

The active Ingredient in any antacid-tablet may

- 1)  $\text{CO}_3^{2-}$
  - 2)  $\text{OH}^-$
  - 3)  $\text{HCO}^-$
  - 4) **All of above**
- 

Which of the following is NOT laboratory safety rule?

- (a) You should never mix acids with bases
- (b) you should never add water to acid
- (c) you should tie back your long hair

**(d) All of the above are valid safety rules**

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Which of the following is a chemical property of water?

- (a) its density is 1.000 g/cm<sup>3</sup> at 4 °C
  - (b) it causes light rays to bend
  - (c) it forms bubbles when calcium is added**
  - (d) its melting point is zero C
- 

What piece of laboratory equipment is best-suited for accurately measuring the volume of a liquid?

- (a) Crucible
- (b) test tube
- (d) Beaker
- (c) Erlenmeyer flask

**(d) Graduated cylinder**

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What is the purpose of using wire gauze equipment in the laboratory?

- A) To measure volume of solution
- B) To run a chemical reaction
- C) To distribute the heat over the surface of container لتوزيع درجة الحرارة بانتظام**
- D) To collect a precipitate

E) To separate a precipitate from a solution

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When two aqueous solutions of  $\text{Na}_2\text{CO}_3$  and  $\text{HCl}$  are mixed together, the observation of occurrence of a reaction is:

- A) **evolution of a gas without odor**
  - B) evolution of a gas with odor
  - C) formation of a white precipitate
  - D) Nothing changed.
- 

Which of the following events is not a common sign that a chemical change has taken place?

- A) production of heat or light
  - B) bubbling
  - C) Formation of a precipitate.
  - D) **change in the state (phase) of matter**
  - E) Change in color or odor.
- 

What instruments do we use to measure accurate density of a liquid?

- A) Top loading balance and thermometer
  - B) Top loading balance and stopwatch
  - C) Graduated cylinder, top loading balance and thermometer
  - D) Graduated cylinder and thermometer
  - E) **Pipet, top loading balance and thermometer**
- 

The density of a diamond is  $3.51 \text{ g/cm}^3$ , and the density of platinum is  $21.43 \text{ g/cm}^3$ . If equal masses of diamond and platinum are transferred to equal volumes of water in separated graduated cylinders, which graduated cylinder would have the greatest volume change?

- A) The platinum because it has the lower density.
- B) **The diamond because it has the lower density.**
- C) All of the above answers are correct
- D) All of the above answers are incorrect

**since the density of diamond ( $3.51 \text{ g/cm}^3$ ) is lower than the density of platinum ( $21.43 \text{ g/cm}^3$ ), the graduated cylinder containing diamond will have the greatest volume change.**

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An example of a chemical property is chemical property

- A) Solubility

- B) Mass
  - C) Density
  - D) Boiling
  - E) **None of these**
- 

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- A) to separate a precipitate from a solution
  - B) to run a chemical reaction
  - C) to measure volume of solution
  - D) **to distribute the heat over the surface of the container**
  - E) to collect a precipitate
- 

Which of the following observations is correct when methane burns in Bunsen burner with **sufficient oxygen**?

- A) Hot, luminous blue flame and  $\text{CO}_2 + \text{H}_2\text{O}$
  - B) **Hot, nonluminous blue flame and  $\text{CO}_2 + \text{H}_2\text{O}$**
  - C) Luminous low flame and  $\text{C(s)} + \text{CO(g)} + \text{CO}_2\text{(g)} + \text{H}_2\text{O}$
  - D) Hot luminous yellow flame and  $\text{CO}_2$
- 

When sodium hydroxide solution was added to a solution of one of the following chemicals, a **gas** with pungent **odor** was evolved. This gas turned a moisture litmus paper blue. The chemical was

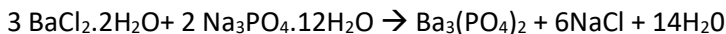
المطلوب شو هي المادة يلي بتتفاعل مع ال



و بيتصاعد غاز ذو رائحة

- A)  $\text{BaCl}_2$
  - B)  $\text{Na}_2\text{CO}_3$
  - C)  **$\text{NH}_4\text{Cl}$**
  - D)  $\text{NaCl}$
  - E)  $\text{ZnSO}_4$
-

In an experiment on limiting reactant, a student dissolved a 1.30 g sample of a mixture of  $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$  (molar mass = 244 g/mol) and  $\text{Na}_3\text{PO}_4 \cdot 12\text{H}_2\text{O}$  (molar mass = 380 g/mol) in 200 mL water, and the mass of  $\text{Ba}_3(\text{PO}_4)_2$  (molar mass = 601 g/mol) collected was = 0.50 g. Knowing that addition of two drops of  $\text{BaCl}_2$  solution to the filtrate lead to precipitate formation, calculate the mass percent of  $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$  in the original sample:



- A) 19%
  - B) 41%
  - C) 50%
  - D) 53%
  - E) 61%
- 

A balance has a precision of  $\pm 0.01 \text{ g}$ . A sample weighs about 3 g on this balance. How many significant figures should be reported for this measurement?

