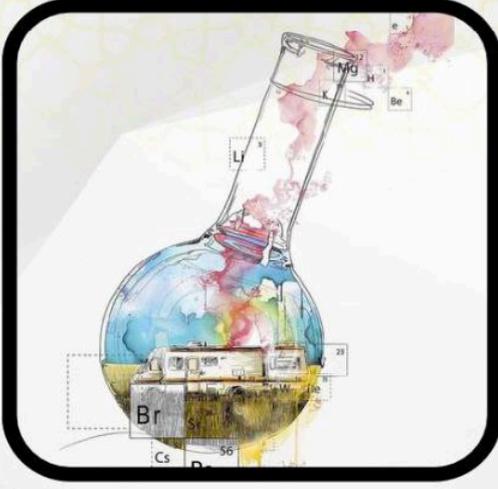


تفريغ مختبر عضوية



اسم الموضوع: *Final exam* ▼

إعداد الصيدلاني: *Sara Taber* ▼



لجان الرفعات

اللهم علمنا ما ينفعنا و انفعنا بما علمتنا
وزدنا علما

اللهم كن لأهل عزة عوناً و نصيراً

Practical Final Exam

* تأكدوا من موعد
الجلسة وحضروا

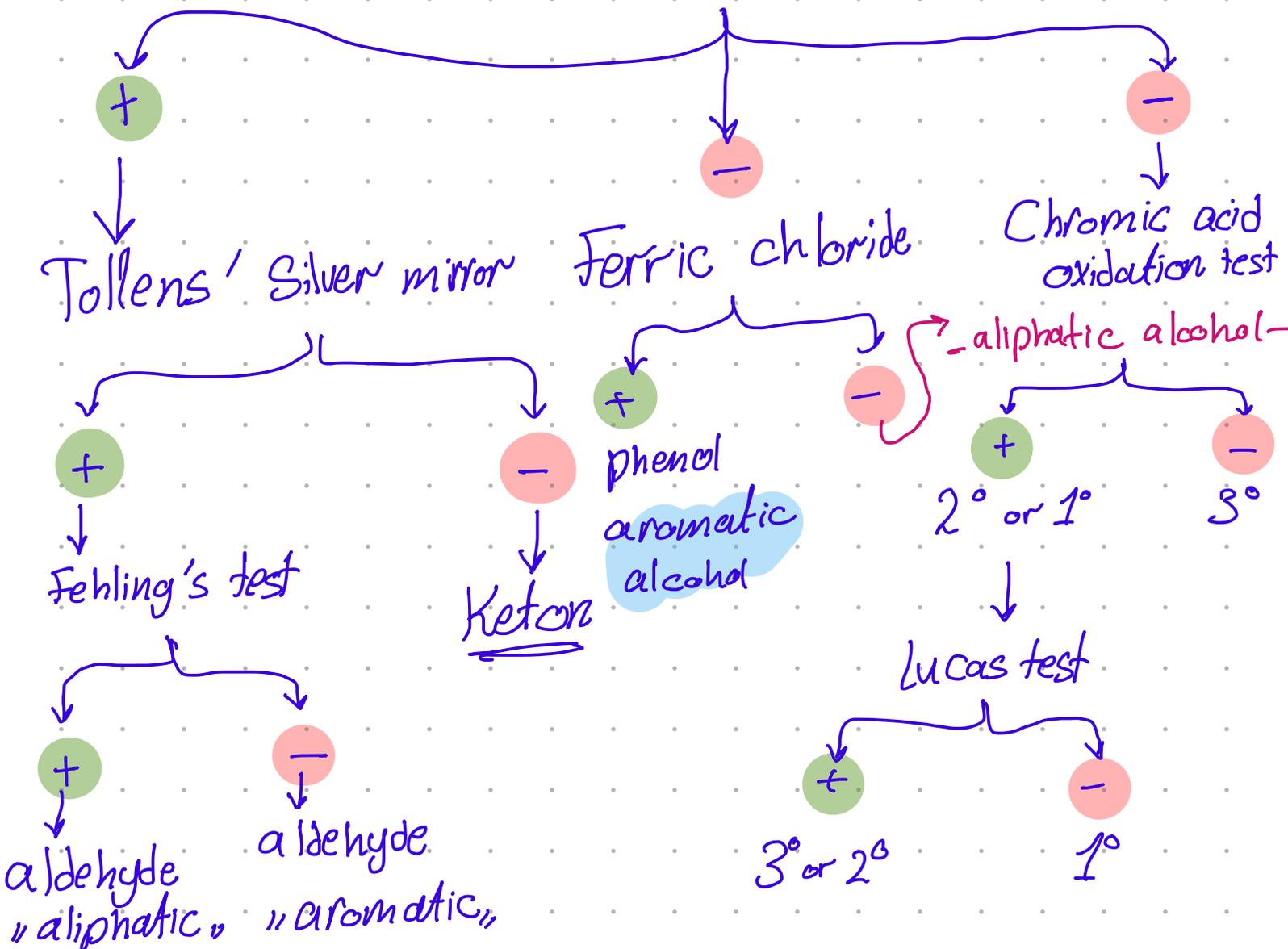
أعزائكم قبل بوقت من الجلسة عشان ماتخسروا علامات

