

اسئلة سابقة ..

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# لجنة الميكانيك - الإتجاه الإسلامي

Al-Balqa Applied University  
Faculty of Engineering Technology  
General Chemistry lab (Chem 111)  
Midterm Exam



Student Name:  
Instructor:  
Section:  
Thu: 26 Oct 2015

Choose the correct answer for the following questions and transfer it to the table below in capital letters:

Question	1	2	3	4	5	6	7	8	9	10
Answer	<del>B</del>	<del>D</del>	<del>B</del>	A	E	<del>D</del>	<del>E</del>	<del>D</del>	C	<del>D</del>

Q1- The glassware which is shown on the figure is called :

- A) Erlenmeyer flask B) Funnel C) Volumetric flask D) Burette E) Beaker

Q2- Which of the following statements is correct concerning safety rules:

- A) Pipette or dropper is not allowed to be inserted in the reagent bottle.  
B) Water is poured on acids not vice versa.  
C) Unused chemicals are returned to stock bottle.  
✓ D) Flammable liquids are heated on direct flame.  
E) It's safe to taste or directly smell any chemical.

Q3- According to solubility rules, which of the following solvents is non polar:

- A) CH<sub>3</sub>OH B) H<sub>2</sub>O C) C<sub>6</sub>H<sub>6</sub> D) C<sub>3</sub>H<sub>7</sub>OH E) C<sub>2</sub>H<sub>5</sub>OH

Q4- A 32.4g piece of a metal was added to a graduated cylinder containing 12.0 ml of water. If the density of the solid is 2.3g/ml, the final volume (in ml) of water in the cylinder equals :

$$Q4: v = \frac{m}{\rho}$$

- A) 26.1 B) 20.0 C) 16.0 D) 22.0 E) 21.5

Q5- The mass ( in g ) of water in 9.0g of MgSO<sub>4</sub>·5H<sub>2</sub>O equals :

(At.wts {g/mol} : Mg=24.31 ,S=32.07,O=16 & H=1)

- A) 4.28 B) 5.56 C) 6.42 D) 5.35 E) 3.85

Q6- Which of the following is an alum:

- A) NaAl(SO<sub>4</sub>)<sub>2</sub>·12H<sub>2</sub>O  
B) NH<sub>4</sub>Al(SO<sub>4</sub>)<sub>2</sub>·10H<sub>2</sub>O  
C) CuSO<sub>4</sub>·5H<sub>2</sub>O  
D) NaCu(SO<sub>4</sub>)<sub>3</sub>·8H<sub>2</sub>O  
E) NaK(SO<sub>4</sub>)<sub>2</sub>·14H<sub>2</sub>O





# لجنة الميكانيك - الإتجاه الإسلامي

Q7- Which of the following statements is correct concerning empirical formula of Mg-oxide experiment:

- A) The empty crucible was heated and its weight was recorded while it's hot.
- B) Only one product can be formed from reaction of Mg with air.
- C) Magnesium oxide MgO was the main product which formed in this experiment.
- D) The crucible with magnesium metal must be heated with HCL to ensure complete reaction .
- E) Mg metal did not glow while burning.

Q8- The following data in the table were collected during an experiment to find the empirical formula of metal (M) oxide, the empirical formula for this oxide is :

- A)  $MO_4$
- B)  $MO_3$
- C)  $MO_5$
- D)  $M_2O$
- E)  $MO_2$

Mass of empty crucible	20.74g
Mass of metal(M)+ crucible	24.53g
Mass of crucible+ final product	26.07g
At.Mass of metal( M)= 118.7 g/mole At.Mass of O= 16 g/mole	

Q9-The following data were collected to calculate the molecular formula of a volatile liquid compound ,this compound is :

- A)  $C_2H_5OH$
- B)  $C_6H_6$
- C)  $C_3H_6O$
- D)  $C_3H_8O$
- E)  $CH_3OH$

Mass of condensed vapour	0.218g
Volume of the vapour	120ml
Atmospheric pressure	0.92atm
Temperature	84 °C
R	0.082 L.atm/K.mol
At.Mass : (g/mol) C=12, O=16 & H=1	

