

تجميعات سنوات لاب تحليل الي من دفع تخطر على البال و
دفع لا تخطر

By raneem Al-syouf
good luck ☆

⚠ warning : do not attempt all questions unprepared

To prevent material shock

Choose the correct answer:

1- All of the following are right EXCEPT

- (A) The observed rotation (α) depends upon the concentration of the solution.
- (B) The observed rotation (α) depends upon the length of the polarimeter tube.
- (C) The observed rotation (α) depends upon the purity of the sample.
- (D) The observed rotation (α) depends upon the temperature.
- (E) The observed rotation (α) depends upon the wavelength of the light.

2- The concentration of cholesterol dissolved in chloroform is 6.15 gram per 100 ml of solution. A portion of this solution in 5 cm polarimeter tube causes an observed rotation of -1.2. The specific rotation of cholesterol is:

- (A) -39
- (B) -3.9
- (C) -0.39
- (D) -0.039
- (E) +3.9

3- In the previous problem, what would be the observed rotation if the same solution was placed in a 10 cm tube?

- (A) - 1.2
- (B) + 2.4
- (C) -2.4
- (D) - 0.6
- (E) None of the above

4- The wavelength range of Near-Infrared is:

- (A) 10-180 cm^{-1}
- (B) 4000-200 cm^{-1}
- (C) 12.800-4000 cm^{-1}
- (D) 200-10 cm^{-1}
- (E) None of the above

5-Why are salt (NaCl or KBr) plates used to hold the sample in IR applications?

- (A) Because the salt is colorless.
- (B) Because the salt is colored.
- (C) Because cannot absorbed the light in IR region.
- (D) Because can absorbed the light in IR region.
- (E) All of the above

6- Which of the following properties is not generally useful as a basis for physical separation?

- (A) Physical state.
- (B) Solubility
- (C) Polarity.
- (D) Vapor pressure.
- (E) Molar absorptivity

7- Potentiometric titration requirements:

- (A) Salt bridge, indicator electrode.
- (B) Wire, voltmeter
- (C) Reference electrode
- (D) All of the above
- (E) None of the above

8- In HPLC partition chromatography is:

- (A) Separation depending on adsorption
- (B) Separation depend on molecular size
- (C) Separation depends on ions
- (D) Separation depends on color
- (E) None of the above

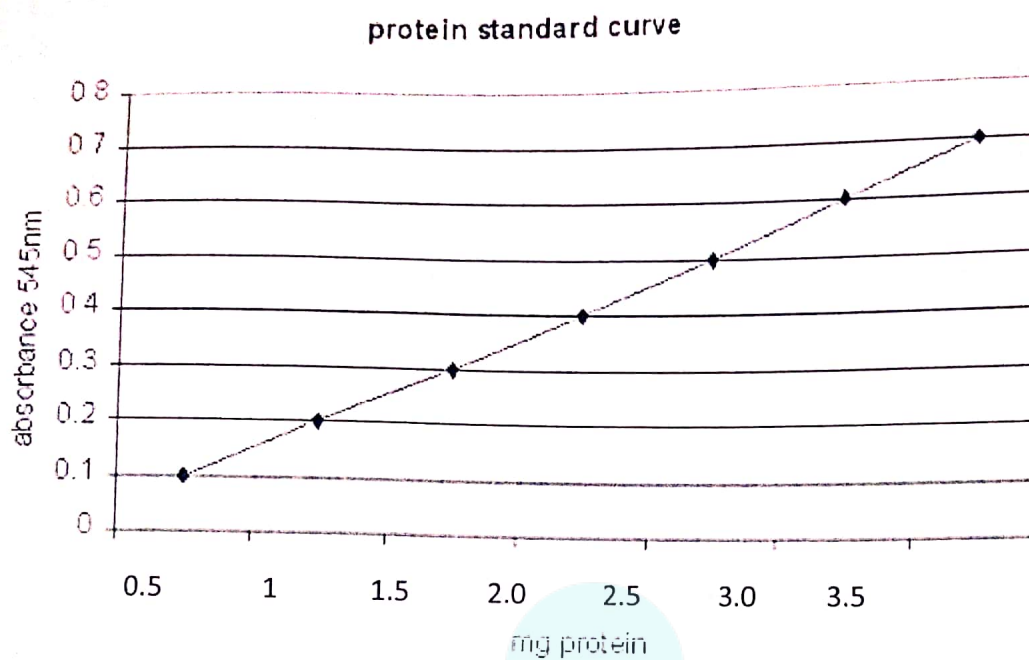
9-Bathochromic shift and hypsochromic shift are

- (A) Effects on absorbance of λ max due to solvent effect
- (B) Increase in wave length of λ max
- (C) Increase in absorbance of λ max
- (D) Shifts on wave length of λ max due to solvent effect
- (E) None of the above

10- Which of the following is the most suitable gas to use as a carrier gas in a gas chromatography?

- (A) CO
- (B) He
- (C) CH₄
- (D) NO
- (E) None of the above

Given the following standard curve, answer the following question:



11- An unknown protein has an absorbance of 0.45, what would its concentration be in mg?

- (A) 25
- (B) 31
- (C) 1.9
- (D) 2.5
- (E) 3.1

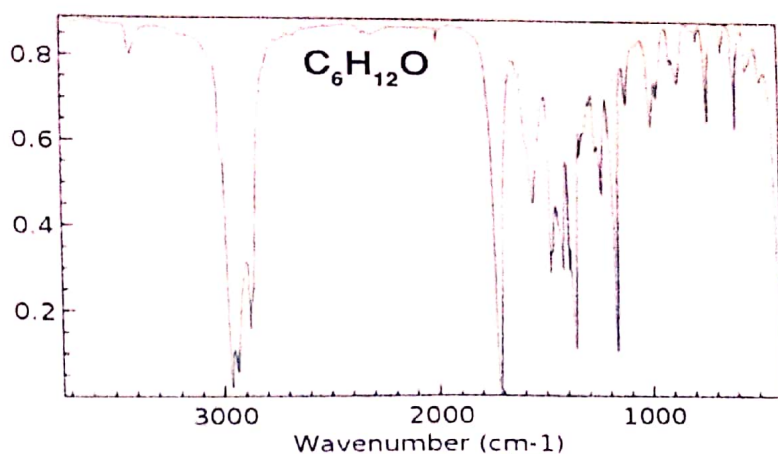
12- The half equivalence point is

- (A) The point where the volume of the titrant added is half the volume required to reach equivalence point.
- (B) The point where the volume of the titrant added is the volume required to reach equivalence point
- (C) The point where the volume of the titrant added is the twice volume required to reach equivalence point
- (D) The point where the volume of the titrant added is the one and half volume required to reach equivalence point
- (E) None of the above

13- What is a Blue shift?

- (A) The shifting of an absorption towards the Red end of the spectrum.
- (B) The shifting of an absorption to lower energy.
- (C) The shifting of an absorption to higher energy.
- (D) The shifting of an absorption to longer wavelength.
- (E) B+D

14- Which of the following molecules best corresponds to IR spectrum below?

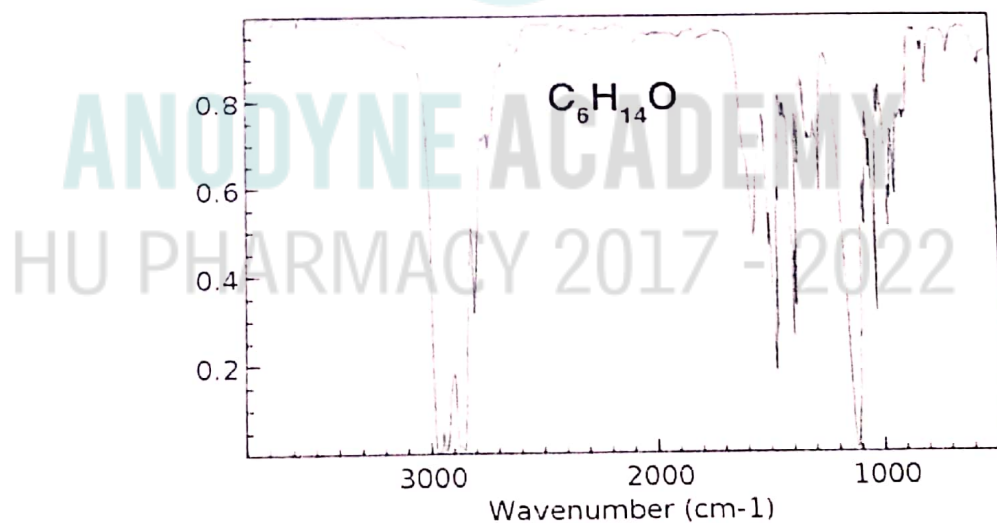


- (A) C1CCCCC1O (B) CCOCC (C) O=C1CCCCO1
 (D) CCCC(=O)C (E) OC1CCC2C1CC2

15- Which of the following waves has the highest frequency:

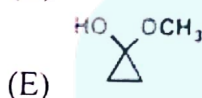
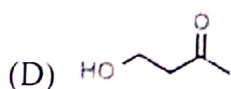
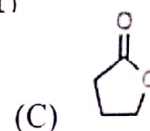
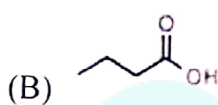
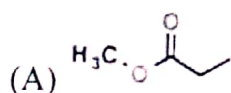
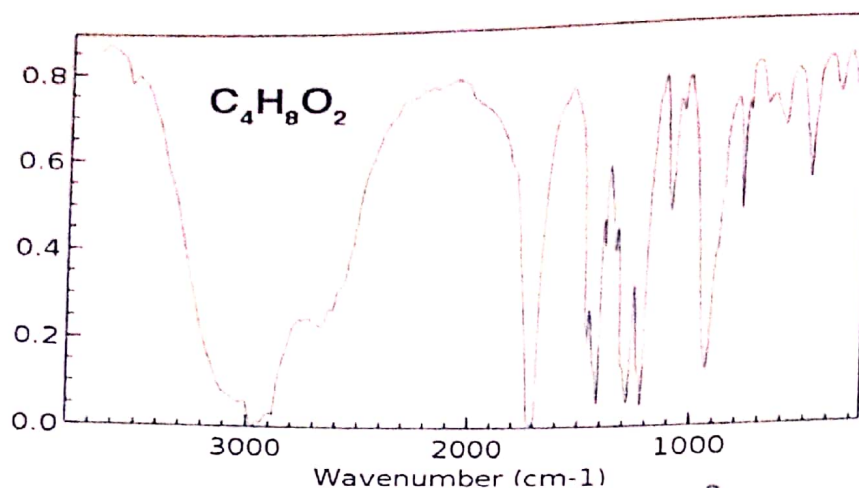
- (A) Micro waves
 (B) X-Rays
 (C) UV Rays
 (D) Gamma Rays
 (E) None of the above

16- Which of the following molecules best corresponds to IR spectrum below?



- (A) CCCCCCCCO (B) CCCC(O)C (C) CCOCC
 (D) CCCCCCCC=O (E) CCCC1(C)CC1

17- Which of the following molecules best corresponds to IR spectrum below?



18- In GC the Flame ionization detector cannot detect

- (A) Water
- (B) Hydrocarbons
- (C) Liquid compounds
- (D) Gas compounds
- (E) None of the above

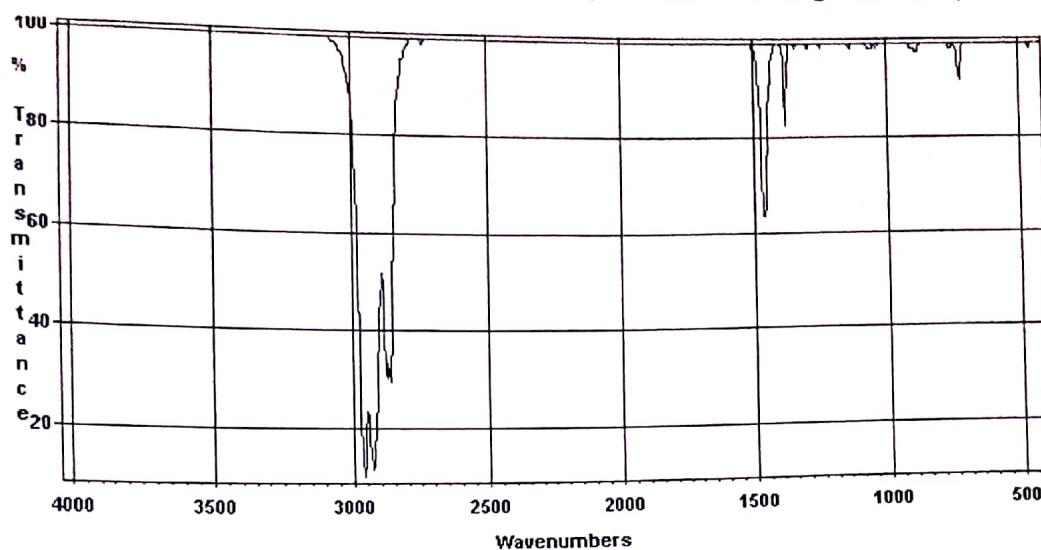
19- An instrument used to measure transmittance

- (A) must have a monochromator.
- (B) must have a detector for measuring light intensity.
- (C) must have the ability to ratio the light intensities measured with and without the sample.
- (D) all of the above.

20- The Beer-Lambert Law

- (A) states that transmittance is linearly related to concentration.
- (B) requires that the product of absorptivity and pathlength be known before absorbance can be related to concentration.
- (C) requires that absorptivity be independent of wavelength.
- (D) cannot be used if more than one absorbing species is present in a sample.

21- What is the structure of the compound that gives the following infrared spectrum?



- (A) $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-CH}_3$ (B) $\text{CH}_3\text{-CH}_2\text{-C}\equiv\text{C-H}$
 (C) $\text{CH}_3\text{-CH}_2\text{-CH=CH}_2$ (D) $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-CH}_2\text{-Cl}$

22- All of the following methods can be used to detect the presence of a certain organic substance except:

- (A) Gas Chromatography
 (B) HPLC
 (C) UV-Visible spectroscopy
 (D) Flame photometry

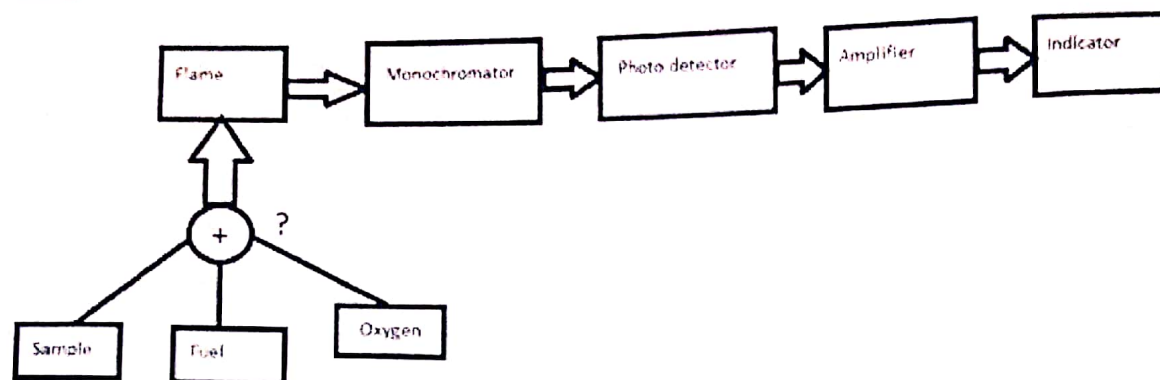
23- Which of the following methods is used to prepare IR polymeric sample?

- (A) Crushing with mulling agent
 (B) Cast film method.
 (C) Microtomy
 (D) Grinding with KBr.

24- Which of the following is the principle of Flame emission photometers?

- (A) Radiation is absorbed by non-excited atoms in vapour state and are excited to higher states
 (B) Medium absorbs radiation and transmitted radiation is measured
 (C) Colour and wavelength of the flame is measured
 (D) Only wavelength of the flame is measured
 (E) None of the above

25- Given below is the diagram of Flame emission photometers. Identify the unmarked component.