2 Unknown $\begin{cases} \rightarrow \text{Carbonyl} \\ \rightarrow \text{Hydroxyl} \end{cases}$

- يكون فيه بالريپورت حانة ال Observation ففوري تعرف
نتيجة ال test إذا كانت (+) شوبير وإذا (-) شوبير

الترتيب كالتالي

2,4 - dinitrophenylhydrazin



Procedure تكون معطاه بالامتحان ما في داعي تحفظوها او تطبعوا الورقة

Procedures for Different Identification Tests

2,4-Dinitrophenylhydrazine Test \Rightarrow General test for carbonyl

رب انشع لي
هيري و هيري
امويك

Procedure:

1. In a test tube, add 2 mL of ethanol.
2. Add 5 drops of the **Unknown** and mix.
3. Add 2 mL of **2,4-dinitrophenylhydrazine** reagent and shake well.
4. Record your observation **and** result. \rightarrow yellow to orange ppt,

\rightarrow +ve when $C=O$

Chromic Acid Oxidation Test

Procedure:

1. In a test tube, place 3 mL of **Chromic Acid Reagent (1% potassium dichromate solution)**.
2. Add (up to 10 drops) of concentrated **sulfuric acid (can be found in the fume hood)**.
3. Mix thoroughly and add 5 drops of the **Unknown** and shake.
4. Record your observations **and** result. \rightarrow Green to blue color 2^o & 1^o

The Lucas Test

Procedure:

1. In a test tube, place 2 mL of **Lucas' reagent**
2. Add 6 drops of the **Unknown**.
3. Close the tubes with a piece of parafilm.
4. Shake well.
5. If no change occurs immediately, then place in water bath at (100°C) for 5-13 minutes.
6. Record your observations **and** result. \rightarrow Turbid immediately \rightarrow 3^o alcohol

" after 5-10 min \rightarrow 2^o alcohol

Ferric Chloride Test

Procedure:

1. In a test tube, place 3 mL of **water**.
2. Add 5 drops of **Unknown**.
3. Add 1-2 drops of 1% **ferric chloride solution**.
4. Shake well and allow to stand for 1-2 minutes.
5. Record your observation **and** result. \rightarrow Violet color

Violet color

لونه صوف فارج

Good Luck

The Iodoform Test

→ + Carbons when only $\begin{matrix} \text{O} \\ \parallel \\ \text{R} \\ | \\ \text{H} \end{matrix} \text{C} - \text{CH}_3$

Procedure:

1. Add 2 mL of 5% sodium hydroxide. + hydroxy when only $\begin{matrix} \text{O} \\ \parallel \\ \text{R} \\ | \\ \text{OH} \end{matrix} \text{C} - \text{CH}_3$
2. Add 10 drops of the Unknown.
3. In a test tube, add 10 drops of iodine solution. yellow ppt
4. Shake very well.
5. Allow to stand for 3-5 minutes (You might need to place it in a hot water bath to accelerate the oxidation).
6. Record your observation and result.