- A) 3000 g/ 4 significant figures
  - B) 3 g/ 1 significant figures
  - C) 3.0 g/ 2 significant figures
  - D) 300 g/ 3 significant figures**
- 

If the percentage yields of a chemical reaction is equal to 100%, then

- A) The actual yield is less than the theoretical yield
  - B) The actual yield is equal to the theoretical yield**
  - C) The actual yield is greater than the theoretical yield
  - D) There was no limiting reactant
- 

Which of the following statements false?

- A) To prevent eye injury in a laboratory, always wear safety glasses.
  - B) Do not blow out the solution remaining in the pipette tip after delivery.
  - C) Never touch, taste, or smell a chemical unless told to do so
  - D) Excess chemicals could be returned to the reagent bottle.**
  - E) Lab coat must be worn all the times in the laboratory.
-

A student obtained the following set of data on density measurements of a solid: Mass of empty beaker = 84.35 g

Mass of beaker + metal pieces = 98.25 g

Initial water level in the graduated cylinder = 55.0 mL

Final water level in the graduated cylinder with the metal pieces = 57.3 mL. The density (g/cm<sup>3</sup>) of the solid with proper significant figures is:

A) **6.043**

B) 6.04

C) 6.0

D) 6.0435

**Solution :  $98.25 - 84.35 = 13.9$**

**$57.3 - 55.0 = 2.3$**

**$13.9 \div 2.3 = 6.043 \text{ g/cm}^3$**

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Wash bottles should be filled 'only' with

A) Tap water.

B) Distilled alcohol

C) Washing or cleansing solution

**D) Distilled or deionized water**

E) None of these answers

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When does a reaction stop?

A) When all the excess reactant is consumed

**B) When all the limiting reactant is consumed**

C) When all the excess reactant is consumed

D) When it wants to

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Consider the following properties which can be used to identify an unknown compound: 1) boiling point 2) solubility 3) density 4) formation of a precipitate

All these properties are

- A) chemical except (1) and (4)
  - B) chemical except (4)
  - C) physical except (4)**
  - D) physical except (1)
  - E) physical except (2) and (3)
- 

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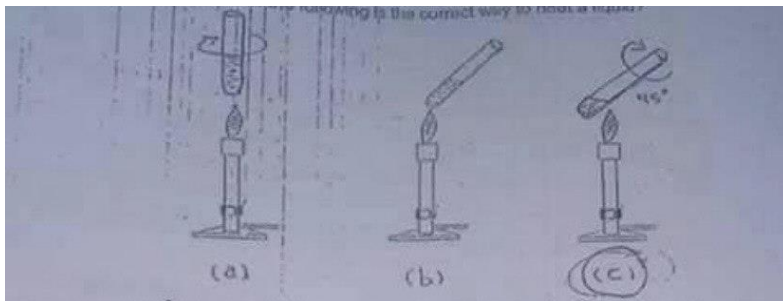
Which of the following is a **chemical property** of water?

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- 

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  - B) test tube
  - C) Beaker
  - D) Erlenmeyer flask
  - E) Graduated cylinder**
-

Which one of the following is the correct way to heat a liquid ? (C)



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The observations obtained from a mixture of sodium hydroxide and hydrochloric acid is:

- A) Color change
- B) ppt. formed
- C) No reaction**
- D) Increasing in temperature
- E) Gas evolved

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A cube of metal is 1.56 centimeters on an edge. Its mass is 16.3 grams. What is its density?

- A) 4.68 g/cm<sup>3</sup>
- B) 4.30 g/cm<sup>3</sup>
- C) 5.69 g/cm<sup>3</sup>
- D) 6.14 g/cm<sup>3</sup>
- E) 4.86 g/cm<sup>3</sup>

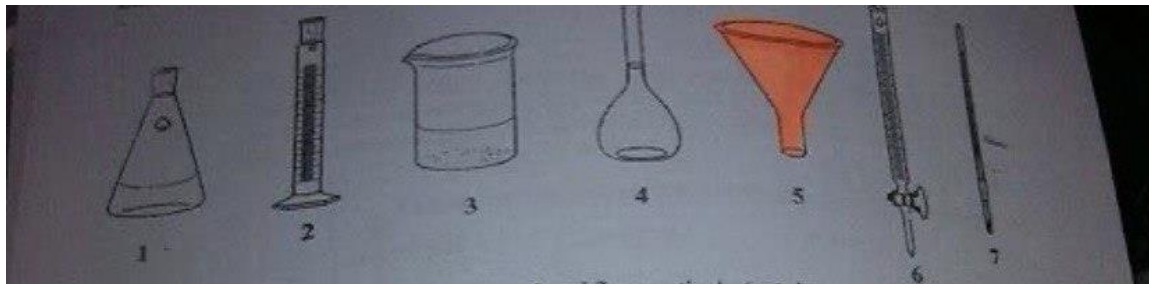
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15.0 ml. of alcohol are pipette into a beaker of mass of 17.832 g. The combined mass of alcohol and the beaker was 29.674 g. What is the density of alcohol?