Q10- During the analysis of commercial vinegar, the following data were collected .the percentage by mass (w/w%) of acetic acid in vinegar sample equals :

- A) 2.88%
- B) 3.36%
- C) 2.40%
- D) 1.92 %
- E) 3.84%

Volume of vinegar sample	2.00 ml
Initial reading of burette	10.00 ml
Final reading of burette	18.00 ml
Concentration of standard NaOH solution	0.08M
Density of vinegar	1g/ml
M.mass of acetic acid	60g/mol

\*\*\*\* Good luck \*\*\*\*





# لجنة الميكانيك - الإتجاه الإسلامي

Al-Balqa Applied University  
Faculty of Engineering Technology  
General Chemistry lab ( Chem 111)  
Midterm Exam.



Student Name: د. علي المعزبي  
Instructor: د. علي المعزبي  
Section: ٥ ← ٢  
Wed: 4 Dec 2013

Choose the correct answer for the following questions and transfer it to the table below in capital letters:

Question	1	2	3	4	5	6	7	8	9	10	11
Answer	C	E	A	B	D	D	A	C	B	E	<del>B</del> C

1. The notation shown on the right, when found on a chemical bottle indicates that this chemical is:

- A) Oxidizing B) Corrosive C) Toxic or very toxic D) Biohazard E) Explosive



2. When a 5.0 g of solid metal is added to 50.0 mL water (density=1g/mL ) in a graduated cylinder the volume of water increased to 57.5 mL , find the density of the solid metal :

- A) 0.63 g/ml B) 0.83 g/ml C) 0.50 g/ml D) 0.58g/ml E) 0.67g/ml

3. Which of the following is water soluble :

- A) C<sub>2</sub>H<sub>5</sub>OH B) C<sub>6</sub>H<sub>6</sub> C) C<sub>10</sub>H<sub>8</sub> D) C<sub>7</sub>H<sub>14</sub> E) C<sub>20</sub>H<sub>40</sub>OH

4. The general formula of an alum is :

- A) M<sup>+1</sup> M<sup>+4</sup> (SO<sub>4</sub>)<sub>2</sub>.XH<sub>2</sub>O B) M<sup>+1</sup> M<sup>+3</sup> (SO<sub>4</sub>)<sub>2</sub>.XH<sub>2</sub>O C) M<sup>+1</sup> M<sup>-3</sup> (SO<sub>4</sub>)<sub>2</sub>.XH<sub>2</sub>O  
D) M<sup>+2</sup> M<sup>-2</sup> (SO<sub>4</sub>)<sub>2</sub>.XH<sub>2</sub>O E) M<sup>-1</sup> M<sup>-3</sup> (SO<sub>4</sub>)<sub>2</sub>.XH<sub>2</sub>O

5. A 2.5 g of hydrated salt was heated in a 25.5 g crucible, after heating the mass of crucible became 26.75g, knowing that the molar mass of anhydrous salt is 159.5 g/mol, the value of water of crystallization (X) is :

- A) 10 B) 2 C) 4 D) 9 E) 6

6. When 0.52 g of Cr (At.wt=52g/mol) was allowed to react with oxygen , the mass of chromium oxide formed was 0.68g. The empirical formula of chromium oxide is : (At.wt O= 16g/mol)

- A) Cr<sub>2</sub>O B) CrO<sub>2</sub> C) Cr<sub>2</sub>O<sub>3</sub> D) CrO E) Cr<sub>3</sub>O<sub>2</sub>

7. The by-product formed during formation of magnesium oxide is :

- A) NH<sub>3</sub> B) Mg<sub>3</sub>N<sub>2</sub> C) Mg<sub>2</sub>N<sub>3</sub> D) H<sub>2</sub>O E) Mg<sub>2</sub>O

8. The experiment in which the desiccator was used to cool the crucible is :

- A) Acid – base titration /vinegar analysis  
B) The molecular weight of a volatile liquid  
C) Water of crystallization of hydrated salt  
D) Density of liquid  
E) solubility of compounds