- (A) Filter
- (B) Aerosol
- (C) Pressure regulator
- (D) Burner
- (E) None of the above

26- The detector used in HPLC:

- (A) IR
- (B) Conductivity
- (C) NMR
- (D) Colorimeter
- (E) pH meter

27- Spectral absorbances in the near-IR region are a result of

- (A) $\Delta v = 1$
- (B) $\Delta v > 1$
- (C) $\Delta v < 1$
- (D) $\Delta v = 0$
- (E) $\Delta v = -1$

28- In reversed HPLC mean:

- (A) Stationary phase is aluminum oxide and the mobile phase is water
- (B) Stationary phase is gel and the mobile phase is gas
- (C) Stationary phase is silica and the mobile phase is toluene
- (D) Stationary phase is C18 and the mobile phase water-methanol
- (E) None of the above.

29- For titration curves of weak monoprotic acids, plotting $\Delta pH/\Delta V$ versus volume (mL) of strong base, the equivalence point occurs at:

- (A) The half-way point of the final volume.

- (B) The point of minimum slope.
- (C) The point of maximum slope.
- (D) The final volume.
- (E) More than one choice is correct.

30- The potentiometric titration can be used for:

- (A) Quantitative analysis.
- (B) Qualitative analysis.
- (C) A and B
- (D) None of the above

31- The potentiometric titration required:

- (A) Standard reference electrode
- (B) Indicator electrode
- (C) A and B
- (D) None of the above

32- The term "wavenumber"

- (A) Refers to the number of waveform cycles traveled by a photon in a fixed time.
- (B) Refers to a quantity often expressed in cm^{-1} .
- (C) Refers to the product of frequency and Planck's constant.
- (D) Refers to the distance corresponding to one cycle of a waveform.
- (E) all of the above

33- What is the frequency of an IR photon with a wavelength of $1.2 \times 10^{-3} \text{ cm}$? $c = 3.00 \times 10^8 \text{ m/s}$.

- (A) $3.6 \times 10^6 \text{ Hz}$
- (B) $2.5 \times 10^{13} \text{ Hz}$
- (C) 3600 Hz
- (D) $2.5 \times 10^{10} \text{ Hz}$
- (E) 700 Hz

34- Which of the following normally occurs in a molecule when a photon of infrared light is absorbed?

- (A) An electron moves to an orbital of higher potential energy.
- (B) The vibration energy increases.
- (C) An electron changes alignment in a magnetic field.
- (D) The molecule gains an electron.
- (E) The molecule loses an electron.

35- How should the concentration of a colorless sample be determined?

- (A) Using a UV spectrophotometer

- (B) Using a VIS spectrophotometer
- (C) Either a UV or VIS spectrophotometer
- (D) Using an indicator solution and pH paper
- (E) All of the above

36- What type(s) of molecular motion is (are) observed using infrared spectroscopy?

- (A) Stretching and bending.
- (B) Rotation and excitation.
- (C) Spin flipping.
- (D) Fragmentation.
- (E) None of the above.

37- What is the molar absorptivity of a compound if a 4.4×10^{-5} molar solution has an absorbance of 0.105 when the path length is 1.0 cm?

- (A) 4.2×10^{-4}
- (B) 1.0×10^8
- (C) 2.4×10^3
- (D) 4.62×10^{-6}
- (E) 5.22×10^{-3}

38- An isocratic elution in HPLC is one which the composition of the solvent

- (A) Remains constant
- (B) Changes continuously
- (C) Changes in a series of steps
- (D) All expect A
- (E) None of the above

39. Compared to a C-H bond, a C-D bond will vibrate where in the infrared spectrum?

- (A) Higher molecular weight.
- (B) Lower molecular weight
- (C) Lower wavenumbers.
- (D) Higher wavenumbers.
- (E) Equal wavenumber

40- In IR the absorption band intensity depend on

- (A) KBr concentration
- (B) Analyte concentration
- (C) Number of vibrational modes
- (D) The molar mass of analyte
- (E) A and C

41- Which type of liquid chromatography separation depends on interactions between solute, mobile phase, and immobilized liquid stationary phase?

- (A) Adsorption
- (B) Partition
- (C) Ion-exchange

- (D) Size exclusion
- (E) None of the above

42- The basis of the technique of chromatography for separating components of a mixture is:

- (A) The differing movement of particles of different mass in an electrical field
- (B) The interaction of the components with a stationary and a mobile phases
- (C) The absorption of infrared radiation by the components.
- (D) The deflection of charged particles in a magnetic field.
- (E) All of the above

43- Of the following compounds, which would you expect to elute last from a reverse-phase liquid chromatography column?

- (A) Methanol (B) Ethanol (C) n-propanol (D) n-butanol (E) octanol

44- The type of chromatography wherein the analyte ions in the mobile phase is attracted to the counter ions in the stationary phase is

- (A) Ion-pair chromatography
- (B) Ion exclusion chromatography
- (C) Ion-Exchange chromatography
- (D) Affinity chromatography
- (E) Size exclusion chromatography

45- What is a chromophore?

- (A) The color of the molecule
- (B) The functional group responsible for colour
- (C) The atom responsible for colour
- (D) A chromium containing compound
- (E) All of the above

46- Glass electrode is:

- (A) Metallic indicator electrode
- (B) One type of reference electrode
- (C) Used in calomel electrode
- (D) Is ion selective electrode
- (E) None of the above

47- Which of the following wavelengths of light would have the highest radiant energy?

- (A) 200 nm
- (B) 300 nm
- (C) 400 nm
- (D) 500 nm
- (E) 600 nm

48- In flame emission photometry, a photon of light with a wavelength specific for a given element is emitted when:

- (A) An orbital electron is raised to a higher energy state by incident light.
- (B) The bonds of the molecule vibrate and release light.
- (C) Thermal energy is absorbed by orbital electrons to a higher energy state and release energy when the orbital electrons return to the ground state.
- (D) The element absorbs ultraviolet radiation and release energy at longer wavelengths.
- (E) None of the above

49-What method of spectrophotometry analysis for elements emitting light at a characteristic wavelength when heated at high temperatures?

- (A) Colorimetry.
- (B) Polarimetry.
- (C) HPLC.
- (D) Flame photometry.
- (E) None of the above

50- The process in flame to breakdown sample into fine droplets is:

- (A) Ionization.
- (B) Separation.
- (C) Detection.
- (D) Nebulization.
- (E) Identification

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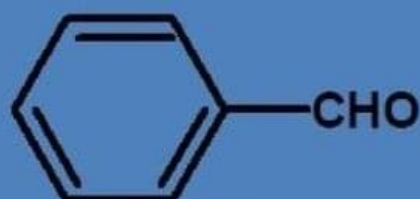
		Frequency (cm^{-1})	Remarks
Alkane	C - H	2850 - 2960 1350 and 1470	
Alkene	C - H	3020 - 3080 675 - 1000	
	C=C	1640 - 1680 (sharp)	
Alkyne	C - H	3300 (sharp)	
	C $\equiv$ C	2100 - 2260	
Aromatic ring	C - H	3000 - 3100 690 - 840	
	C=C	1500, 1600	
Alcohol	O - H	3200 - 3640 (broad)	The shape of alcohol O - H peak is a smooth tongue
	C - O	1050 - 1275	
Ether	C - O	1050 - 1275	
Alkyl halide	C - Cl	600 - 800	
	C - Br	500 - 600	
Amine	N - H	3300 - 3500	The shape of primary amine N - H peak is vampire fangs
	C - N	1030 - 1230	The shape of secondary amine N - H peak is one fang
Carbonyl	C=O in carboxylic acid	Generally 1670 - 1780 1712	
	C=O in aldehyde	1705 - 1730	
	C=O in ketone	1690 - 1750	
	C=O in ester	1735 or 1715	
Carboxyl	O - H	2500 - 3100	The shape of carboxylic acid O - H peak is a hairy beard
	C=O	1712	
Nitro	NO ₂	1540 (strong)	
Nitrile	C $\equiv$ N	2210 - 2260	

9. Which of the following is the purpose of the beam splitter in double beam photometer or colorimeter?

- a) Splits beam into two equal intensity beams
- b) Splits beam in such a way that sample beam has higher intensity
- c) Splits beam in such a way that reference beam has higher intensity
- d) Merge two equal intensity beams into single beam

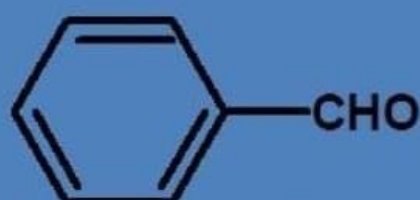
Answer: a

3. Given below are the solvents used in analysis of benzaldehyde in the UV-visible spectra. Select the **CORRECT** statement regarding these



Sample A

In water



Sample B

In cyclohexane



(A) Water increases π to π transition

(B) Cyclohexane increases π to π transition

(C) Both water and cyclohexane increase π to π transition

(D) Water increases n to π transition while cyclohexane increases π to π transition

Show answer



Nour Al Adwaid

IR spectra

وحدة كانت الدهايد

٢. كحول

٣. حلقة بنزين مع نيتروجين و النيتروجين مرتبط

معها هيدروجين

4. Carboxylic acid

3w

Like

Reply

9. What is the unit of absorbance which can be derived from Beer Lambert's law?

- a) $\text{L mol}^{-1} \text{ cm}^{-1}$
- b) $\text{L gm}^{-1} \text{ cm}^{-1}$
- c) Cm
- d) No unit

Answer: d

(2) Two compounds A and B have molar absorptivity as 1200 and 15,000 $\text{mol lit}^{-1}\text{cm}^{-1}$ respectively. Which of the following statements is correct regarding them?

[A] Compound A can be detected at very low concentrations than compound B.

[B] Compound B can be detected at very low concentrations than compound A.

[C] Both compounds can be detected at very dilute concentrations.

[D] Molar absorptivity have no influence on the detection of compounds.

Answer: Compound B can be detected at very low concentrations than compound A.

(3) Select the groups that produces bathochromic shift when substituted on benzene.



- [A] Q,R
- [B] P,S
- [C] P only
- [D] P,Q,R and S

Answer: P,Q,R and S

كان فيه سؤال تأثير solvent water و cyclohexen ع مركب بس ما بعرف الجواب

3w Like Reply



Aya H. Habbash

Admin

Hadeel Aljarrab

Water decrease energy gap between pi pi*

See Translation

3w Like Reply



1



Write a reply...

Leen Qalishch

جابت سؤال عن ال chromatogram انه احسبي ال assay % لل Standerd لما يكون ال theoretical = 50 mg ومعطيك قيم لل A, B, C.

عن طريق ال retention time بنعرف انه ال std هو نفسه ال B

وعلى قانون ال assay بنحلّ

بتطلع 75.6%

Which of the following is matched correctly :

IR:emission

Flame:elution

UV-vis: absorption الجواب

See Translation

3w Like Reply

Yasmine Robin

مش متذكرة السؤال بس متذكرة الخيارات

Absorbance has logarithmic relationship with transmittance

Absorbance has a negative logarithmic relationship

اي وحدة صح؟

3w Like Reply

Marlam Yacoub

Yasmine Robin negative الثانية

3w Like Reply

1 🤔

Write a reply...

Yasmine Robin

: angle of rotation الي بعتمد عليها

نسيت الخيارات بس جوابه all؟

3w Like Reply

Yasmine Robin

اشي عن ال split :

حطيت جواب انه بعمل split للمادة ومش كلها
بتوصل لل column بهاي الصيغة 🤝😂

3w Like Reply



Aya N Rabb

Admin

👉👈

🤝😂

3w Like Reply

1 🤔



Write a reply...

Yasmine Robin

which of the following substitutions have bathochromic effect ?

1) P, S

2) P, Q, R

3) Q, R

4) none

(P) -OH

(R) -COOH

(Q) -CO

(S) -NH₂

3w Like Reply

1 👍

وفي كمان سؤال ترو وفولس انه مصدر exciting in
flame هو light وكان فولس

3w Like Reply

Aya N Rabbaa

Admin

ااه صح وانه الحرارة تاعت flame بتعتمد ع نوع
fuel and oxidant and their portions وجوابه ترو

3w Like Reply

Aya N Rabbaa

Admin

جابتلنا صورة flame photometry وبدها الخيار
الصح وكان الجواب انه بيقدر يحلل 6 عناصر مختلفة

3w Like Reply

1 

جابت هاي رسمة chromatogram وحكت انه ال
stationary phase is silica

A) normal chromatography

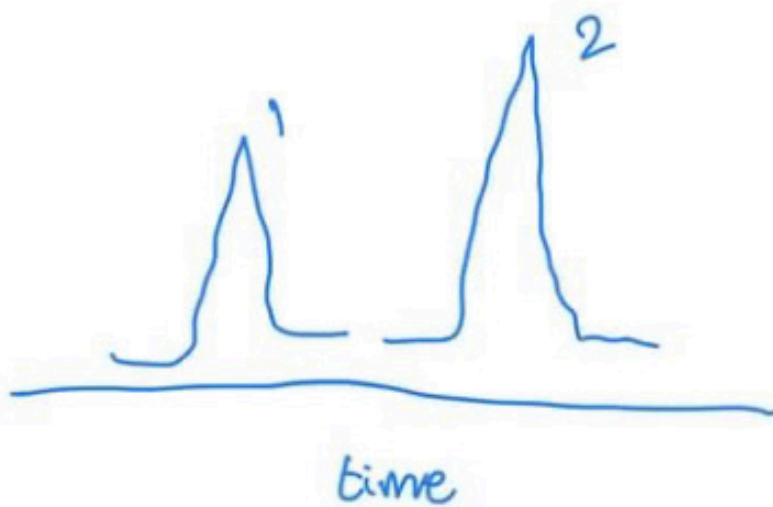
b) reverse

C) compound 1 more polar than 2

D) compound 2 more polar than 1

الجواب A+D

See Translation



3w Like Reply

1

Aye N Rablaga
Admin

وجابت انه بنقدر نستخدم GC ل gas , solid,
liquid and vaporized it by heat ناسية السؤال
بس هاد كان صح

3w Like Reply

Haneen Ajarmah

ال flame ما اله ضوء هيك شي ترو

3w Like Reply

Admin 

سؤال معادلة شو اللي بنستخدمها بال
nerst potantimetric titration جوابها

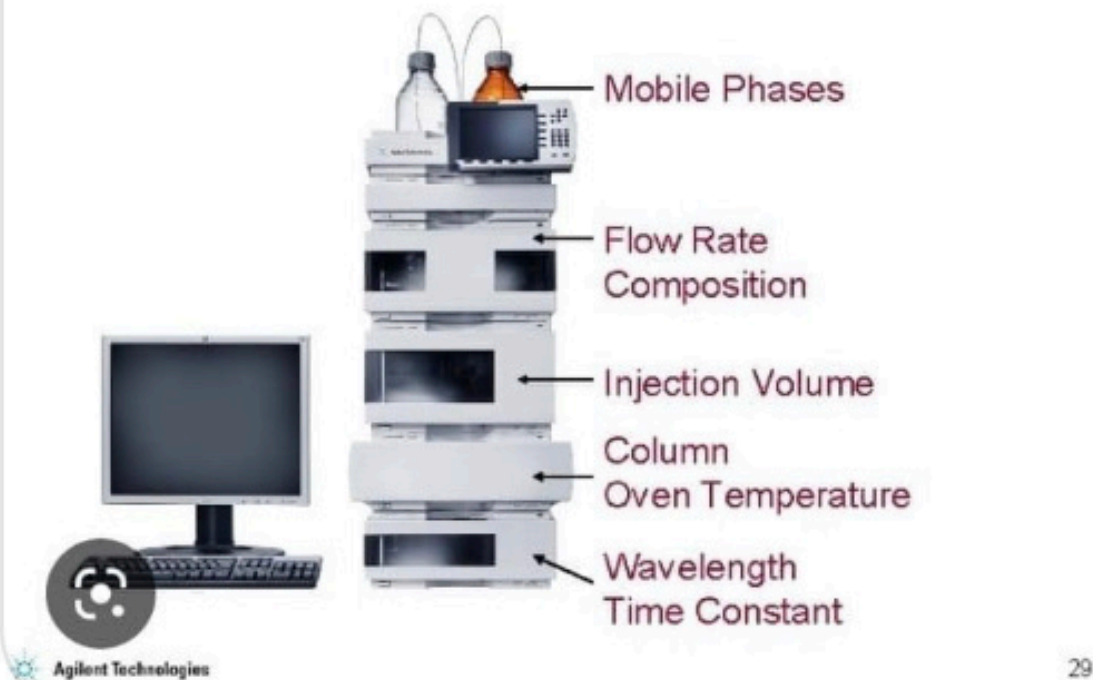
3w

Like

Reply

1 

HPLC Analysis Parameters



3w Like Reply

1 ❤️

Laila-Jehad

Nour Al Adwan c9B?