- A) 1.188 g/ml.
- D) 0.837 g/ml.
- C) 0.789 g/ml.**

E) 0.474 g/ml

C) 0.991 g/ml.



1. The correct names of equipments number 2 and 3 respectively ( ) are;

A) Pipet and Beaker.

B) Erlenmeyer Flask and Beaker.

C) Beaker and Funnel.

**D) Graduated Cylinder and Beaker.**

2. Which of the above equipments is used to separate a precipitate from a solution?

A) 2

B) 7

**C) 5**

D) 1

3. What is the name of equipment number 6?

A) **Buret**

B) Pipet

C) Volumetric flask 4

D) Thermometer

4. Which of the above equipments is the best use to measured volume of solution?

**It's 6**



A 50 mL of 0.145 M HCl is added to an antacid sample. The Solutions is heated for about 1 min. Then the indicator was added to the solution and titrated to the end point using,24.9 ml. of (0.12 M NaOH). Answur these questions :

- A. What is the purpose of heating: **to remove dissolved CO<sub>2</sub>**
- B. The type of titration is called **Back titration**
- C. The name of indicator is **bromophenol blue** colored in base **blue**

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**FORMULA MASS OF A VOLATILE LIQUIDS** تجربة

Q1: 0.246g of a condensed vapor of an unkaown volatile liquid was collected in a 150 ml flask at 60°C and a pressure of 740 torr. Assaming ideal behavior,R: 0.082 L.atm/mol.K, Calculate:

1. The number of moles of the volatile liquids الحل عالقوانين مباشرة

$$PV = n RT$$

2. The molar mass of volatile liquid

$$FM = \text{mass vapor} \div \text{moles of vapor}$$

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Q2: For the molecular weight of the volatile liquid experiment a student obtained the following data

Mass of flask and foil cap and unknown = 83.35 g

Mass of flask and foil cap = 82.65 g

Water path temperature = 95 C°.

Barometric pressure, at atm = 1.01 atm.

Volume of the flask, ml = 270 ml

Calculate the molar mass of the volatile liquid.

نفس الطريقة الحل من المانيوال  
الجزء العملي تجريبه

**FORMULA MASS OF A VOLATILE LIQUIDS**

Most common antacid ingredient بعض المعادلات وطريقة الحل (antacid) (5) تجربة رقم

Compound	Chemical formula	Chemical Reaction
Aluminum hydroxide	$\text{Al}(\text{OH})_3$	$\text{Al}(\text{OH})_3 (s) + 3 \text{HCl} (aq) \rightarrow \text{AlCl}_3 (aq) + 3 (\text{H}_2\text{O}) (l)$
Calcium carbonate	$\text{CaCO}_3$	$\text{CaCO}_3 (s) + 2 \text{HCl} (aq) \rightarrow \text{CaCl}_2 (aq) + \text{H}_2\text{O} (l) + \text{CO}_2 (g)$
Magnesium carbonate	$\text{MgCO}_3$	$\text{MgCO}_3 (s) + 2 \text{HCl} (aq) \rightarrow \text{MgCl}_2 (aq) + \text{H}_2\text{O} (l) + \text{CO}_2 (g)$
Magnesium hydroxide	$\text{Mg}(\text{OH})_2$	$\text{Mg}(\text{OH})_2 (s) + 2 \text{HCl} (aq) \rightarrow \text{MgCl}_2 (aq) + 2 \text{H}_2\text{O} (l)$
Sodium bicarbonate	$\text{NaHCO}_3$	$\text{NaHCO}_3 (aq) + \text{HCl} (aq) \rightarrow \text{NaCl} (aq) + \text{H}_2\text{O} (l) + \text{CO}_2 (g)$

( report sheet ) اسئلة الحل نفس طريقة ال

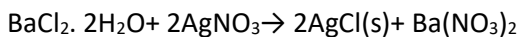
A student titrated a 25.00 mL sample of vinegar containing acetic acid,  $\text{HC}_2\text{H}_3\text{O}_2$ , with a 0.9980M NaOH solution. It required 22.78 mL of the base to reach the equivalence point. Based on this information determine the following.

- What is the molarity of the  $\text{OH}^-$ ? How many moles of  $\text{OH}^-$  are used to reach the equivalence point?
- How many moles of  $\text{H}^+$  are present at the equivalence point?
- What is the molarity of the  $\text{H}^+$  ( $M_{\text{H}^+}$ )?
- What is the molarity of the acetic acid ( $M_{\text{acid}}$ )? What is the % by mass of acetic acid in vinegar?

