

23 / 4 / 2023

الموضوع سكتن الكيمياء

« Physical chemistry »

على

* Analytical chemistry → deals with the identification of sample component and measure their actual Amount.

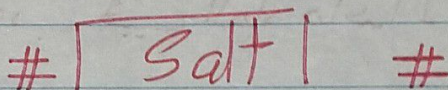
Analytical chemistry classified into Two Branches

↓
Quantitative

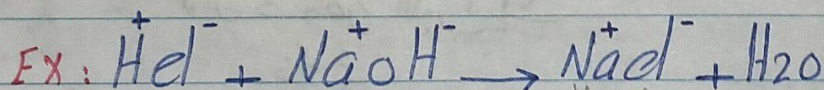
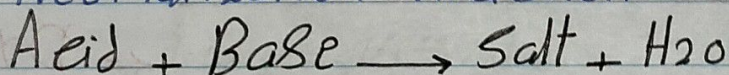
Deals with measuring the Actual Amount (weight, cone, volume).

↓
Qualitative

Deals with the identification of sample component.



* Neutralization Reaction



Positive Ion Negative Ion

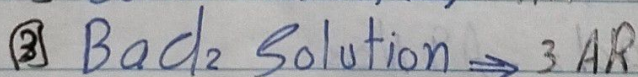
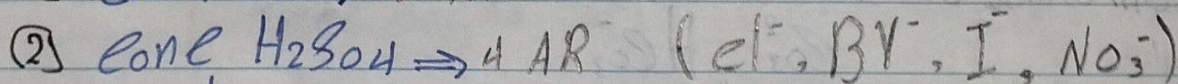
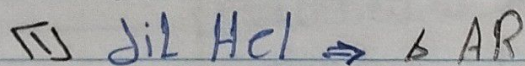
« cation »

« Anion »

Basic radical

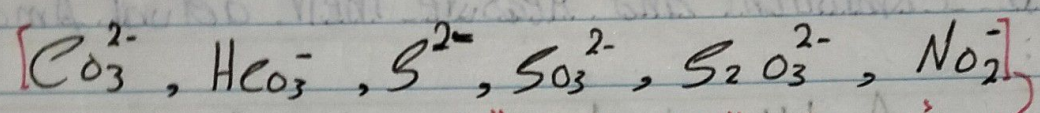
Acidic radical

* classification of Acid based on its stability:

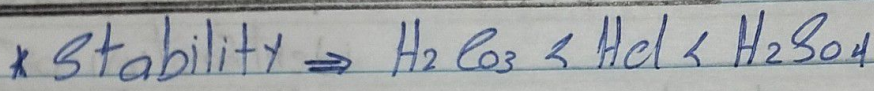
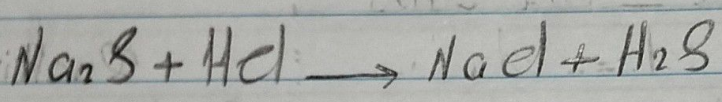
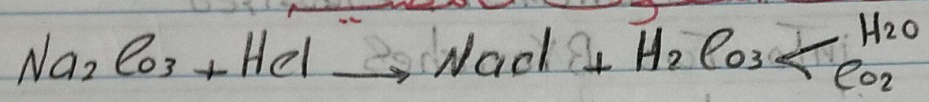


!! Ae ← الشق الحامضي أو Acid Radical

* ⑥ Acidic Radical:



أضداد الشقوق الحامضية



!! كل أنواع الكربونات تذوب في الماء حامدا [صوديوم / بوتاسيوم أمونيوم]

GP1 - dil HCl

main test ①

dil HCl

DY test

Small Amount Salt

!! DY test ← أنبوبة جافة تماما لأن حمض الكلوريك نافع

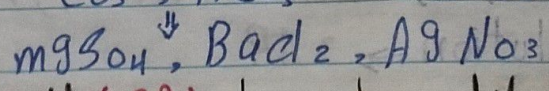
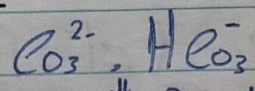
* المفروض يظهر تأثيرات