3w Like Reply

Mariam Yacoub

Laila-Jehad

المفروض إنه يس هيك جوابه

PARTS OF HPLC

- 1) MOBILE PHASE / SOLVENT RESERVOIR
 - 2) DEGASSER,
 - 3) PUMP,
 - 4) INJECTOR,
 - 5) COLUMN,
 - 6) DETECTOR,
 - 7) RECORDER.
- Solvent Reservoir
 - Degasser
 - Solvent Delivery System (Pump)
 - Injector
 - Column & oven
 - Detectors
 - Recorder (Data Collection)



3w Like Reply

1 👍

Mariam Yacoub

شو إئي بعمل separation لل vaporized ؟
GC

3w Like Reply

Mariam Yacoub

شو طريقة ال HLPS إئي بستخدمها بفصل البروتين
كان

Ion exchange

3w Like Reply

1 

Adsorption

See Translation

3w Like Reply

View 6 replies...

Mariam Yacoub

الجواب partition سألت الدكتورة

2w Like Reply

في سؤال شو العلاقة بين absorbance و transmittance

$A = -\log \text{transmittance}$

3w Like Reply



مش عارفة شو كان السؤال بس إنه عن buffer PH
لوين بنرجع بال pharmacopeia

3w Like Reply

شو من الخيارات correct عن ال Glss electrode

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سؤال زيادة ال wavelength مع نقصان ال
intensity of absorption
جوابه

Bathochromic and Hypochromic

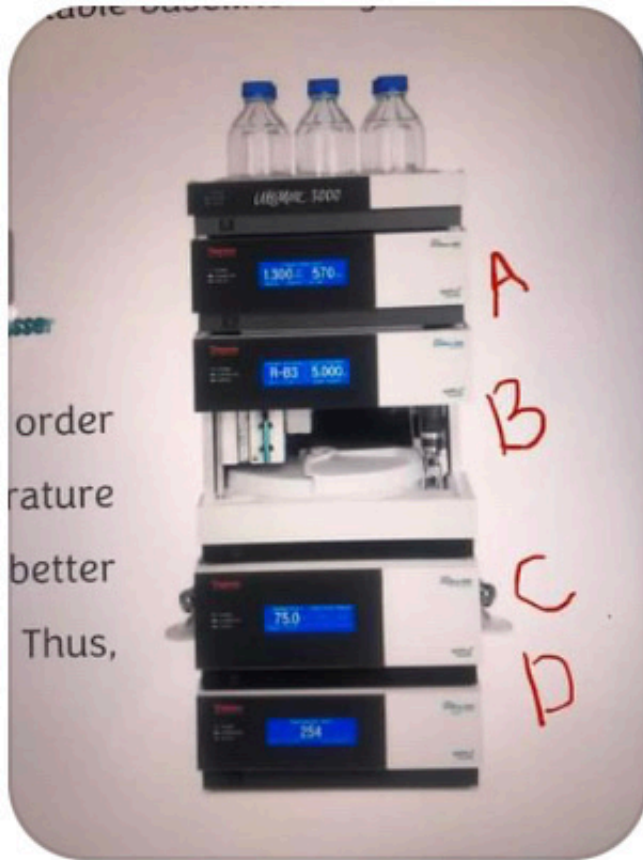
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وأسئلة spectrum برضو مُعاقرة

3w Like Reply

جابت هاد الجهاز وطلبت مكان column ومكان injection



3w Like Reply

شو جوابه

3w Like Reply

B sample, C column
See Translation

3w Like Reply

Admin



في سؤال صعب شرحه بس كان جوابه Ag oxidized

3w Like Reply

Aya H Rahbani

Admin

سؤال اللي الهم نفس observed rotation عند
نفس concentration جاوبته same compound

3w Like Reply



Aya H Rahbani

Admin

سؤال معطيني انه stationary هو سيليك شو بكون
ومعطيني مركبات وبده نقارن polarity الهم
كان الجواب A+D

3w Like Reply

Aya H Rahbani

Admin

في سؤال كان انه reference external وال
indicator internal ناسية شو هو بالزبط بس هداول
الاجابتين كانو خطأ (مش متأكدة)

3w Like Reply

Admin 
وكان في شو اللي بيعمل bathochromic shift
لحلقة البنزين وجاوبته P and S

3w Like Reply

بال HPLC اذا ال sample كان فيها gas بتعملي
noise and unstable baseline

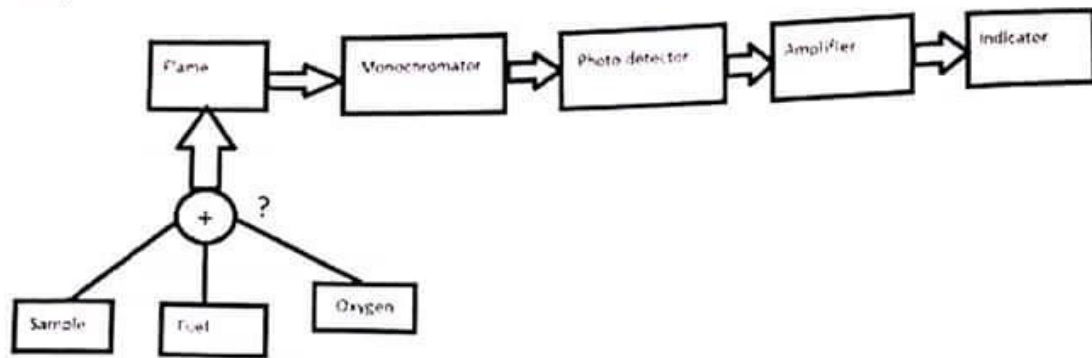
True

3w

Like

Reply

25- Given below is the diagram of Flame emission photometers. Identify the unmarked component.



- (A) Filter
- (B) Aerosol
- (C) Pressure regulator
- (D) Burner
- (E) None of the above

26. The detector used in HPLC

شو بتمثل ال a في معادلة beers

$A=abc$

Molar absorptivity

3w

Like

Reply



شو ال transition لل Aromatic

$\text{Pi} - \text{pi}^*$

$\text{n} - \text{Pi}^*$

$\text{Sigma} - \text{sigma}^*$

$\text{n} - \text{sigma}^*$

See Translation

3w Like Reply

Layan Salameh

ف سؤال sample عملناه diluted شو حله??

3w Like Reply



Aya N Rabee

Admin

Layan Salameh

25 mg

3w Like Reply

2



Write a reply...

Ruba Al Naddaf

وحدة absorbance
Unitless

3w Like Reply

9

سؤال معطيني انه stationary هو سيليكات شو بكون ومعطيني مركبات وبده نقارن
polarity الهم
كان الجواب A+D

الحرارة تاغت flame بتعتمد ع نوع fuel and oxidant and their portions
وجوابه ترو

مخطط وعليه مربعات لما اخلط fuel & sample & oxygen وين بدخلهم ؟
Burner جوابه

سؤال عن beam splitter ناسية شو جوابه

٣ رسومات سبكترم

وحدة absorbance هي Unitless
سؤال زيادة ال wavelength مع نقصان ال intensity of absorption
جوابه

Bathochromic and Hypochromic

سؤال الي الهم نفس observed rotation عند نفس concentration جاوبته
same compound

سؤال عن ph بال buffer لوين يرجع بال pharmacopeia من اول تجربة اعتقد

وكمان سؤال عن British pharmacopeia

رسمة لجهاز HPLC المكان الي بنحط فيه column و sample

العوامل الي بعتمد عليها angle of rotation اعتقد جوابه all

USP حطیتہ ترو بعرفش های ولا BP? موجود بال veterinary medicine

2v Like Reply

بقدر افحص فيها عينة عندها

Thermal stability

Volatility

اكيد GC

2y Like Reply

M [REDACTED]

السلام عليكم الله يعافىكم

كان في سؤال حسابات معطي ال calibration curve و حاكي انه طحنت ٢٠ حبة
و طلع وزنهم ١٠ غرام و اخذت من العينة 0.3g و عملت stock و بعدها خففت
ل 5ml ثم 250ml

($97x + 0.004$)

و طلع ال absorbance 0.591

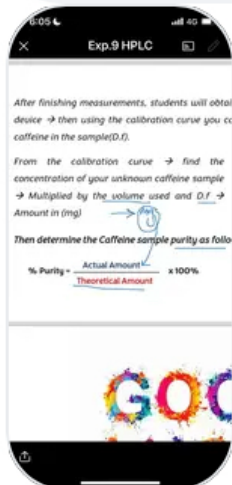
طلب وزن الحبة الوحدة

مش متأكد كثير من الأرقام

في اسئله من تجربه ا
عن ال volume
كان تقريبا ٣ اسئله على ا

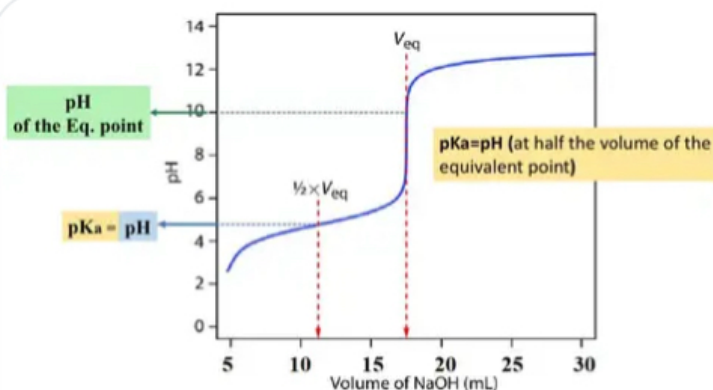
2y Like Reply

في سؤال حساب عن نسبة ال purity



2y Like Reply

بنات كان في مركبين زي هاد وسأل عن conc
و pka
شو جوابه



حظيته 1 volume تبع general بس بعرفش اذا صح

مش عارفة شو كان السؤال بس إنه عن buffer PH
لوين بنرجع بال pharmacopeia

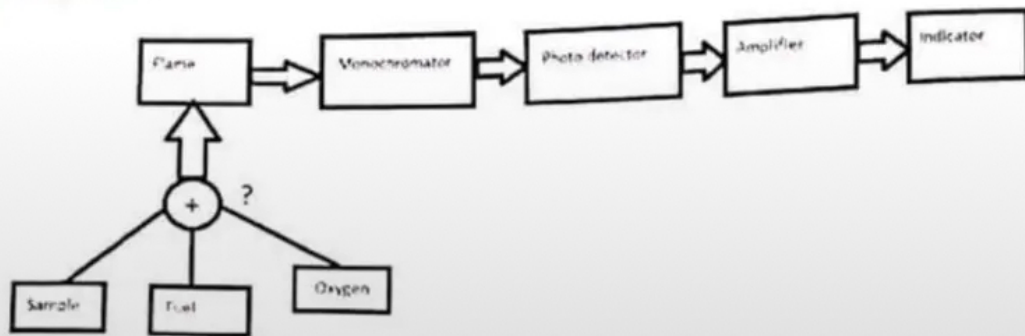
3w Like Reply

2y Like Reply

 All-star contributor

الاشياء الي بتأثر على specific rotation كانت التركيز والطول الموجوي
والحرارة حكيته all

25- Given below is the diagram of Flame emission photometers. Identify the unmarked component.



- (A) Filter
- (B) Aerosol
- (C) Pressure regulator
- (D) Burner
- (E) None of the above

جابت سوألين حسابات على تجربة ٦ واحد طلبت %ee

وواحد طلبت الobserved rotation

2- The concentration of cholesterol dissolved in chloroform is 6.15 gram per 100 ml of solution. A portion of this solution in 5 cm polarimeter tube causes an observed rotation of -1.2 . The specific rotation of cholesterol is:

- (A) -39
- (B) -3.9
- (C) -0.39
- (D) -0.039
- (E) $+3.9$

3- In the previous problem, what would be the observed rotation if the same solution was placed in a 10 cm tube?

كان فيه سؤال تأثير solvent water و cyclohexen ع مركب بس ما بعرف الجواب

3w Like Reply

Aya H. Reblasa

Answered

Reacted with

Water decrease energy gap between π π^*

See Translation

3w Like Reply

1 

جابت سؤال عن ال chromatogram انه احسبي ال
theoritical = ال Standard لما يكون ال
50 mg
ومعطيك قيم لل A, B, C.

عن طريق ال retention time بنعرف انه ال std هو
نفسه ال B

وعلى قانون ال assay بنحل

بتطلع 75.6%

Pubba Al Haddad

absorbance وحدة
Unitless

3w

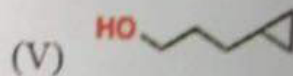
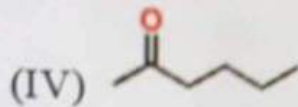
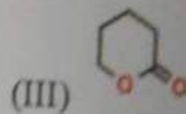
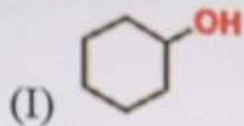
Like

Reply

9 

Comparison	Analytical Methods	
	Classical	Instrumental
(Qualitative analysis) Separation of components by	Precipitation, extraction, distillation	Chromatography, electrophoresis
(Quantitative analysis)	Gravimetric or volumetric	Electrode methods, conductance

3000 2000 1000
Wavenumber (cm⁻¹)



☐ II

☐ I

☐ V

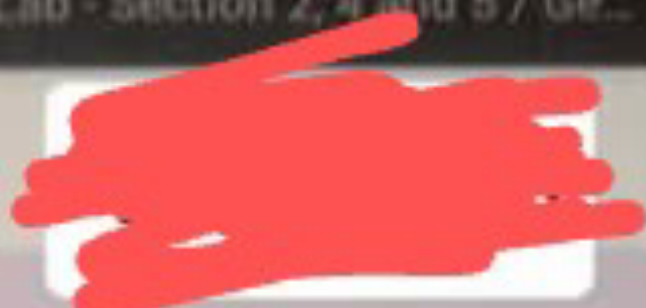
☐ III

☒ IV



Fill | Instrumental lab_Final Exam_2020

Ph. Instrumental Analysis Lab - Section 2, 4 and 5 / Ge...



