Eastem Mediterranean University
Department of Chemistry

Chem 101 General Chemistry
Fall 2009-2010 Quiz I
23/10/2010  16.30 -17.00

Student No: Q1 - A
Name: Q1 - B
Group: Q1 - C
Signature: TOTAL

INSTRUCTIONS:
1. Write your name, surname and group no. on the question booklet.
2. Students who do not write their group number or those who write their group number wrong will lose 1 points.
3. The exam consists of 1 classical type of questions. In order to get full marks you must answer all questions. Show your steps in answering the classical type of questions.
4. The following information and Periodic Table provided may be necessary to answer some of the questions.
5. Use of mobile phones, exchange of calculators or rubbers is not allowed.
6. You can see your papers in the first 7 days after the announcement of the results.

Periodic Table of Elements

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Lanthanides

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Actinides

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<td>257.10</td>
<td>259.10</td>
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Constants: $N_A = 6.022 \times 10^{23}$ items/mol
Q1.  
A) Consider the elements arsenic(As), manganese(Mn), selenium(Se), and sodium(Na). Among these elements, name the element(s) that (10 Pts.)

1) has/have chemical properties like potassium  
2) is/are non-metal(s)  
3) is/are transition metal(s)  
4) is/are in group 16  
5) is/are metalloid(s)

B) Write the formulae of the following ionic compounds (10 Pts.)

1) sodium hypochlorite  
2) potassium carbonate  
3) calcium sulfate  
4) magnesium nitrate  
5) aluminum oxide

Write the names of the following acids

6) HBr(aq)  
7) H₂SO₄(aq)  
8) HClO₄(aq)  
9) HNO₂(aq)  
10) HNO₃(aq)

C) Magnesium has three isotopes. First two isotopes masses are 23.98 amu and 24.98 amu. The first two isotopes have abundances of 78.6% and 10.1% respectively. What is the atomic mass of third isotope? (10 Pts.)

\[
\text{Atomic mass of the 3rd isotope} = x \\
\text{Abundance of the 3rd isotope} = 100 - (78.6 + 10.1) = 11.3
\]

\[
\text{Atomic mass } Mg = \left(\frac{\text{Atomic mass 1st}}{100}\right) \times \frac{\text{mass 1st isotope}}{100} + \left(\frac{\text{Atomic mass 2nd}}{100}\right) \times \frac{\text{mass 2nd isotope}}{100} + \left(\frac{\text{Atomic mass 3rd}}{100}\right)
\]

(3 pts)

You could first clear the equation of decimals by multiplying each side by 100

\[
2430 \text{ amu} = 23.98 \text{ amu} \times 78.6 + 24.98 \text{ amu} \times 10.1 + x \times 11.3
\]

(3 pts)

\[
2430 \text{ amu} = 1884.83 \text{ amu} + 252.29 \text{ amu} + 11.3x
\]

(4 pts)

\[
x = 25.92 \text{ amu}
\]