9. The mass of C<sub>6</sub>H<sub>6</sub> vapour which occupies a volume of 83.4 ml at 84°C and 0.9 atm is:  
(At.wt C = 12g/mol ,At.wt H = 1g/mol & R= 0.08206 L.atm/K.mol )

- A) 0.02 g B) 0.2g C) 200g D) 20 g E) 2.0 g

10. The percentage by mass (%CH<sub>3</sub>COOH) in white vinegar ( density = 1.01 g/ mL) is known to be 6.5 % , calculate the volume of 0.5 M NaOH needed to neutralize a 10 mL vinegar sample : (M.wt CH<sub>3</sub>COOH =60g/mol)

- A) 17.8 mL B) 35.7 mL C) 53.5 mL D) 26.8 ml E) 21.5 ml

11. During vinegar analysis, adding 9mL distilled water to 1mL vinegar sample before titration will:

- A) Decrease the % of CH<sub>3</sub>COOH in 1mL vinegar B) Increase the number of mole of CH<sub>3</sub>COOH in 1mL vinegar  
C) Increase the % of CH<sub>3</sub>COOH in 1mL vinegar D) Decrease the number of mole of CH<sub>3</sub>COOH in 1mL vinegar  
E) Not affect the number of mole of CH<sub>3</sub>COOH in 1mL vinegar





# لجنة الميكانيك - الإتجاه الإسلامي



Al-Balqa' Applied University  
Faculty of Engineering Technology  
General Chemistry (111)/ Mid Term Exam  
Second Semester (2012/2013)

9/April/2013

Name: \_\_\_\_\_

Day and time of lab: 8-11

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

**Useful data:** Atomic weights Cu=63.5, Fe=55.8, Mg=24.3, Ca=40, Xe=131.3, Na=23, Cl=35.5, C=12, H=1, S=32, O=16 g/mol). Density of vinegar solution = 1.03 g/mL. R = 0.0821 atm.L/mol.K

1. Choose the most correct answer for the following questions and transfer them to the table above.

- Which of the following statements is **correct**:  
 a. Melting point depends on the quantity of substance.  
 b. Water may boil at 97°C at 0.8 atm.  
 c. Density of material is pressure dependent.  
 d. C<sub>3</sub>H<sub>8</sub> is soluble in water.
- Which of the following is a flammable liquid:  
 a. C<sub>2</sub>H<sub>5</sub>OH  
 b. Acetone  
 c. water  
 d. a+b
- The mass percentage of oxygen in 5.5 g CuSO<sub>4</sub>.5H<sub>2</sub>O equals :  
 a. 57.7%  
 b. 71.5%  
 c. 63.5%  
 d. 55.8%
- A compound was found to contain 55.2% of xenon "Xe" and 44.8% of chlorine "Cl". The empirical formula of this compound is:  
 a. XeCl<sub>2</sub>  
 b. XeCl  
 c. XeCl<sub>3</sub>  
 d. XeCl<sub>4</sub>
- Which of the following hydrates is classified as an **alum**:  
 a. NaCo(SO<sub>4</sub>)<sub>2</sub>.6H<sub>2</sub>O.  
 b. AgAl(SO<sub>4</sub>)<sub>3</sub>.7H<sub>2</sub>O.  
 c. NH<sub>4</sub>Cr(SO<sub>4</sub>).8H<sub>2</sub>O  
 d. NH<sub>4</sub>(SO<sub>4</sub>)<sub>2</sub>.6H<sub>2</sub>O
- An air sample containing only nitrogen gas is filled a 0.5L container. If the mixture has a density of 1.34g/L at 25°C and 1 atm. The mass of nitrogen (N<sub>2</sub>) in the sample.  
 a. 0.357 g  
 b. 0.313 g  
 c. 0.295 g  
 d. 0.413 g
- Given the following data for experiment of Vinegar Analysis:  
 • Volume of diluted vinegar= 30.0 mL  
 • Volume of concentrated vinegar = 6 mL  
 • Initial volume of 0.2M NaOH= 28.5 mL  
 • Final volume of NaOH= 36.5 mL  
 Mass of CH<sub>3</sub>COOH in one liter of concentrated (original) vinegar solution equals:  
 a. 3.2 g  
 b. 19.2 g  
 c. 9.6 g  
 d. 16.0 g
- Which of the following statements is **incorrect** concerning experiment of vinegar analysis:  
 a. The concentration of the base is accurately known.  
 b. 10 ml vinegar are filled in a conical flask.  
 c. The indicator is phenylethylene which has a pink color in the basic medium.  
 d. At the end point, moles of NaOH= moles of CH<sub>3</sub>COOH.