22

All of the following are right EXCEPT *
(1.5 Points)

- ☐ The observed rotation (α) depends upon the path length of the light.
- ☐ The observed rotation (α) depends upon the length of the polarimeter tube.
- ☐ The observed rotation (α) depends upon the concentration of the sample
- ☒ The observed rotation (α) depends upon the purity of the solvent

23

Regarding GC which statement(s) is/are not correct? *
(1.5 Points)

- ☐ The elution order depends on the analytes boiling points
- ☐ The applied mobile phase must be an inert gas

Velocity

Frequency

☒ Intensity

☐ Colour

6

The principle of flame emission photometers is to measure: *

(1.5 Points)

- ☐ The medium absorbs radiation and transmitted radiation
- ☐ None of the above
- ☐ The radiation of the non-excited atoms in vapor state and are excited to higher states
- ☒ The wavelength of the flame and it's intensity
- ☐ The color of the flame and it's intensity

7

The plot of signal versus Retention time

* All of the following are right EXCEPT
(1.5 نقطة)

.The observed rotation (α) depends upon the length of the polarimeter tube ☐



The observed rotation (α) depends upon the purity of the solvent ☒

The observed rotation (α) depends upon the concentration of the sample ☐

.The observed rotation (α) depends upon the path length of the light ☐

- ← Ph. Instrumental Analysis Lab - Section 2, 4 and 5 / Ge...
- ☐ UV spectrum
 - ☐ Both UV and IR- spectrum
 - ☒ HPLC - chromatogram

8

The meaning of reversed HPLC is: *

(1.5 Points)

- ☐ Stationary phase is aluminum oxide and the mobile phase is water
- ☐ Stationary phase is silica and the mobile phase is toluene
- ☐ None of the above.
- ☐ Stationary phase is hydrophilic and the mobile phase is hydrophobic
- ☒ Stationary phase is hydrophobic and the mobile phase is hydrophilic

9

Which of the following bonds would show the strongest absorption in the IR: *

(1.5 Points)

1

The principle of flame emission photometers is to measure: *
(1.5 Points)

- ☐ The wavelength of the flame and it's intensity
- ☐ The medium absorbs radiation and transmitted radiation
- ☐ The radiation of the non-excited atoms in vapor state and are excited to higher states
- ☐ None of the above
- ☒ The color of the flame and it's intensity

3

For weak monoprotic acids titration curves, the plotting $\Delta\text{pH}/\Delta V$ versus volume (mL) of a strong base, the equivalence point occurs at: *

(1.5 Points)

- ☐ The half-way point of the final volume.
- ☐ The final volume.
- ☐ More than one choice is correct.
- ☒ The point of maximum slope.
- ☐ The point of minimum slope.

4

Which of the following bonds will not show a peak for stretching? *

(1.5 Points)

- ☐ C=O
- ☐ O-H

- Shifts on wave length of λ_{max} due to solvent effect

28

All of the following are right EXCEPT *

(1.5 Points)

- ☐ The observed rotation $[\alpha]$ depends upon the length of the polarimeter tube.
- ☐ The observed rotation $[\alpha]$ depends upon the path length of the light.
- ☐ The observed rotation $[\alpha]$ depends upon the concentration of the sample.
- ☒ The observed rotation $[\alpha]$ depends upon the purity of the solvent.

29

The meaning of reversed HPLC is *

(1.5 Points)

None of the above

☒ Flame photometer

☐ Potentiometer

☐ None of the above

14

All of the following methods can be used in quantitative analysis EXCEPT: ★
(1.5 Points)

☒ None of the above

☐ UV-Visible spectroscopy

☐ Flame photometry

☐ HPLC

☐ Gas Chromatography

15

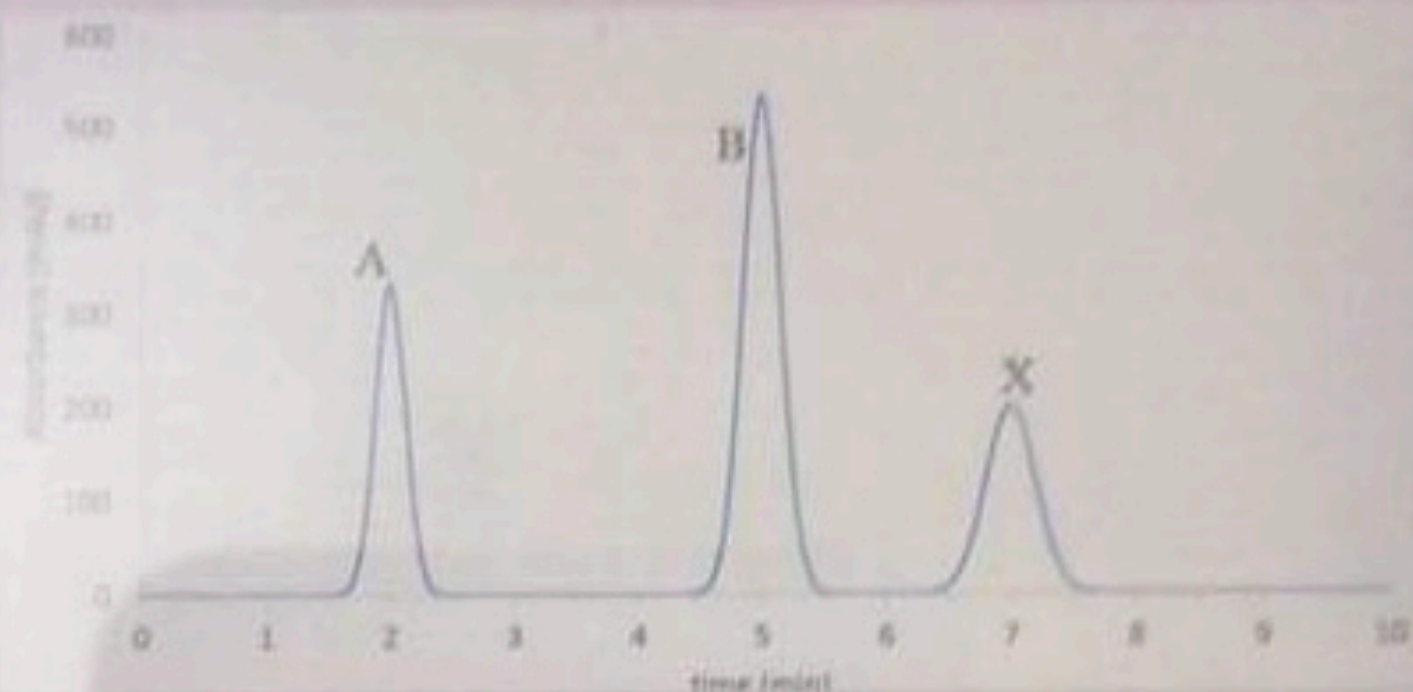
The IR spectrum below is the best corresponds to which of the following molecules? ★
(1.5 Points)

Hydrogen

length reversed-phase column, isocratic elution).

Which statement is correct regarding the properties of the compounds? *

(1.5 Points)



☐ No indication of polarity in this analysis process

☐ Compound X is more polar than compound B

☐ Two are correct

☒ Compound B is more polar than compound X

☐ Compound X has higher affinity to the mobile phase than B

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Ph. Instrumental Analysis Lab - Section 2, 4 and 5 / Ge...

20

In comparison between the C-H bond and the C-D bond (D= Deuterium), the C-D bond will vibrate in the infrared spectrum with..... *
(1.5 Points)

- ☒ Lower wavenumbers.
- ☐ Equal wavenumber
- ☐ Lower molecular weight
- ☐ Higher wavenumbers.
- ☐ Higher molecular weight.

21

The separation based on partition chromatography in HPLC is: *
(1.5 Points)

- ☐ Depending on absorption
- ☐ Depends on color
- ☒ None of the above
- ☐ Depend on molecular size

2

The purpose of locating the injector as part of the oven in the GC is: *

(1.5 Points)

- ☐ None are true
- ☐ To inject the sample
- ☒ All are true
- ☐ To vaporize the sample
- ☐ To mix the sample with carrier gas

3

For weak monoprotic acids titration curves, the plotting $\Delta\text{pH}/\Delta V$ versus volume (mL) of a strong base, the equivalence point occurs at: *

(1.5 Points)

- ☐ The half-way point of the final volume.

29

The ----- occur in IR? *

(1.5 Points)

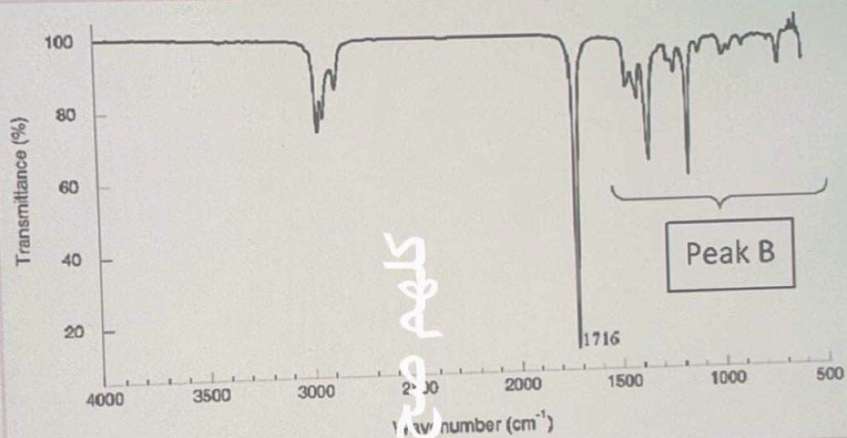
- ☒ Vibrational excitation
- ☐ Rotational excitation
- ☐ None of the above
- ☐ Electronic excitation
- ☐ All the electronic, rotational, vibrational excitation

30

Which of the following bonds would show the strongest absorption in the IR: *

(1.5 Points)

*:All are true about region B Except
(1.5 نقطة)



Stretching vibration region ☐

Bending vibration region ☐

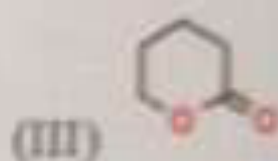
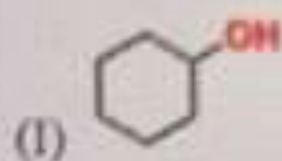
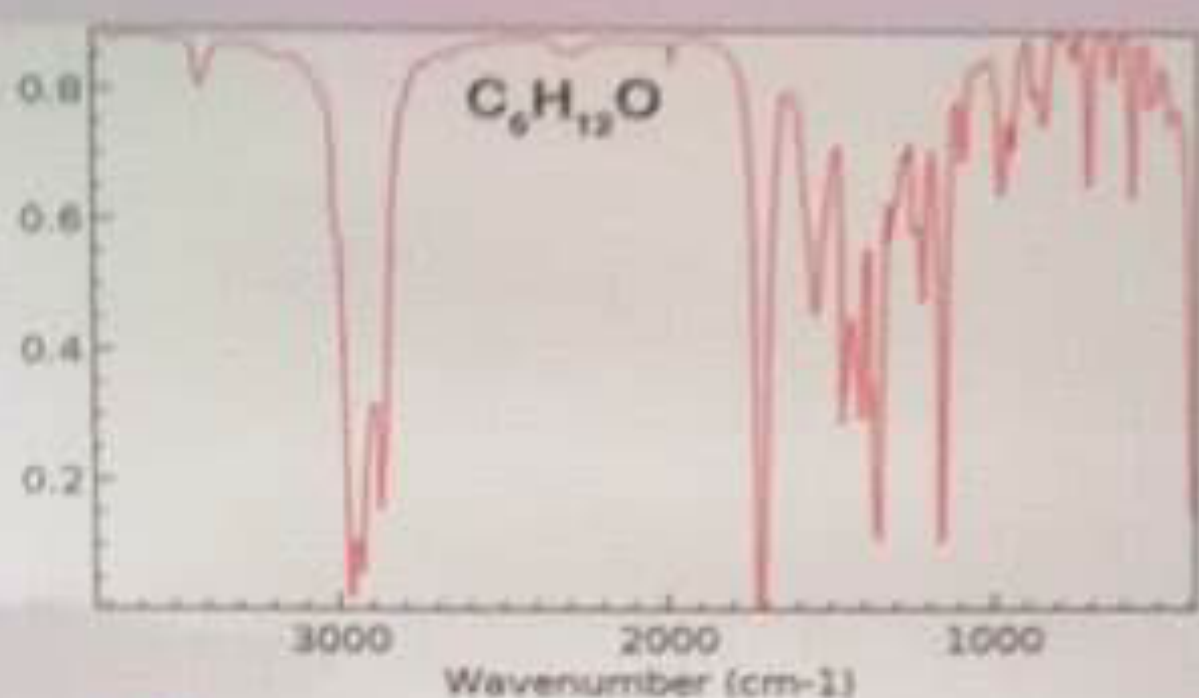
Finger print region ☐

Functional group region ☐

all are true ☐

The IR spectrum below is the best corresponds to which of the following molecules? *

(1.5 Points)



☒ IV

☐ II

☐ II

☐ V

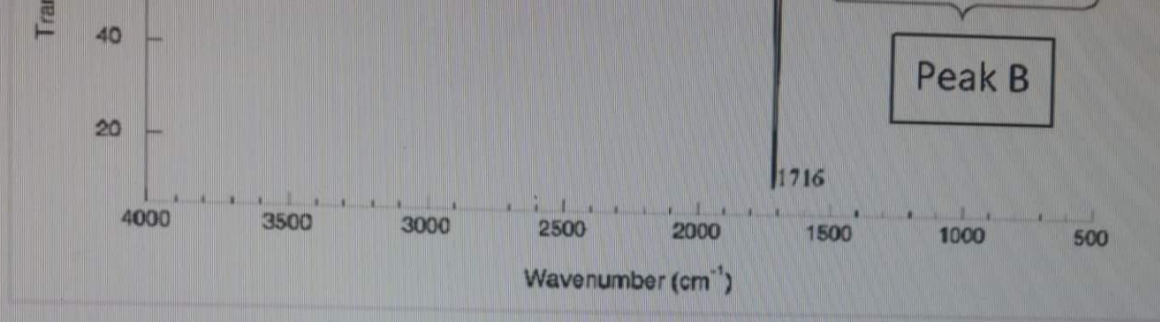
☐ I

16

The _____ occur in IR? *

(1.5 Points)

Hydrogen



- ☒ Functional group region
- ☐ all are true
- ☐ Finger print region
- ☐ Bending vibration region
- ☐ Stretching vibration region

* ?What is a Blue shift
(1.5 نقطة)

.The shifting of an absorption to longer wavelength ☐

Two are true ☐

.The shifting of an absorption towards the Red end of the spectrum ☐

.The shifting of an absorption to lower energy ☐



.The shifting of an absorption to higher energy ☒

☐ Ion selective electrode

☐ Metallic indicator electrode

☐ None of the above

☐ Calomel electrode

12

Epsilon (ϵ) is the Molar absorptivity constant in beer's lambert's law when concentration in *
(1.5 Points)

☒ all of the above

☐ w/v %

☐ M

☐ g%

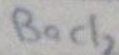
☐ g/ml

13

Which of the following is the destructive instrumental analysis for the sample : *
(1.5 Points)

سودیم کلورید (NaCl)
حجم 250 میلی لیتر

مکانت معادله



Sodium from NaCl

250ml of Na⁺ in a
concentration of
(200 ppm)

ppm = mg/L

Na⁺ ??

Equivalent Wt.

NaCl ??



200 ppm → 200 mg → 1L
?? → 0.25

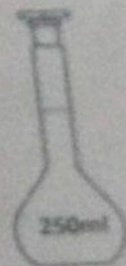
❖ Molecular weight for

(Na= 22.990 g/mol)

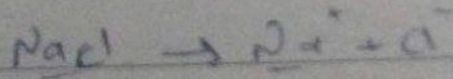
(Cl= 35.453 g/mol)

(NaCl= 58.44 g/mol)

200 ppm of Na⁺



Na = 50mg



moles Na = moles NaCl

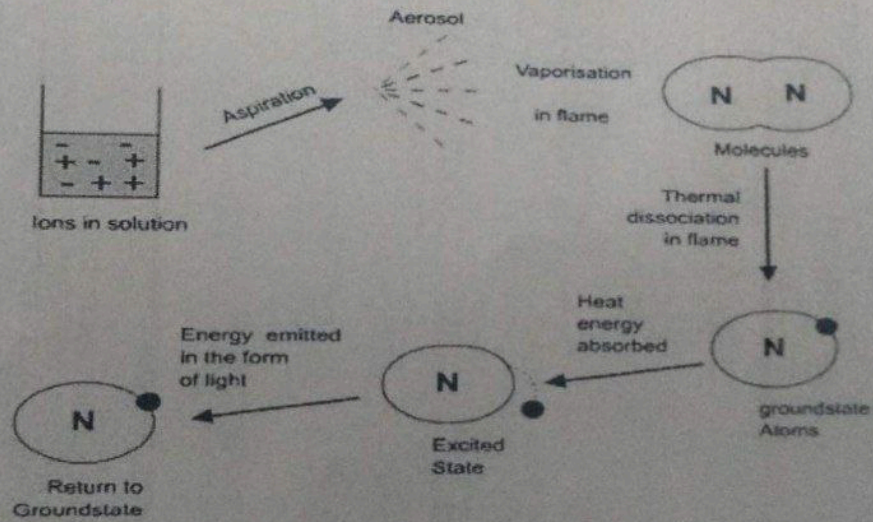
50 / 22.99 = mass / 58.44g

Handwritten scribbles

True or False

3) **Recording System:** This part consists of all the means of detection (phototubes or photomultiplier tubes), the *electronic devices of amplifying and electrical apparatus for measuring and direct recording.*

Flame Photometry process



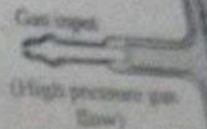
2) **λ -Selection System:** This includes the whole optical system of wavelength selection. In flame photometer the wavelength selector is a **filter**.