An antacid tablet was dissolved in water and 10mL of 0.20 M HCl was added from buret and color of antacid solution changed to yellow. After the acid had reacted with the tablet it required 20 mL of 0.05 M NaOH to neutralize the excess HCl. How many moles of HCl did the antacid neutralize?

An antacid tablet containing magnesium hydroxide instead of calcium carbonate was dissolved in 100.0 mL of 0.2893 M HCl. 10.00 mL of this solution was titrated to endpoint with 25.20 mL of 0.1007 M NaOH. How much magnesium hydroxide was in the antacid tablet (in mg)? Assume 100% of the tablet was dissolved in the acid.

An aqueous solution of 3.84 g mixture of solid salt  $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$  and  $\text{AgNO}_3$  produces 1.148 g of  $\text{AgCl}$  is a precipitate. It is experimentally found that the supernatant solution contains  $\text{Ag}$  ions. (MM of  $\text{AgNO}_3 = 169.9/\text{BaCl}_2 \cdot 2\text{H}_2\text{O} = 244.2/\text{AgCl} = 143.4$  and  $\text{Ba}(\text{NO}_3)_2 = 261.3$  g/mol).



Answer the following three questions:

- 1) What is the limiting reactant?  $\text{AgNO}_3$
  - 2) What is the mass of the limiting reactant? 3.84 g
  - 3) What is the percent composition of  $\text{AgNO}_3$ , in the salt mixture? 100%
- 

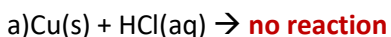
An aqueous solution of a 0.960 g mixture of solid salt  $\text{Na}_2\text{SO}_4$  and  $\text{BaCl}_2 \cdot \text{H}_2\text{O}$  produces  $1.203 \times 10^{-3}$  moles of  $\text{BaSO}_4$  as a precipitate. It is experimentally found that the supernatant solution contains  $\text{SO}_4^{2-}$  ions. (MM of  $\text{Na}_2\text{SO}_4 = 142.0$ ;  $\text{BaCl}_2 \cdot \text{H}_2\text{O} = 244.3$  g/mol). Accordingly, answer questions:

- 1) What is the limiting reactant?
- 2) The number of moles and the mass of the limiting reactant are:

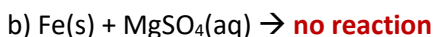
**Do your calculations and if you don't know how, tell me**

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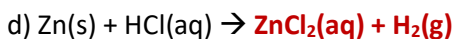
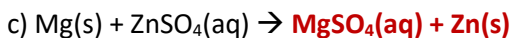
The following elements are arranged according to decreasing their reactivity from left to right, (Mg, Zn, Pb, H, and Cu), complete the following equations: (4) تجربة رقم (acid and base)



**Copper (Cu) is less reactive than hydrogen (H), so it cannot displace hydrogen from hydrochloric acid (HCl).**



**Iron (Fe) is less reactive than magnesium (Mg), so it cannot displace magnesium from magnesium sulfate ( $\text{MgSO}_4$ ).**



## True and false

Most laboratory balances in the general chemistry laboratory can measure the mass of a substance to less than 0.01 g. **True**

Use a spatula to transfer chemicals from a reagent bottle. **False**

The hottest part of the flame is the top of the inner cone. **True**

To avoid waste in the use of chemicals, always return the unused portions directly to the bottle **False**

If your skin is burned by a flame, immediately treat the affected area by covering it with a medical cream. **True**

pipette should be rinsed several times with the liquid or solution before it is final filled. **True**

Analytical balance is more sensitive than top loading balance **True**

Erlenmeyer flask is not suitable glassware to measure exact volume. **True**

Cool flame is an adjusted Bunsen burner having a full supply fuel and limited air. **False**

Addition of sodium hydroxide solution to an ammonium chloride solution gave ammonia gas. **True**

The boiling point of flammable liquids can be measured by using Bunsen burner as source of heat. **True**

Adjusted Bunsen burner has two cones, in which the top of the inner cone is the hottest part. **False**

The best way to smell a chemical compounds is by point the test tube away from face while gently fanning vapors toward nose. **True**

Don't blow out the solution remaining in the pipette tip after solution has drain from the pipette. **True**

Working alone in the laboratory is not permitted in any circumstances. **True**

Complete with the correct word(s), phrase, or value(s).

Ask your instructor to identify the questions you are to complete.

