

Organic lab Midterm exam

Guidance pdf

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Midterm organic lab exam

Alcohol and phenols & Aldehyde and ketones

- جيبوا معكم أدواتكم لأنه عليها علامات
- Mask (الكمامة) + + eye goggles + towel for bench cleaning + gloves
- التزموا بالوقت
- مهم بعد كل تجربة تنظيف ال test tubes و ال النتائج تطلع خطأ !!
- بتجربة ال Aldehydes and ketones كنا أنظفهم
Ethanol~table water~distilled water
- بتجربة ال Alcohol and phenols كنا أنظفهم
acetone~table water~distilled water
- رح نعرف من اول اختبار
- (DNP-2,4) لأنه رح يفصلي لو ال unknown كحول أو الدهايد و كيتون
- الأمتحان رح يكون معك 2 unknowns يعني صفحتين لكل واحد صفحه
مع ملاحظاته و جوابه
- رح اكتب كل الملاحظات بالتدريج حتى بالامتحان نمشي بكل تجربته و احنا
فاهمين شو نعمل و شو نكتب
- امشوا خطوه خطوه سجلوا اول بأول + ضفت ملاحظات كم قطره فوق ال
ml لأنه لو تتذكروا رح نستخدمهم من ال bottles مباشره بدون beakers
- طبعا الملف مدعم بالصور كل التوفيق ♥
- Wish you an enjoyable practical lab exam !!

★ کی الخطوات رح يسطو لنا اياها مكتوبه على ورقه (لا تحفظ procedure)

Practical Midterm Exam for Pharmaceutical Organic Chemistry Laboratory for
the Second Semester of 2025/2026

Student name :

Class number :

Student ID :

- ✓ Fill the following information for your Unknown compound (only fill the test you used) : (2.5 for each test)

★ الاختبارات الي رح

نعملهم رح نفهم

كي اختار شو المطلوبه

اي رح يعطيني اياها معروف

صفات ال unknown تاتي

Unknown ID :		
Test used	Your observation	Results
2,4-Dinitrophenylhydrazine Test	+ Bright orange to yellow precipitate - No ppt (معك لوشه) clear orange	
Chromic Acid Oxidation Test	+ Green solution - stays orange	
The Lucas Test	+ White to cloudy mixture - clear solution	
The Iodoform Test	+ Bright yellow precipitate - No yellow ppt	
Tollens Test	+ Dark grey precipitate to silver mirror - No silver mirror (clear)	

- ✓ Based on your previous observations fill the following table with information regarding your unknown compound if applied: (0.5 marks for each one)

<p>Expected compound (alcohol , <u>aldehyde</u> , <u>ketone</u>)</p>	<p>2,4-dinitrophenylhydrazine راجع تعرفت اعتبار</p>
<p>Expected class (primary , <u>secondary</u> , <u>tertiary</u>) for alcohol</p>	<p>1°/2° + chromic Acid oxidation - 3° 2°/3° + lucas test - 1°</p>
<p>Expected type (aliphatic or <u>aromatic</u>)</p> <p>ممكن زي benzaldehyde</p>	
<p>Presence of <u>methyl carbonyl</u> or <u>methyl ketone</u> group (<u>yes</u> or <u>no</u>)</p>	<p>(+ iodoform test)</p>
<p>Draw the general structure for your expected compound showing the main function groups</p>	

Further evaluation will be counted based on the following : (5 marks)

- ✓ Cleaning and tidiness of glass wares and bench
- ✓ **Correct way of discarding the waste** (*In fume hood*)
- ✓ Availability of cleaning towel, eye google, gloves and makes

Organic Chemistry Lab Practical Exam – Evaluation Rubric (Total: 5 Marks)

Student Name	Time frame for experiment <i>50 m</i>	Lab Safety Compliance	Proper Cleaning of <u>Tools & Bench</u>	Proper Chemical Waste Disposal <i>fume hood</i>	<u>Attendance & Punctuality</u> <i>احضرت بوقت session كل</i>

PROCEDURE

- detect



(carbonyl group) in Ketones + Aldehydes

كحول

• يعني لو طلع negative أعرف انه ال unknown كحول

1. 2,4-Dinitrophenylhydrazine Test

هذا الاختبار رح يخليني افصل

Unknown اذا ال

كحول او الدهايد و كيتون

عشان هيك نعمله اول اشي

1. In each test tube, add **2 mL** of ethanol.
2. Add **5** drops of the **10 drops** **- unknown -** and mix.
3. Add **2 mL** of **2,4-dinitrophenylhydrazine** reagent and shake well.
4. Record your observations **and** result

Positive results → **Bright orange** to **yellow precipitate**

Ketone
?

Aldehyde?

Alcohols?



1. pentanone

unknow

formaldehyde

benzaldehyde

3. pentanone

3. Chromic Acid Oxidation



8. In each test tube, place 5 mL of **Chromic Acid Reagent (1% potassium dichromate solution)**.
9. Add (up to 10 drops) of concentrated **sulfuric acid**. *(In fume hood)*
10. Mix thoroughly and add 2 drops of one of the **- unknown -** and shake.
11. Record your observations **and** result.