- The radiation emitted by the excited atoms is selected by using a filter which **transmits an emission line** of one of the elements **while absorbing the others**.
- **There are two types of filters.** These are **absorption** and **interference** filters. Absorption filters are restricted to visible region of the spectrum, but interference filters are used in UV, VIS and IR regions of the spectrum.

لا فیلٹر
تک و فیلٹر

TECHNIQUE

In this technique, first aerosols are formed from sample solution by a jet of compressed gas. This process is called **nebulization**. Then the flow of the gas carries the aerosols into a flame where atomization takes place. Atomization is the conversion of sample aerosols into an atomic vapor by flame.



جانب، صفة
و ممكن صفة لعلية



Fuel g

Element	Emitted wavelength	Flame colour
Potassium (K)	766 nm	Violet 
Lithium (Li)	670 nm	Red 
Calcium (Ca)	622 nm	Orange 
Sodium (Na)	589 nm	Yellow 
Barium (Ba)	554 nm	Lime green 

دستور
فرمول

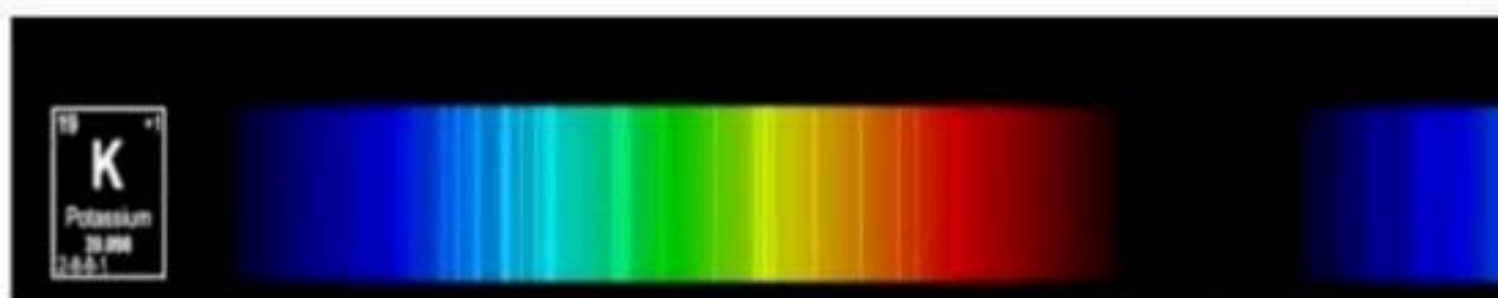
...in the visible region. These filters absorb certain portions of the spectrum and transmitting the band of wavelengths belonging to the analyte element. The most common type consists of colored glasses.

- **Interference filters** rely on optical interference to provide relatively narrow bands of radiation. They consist of a transparent dielectric layer (CaF_2 or MgF_2) that occupies the space between two semi-transparent metallic films. This array is sandwiched between two plates of glass.

colorless

هون طلبت لون mg

< تجربة ٧ - Reduced-



Element	Emitted wavelength	Flame colour
Potassium (K)	766 nm	Violet 
Lithium (Li)	670 nm	Red 
Calcium (Ca)	622 nm	Orange 
Sodium (Na)		Yellow 
Barium (Ba)	554 nm	Lime green 



< 4_5811930185666137...   

Flame consists of three important regions. These are the primary combustion zone, interconal region and outer cone (secondary combustion zone). The appearance and the relative sizes of these regions can be changed with the fuel-oxidant ratio. Regions of the flame are shown in Figure 2.

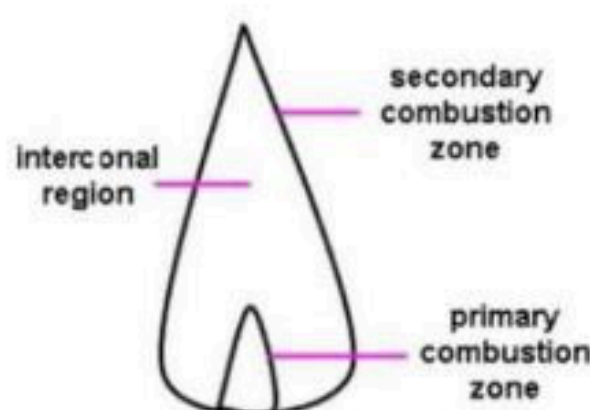


Figure 2. Schematic appearance of flame

The primary combustion zone of the flame is blue in color. The interconal region is rich in free atoms and is the most widely used region for the spectroscopy.

In flame photometer there are three fundamental systems which are emission, λ -selection and recording. The general flow diagram is shown in Figure 3.

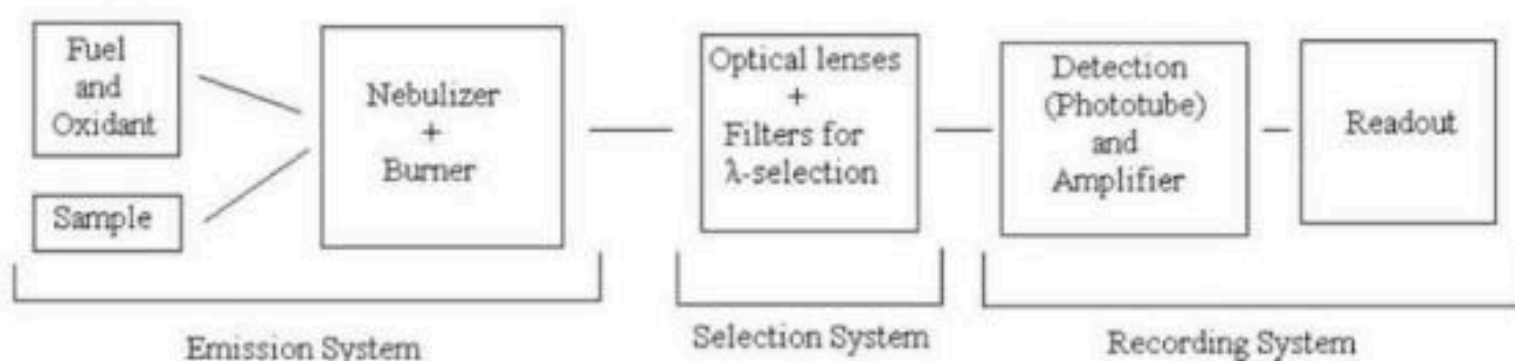


Figure 3. A general scheme of a Flame Photometer

Emission System: This consists of the flame, which is the source of emission.

λ -Selection System: This includes the whole optical system of wavelength selection. In flame photometer the wavelength selector is filter. The radiation emitted by the excited atoms is selected by using a filter which transmits an emission line of one of the elements while absorbing the others. There are two types of filters. These are absorption and interference filters. Absorption filters are restricted to visible region of the spectrum but interference filters are used in UV, VIS and IR regions of the spectrum.

Absorption filters are less expensive than the interference filters and they have been widely used for band selection in the visible region. These filters function by absorbing certain portions of the

Flame photometry or flame emission spectroscopy is an atomic emission technique. There is no need for an atomizer and an excitation source. It is suitable for qualitative and quantitative determination of several cations, especially for metals that are present at higher energy levels at flame temperature. These are Na, K, Ca, Ba, Li.

In this technique, first aerosols are formed from sample solution by a jet of compressed gas. This process is called nebulization. The design of the nebulizer is shown in Figure 1. Then the flow of aerosols through the flame takes place. Atomization is the conversion of sample aerosols into an atomic vapor by flame. When a sample is atomized, a certain fraction of these atoms are converted into gaseous atoms and also depending on the temperature of the flame a certain fraction of these atoms are ionized. Then, electrons of the formed atoms are excited to upper state. Light is emitted at characteristic wavelengths for each metal as the electron returns to the ground state.

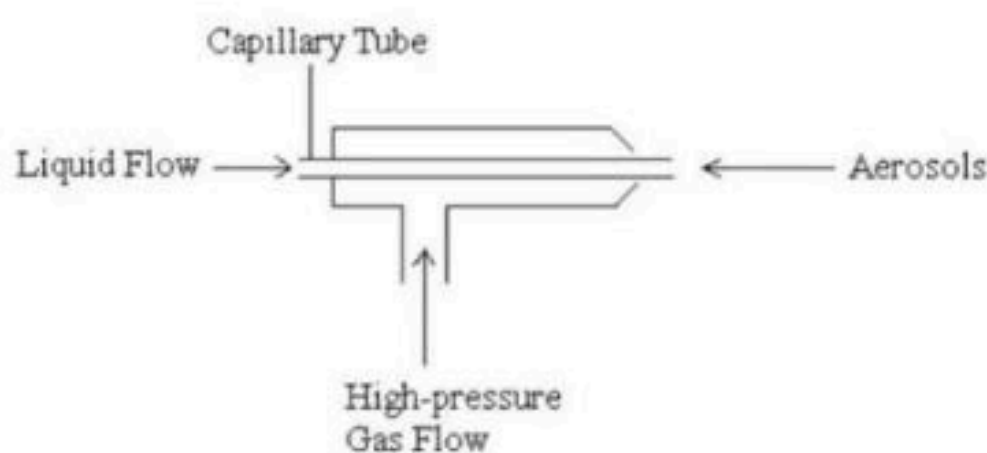


Figure 1. Design of a nebulizer

Flame is formed by two components: fuel and oxidant. Temperature of the flame changes with the change in the proportions. In flame photometer generally natural gas is used as a fuel and air is the oxidant. Table 1 lists the different types of fuel, oxidant and the temperature of the flame.

Table 1. Flame components and temperatures

FUEL	OXIDANT	TEMPERATURE, °C
Natural Gas	Air	1700-1900
Natural Gas	Oxygen	2700-2800
Hydrogen	Air	2000-2100
Hydrogen	Oxygen	2550-2700
Acetylene	Air	2100-2400
Acetylene	Oxygen	3050-3150
Acetylene	Nitrous Oxide	2600-2800

Instrumental Analysis

Quiz no#2

Student name:

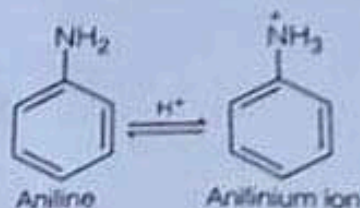
Student ID:

Section:

Q1) For the following statement indicate true or false and correct the false statement:

- a. Hypochromic shift means a shift in absorption intensity to a higher value
- b. Addition of an auxochrome to a molecule lead to a bathochromic shift.....
- c. Specific rotation for the compound can be obtained using the polarimeter
- d. In the polarimeter, the detector is used to filter the light in one direction.....

Q2) Which one of the following two compounds has a higher (λ_{max}), what is the shift and explain why it happens?



Q5) Mention two uses for using the polarimeter?

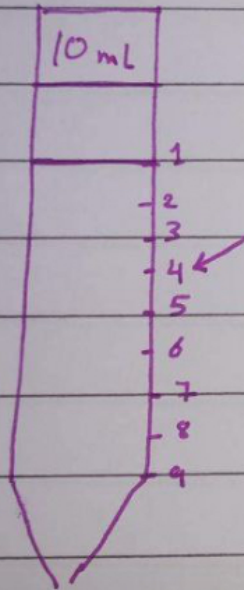
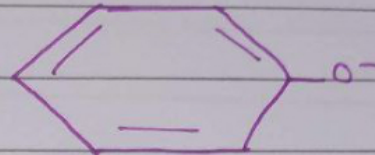
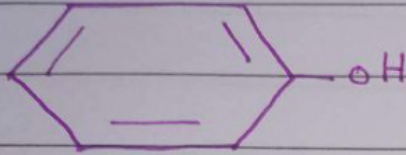
Q3) If you fill the following graduated pipette to the marked point the (arrow) as shown in the picture, how many ml's is that?

Fill to here



Good Luck

M.Sc. Farah Hashab



نسي اذا عينها للسهم كم بتكون حيت ١٩ =>

T A R S N O T E B O O K

كويز التحليل ، دكتورة فرح
ترو و فولس 3 مع تصحيح الخطأ
الأول F_ أنه الي بصيرله rotation هو ال achiral
الثاني F_ يلي يزيد ال lambda max هو ال hyperchromic

و سؤال عن رسمة مركبين هيهم بالصورة و مين أعلى lambda max و ليش
و السؤال الثالث عالورقة كمان

■ سؤال تكرر بكل الشعب وهو المنحنى هاد وتسمية أجزاء فيه

■ اسم ال Instrument إِي ح نستعملها بتجربة اليوم

■ سؤال Calculation حله ع قانون $M_1 V_1 = M_2 V_2$

أو حساب ال Pka

■ تعريف ال UV visible

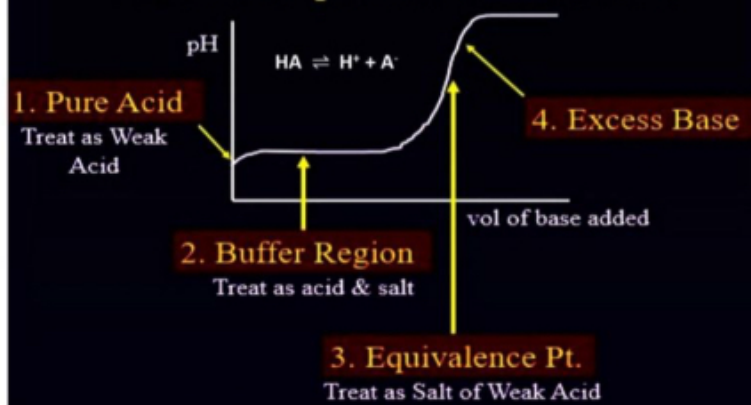
■ مقدار ال UV visible and Wavelength

200-400

400-800

👁 1.7K Oct 23, 2022, 9:19 PM

4 Parts of pH Titration Curve



👁 1.7K Oct 23, 2022, 9:19 PM



جابت رسمة ونحدد
buffer region ال

Equivalent point

Intinal ph

وجابت شو افضل ملح بنستخدمه " salt bridge "
وجابت ترو وفولس انه UV visible من 200 ل 400
وجابت سؤال حل ع $m_1v_1=m_2v_2$

1.8K Oct 24, 2022, 8:50 PM

كويز اليوم لدكتورة مي :

جابت المنحنى ونحدد ال ph وال buffer region

كمان عن أي منحنى هو ال first derivative curve

و سؤال نحدد قيمة ال NaOH بالمنحنى

وسؤال حساب عن طريق $M_1V_1=M_2V_2$

وأربع اسئلة ترو فولس
الأول عن نوع الجهاز المستخدم إذا double peak أو لا
والثاني إنه ال UV من 400 ل 800 طول موجي
وجابت عن لمدا ماكس وعلاقتها بالتركيز

1.8K Oct 25, 2022, 7:11 PM

رسمة و نحدد عليها ال :

Citric acid pH

Citric acid pk

Equal mole of acid and base

Buffer region

True/ false

1) UV (200-400)

2) اذا رح نشتغل على ال Single beam

(3) سؤال عن قانون E

سؤال حل على 2 (mv) 1=(mv)

1.9K Oct 26, 2022, 6:32 PM

الكويز الثاني اليوم لدكتورة فرح :

جابت رسمة first derivative

وطلبت أسماء المحاور:

X axis

Y axis

وطلبت كمان قيمة equivalence point

وسؤال حل على $M_1V_1=M_2V_2$

سؤال T/F

UV (200-400)

وكمان سؤالين ترو وفولس

وجابت عن الجهاز إلّي بستخدمه في UV هو Quartz وإيش إلّي

بتكون منها

-Explain the mechanism of polarimetry

بدها دلالة الرمز $[\alpha]$ -

Specific rotation

المواد الي ممكن استخدام لجهاز polarimeter

Chiral compound

- اذكر هدفين للتجربة

1.7K Nov 20, 2022, 9:05 PM

■ أسئلة كویز الیوم لدکتورة می:

الامتحان ٤ أسئلة :

- سؤال صح وخطأ وصحي الخطأ

- ثاني سؤال جابت مركبين واحد 1,4dihexanol والثاني

1,3dihexanol ومين أكثر طول موجي مع التفسير

- جابت الهدف من تجربة ال polarimetry

- سؤال حسابات

1.7K Nov 20, 2022, 11:27 PM

■ أسئلة كويز اليوم :

أغلب الاسئلة ترو فولس

- جابت سؤال عن ال blue shift of lambda max

-جابت سؤال عن ال optical rotation

-جابت سؤال determine the purpose of polarimeter

- جابت 2 ستركتشرز (واحد في كحول والثاني فيه اكسجين
وشحنة سالبة) وبدها نحدد مين إلّي إلها أعلى لمدا ماكس مع
التفسير

200

400

600

800

49w

Like

Reply

٢٠٠ هايست انيرجي

49w

Like

Reply

هايست = اعلى

49w

Like

Reply

Write a reply...