من التجربة ولكن لأن CO_3 , HCO_3

لهم تأثير والذء لذلك يظهر كمشاهدات ولهذا فأنه التجربة التأليفة مع التجربة الأمامية

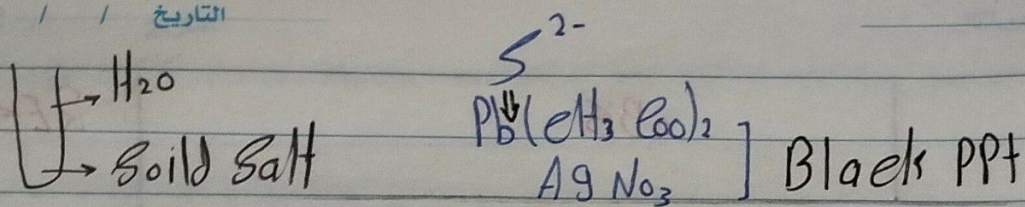
* Control test:

$\xrightarrow{+H_2O}$ Solid Salt



white ppt on cold (CO_3^{2-})

white ppt after heating (HCO_3^-)



EXP	OBS	RES
Solid Salt + dil HCl	Effervescence and evolution of CO_2 gas which turns lime water due to formation of insoluble CaCO_3 $\text{Na}_2\text{CO}_3 + 2\text{HCl} \rightarrow 2\text{NaCl} + \text{H}_2\text{O} + \text{CO}_2 \uparrow$ $\text{NaHCO}_3 + \text{HCl} \rightarrow \text{NaCl} + \text{H}_2\text{O} + \text{CO}_2 \uparrow$ $\text{Ca(OH)}_2 + \text{CO}_2 \rightarrow \text{CaCO}_3 \downarrow + \text{H}_2\text{O}$	AR Maybe CO_3^{2-} or HCO_3^-
Solid Salt + dil HCl	Evolution of H_2S gas characterized by its rotten odor. blackening of Filter Paper moistened with lead acetate solution $\text{Na}_2\text{S} + 2\text{HCl} \rightarrow 2\text{NaCl} + \text{H}_2\text{S} \uparrow$ $\text{H}_2\text{S} + \text{Pb}(\text{CH}_3\text{COO})_2 \rightarrow 2\text{CH}_3\text{COOH} + \text{PbS} \downarrow$	AR Maybe S^{2-}
Solid Salt + dil HCl	Evolution of SO_2 gas characterized by its suffocating odor, which turns acidie Paper moisten with $\text{K}_2\text{Cr}_2\text{O}_7$ into green $\text{Na}_2\text{SO}_3 + 2\text{HCl} \rightarrow 2\text{NaCl} + \text{H}_2\text{O} + \text{SO}_2 \uparrow$ $3\text{SO}_2 + \text{H}_2\text{SO}_4 + \text{K}_2\text{Cr}_2\text{O}_7 \rightarrow \text{K}_2\text{SO}_4 + \text{Cr}_2(\text{SO}_4)_3 + \text{H}_2\text{O}$	AR Maybe SO_3^{2-}
	Evolution of SO_2 gas and yellow P.P.t is formed due to separation of Sulphur $\text{Na}_2\text{S}_2\text{O}_3 + 2\text{HCl} \rightarrow 2\text{NaCl} + \text{H}_2\text{O} + \text{SO}_2 \uparrow + \text{S} \downarrow$	AR Maybe $\text{S}_2\text{O}_3^{2-}$

EXP	OBS	RES
Soild Salt + dil HCl	Evolution of colorless gas (nitrous acid) which combines with oxygen of air and giving brown gas (nitrogen dioxide) at the mouth of test tube $\text{NaNO}_2 + \text{HCl} \rightarrow \text{NaCl} + \text{HNO}_2 \uparrow$ $3\text{HNO}_2 \rightarrow \text{H}_2\text{O} + \text{HNO}_3 + 2\text{NO}$ $2\text{NO} + \text{O}_2 \rightarrow 2\text{NO}_2$	AR Maybe NO_2^- +
RA	ve	1/9p is absent