3° | 2° 1°

تكملة مع الأول لو كانت كحول

كيتون؟ | الألكايد؟

لو كانت كيتون
الألكايد

Positive results → **Green solution** will be formed.

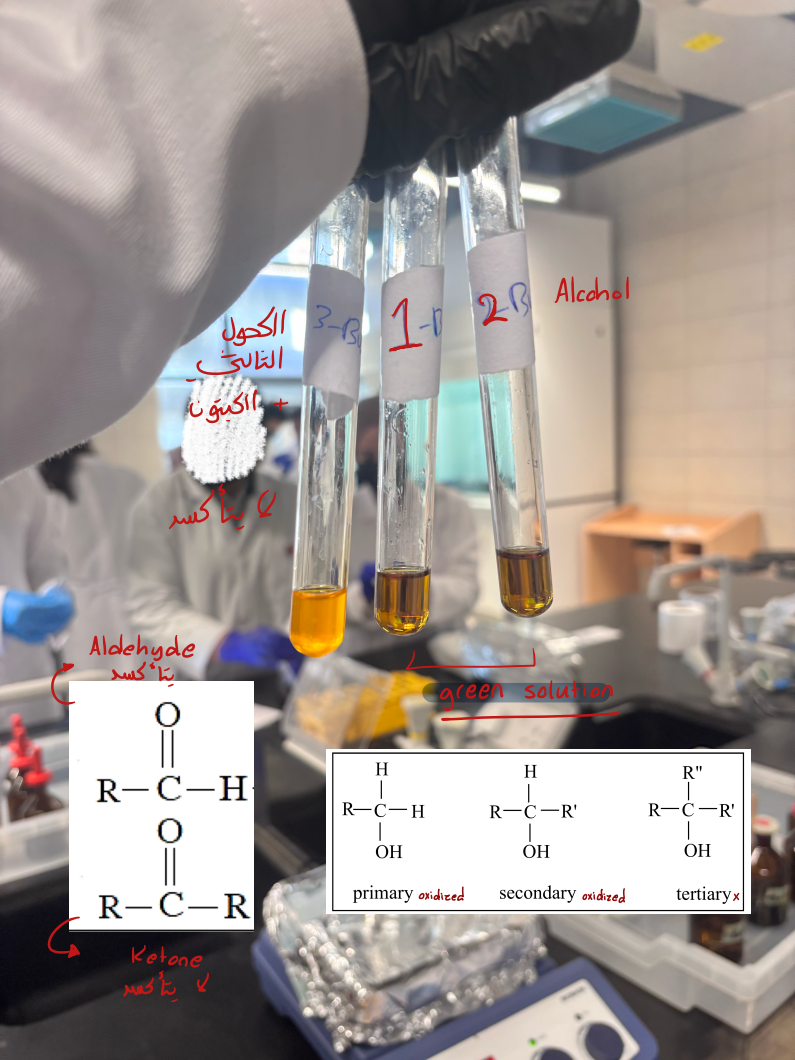
- 1- primary Alcohol
- 2- secondary Alcohol
- 3- Aldehyde

إذا طلع معنا محلول أخضر (+) unknown راجح يكون يا

كلم
يتأكسد وا

إذا مل برتقالي (-) راجح يكون

(لا يتأكسد وا) 3° Alcohol or Ketone



الكحول
التالي +
الكيتون

Alcohol

3-β

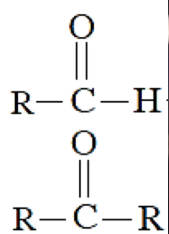
1-β

2-β

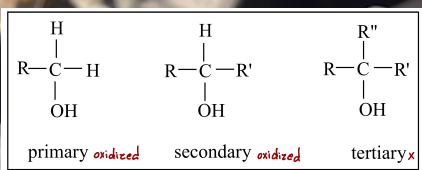
↓ يتأكسد

Aldehyde
يتأكسد

green solution



Ketone
متأكسد



4. *The Lucas Test*

1. In each test tube, place 2 mL of Lucas' reagent (*In fume hood*)
2. Add 6 drops of one of the *unknown*
3. Close the tubes with a piece of parafilm and shake well.
4. If no change occurs immediately, then place in water bath at (100°C) for 5-13 minutes.
5. Record your observations **and** result.