1. Technique 1. To insert glass tubing through a rubber stopper, first moisten the glass with water or glycerol.  
*لإدخال الأنبوب الزجاجي من خلال مسدود مطاطي، قم أولاً برطوبته بالماء أو الجليسرول.*
2. Technique 2. Glassware should first be washed with tap water and a detergent solution followed by final rinses with deionized water.  
*تُغسل الأواني الزجاجية أولاً بالماء الصالح (ماء المكنون) وحمض الكبريتيك، تليها شطفات نهائية بالماء منزوع الأيونات.*
3. Technique 2. Glassware is clean when no water droplets adhere to the clean surface.  
*الأواني الزجاجية نظيفة عندما لا تلتصق قطرات الماء بالأسطح النظيفة.*
4. Technique 4. Information on the properties and disposal of chemicals can be found in the stockroom or online from the MSDS collection. (material safety data sheet)  
*معلومات الخواص والتخلص من المواد الكيميائية يمكن العثور عليها في المخزن أو عبر الإنترنت من مجموعة MSDS (معلومات سلامة المواد).*
5. Technique 5. Most solutions used for quantitative work are prepared in flasks called volumetric flasks.  
*معظم المحاليل المستخدمة للعمل الكمي تُحضّر في قوارير تسمى قوارير الحجم.*
6. Technique 6. The mass of a sample measured on a balance without regard to its container is called its tare mass.  
*الكتلة المقاسة لعينة على ميزان دون مراعاة الوعاء تسمى كتلة التارة.*
7. Technique 6. After completing a mass measurement, the mass settings are to be set to zero position.  
*بعد اكتمال القياس، يجب ضبط إعدادات الكتلة على صفر.*
8. Technique 7. A well of a 24-well plate has the same approximate volume that is slightly larger than a 7.5 mm test tube.  
*الغرفة في لوحة 24 غرفة لها نفس الحجم التقريبي الذي هو أكبر قليلاً من أنبوب اختبار 7.5 ملم.*
9. Technique 8. To collect a water-soluble gas less dense than air, the mouth of the gas-collecting flask should be pointed downward.  
*لجمع غاز قابل للذوبان في الماء أقل كثافة من الهواء، يجب توجيه فم زجاجة الجمع لأسفل.*
10. Technique 9. Do not use a spatula to transfer a solid from its reagent bottle to a beaker with the aid of a stirring rod.  
*لا تستخدم ملعقة لانتقال مادة صلبة من زجاجة الكاشف إلى باكيتر باستخدام قضيب مزجج.*
11. Technique 10. Transfer liquids or solutions from the reagent bottle to a beaker with the aid of a stirring rod.  
*انقل السوائل أو المحاليل من زجاجة الكاشف إلى باكيتر باستخدام قضيب مزجج.*
12. Technique 11a. The bowl of the funnel should be less than two third full when gravity filtering a mixture.  
*حوض المرشح يجب أن يكون أقل من الثلثين ممتلئاً عند ترشيح الخليط بالجاذبية.*
13. Technique 11f. A centrifuge should be balanced with \_\_\_\_\_ numbers of test tubes containing \_\_\_\_\_ volumes of solution.  
*يجب موازنة جهاز الطرد المركزي بعدد متساوٍ من أنابيب الاختبار المحتوية على أحجام متساوية من المحاليل.*
14. Technique 12. If a noxious or nauseating gas is evolved from a reaction mixture, it is good advice to perform the reaction face hoods or improvised hoods.  
*إذا تم إنتاج غاز سام أو مقيح من خليط التفاعل، فمن النصح إجراء التفاعل في حجاب الوجه أو حجابات مجهزة يدوياً.*
15. Technique 13a. A nonluminous flame with a reduced supply of fuel is called a \_\_\_\_\_. Such a flame is most critical when heating liquids and solutions contained in a test tube.  
*الهبوط غير اللامع مع إمداد وقود منخفض يسمى هبوط غير لامع. هذا النوع من الهبوط خطير جداً عند تسخين السوائل والمحاليل في أنبوب اختبار.*
16. Technique 13c. A nonflammable liquid in a flask or beaker that is greater than one-fourth full, can be heated using the laboratory setup shown in Figure \_\_\_\_\_.  
*السائل غير القابل للاحتراق في زجاجة أو باكيتر الذي يمتلئ بأكثر من ربعه يمكن تسخينه باستخدام الإعداد المختبري المبين في الشكل \_\_\_\_\_.*
17. Technique 13d. Solutions in test tubes can be maintained at a constant "higher" temperature with the use of a \_\_\_\_\_.  
*يمكن الحفاظ على درجة حرارة ثابتة أعلى للمحاليل في أنابيب الاختبار باستخدام \_\_\_\_\_.*
18. Technique 15a. Solids are commonly heated to dryness in a drying oven and then cooled (ideally) in a desiccator.  
*المواد الصلبة تُسخن عادةً حتى تجف في فرن التجفيف، ثم تبرد (منافس) في جاف.*
19. Technique 16a. The volume of a liquid should be read at the bottom of the meniscus.  
*الحجم السائل يُقاس من قاع المنحنى.*
20. Technique 16b. The volume of a liquid in a pipet should be controlled with the index (finger).  
*الحجم السائل في أنبوب القياس يُتحكم به بإصبع الإشارة.*
21. Technique 16c. A buret should be rinsed with several 3- to 5-mL portions of \_\_\_\_\_ before being filled.  
*يجب شطف buret بعدة أجزاء من 3-5 مل من \_\_\_\_\_ قبل الملأ.*

مهم السؤال تجريبية رقم (2)

Four test tubes, numbered as 1, 2, 3 and 4. Each contains one of the aqueous solutions  $\text{H}_2\text{SO}_4$ ,  $\text{Na}_2\text{SO}_4$ ,  $\text{BaCl}_2$ , and  $\text{Na}_2\text{CO}_3$ . The observations appeared in the table below are noticed. Accordingly, answer questions below?