ايش الجزء الي بعد fuel oxident sample ?
حطيتو aerosole

49w

Like

Reply



وأنا

ایش بعمل nublizer

9w Like Reply

بقسم نسیت شو لاشیاء صغيرة

49w Like Reply

صح

49w Like Reply

Write a reply...

شو الي ما بدخل الفليم

9w Like Reply

اورجانك ؟

49w Like Reply

حطيتها hydrocarbons بس شفتكم
الصبح او مبارح بتحكو gas فشكيت

Blue shift mean !?

49w Like Reply

Higher energy

49w Like Reply

Write a reply...

Near ir range !?

49w Like Reply

سخام



49w Like Reply

البين

49w Like Reply

جوابه non صح
??

جوابه non صح
؟؟

49w Like Reply

فیه شے کان فیه ۱۲.۸۰۰-۲۰۰

49w Like Reply

Write a reply...

Conc طردی مع intensity

49w Like Reply

کان حاط کونسیرتیشن ال kbr بخیار

والتانی con ال analyte

حطیت الانالایت

49w Like Reply

شو هاد یختی؟

بہنہ! شو ہاڈ یچی؟

49w Like Reply

سؤال مين بأثر عالانتستي

49w Like Reply

آية الصمادي. اه فهمت عليكي
برافو برافو عليكي

49w Like Reply

Write a reply...

C=d c=h

اجا

49w Like Reply

Lower wavenumber

49w Like Reply  1

ل سي ظي

ل سي طي

49w Like Reply

دي

49w Like Reply

حطيت Use in hplcoctan

49w Like Reply

Write a reply...

حطيت هاض الخيار..... Silca with toline
شو الصح ؟!

49w Like Reply

اشكرك

49w Like Reply

لا والله بلعكس انبسطت
انك حكيتي الصح لاني شاك في علحالتين

لا والله بلعكس انبسطت
انك حكيتي الصبح لاني شاك في علحالتين

49w Like Reply

C18

Mixture water + ethanol

49w Like Reply

Write a reply...

-٣٩

49w Like Reply

-٢.٥

49w Like Reply

تعال اكتب

49w Like Reply



اجا cast film انو بستخدمها ل polymeric



49w Like Reply

اعطيني رابط الاسئلة هذول 🤔

29w Like Reply

Firas Anani نزلت بوست

29w Like Reply

Write a reply...

زادت ال side chain يلي همه
الكربونات كل ما قلت ال polarity

1 Comment



Like



Comment

تسجيل الدخول

مستند (1) سو حشيتي؟؟

PDF

الجواب burner



Cast film for polymeric materials



١ ساعة أعجبتني رد

شو الحرارة الكولد بالفارماكوبيا



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HU PHARMACY 2017 - 2022

7
9
11
20
13

١ ساعة أعجبتني رد

٧ حطيت



شكرو هيك



Like



Comment

[REDACTED]

Octanol

reversed آخر واحد بطلع من
chromatography



49w Like Reply

[REDACTED]

لانه اقل بولارتي

49w Like Reply



Like



Comment

PDF مستند ... (1) pdf.

اه حطيت هيك
بس ليش اوكاتونول شو السبب
ه دقيقة أعجبني

Put God first and you'll never be last.

وانا 😍
حنين لانو اقل polarity رح يطول
ليطلع بال mobile لانو polar reversed
3 دقيقة أعجبني

طيب والباقيات ميثانول وخواتها
عشو قارنتي بينهم
3 دقيقة أعجبني

اه كلهم كحول بس بتتذكري كل ما
زادت ال side chain يلي همه
الكربونات كل ما قلت ال polarity

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1 Comment

اجا نفسو
اتوقع الجواب low wavenumber
لانه بدو ياه حسب ir



۱۲

49w Like Reply

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انا قلت خن افكر 😂

ال D حتكون رمز كلشي ما عدا ال H

واصغر ذرة بالكون H صفى الجواب

High M.wt 😂😂😂

أنا تفكيري زيك والتحليل شوي مختلف



حطيته بزيد ال wave number

49w Like Reply

لا بقل الويف نمبر يخوان متأكدة زي ما
انا مش شايفتكم هلاً

49w Like Reply



أقنعتيني

49w Like Reply

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هو بدو حسب IR وين بكون
بكون عند اقل ويف نمبر
لانه العلاقة بين الماس والويف نمبر
عكسية

49w Like Reply

بحكي عن C-D

[REDACTED]

بحكي عن C-D

49w Like Reply

[REDACTED]

[REDACTED]

جد عكسية 🤔

49w Like Reply

١٩

[REDACTED]

يس عكسية

49w Like Reply

ANODYNE ACADEMY

HU PHARMACY 2017 - 2022

حطيتها زي  اعتمدت ع رسة
المادة

49w Like Reply

[REDACTED]

لا طلعت لور ويف نمبر بيبي

49w Like Reply

Wire
Voltmeter
All of the above (answer)

صفحة 9 / 18



Like



Comment



Glass electrode ..

ساعة أعجبتني رد

selective ion جوابه



Like



Comment

Put God
first and
you'll never
be last.

سؤال غريب ما فهمت شو بدو

قال

C-H

C-D

ابصر شو IR

High m.wt

Low m.wt

High wavenumber

Low wavenumber



Like



Comment

PDF

مستند ... (1).pdf

PDF

اشي مش ملون بشو بشوفو؟ Uv spectroscopy



49w Like Reply

16

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سلام 🙌

سنوات لاب تحليل الي

<https://www.masterorganicchemistry.com/2016/11/29/ir-spectroscopy-some-simple-practice-problems/>

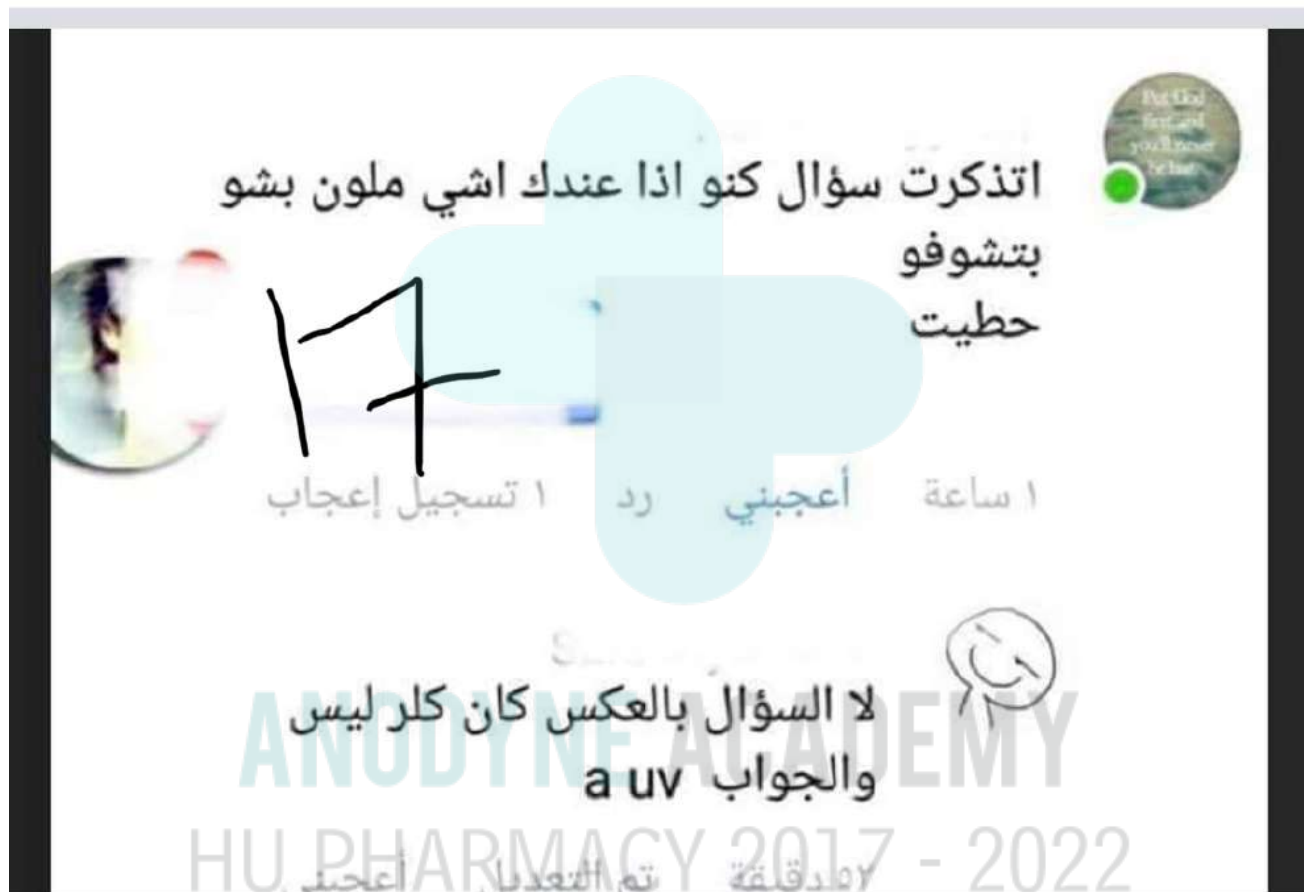
133 Comments



Like



Comment



Like



Comment



Potentiometric titration need
Reference
Wire + indicator electrode
Voltmeter
Salt bridge
All of the above

سؤال ثاني

Potentiometric need
Reference electrode
Indicator electrode
A+b (answer)

49w Like Reply

وڪمان اڃا عنها انه بتحسب كمية ونوع
ولا كمية او نوع صح

49w Like Reply

كمي ونوعي صح

49w Like Reply

زي

18

Glass electrode an example of :
Ion selective electrode

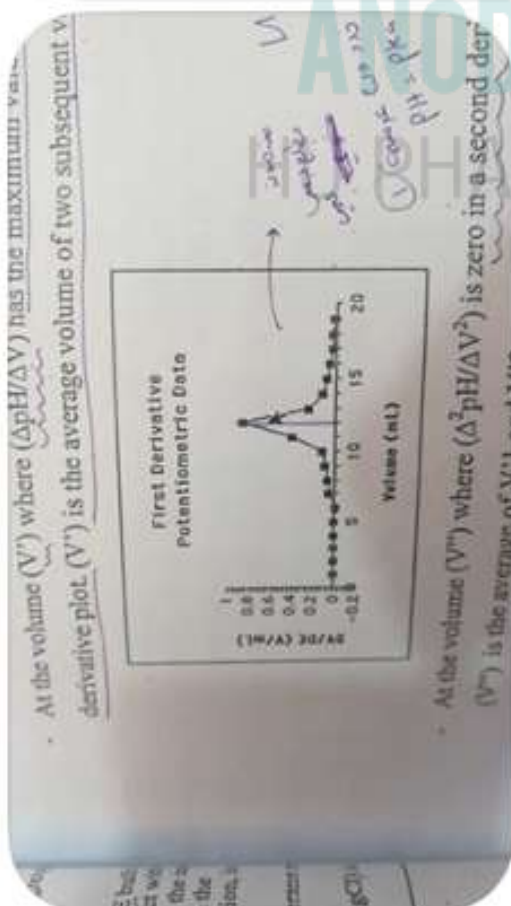
49w Like Reply

ایلافیووو

49w Like Reply

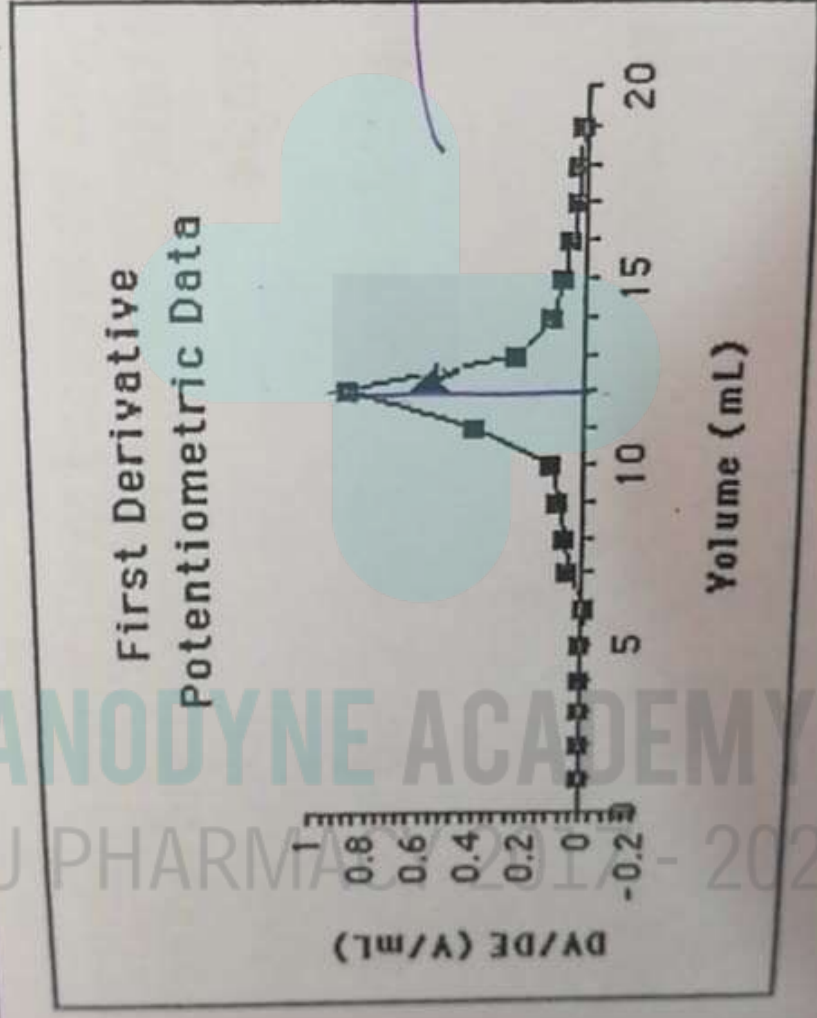
Write a reply...