Tollens' Silver Mirror Test

Procedure:

1. In a test tube, add 3 mL of Tollens' reagent.
2. Add 3-4 drops of the Unknown and mix.
3. Shake the tubes vigorously and allow to stand for 10 minutes.
4. Record your observations. silver mirror → aldehyde

Fehling's Test

→ weak oxidizing agent ⇒ ما يقدر يا كسد الحلات

Procedure:

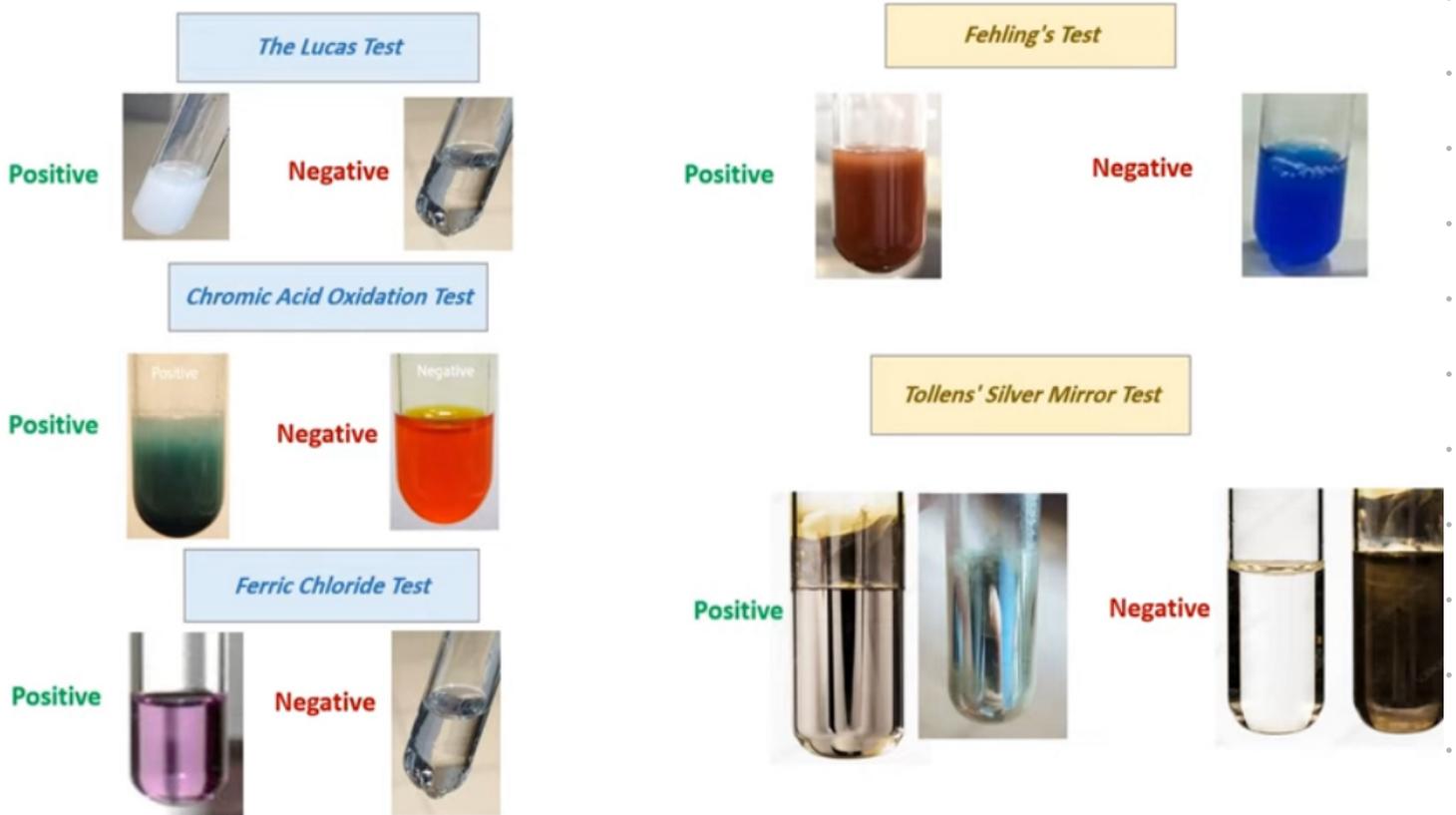
1. In a test tube, add both 2 mL of Fehling's reagent A and 2 mL of Fehling's reagent B.
2. Add 3-5 drops of the Unknown.
3. Place the test tube in a beaker of boiling water for 15-20 minutes.
4. Record your observation and result. → Brown to Red ppt