2. Answer by true or false

- For experiment of determination of empirical formula of MgO, N<sub>2</sub>H<sub>3</sub> is formed during the removal of the by product. X
- Bunsen flame should be blue colored. ✓
- The pictogram on the right indicates that the chemical is oxidizing. X
- Conical flasks have inaccurate volumes approximately equal to the volume labeled on it. X





# لجنة الميكانيك - الإتجاه الإسلامي



Al-Balqa Applied University  
Faculty of Eng. Techn.  
Applied Sciences Dept.

General Chemistry Lab.

Date: 10. 07. 2012

٢٠١٢ / ٧ / ١٠

Midterm Exam

Instructor: د. محمد زواوي

Student Name: \_\_\_\_\_

Q1: Circle the most correct answer of the following:

1. Which of the following **cannot** be considered as a safety rule in the lab:  
a. wearing the lab coat.  
b. avoid eating and the lab.  
c. washing hands after finishing the experiment.  
d. using gloves when hazards is used.  
e. using very accurate balance.
2. To what reading the graduated cylinder expected to be raised to, when 10 g of a metal with a density of  $7.3 \text{ gml}^{-1}$  was thrown in it and the initial volume was 4.6 ml?  
a. 7.6    b. 6.7    c. 6.0    d. 5.4    e. 5.6
3. Which of the following solvents expected to have the lowest boiling point?  
a.  $\text{CH}_3(\text{CH}_2)_{15}\text{CH}_3$     b.  $\text{CH}_3(\text{CH}_2)_3\text{CH}_3$     c.  $(\text{CH}_3)_2\text{CHCH}_2\text{OH}$     d.  $\text{H}_2\text{O}$     e. HF
4. What is the X value in an alum with the formula  $\text{LiAl}(\text{SO}_4)_2 \cdot \text{XH}_2\text{O}$  if 48.8% of this alum is water. (Awt for Li = 7  $\text{gmol}^{-1}$ , Al = 27, S = 32, O = 16  $\text{g mol}^{-1}$ )  
a. 6    b. 8    c. 18    d. 8    e. 12
5. In the experiment "Molecular Mass of volatile liquid", what is the effect of insufficient heating.  
a. The calculated molecular mass will be higher than actual.  
b. The calculated molecular mass will be lower than actual.  
c. There will be no effect, since the time is not included in the formula.  
d. The temperature will be higher and this will decrease the mass of condensate.  
e. None of the above is correct.
6. Considering Empirical Formula Experiment, the container in which the reaction cooled up is called;  
a. Beaker    b. Erlimyer Flask    c. Round bottom flask    d. Crucible    e. Desiccator
7. In the experiment "Molecular Mass of volatile liquid", if the mass of condensate was 0.122 g and the temperature was  $88^\circ\text{C}$ . Given that, the volume of the flask was 67 ml and the external pressure was 707 mmHg, then this volatile liquid is:  
(Awt C = 12, H = 1, O = 16, Cl = 35.5  $\text{gmol}^{-1}$ , R = 0.0821 L-atm/(mol-K))  
a.  $\text{CH}_2\text{Cl}_2$     b.  $\text{CH}_3\text{COCH}_3$     c.  $\text{CHCl}_3$     d.  $\text{CH}_3\text{CH}_2\text{OH}$     e.  $\text{CH}_3\text{CHCl}_2$



8. A 1.0 ml sample of vinegar (density =  $1.1 \text{ gml}^{-1}$ ) was titrated with 0.11 M NaOH solution. If 24.6 ml of the titrant was needed to change the color of indicator, what is the mass percentage (w/w) of the vinegar?