5 - 7 below?

Test tube Numbers	Observation
<u>1</u> + 2	White precipitate <i>cloudy</i>
2 + <u>3</u>	Gas evolution
<u>3</u> + <u>4</u>	Nothing
<u>1</u> + <u>4</u>	White precipitate <i>cloudy</i>
2	Litmus paper turns <u>red</u>

1) Test tube number (1) contains:

- A)  $\text{Na}_2\text{SO}_4$
- B)  $\text{Na}_2\text{CO}_3$
- C)  $\text{BaCl}_2$**
- D)  $\text{H}_2\text{SO}_4$

2) Test tube number (4) contains:

- A)  $\text{Na}_2\text{CO}_3$
- B)  $\text{Na}_2\text{SO}_4$**
- C)  $\text{BaCl}_2$
- D)  $\text{H}_2\text{SO}_4$

3) Test tube number (3) contains:

- A)  $\text{BaCl}_2$
- B)  $\text{Na}_2\text{SO}_4$
- C)  $\text{H}_2\text{SO}_4$
- D)  $\text{Na}_2\text{CO}_3$**

4) Which one of the following reactions generates  $\text{CO}_2$  gas?

A)  $\text{H}_2\text{SO}_4$  and  $\text{NaHCO}_3$

B)  $\text{HCl}$  and  $\text{NH}_4\text{Cl}$

C)  $\text{NaCl}$  and  $\text{Na}_2\text{CO}_3$

D)  $\text{Na}_2\text{CO}_3$  and  $\text{NaHCO}_3$

E)  $\text{H}_2\text{SO}_4$  and  $\text{Na}_2\text{SO}_4$

---

When methane gas is burned on a Bunsen burner with sufficient amount of oxygen, the result will be:

A) Hot nonluminous yellow flame and  $\text{CO}_2$  gas.

B) Hot luminous blue flame and  $\text{CO}_2$  gas+  $\text{H}_2\text{O}(\text{g})$

**C) Hot nonluminous blue flame and  $\text{CO}_2$  gas+  $\text{H}_2\text{O}(\text{g})$**

D) Luminous yellow flame and  $\text{CO}_2$  and  $\text{CO}$  gases +  $\text{H}_2\text{O}(\text{g})$

E) Nothing happens

For the "Limiting reactant" experiment.

A (1.12 g) mixture containing  $\text{Na}_2\text{SO}_4$ , and  $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$  was dissolved in water, and then heated to near boiling for 15.0 minutes. After cooling the mixture was filtrated off and 0.113 g of  $\text{BaSO}_4$  obtained as precipitate. The obtained filtrate was divided into two parts, the first part drops of 0.050 M  $\text{BaCl}_2$  were added and nothing was obtained where the second part, drops of 0.50 M  $\text{Na}_2\text{SO}_4$  were added and a cloudy solution was obtained. Given the molar masses (MM) for reactants and products are summarized in the table

Compound	Molar mass (g/mol)
$\text{Na}_2\text{SO}_4$	142.043
$\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$	244.263
$\text{BaSO}_4$	233.391

- 1) In this experiment, which lab equipment was used to perform the digestion step?
  - (a) Evaporating dish
  - (b) Direct Bunsen burner
  - (c) Crucible
  - (d) Beaker, glass rod, watch glass**
  
- 2) The limiting reactant was:
  - (a)  $\text{BaSO}_4$
  - (b)  $\text{Na}_2\text{SO}_4$**
  - (c)  $\text{BaCl}_2$
  - (d)  $\text{H}_2\text{O}$
  - (e)  $\text{NaCl}$
  
- 3) **The percentage** of  $\text{BaCl}_2$  in the original salt mixture is
  - (a) 6.10%
  - (d) 35.00%
  - (b) 12.20%**
  - (c) 65.00%
  - (d) 93.90%
  - (e) 35.00%

---

A properly adjusted Bunsen burner flame has ..... distinct cone(s)

- (a) One
- (b) Two
- (c) Three**
- (d) Four
- (e) Zero



The mass of a beaker was 5.944 g. After 5.00 mL of an alcohol was pipetted into the beaker, the combined mass was 9.891 g. Determine the density of the alcohol?

- (a) 0.789 g
- (b) 1.188 g/ml
- (c) 1.188 g
- (d) 0.789 g/ml**
- (e) can't be calculated

---

Which of the following is considered an evidence for a chemical reaction?

- (a) gas**
- (b) Water of hydration
- (c) Digestion
- (d) Excess reactant
- (e) None of these

---

Which of the following reactions would give a precipitate?