→ Aromatic Aldehyde

مشی حلة أروماتية

Aldehyde
→ Carbonyl
+ aldehyde

Test	Carbonyl		Hydroxy	
	aldehyde	ketone	alcohol	phenol
2,4-dinitro-Phenylhydrazine	(+) yellow to orange ppt	(+) yellow to orange ppt	(-) clear No ppt	(-) clear No ppt
Tollen's Mirror test	(+) Silver mirror appearance	(-) No silver mirror		
Fehling's test	(+) Brown to Red ppt <u>aliphatic</u> (-) <u>aromatic</u>	(-) No ppt		
Chromic acid oxidation test			(+) → 2°, 1° alcohol Green to blue color (-) → 3° No change, remains orange	
Lucas test			(+) → 2°, 3° Turbid 5-10 min & heat ↳ turbid immediately (-) → 1° No turbid	
Iodoform test	(+) $\begin{matrix} [R] \\ \\ \text{C} \\ \\ [H] \end{matrix} - \overset{\text{O}}{\parallel} - \underline{\underline{\text{CH}_3}}$ yellow ppt (-) $\begin{matrix} [R] \\ \\ \text{C} \\ \\ [H] \end{matrix} - \overset{\text{O}}{\parallel} - [R]$		(+) $\begin{matrix} \text{CH}_3 \\ \\ \text{C} \\ \\ \text{H} \end{matrix} - \overset{\text{O}}{\parallel} - \text{OH}$ → <u>& ethanol</u> yellow ppt (-) $\text{R} - \overset{\text{H}}{\underset{ }{\text{C}}} - \text{OH}$	
Ferric Chloride				Violet color (+)



+ اظهرنا الفيدوهات العملي في شان تكون
 ال Procedure ودرجة 100/100

- من جهة التجارب وال Reportes التي علينا ان نقوم بها بالمختبر
 من الامتيازات ← راجع اليهم على التفريغ

- آخر الفيدو الدكتور حلت امثلة على
 اليبورت اظهره

EXPERIMENT 3

ALCOHOLS AND PHENOLS

Report Sheet

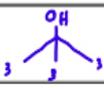
Name		Section no:	
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➤ OBJECTIVES:

Determine the chemical properties of alcohols & Phenols
Identify the chemical properties of the unknown

➤ ALCOHOLS:

I. Solubility of Alcohols in Water

Alcohol	Structure	Solubility
ethanol	 C_2H_6O	✓
1-butanol	 $C_4H_{10}O$	X
2-methyl-2-propanol	 $C_4H_{10}O$	✓
ethylene glycol	 $C_2H_6O_2$	✓

What general conclusions can you draw concerning the solubility of alcohols in water?

* Solubility $\propto \frac{1}{M.W}$

* Solubility \propto number of Branches

* Solubility \propto number of Hydroxyl Group

II. Oxidation of Alcohols with Chromic Acid

Alcohol	Result (+ or -)	Observations (color, ppt,...)
1-butanol	+	Color Change to Green
2-butanol	+	
2-methyl-2-propanol	-	No Color Change

III. Lucas Test

Alcohol	Result (+ or -)	Observations (color, ppt,...)
1-butanol	+	Nothing
2-butanol	+	Cloudy & white after heating
2-methyl-2-propanol	-	Cloudy & white mixer

Arrange the three alcohols according to their rates of reaction with the Lucas reagent:

2-methyl-2-propanol > 2-Butanol > 1-Butanol
 - 3° alcohol - immediately - 2° alcohol - 5-10 min with heating - 1° alcohol - take several hours

IV. Iodoform Test

2° alcohol & ethanol ⇒ Give (+) result

Alcohol	Result (+ or -)	Observations (color, ppt,..)
1-butanol	-	nothing
2-butanol	+	Bright yellow ppt
2-methyl-2-propanol	-	nothing

➤ PHENOLS

I. Ferric Chloride Test

Alcohol	Result (+ or -)	Observations (color, ppt,..)
Cyclohexanol		
Phenol	+	Violet color

➤ Unknown Alcohol Determination:

According to your unknown

Unknown ID:		
Test used	Observation	Result
Chromic Acid Oxidation		
Lucas Test		
Iodoform test		
Ferric Chloride		

- Based on your results, what is your unknown alcohol type?
- Draw the expected alcohol structure of your alcohol showing the main function group:

EXPERIMENT 4

ALDEHYDES AND KETONES

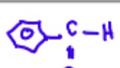
Report Sheet

Name		Section no:	
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- **OBJECTIVES:** - Identify the functional group (aldehydes & ketones) & their chemical properties in the given organic compounds.
- Identify an unknown organic compound according to several test