- a. 5.4%      b. 15.8%      c. 7.38%      d. 3.7%      e. None

9. In the melting point experiment, the effect of using less material is:

- a. the melting point increases  
b. the melting range increases  
c. the melting point decreases  
d. the melting range decreases  
e. No effect



10. Which of the following statements is **not correct** concerning the solubility of solid in liquid:

- a. it depends on the ratio between solute and solvent.  
b. it depends on the intermolecular attractive forces of the solute.  
c. it depends on the intermolecular attractive forces of the solvent.  
d. it depends on external pressure.  
e. it depends on the temperature.

Good Luck ..... Good Luck..... Good Luck..... Good Luck





# لجنة الميكانيك - الإتجاه الإسلامي

Al-Balqa Applied University

Faculty of Engineering Technology, Department of Basic Sciences

General Chemistry Laboratory (CHEM 111) Mid Exam

Date: 13/4/2011

Student name: --

Registration No: -----

Instructor Name: ----- د. علي المجرى

Time of Lab: ٥ - ١٢

Helpful data: Li = 6.94 g/mol; O = 16.0 g/mol; H = 1.01 g/mol; C = 12.0 g/mol; N = 14.0 g/mol; Cl = 35.5 g/mol; S = 32.06 g/mol; K = 39

R = 0.082

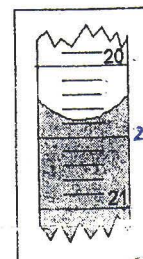
## Answer Sheet

14

Q	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ans	d	a	c	b	d	b	a	c	d	b	c	c	d	a

Choose the most correct answer for each of the following questions:

- The statements that is NOT a laboratory safety rule:
  - You can not taste any chemical.
  - You should wear laboratory coat.
  - You should never mix acids with bases.
  - You can directly smell any chemical.
  - You can add acids to water not the vice versa.
- The best equipment that is best suited for accurately measuring the volume of a liquid is:
  - graduated cylinder
  - graduated beaker
  - graduated flask
  - Volumetric flask
  - graduated burette.
- An example of a chemical property is:
  - density
  - mass
  - acidity
  - boiling point
  - solubility
- The percentage composition of K in  $K_2SO_4 \cdot Al_2(SO_4)_3 \cdot 24 H_2O$  (948.2 g/mol) equals:
  - 5.69 %
  - 8.25 %
  - 45.56 %
  - 40.50 %
  - 54.43 %
- The correct measurement (in mL) of the liquid in this picture equals:
  - 21.56
  - 21.45
  - 20.55
  - 20.39
  - 21.61
- A sample weighing 100.0 g of LiOH were dissolved in enough amount of water to give 3.0 L solution, the molarity of this solution equals:
  - 0.42
  - 1.4
  - 0.28
  - 0.56
  - 1.26
- The active ingredient in vinegar is:
  - NaOH
  - phenolphthalein
  - $CH_3COOH$
  - $CH_3COO^-Na^+$
  - HCl





# لجنة الميكانيك - الإتجاه الإسلامي

8. The following data were collected during vinegar analysis, if the density of original vinegar solution was  $1.00 \text{ g/mL}$ , then the % by mass of the acid in vinegar equals:

a) 10.6 %      b) 11.6 %      **c) 5.24 %**  
d) 7.9 %      e) 13.22 %

Initial burette reading	0.50 mL
Final burette reading	25.35 mL
Concentration of NaOH solution	0.0995 M
Volume of diluted vinegar solution (dilution factor 10.25)	11.5 mL

9. During the determination of the molecular weight of a volatile liquid, one of the following statements is correct:

a) It is not necessary to weight the flask and the liquid before heating.  
b) The boiling point of the volatile liquid should be greater than  $100^\circ\text{C}$ .  
c) The boiling point of the volatile liquid should be lower than  $100^\circ\text{C}$  by not more than  $5^\circ\text{C}$ .  
**d) The boiling point of the volatile liquid should be greater than the boiling point of water by at least  $20^\circ\text{C}$ .**  
e) It is true that equal volumes of different gases at same temperature and pressure do not have the same number of moles.