Positive results → White to cloudy mixture (immediately with 3° alcohols & within 5-10 min with 2° alcohols)

هذا الاختبار يميز في الكحولات

3°

immediate
turbidity
(positive +)

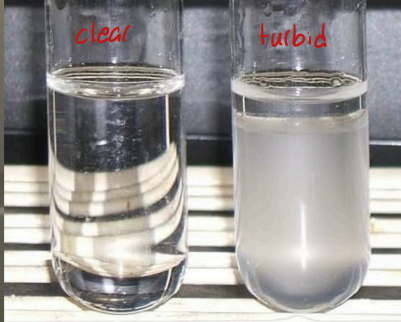
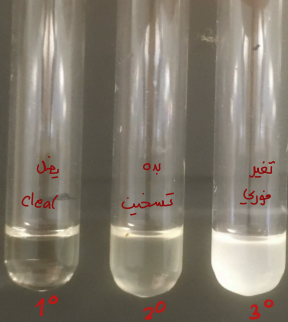
2°

يتكدر مع
النسخين
(positive +)

1°

← يظل صافياً clear
(negative -)

Alddehydes & Ketones no reaction





white cloudy mixture

The Iodoform Test

للاحياتين

5. In each test tube, add **3 mL** of **5% sodium hydroxide**.
6. Add 10 drops of one of the *unknown*
7. Add **5-10** drops of **iodine solution** (or up to **0.5 mL**) gradually.
8. Shake very well.
9. Allow to stand for **3-5** minutes.
10. Record your observations **and** result.

Positive results → **Bright yellow precipitate**

detect methyl Ketones



or compounds that can be oxidized to form it

8 + ميثا يكون

1- methyl Ketone $\text{CH}_3 - \overset{\text{O}}{\parallel}{\text{C}} - \text{R}$

2- Ethanol $\text{CH}_3 - \text{CH}_2\text{OH}$ only 1° Alcohol

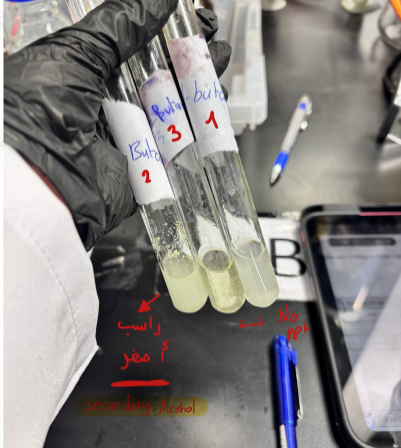
3- secondary Alcohol with



methyl carbinols



مذيب
معلق
methyl
Ketone
(Acetone)



راسب
مميز

secondary Alcohol

No ppt

Tollens' Silver Mirror Test

1. In each 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 5 minutes.
4. Place the tube in a hot water bath (50°C) for 3-5 minutes.
5. Record your observations **and** result.

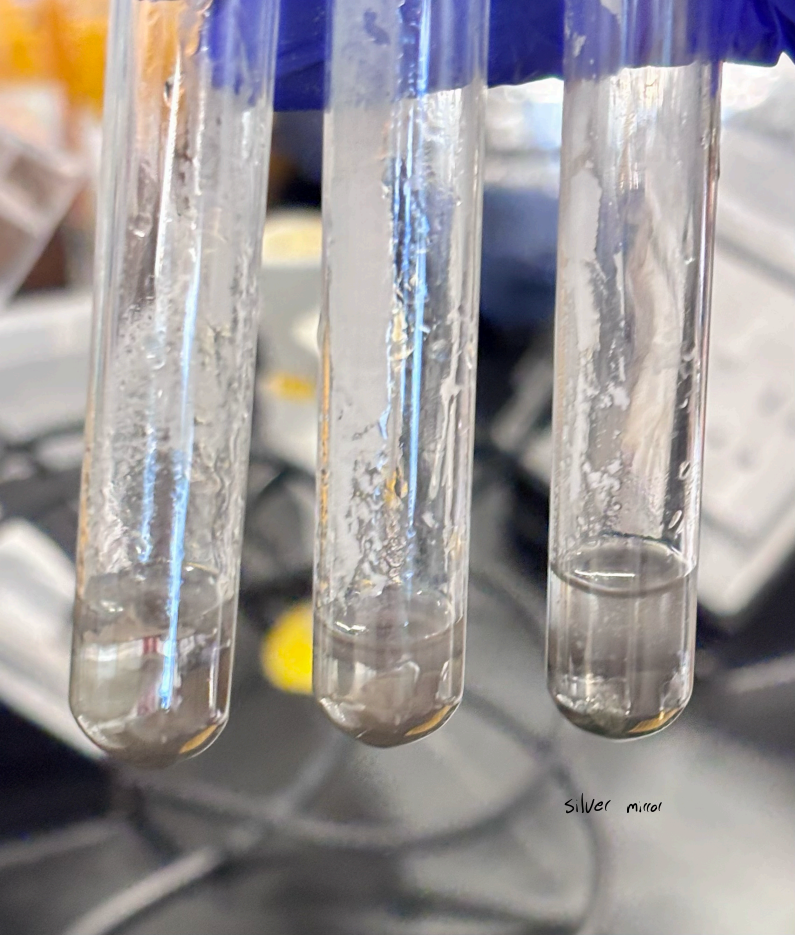
Aldehyde detection +



29. DNP لو طلع (-) لو كالت

(+) Ketone يكو

Positive results → Dark grey precipitate to silver mirror



silver mirror