➤ **IDENTIFICATION TESTS:**

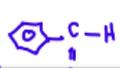
I. 2,4-Dinitrophenylhydrazine Test

Compound	Function group	Result (+ or -)	Observations (color, ppt.,)
Acetone	$\text{H}_3\text{C}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$	+	orange
Benzaldehyde		+	orange

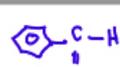
II. Tollens' Test

Compound	Function group	Result (+ or -)	Observations (color, ppt.,)
Acetone	$\text{H}_3\text{C}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$	-	Black
Benzaldehyde		+	Silver mirror "Bright"

III. Fehling's or Benedict's Tests

Compound	Function group	Result (+ or -)	Observations (color, ppt.,)
Acetone	$\text{H}_3\text{C}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$	-	No ppt / Blue color
Benzaldehyde		-	No ppt / Blue color

IV. Iodoform test

Compound	Function group	Result (+ or -)	Observations (color, ppt.,)
Acetone	$\text{H}_3\text{C}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$	+	Yellow ppt
Benzaldehyde		-	No ppt
2-pentanone	$\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2\text{CH}_2\text{CH}_3$	+	Yellow ppt
3-pentanone	$\text{CH}_3-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2\text{CH}_3$	-	No ppt

Practical Midterm Exam for Pharmaceutical Organic Chemistry

Second Semester of 2022/2023

Student Name:

Class Number:

Student ID Number:

> Objective:

Identify the Unknown by some tests determine the Chemical properties

> Fill the following information for your First Unknown Compound (FILL ONLY THE TESTS YOU USED):

Unknown ID/Number	المسبوقه اول ما فتحوا الورقة والعينه	
Test used	Your Observation	Result
2,4-Dinitrophenylhydrazine	Clear no ppt	(-)
Tollens' Silver Mirror	————	
Fehling's Oxidation	————	
Chromic Acid Oxidation	Color Chang to Blue-Green	(+)
Lucas Reaction	turbidity & white ppt after 5-6 min & heating	(+)
Ferric Chloride	————	
The Iodoform Reaction	yellow ppt formed	(+)

> Based on your previous observations fill the following table with information regarding your unknown compound if applied:

الاعتقاد على الجدول الدال و حفظ التفاعلات والنتائج

Expected Compound (Alcohol, Ketone, or Aldehyde)	alcohol
Expected Class (Primary, Secondary, Tertiary) for Alcohols	secondary
Expected Type (Aliphatic or Aromatic)	————
Presence of Methyl carbonyl or methyl ketone group (Yes or No)	methyl hydroxyl
Draw the general structure for your expected compound showing the main function groups.	$ \begin{array}{c} \text{OH} \\ \\ \text{R} - \text{C} - \text{CH}_3 \\ \\ \text{H} \end{array} $

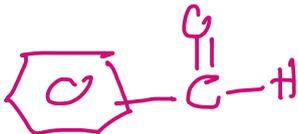
* مش من كدة متبني
بس منطقه
المش من الخيران

➤ Fill the following information for your Second Unknown Compound (FILL ONLY THE TESTS YOU USED):

نفس الخطوات الأولى بس للـ Unknown الثاني

Unknown ID/Number	Benzaldehyde على وزن انه	
Test used	Your Observation	Result
2,4-Dinitrophenylhydrazine	Brown to Red ppt	+
Tollens' Silver Mirror	Silver mirror formed	+
Fehling's Oxidation	No changing in color, Remain blue	-
Chromic Acid Oxidation	—	
Lucas Reaction	—	
Ferric Chloride	—	
The Iodoform Reaction	No ppt formed	-

➤ Based on your previous observations fill the following table with information regarding your unknown compound if applied:

Expected Compound (Alcohol, Ketone, or <u>Aldehyde</u>)	Aldehyde
Expected Class (Primary, Secondary, Tertiary) for <u>Alcohols</u>	—
Expected Type (Aliphatic or Aromatic)	Aromatic
Presence of Methyl carbonyl or methyl ketone group (Yes or No)	No
Draw the general structure for your expected compound showing the main function groups.	

Further evaluation will be counted based on the following: (2 marks)

- Cleaning and tidiness of the glass wares and bench
- Correct way of discarding the waste
- Availability of cleaning towel, gloves, and mask.

Sara Jaber