10. A sample weighing  $0.238 \text{ g}$  of a gas occupies  $125.0 \text{ mL}$  at  $600 \text{ mmHg}$  and  $25^\circ\text{C}$ , the molecular weight of this gas equals:

a) 44      **b) 59**      c) 71      d) 120      e) 93

11. During Redox titration of bleach, the sample that was introduced in the burette was-----, it was used to reduce ----- in the flask

a)  $\text{ClO}^-$ ,  $\text{S}_2\text{O}_3^{2-}$       b)  $\text{ClO}^-$ ,  $\text{I}^-$       **c)  $\text{S}_2\text{O}_3^{2-}$ ,  $\text{I}_3^-$**       d)  $\text{S}_2\text{O}_3^{2-}$ ,  $\text{I}^-$   
e)  $\text{S}_2\text{O}_3^{2-}$ , starch

12. A sample weighing  $25.0 \text{ g}$  of a salt was found to contain  $0.679 \text{ g}$  of  $\text{H}_2\text{O}$ . If the molar mass of the anhydrous salt is  $136.1 \text{ g/mol}$ , then the value of water of crystallization equals:

a) 10      b) 12      **c) 14**      d) 4      e) 6

13. During the empirical formula experiment, one of the following equations clearly shows how you eliminate the by-product formed during the experiment:

a)  $3\text{Mg}_{(s)} + \text{N}_{2(g)} \rightarrow \text{Mg}_3\text{N}_{2(s)}$   
b)  $\text{Mg}_3\text{N}_{2(s)} \rightarrow \text{Mg}_3\text{N}_{2(s)} + \text{N}_{2(g)}$   
c)  $3\text{MgO}_{(s)} + 2\text{NH}_{3(g)} \rightarrow \text{Mg}_3\text{N}_{2(s)} + 3\text{H}_2\text{O}_{(l)}$   
**d)  $\text{Mg}_3\text{N}_{2(s)} + 3\text{H}_2\text{O}_{(l)} \rightarrow 3\text{MgO}_{(s)} + 2\text{NH}_{3(g)}$**   
e)  $\text{MgCl}_{2(aq)} + \text{H}_2\text{O} \rightarrow \text{MgO}_{(s)} + 2\text{HCl}_{(aq)}$

14. The colour change that indicates end point of titration during analysis of bleach experiment was:

**a) Dark brown to yellow**      b) Blue to colorless      c) yellow to blue  
d) Dark orange to colorless      e) colorless to light pink





# لجنة الميكانيك - الإتجاه الإسلامي

Al-Balqa' Applied University 16  
Faculty of Engineering Technology/ Applied Sciences Department  
General Chemistry Laboratory/ Mid-Term Exam

Name: خالد عبد الرحمن Date 18-7-2011  
Day & time of lab: الاثنين والاربعاء  
من 8 إلى 11

NOTE: Transfer all your answers to the table below in capital letters.

Ques.no.	1	2	3	4	5	6	7	8	9	10
Answer	E	A	<del>B</del>	D	A	<del>A</del>	D	C	C	E

Choose the most correct answer for each of the following questions:

1. Which one of the following changes is not a physical change:

- a. Freezing of a liquid.
- b. Condensation of vapor.
- c. Melting of NaCl.
- d. Evaporation of water.
- ☒ e. Converting of Mg to MgO.

2. The boiling point of a liquid decreases as :

- ☒ a. the intermolecular forces between liquid molecules decrease. \*
- b. the external pressure increase.
- c. the liquid's mass decrease..
- d. the liquid's volume decrease
- e. the liquid's density increase.