Volume needed for reach equivalent point is ?
Maximum slope



49w Like Reply

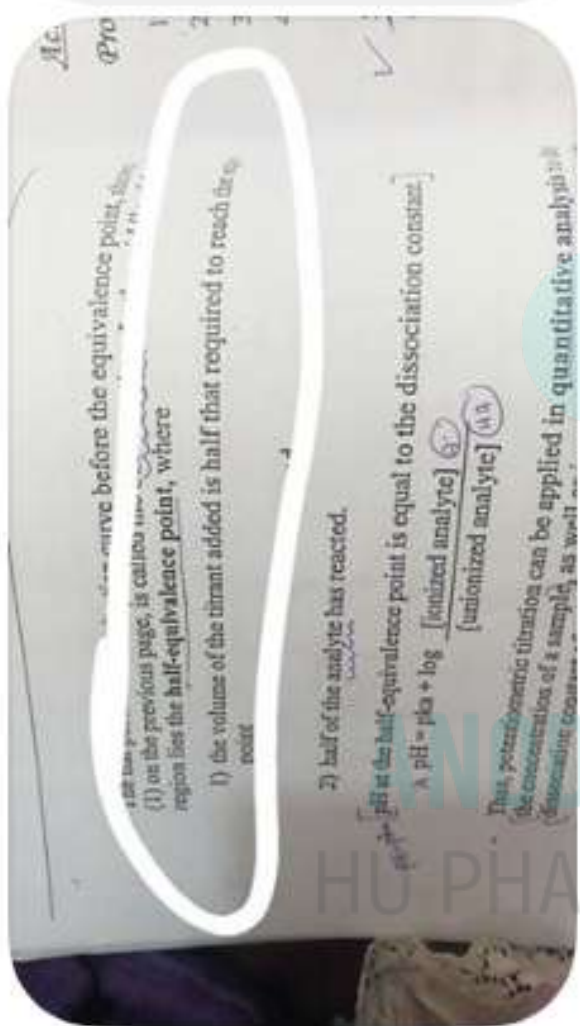
At the volume (V') where $(\Delta pH/\Delta V)$ has the maximum value in derivative plot. (V'') is the average volume of two subsequent volumes.



At the volume (V'') where $(\Delta^2 pH/\Delta V^2)$ is zero in a second derivative plot. (V''') is the average of V''_1 and V''_2 .

20

التعريف



21

PHARMACY ACADEMY
HUMAN PHARMACY 2017 - 2022

49w

Like

Reply

the titration curve before the equivalence point, shown in the figure. The point on the curve where the pH is equal to the pK_a is called the half-equivalence point, where

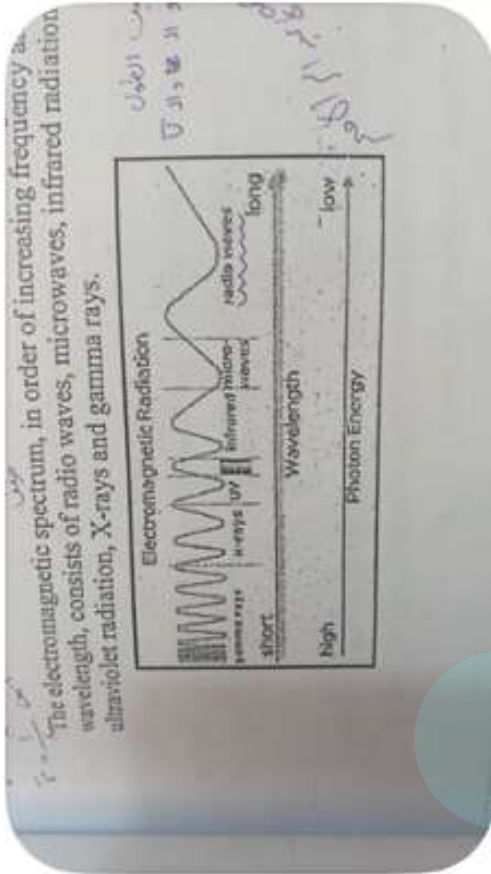
1) the volume of the titrant added is half that required to reach the equivalence point

2) half of the analyte has reacted.

$$pH = pK_a + \log \frac{[A^-]}{[HA]}$$

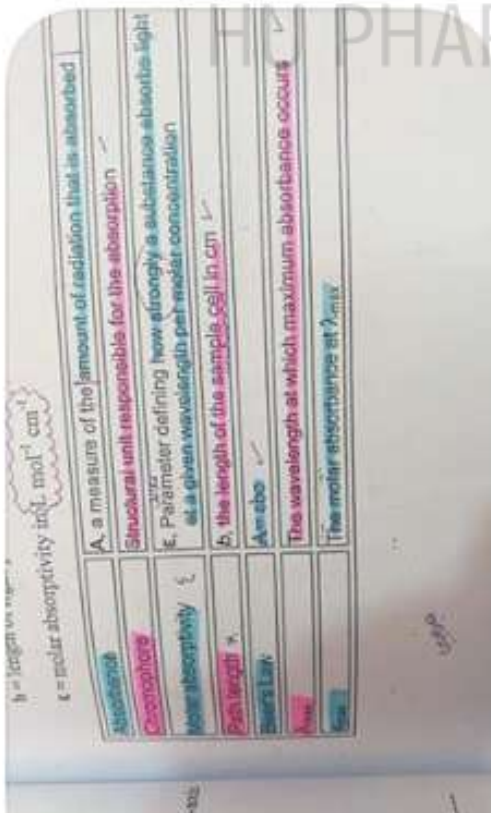
Thus, potentiometric titration can be applied in quantitative analysis to determine the concentration of a sample, as well as the dissociation constant.

مین اعلی frequency ?
Gamma



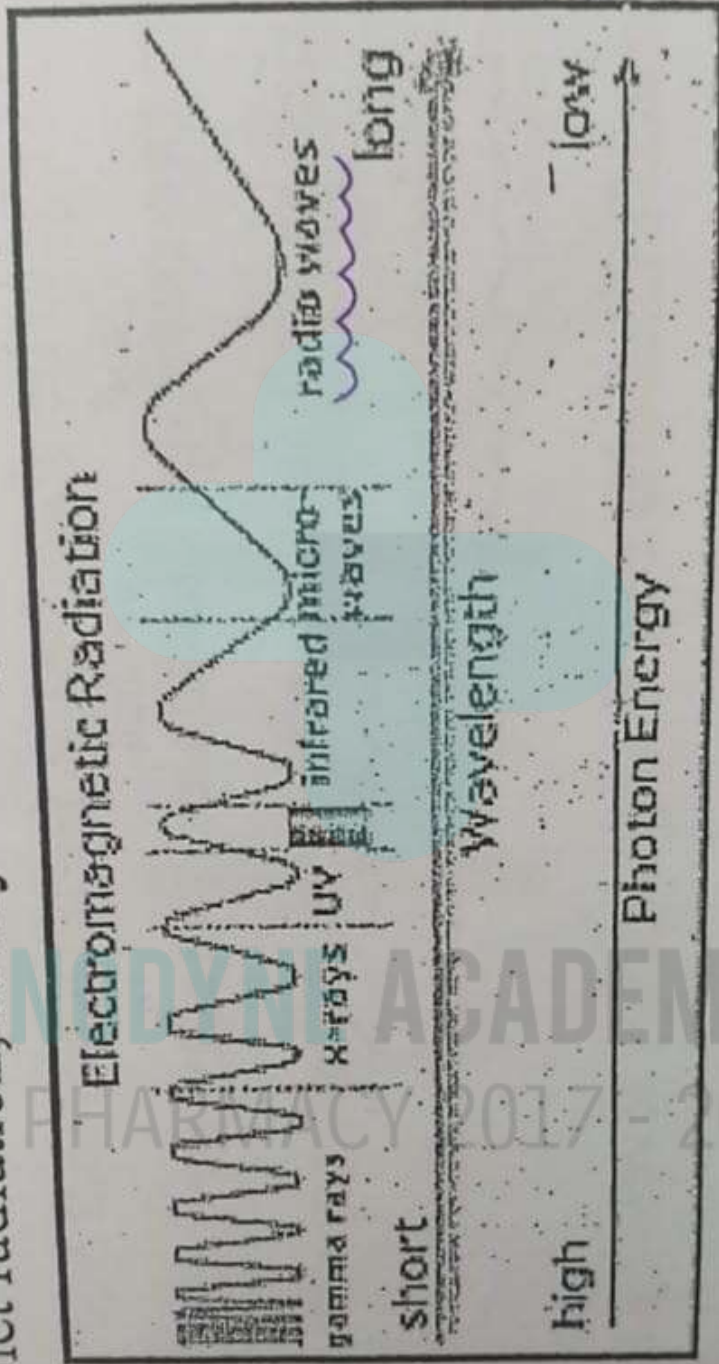
49w Like Reply

تعریف chromophore



22

$\bar{\nu} = \frac{1}{\lambda} \text{ cm}^{-1}$
 The electromagnetic spectrum, in order of increasing frequency and wavelength, consists of radio waves, microwaves, infrared radiation, ultraviolet radiation, X-rays and gamma rays.



من الطول
 موجات الراديو
 موجات الميكرو
 موجات الأشعة تحت الحمراء
 موجات الأشعة فوق البنفسجية
 موجات الأشعة السينية
 موجات أشعة غاما

25

b = length of cuvette

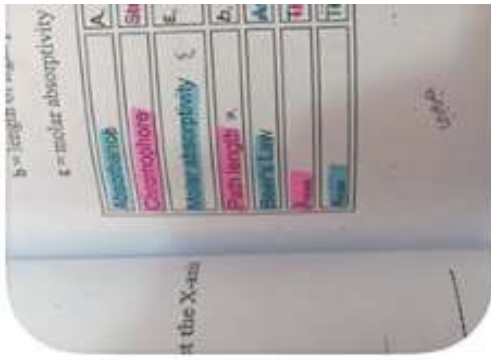
ϵ = molar absorptivity in $L \text{ mol}^{-1} \text{ cm}^{-1}$

set the X-axis

Absorbance	A, a measure of the amount of radiation that is absorbed
Chromophore	Structural unit responsible for the absorption
Molar absorptivity ϵ	^{Beer's Law} Parameter defining how strongly a substance absorbs light at a given wavelength per molar concentration
Path length b	b , the length of the sample cell in cm
Beer's Law	$A = \epsilon bc$
λ_{max}	The wavelength at which maximum absorbance occurs
ϵ_{max}	The molar absorptance at λ_{max}

25

2022



49w Like Reply

🤔 all of the above مش

49w Like Reply

?

49w Like Reply

محمد خالد لا لاسف

49w Like Reply

محمد خالد او بجوز والله

49w Like Reply 😂 1

26

المشكلة م اجى زي هيك 🤔😂

اجى انه

١. هو مسؤول عن color

٢. الفنكشنل جروب مسؤول عن color

٣. ال atom مسؤولة عن color

٤. None of above

49w

Like

Reply

هيك

اه

1

49w

Like

Reply

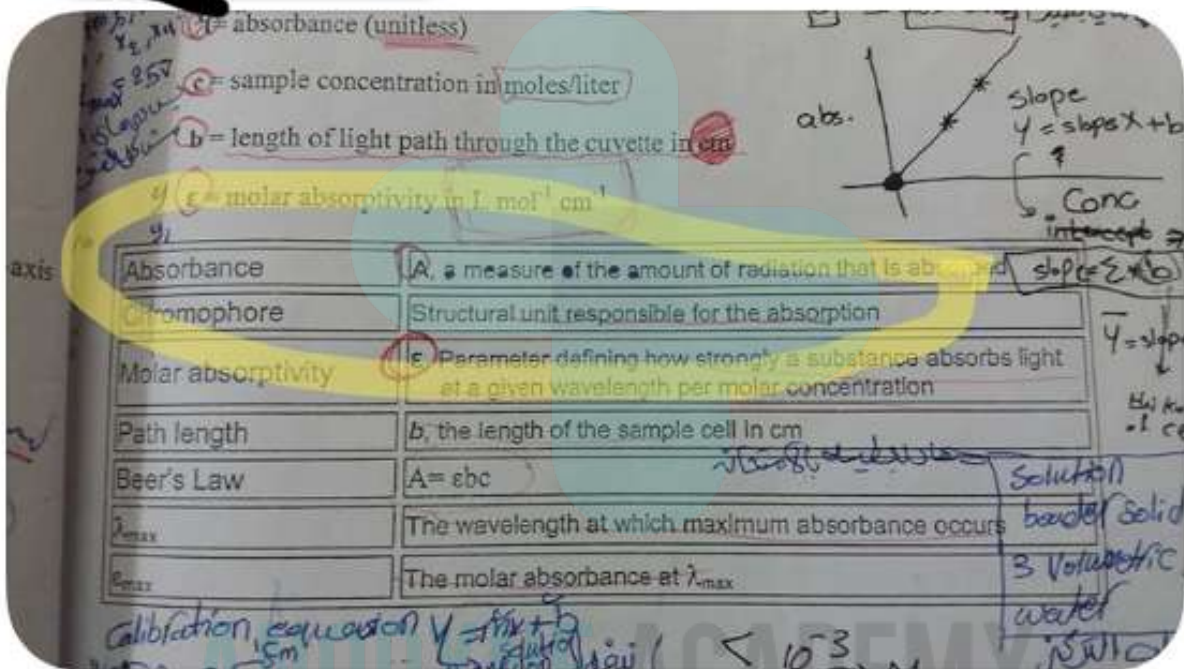
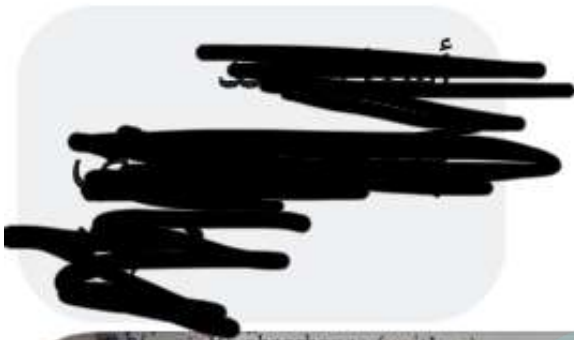
واو محلا السؤال هلا

انتبهت لجماله



الأول والثاني صح فقلت أكيد 😊

49w Like Reply



49w Like Reply

HU PHARMACY 2017 - 2022

أنا نغس الصورة الي خاطيتها انا

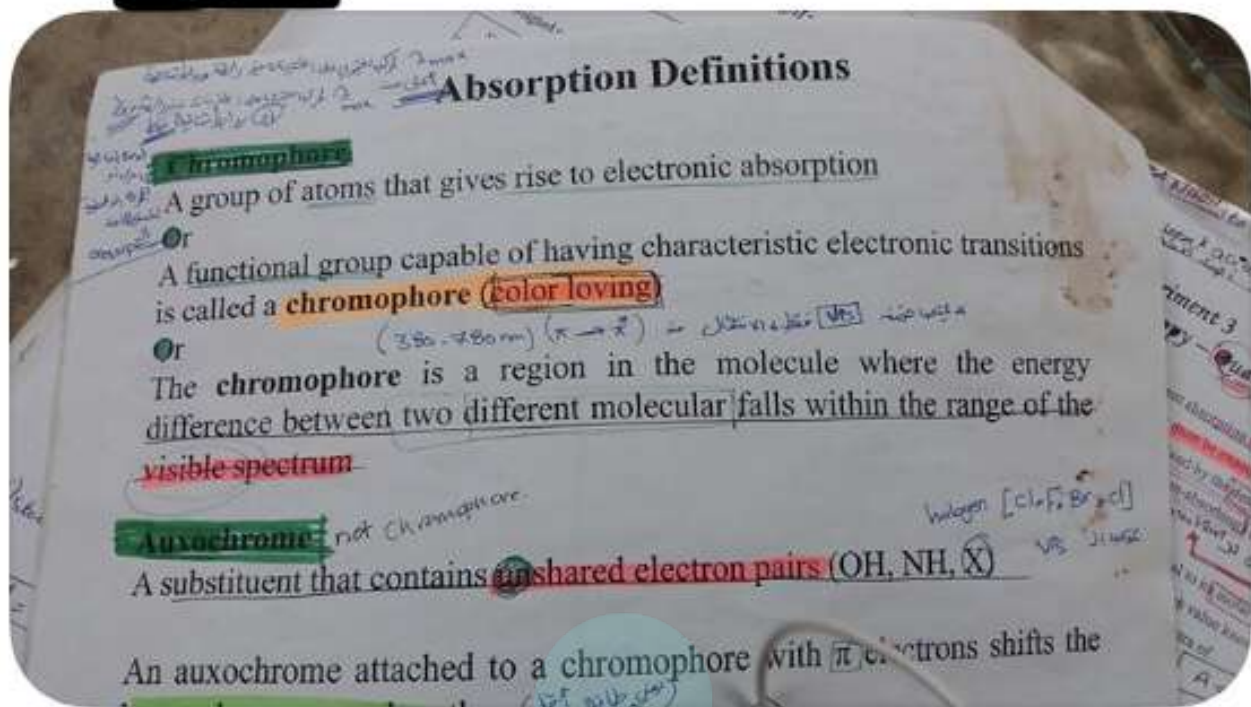
49w Like Reply

أسيل خالد

اه الثانية بتحمل 🙄

49w Like Reply

28



49w Like Reply

بالت
 اه شفتها
 بس ابصر
 ما اتوقع اول
 لانه كان في اشي كروميوم

49w Like Reply

21

مش عارفة الأجوبة كلها مقنعة
 الله يستر

49w Like Reply

Absorption Definitions

Chromophore

A group of atoms that gives rise to electronic absorption

Or
A functional group capable of having characteristic electronic transitions is called a **chromophore** (color loving)