- (a)  $\text{HCl} + \text{K}_2\text{CO}_3$
- (b)  $\text{BaCl}_2 + \text{H}_2\text{SO}_4$
- (c)  $\text{HNO}_3 + \text{NaOH}$
- (d)  $\text{AgNO}_3 + \text{Na}_2\text{CO}_3$
- (e) b and d are correct**

---

One of the following reactions generates  $\text{CO}_2$  gas:

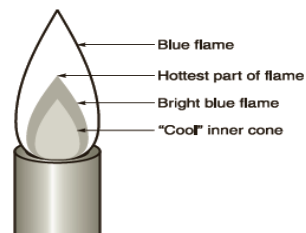
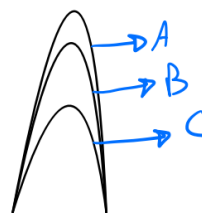
- (a)  $\text{NH}_4\text{Cl} + \text{H}_2\text{SO}_4$
- (b)  $\text{H}_2\text{SO}_4 + \text{Na}_2\text{CO}_3$**
- (c)  $\text{NaCl} + \text{Na}_2\text{CO}_3$
- (d)  $\text{Na}_2\text{CO}_3 + \text{NaHCO}_3$
- (e) b and c are correct

**Updates 12/15/2023**

رسمه فيها الشعلة مقسمة ٣ اقسام اللي فوق عليه رمز  
وطلب وصف الهم

a-) A is yellow flame, B is the hottest part

b-) A is a blue flame, B is the hottest part



**Figure 1.3** Flame of a properly adjusted Bunsen burner.

---

Which of the following has the highest value of pH?

- a) NaOH
- b) HCl
- c) Ca(OH)<sub>2</sub>
- d) CH<sub>3</sub>COOH

---

If the pressure were  $p = 0.134 \text{ atm}$  and  $V = 0.97 \text{ L}$  and with  $27 \text{ C}$  and the mass =  $0.411\text{g}$  what is the MM ?

$$P = 0.134 \text{ atm} / v = 0.97 \text{ L} / T = 300.15 \text{ K} / R = 0.082 \text{ l.atm/k.mol}$$

$$PV = nRT$$

$$n = 0.00528$$

$$\text{then, MM} = m(\text{vapor}) \div n(\text{vapor}) = 77.8 \text{ g/mol} \text{ ..... Check it}$$

---

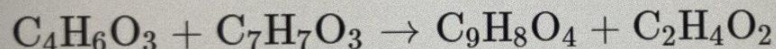
Aspirin is prepared by the reaction between acetic anhydride and salicylic acid, a 6.9 salicylic acid (MM= 138.1 ) with 4.08 anhydride (MM= 102.1 ) produced aspirin (MM=180.2) the mass of aspirin?

- a) 8.9 g
- b) 7.1 g
- c) 6.9 g
- d) 4.07 g

**الحل :**

بما انه المعادلة كالتالي

acetic anhydride + salicylic acid  $\rightarrow$  aspirin + acetic acid



نحسب عدد مولات المتفاعلات لإيجاد ال

limiting reactant

$$\#moles\ of\ acetic\ anhydride = \frac{mass}{molar\ mass} = \frac{4.08}{102.1} = 0.0399\ mol$$

$$\#moles\ of\ salicylic\ acid = \frac{mass}{molar\ mass} = \frac{6.9}{138.1} = 0.0499\ mol$$

The limiting reactant is acetic anhydride so

$$\#moles\ of\ Aspirin = \#moles\ of\ acetic\ anhydride = 0.0399\ mole$$

$$\begin{aligned} Mass\ of\ Aspirin &= \#moles\ of\ aspirin \times Molar\ mass = 0.0399 \times 180.2 \\ &= 7.1\ g \end{aligned}$$

---

Which of the following is correct about acid and base?

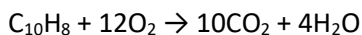
- a) **Base give hydroxide in solution and have bitter taste and turn litmus paper to the blue**
- b) Acid give hydronium ion in solution and have sour taste and turn the litmus paper to the yellow

---

The good solvent soluble should be ?

- a) High temperature confection towards the purified
- b) low temperature confection toward the impurity
- c) **low temperature confection towards the purified**
- d) High temperature confection towards the impurity
- e) A and B

When 11 moles of O<sub>2</sub> reacts with 1.1 mole of C<sub>10</sub>H<sub>8</sub>, what is the limiting reactant?



- a) O<sub>2</sub>
  - b) H<sub>2</sub>O
  - c) CO<sub>2</sub>
  - d) C<sub>10</sub>H<sub>8</sub>
- 

what is the Signs for the chemical reaction دلالات حدوث التفاعل الكيميائي

- a) odor
  - b) color
  - c) percipitate
  - d) gas
  - e) **All of the answer**
- 

For the reaction of alkene and alkyne with permenganate in acidic which one is correct ?