3. Which of the following is wrong?

- ☒ a. Weighing hot objects over the balance won't affect the mass reading.
- b. Fire extinguishers are usually filled with CO<sub>2</sub>.
- c. Never taste any chemical.
- d. Flammable liquids are heated in water bath.
- e. Always pour acids into water.

4. One of the following is insoluble in CH<sub>3</sub>OH:

- a. NH<sub>3</sub>
- b. H<sub>2</sub>O
- c. H<sub>2</sub>SO<sub>4</sub>
- ☒ d. C<sub>6</sub>H<sub>6</sub>
- e. CH<sub>3</sub>NH<sub>2</sub>

5. If 1.216 g of metal "X" is burned with excess amount of oxygen yielding an oxide that weighs 1.60 g. The empirical formula for this metal oxide is: (atomic wt of X= 55.0, O=16 g/mol)

- ☒ a. XO
- b. X<sub>3</sub>O<sub>4</sub>
- c. X<sub>2</sub>O<sub>3</sub>
- d. X<sub>2</sub>O
- e. XO<sub>2</sub>



# لجنة الميكانيك - الإتجاه الإسلامي

6. During the experiment of determination of the empirical formula of magnesium oxide, the by-product formed is:

- a.  $\text{NH}_3$       b.  $\text{Mg}_3\text{N}_2$       c.  $\text{MgN}_2$       d.  $\text{MgO}$       e.  $\text{MgO}_2$

7. A 0.990 g sample of the hydrated salt:  $\text{MA} \cdot \text{XH}_2\text{O}$  was dried to 0.5211g. If the molar mass of the anhydrous salt is 160 g/mol, the value of X (moles of water in the hydrated salt) equals:

- a. 5      b. 6      c. 7      d. 8      e. 11

8. A 2.0 mL of vinegar sample was titrated with 0.135 M NaOH solution, if it required 15.4 mL of NaOH to reach the end point, the %  $\text{CH}_3\text{COOH}$  in vinegar solution equals:

- a. 8 %      b. 4 %      c. 6 %      d. 4.5 %      e. 5 %

9. Which of the following statements is correct concerning the experiment of vinegar analysis:

- a. At the end point the color changes from pink to colorless.  
b. The indicator used is pink in the acidic medium.  
c. The titrant NaOH is filled in the burette. ☒  
d. The indicator is methyl orange.  
e. At the end point, moles of acetic acid > moles of NaOH.

10. The mass of a volatile liquid's vapor that was vaporized at  $85^\circ\text{C}$  in a  $210 \text{ cm}^3$  flask, at external pressure equal to 750 mmHg is 0.282 g, the molecular weight of this liquid (in g/mol) equals:

- a. 210      b. 105      c. 94      d. 30      e. 40

## Useful Data:

- \* Atomic weights: C=12, O=16, H=1 g/mol.  
\* Density of vinegar solution=1.04 g/mL.  
\* 1 atm=760 mmHg  
\*  $R = 0.0821 \text{ atm.l/mol.K}$   
\*  $\text{K} = \text{ }^\circ\text{C} + 273$



----Good Luck----





# لجنة الميكانيك - الإتجاه الإسلامي

Al-Balqa Applied University

Faculty of Engineering Technology, Department of Basic Sciences

General Chemistry Laboratory (CHEM 111) Mid Exam

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Date: 13/4/2011

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Time of Lab: (8-11)

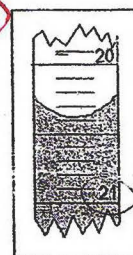
Helpful data: Li = 6.94 g/mol; O = 16.0 g/mol; H = 1.01 g/mol; C = 12.0 g/mol; N = 14.0 g/mol; Cl = 35.5 g/mol; S = 32.06 g/mol.  $R = 0.0821$

Answer Sheet

Q	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ans	d	a	d	d	c	d	b	c	c	a	a	d	c	b

Choose the most correct answer for each of the following questions:

