text{H}_2$                       B)  $\text{C}_6\text{H}_6$                       C)  $\text{H}_2\text{O}$                       D)  $\text{C}_6\text{H}_{12}\text{O}_6$

3- A metal cube has a volume of  $11.4 \text{ m}^3$  and a mass of 4.0 g. Calculate the density of the metal?

- A)  $3.5 \times 10^{-4} \text{ g/cm}^3$                       B)  $3.5 \times 10^{-7} \text{ g/cm}^3$   
C)  $2.8 \times 10^{-4} \text{ g/cm}^3$                       D)  $2.8 \times 10^{-7} \text{ g/cm}^3$

4- Which of the following is an example of a chemical reaction?

- A) the separation of solids from liquids                      B) the separation of a mixture into its components  
C) the separation of a compound into its elements                      D) the separation of gases from liquids

5-  ${}^{14}_6\text{C}$  and  ${}^{12}_6\text{C}$  are example of carbon:

- A) Ions                      B) isotopes  
C) molecule                      D) non

6- Which of the following ions has an incorrect charge?

- A)  $\text{Mg}^{+2}$                       B)  $\text{Rb}^{+}$                       C)  $\text{N}^{-3}$                       D)  $\text{Cl}^{-2}$

7- What is the formula of chromium (III) phosphate?

- A)  $\text{CrPO}_3$                       B)  $\text{Cr}_3(\text{PO}_3)_3$                       C)  $\text{Cr}_3(\text{PO}_4)_3$                       D)  $\text{CrPO}_4$

8- What is the percent composition of sulfur (S) in  $\text{SF}_6$ ?

- A- 21.9 %                      B) 70.4 %                      C) 37.06 %                      D) 62.67 %

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Q 2:

Answer the following question belongs for  $P_4O_{10}$ ?

- a- The type of compound
- b- Naming the compound
- c- Calculate the mass of phosphorus (P) in 100 g of compound
- d- How many phosphorus (P) atoms in 100 g of compound

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Q 3:

What is the empirical formula of a compound that contains 0.799 g C and 0.201 g H and 1.0 g O sample?

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Q4:

Reaction step in the conversion of ammonia to nitric acid involves converting  $\text{NH}_3$  to  $\text{NO}$  by the following reaction:



If 18 g  $\text{NH}_3$  (17 g/mole) reacted with 30 g  $\text{O}_2$  (32 g/mole)

- a- How many grams of  $\text{NO}$ (30g/mole) formed
- b- The percent yield of  $\text{NO}$  , if the actual yield is 33.2 g
- c- The mass of excess reagents