**(Baeyer Test) اخر تجربة**

- a) All of the answer
  - b) secondary hydrogen sulfate produced
  - c) the reaction is discribed acid - base reaction
  - d) **Diol is produced**
- 

What is the color given from bromophonel blue in acidic solution?

- a) **Yellow**
  - b) Blue
  - c) Pink
  - d) Colorless
- 

The ideal gas is one of the following **اختر تجربة رقم (6) molar mass of volatile liquids**

- a) has no color
  - b) zero volume
  - c) no interaction between the molecules
  - d) **b and c**
- 

What color do **anthrance** with AlCl<sub>3</sub> , CHCl<sub>3</sub> ? **اختر تجربة**

- a) **Green**
- b) Blue
- c) Orange-red
- d) yellow

Which of the following is true about group (I) functional ? *اخر تجربة*

- a) **Alkanes are the most unreactive compound**
  - b) Alkanes are the most reactive compound
- 

AgNO<sub>3</sub> make a precipitate with what of the following?

- a) NH<sub>4</sub>Cl with NaCl
  - b) NaCl
  - c) MgSO<sub>4</sub>
  - d) Na<sub>2</sub>CO<sub>3</sub>
  - e) **NH<sub>4</sub>Cl**
- 

Two solutions are added together and the new solution becomes hot.

- a) **A chemical change is taking place** *حدث تفاعل*
  - b) the solutions are not soluble
  - c) the physical properties are the same
  - d) a gas is being produced
- 

The density of a substance is 1.63 grams per milliliter. What is the mass of 0.25 liters of the substance in grams?

*يجب التحويل من لتر الى مل*

- a) 400.7 g
- b) 398.1 g
- c) **407.5 g**
- d) 409.5 g

$$\text{Density} = \frac{\text{mass}}{\text{volume}} \rightarrow 1.63 = \frac{\text{mass}}{250} \rightarrow \text{mass} = 1.63 \times 250 = 407.5 \text{ g}$$

---

One of the following is correct about tap water:

- a) natural since it is highly pure
  - b) **none of the answers**
  - c) Basic because burning coal produce NH<sub>3</sub> to the atmosphere which is basic
  - d) it is acidic since dissociated atmosphere CO<sub>2</sub> react with water to produce acid
-

732.9 g of  $\text{BaCl}_2 \cdot 2 \text{H}_2\text{O}$  ( MM = 244.3 ) 760.2 g of  $\text{Na}(\text{PO}_4)_2 \cdot 12\text{H}_2\text{O}$  ( MM = 380.1 ) and be a precipitate of a  $\text{Ba}_3(\text{PO}_4)_2$  Which the correct when the supernatant solution is tested ? **تجربة رقم (3) limiting reactant**

- a) **The test is positive for  $\text{Ba}^{+2}$  ion**
  - b) The test is positive for  $\text{PO}_4^{-3}$
  - c) The test is negative for both barium and  $\text{PO}_4^{-3}$
  - d) The test is positive for both.
- 

Neutralizing effectiveness of anti acid defined by : **(5) تجربة رقم**

- a) A number of mole of antacid base per gram of antacid tablet
  - b) number of gram of base per mole antacid
  - c) number of mole of NaOH in tablet per number of mole HCl in stomach
  - d) **A and B**
- 

Which of the following is base?

- a)  $\text{HNO}_3$
  - b) HCl
  - c) **NaOH**
  - d) None of these is correct
- 

One of them is acid

- a) **HCl**
  - b) NaOH
  - c)  $\text{NaNO}_3$
  - d)  $\text{CaCO}_3$
- 

Most of the Anti-acids ingredients are

- a) **Water insoluble**
  - b) Ethanol soluble
  - c) Water soluble
  - d) All are not correct
- 

Anti-acids are:

- a) The product that neutralizes stomach basicity.
- b) **The product that neutralizes stomach acidity.**
- c) The product that neutralizes stomach basicity and acidity.
- d) The product that neutralizes stomach basicity or acidity.

Spectator ion is:

- a) an ion that exists as a reactant and a product in a chemical equation.
- b) Spectator ions can be observed in the reaction of aqueous solutions of sodium chloride and copper (II) sulfate
- c) an ion that exists as a product only in a chemical equation.

**d) a+b**

---

Limiting reactant is a reagent that is completely consumed during a chemical reaction.

- a) **True**
  - b) False
- 

2HCl+ Na<sub>2</sub>CO<sub>3</sub> Gives: انتبه ل حالة المادة

- a) CO<sub>2</sub>(l) + H<sub>2</sub>O(s) + 2NaCl(aq)
- b) CO<sub>2</sub>(l) + H<sub>2</sub>O(l) + 2NaCl(s)
- c) **CO<sub>2</sub>(g) + H<sub>2</sub>O(l) + 2NaCl(aq)**
- d) CO<sub>2</sub>(s) + H<sub>2</sub>O(s) + 2NaCl(aq)