- The statements that is NOT a laboratory safety rule:
  - You should wear laboratory coat.
  - You should never mix acids with bases.
  - You can not taste any chemical.
  - You can directly smell any chemical.
  - You can add acids to water not the vice versa.
- The best equipment that is best suited for approximately measuring the volume of a liquid is:
  - graduated cylinder
  - graduated beaker
  - graduated flask
  - Volumetric flask
  - graduated burette.
- An example of a chemical property is:
  - density
  - mass
  - solubility
  - acidity
  - boiling point
- The percentage composition of sulphate ions ( $\text{SO}_4^{2-}$ ) in  $\text{K}_2\text{SO}_4 \cdot \text{Al}_2(\text{SO}_4)_3 \cdot 24 \text{H}_2\text{O}$  (948.2 g/mol) equals:
  - 5.69 %
  - 8.25 %
  - 45.56 %
  - 54.43 %
  - 40.50 %
- The correct measurement (in mL) of the liquid in this picture equals:
  - 21.56
  - 20.39
  - 21.45
  - 20.55
  - 21.61
- A sample weighing 40.0 g of LiOH were dissolved in enough amount of water to give 3.0 L solution, the molarity of this solution equals:
  - 0.42
  - 1.4
  - 0.28
  - 0.56
  - 1.26





7. The active ingredient in vinegar is:  
 a) NaOH      **b) CH<sub>3</sub>COOH**      c) HCl      d) CH<sub>3</sub>COO<sup>-</sup>Na<sup>+</sup>      e) phenolphthalein

8. The following data were collected during vinegar analysis, if the density of original vinegar solution was 1.00 g/mL, then the % by mass of the acid in vinegar equals:

a) 10.6 %      b) 11.6 %      **c) 5.24 %**  
 d) 7.9 %      e) 13.22 %

Initial burette reading	15.50 mL
Final burette reading	25.35 mL
Concentration of NaOH solution	0.0995 M
Volume of diluted vinegar solution (dilution factor 10.25)	11.5 mL

9. During the determination of the molecular weight of a volatile liquid, one of the following statements is correct:

**a) It is necessary to weight the flask and the liquid before heating.**  
 b) The boiling point of the volatile liquid should be lower than 80 °C.  
 c) The boiling point of the volatile liquid should be lower than 100 °C by not more than 5 °C  
 d) The boiling point of the volatile liquid should be greater than the boiling point of water by at least 20 °C.  
 e) It is true that equal volumes of different gases at same temperature and pressure do not have the same number of moles.

10. A sample weighing 0.179 g of a gas occupies 125.0 mL at 600 mmHg and 25 °C, the molecular weight of this gas equals:

**a) 44**      b) 59      c) 71      d) 120      e) 93

11. During Redox titration of bleach, the sample that was introduced in the burette was -----, it was used to reduce ----- in the flask

**a) ClO<sub>2</sub>, S<sub>2</sub>O<sub>3</sub><sup>2-</sup>**  
 b) S<sub>2</sub>O<sub>3</sub><sup>2-</sup>, starch

12. A sample weighing 3.25 g of a certain anhydrous salt was found to contain 0.991 g of H<sub>2</sub>O. If the molar mass of the anhydrous salt is 164.1 g/mol, then the value of water of crystallization equals:

a) 10      b) 12      c) 2      **d) 4**      e) 6

13. During the empirical formula experiment, one of the following equations clearly shows how the by-product is formed during the experiment:

a)  $Mg_3N_2(s) \rightarrow Mg_3N_2(s) + N_2(g)$   
 b)  $Mg_3N_2(s) + 3H_2O(l) \rightarrow 3MgO(s) + 2NH_3(g)$   
 c)  $3MgO(s) + 2NH_3(g) \rightarrow Mg_3N_2(s) + 3H_2O(l)$   
 d)  $MgCl_2(aq) + H_2O \rightarrow MgO(s) + 2HCl(aq)$   
**e)  $3Mg(s) + N_2(g) \rightarrow Mg_3N_2(s)$**

14. The colour change that indicates end point of titration during analysis of bleach experiment was:

**a) Blue to colorless**      b) dark orange to colorless      c) yellow to blue  
 d) dark brown to yellow      e) colorless to light pink