Or
(380-780 nm) ($\pi \rightarrow \pi^*$) في المنطقة المرئية VPS
The **chromophore** is a region in the molecule where the energy difference between two different molecular falls within the range of the **visible spectrum**

Auxochrome

not chromophore.
A substituent that contains **unshared electron pairs** (OH, NH, X)

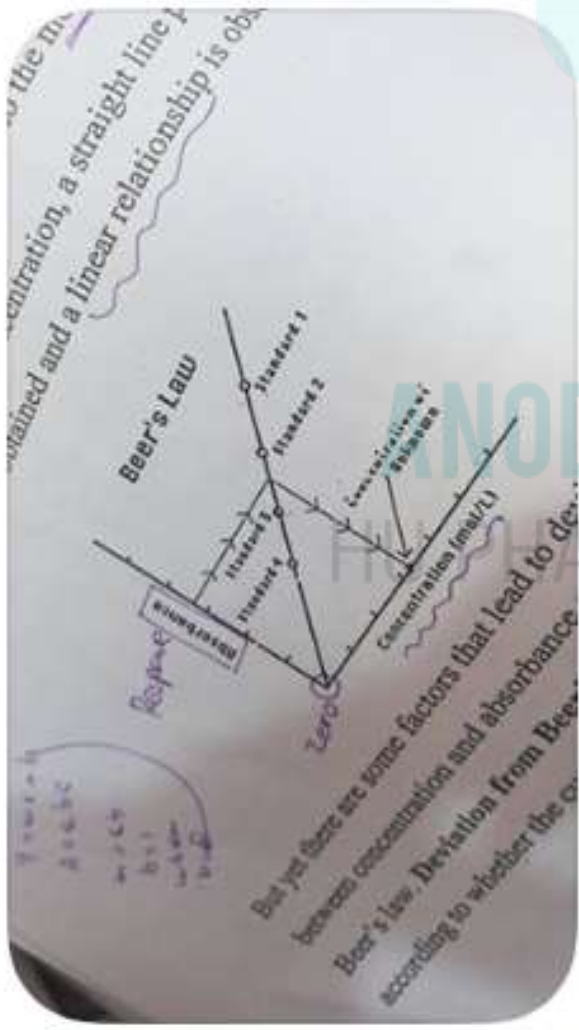
An auxochrome attached to a chromophore with π electrons shifts the

[REDACTED]

رسمة زي بس مش مبلش من الصفر
بدو ال conc عند

.45

اسقاط عادي الرسمة
بطلع ٢.٥ مغ

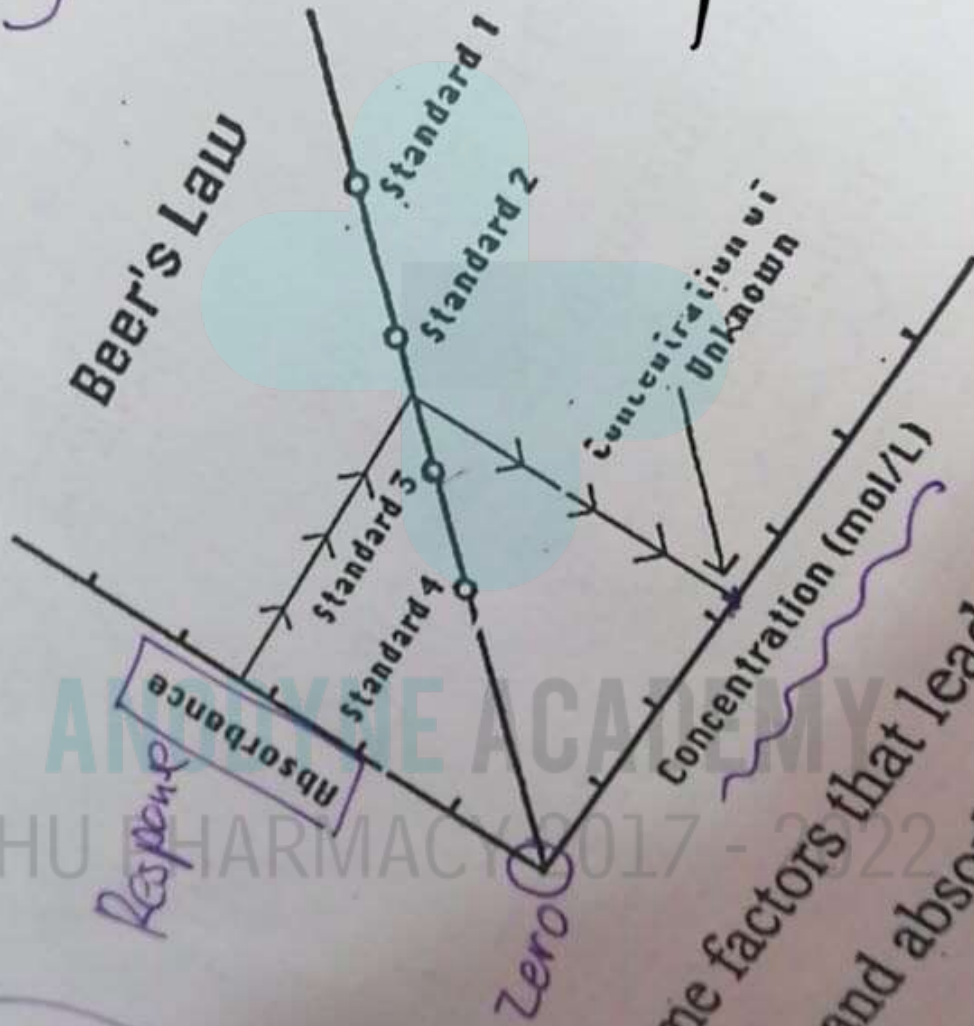


31

49w Like Reply

to the mo
centration, a straight line p
obtained and a linear relationship is obs

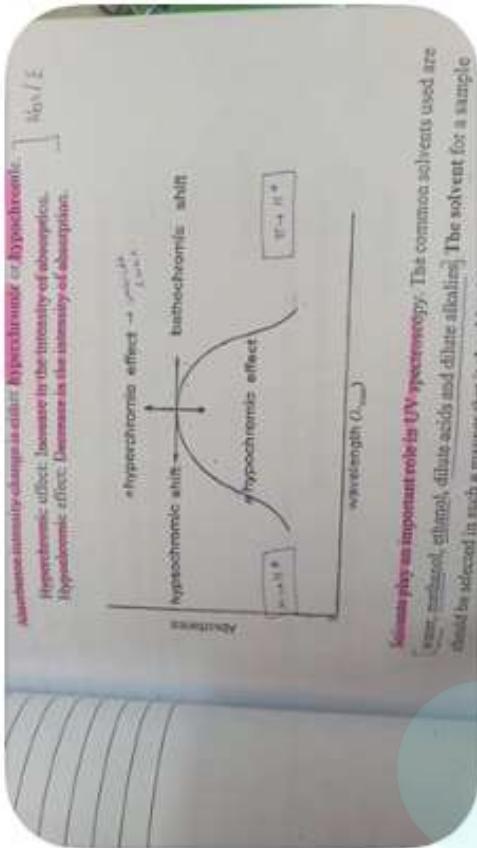
32



$y = mx + b$
 $A = \epsilon bc$
 $m = \epsilon b$
 $b = 1$
 when
 $b = 1$

But yet there are some factors that lead to deviation between concentration and absorbance in Beer's law. Deviation from Beer's law according to whether the concentration is high or low.

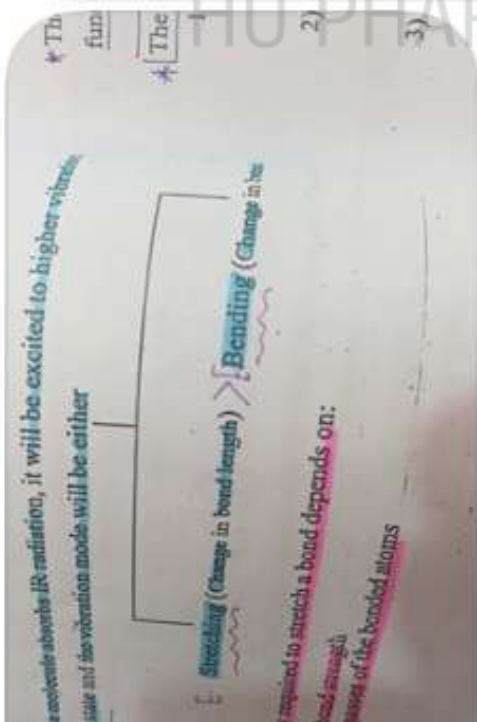
Blue shift?
Higher energy



49w Like Reply

33

ایش حرکات ir ?
Bend + stretch

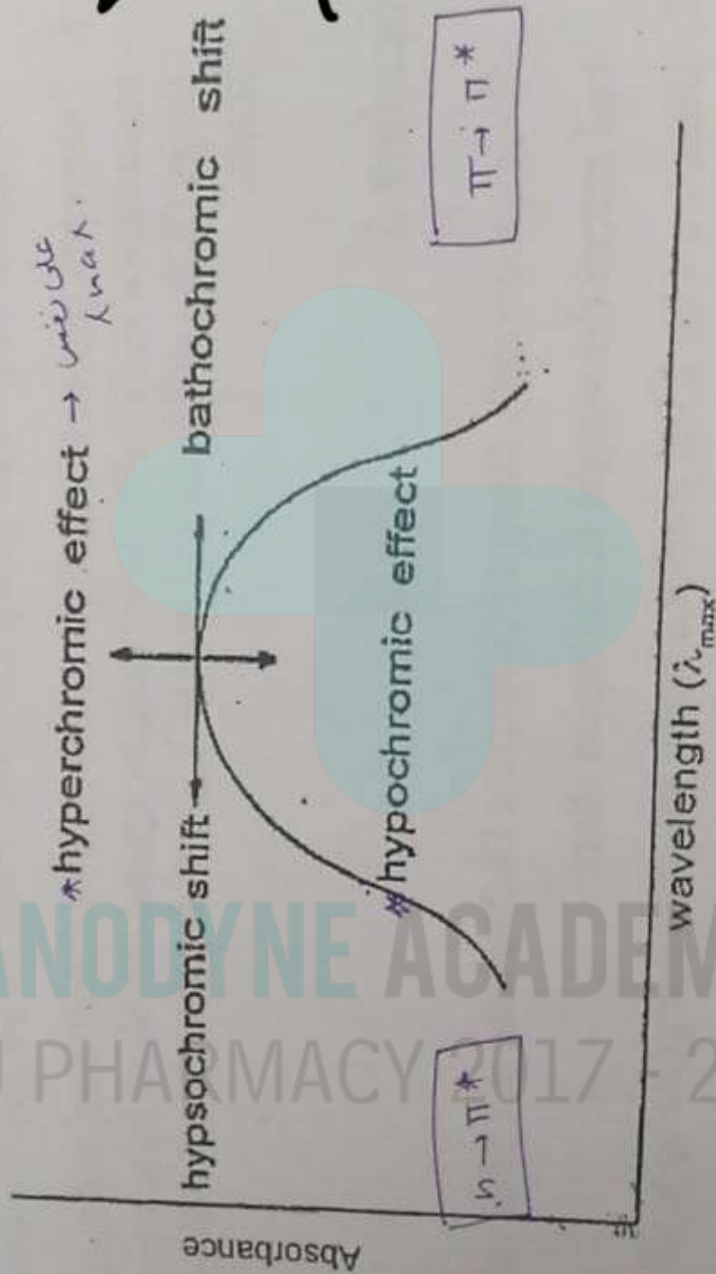


Absorbance intensity change is either hyperchromic or hypochromic.

Abs/E

Hyperchromic effect: Increase in the intensity of absorption.

Hypochromic effect: Decrease in the intensity of absorption.



Solvents play an important role in UV spectroscopy. The common solvents used are [water, methanol, ethanol, dilute acids and dilute alkalies]. The solvent for a sample should be selected in such a manner that it does not absorb in the region of interest.

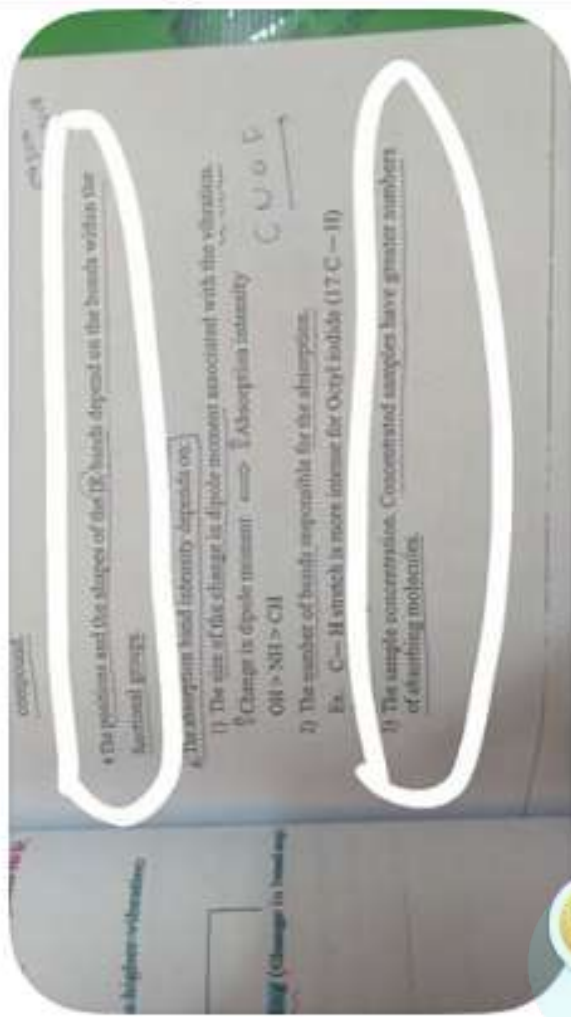
When a molecule absorbs IR radiation, it will be excited to higher vibration energy state and the vibration mode will be either

E. Stretching (Change in bond length) > Bending (Change in bond angle)

The energy required to stretch a bond depends on:

- * 1) The bond strength
- * 2) The masses of the bonded atoms

35



36



49w

Like

Reply



شو أجى عليه هاد

49w

Like

Reply

العلاقة بين ir spectroscopy او شو الي
بأثر عليها ؟

وكان التركيز هو الجواب

49w

Like

Reply



compound.

04/04/2018

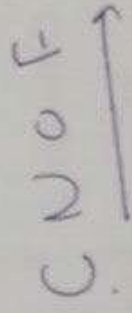
* The positions and the shapes of the IR bands depend on the bonds within the functional groups.

* The absorption band intensity depends on:

1) The size of the change in dipole moment associated with the vibration.

↑ Change in dipole moment $\rightleftharpoons$ ↑ Absorption intensity

OH > NH > CH



2) The number of bonds responsible for the absorption.

Ex. C-H stretch is more intense for Octyl iodide (17 C-H)

3) The sample concentration. Concentrated samples have greater numbers of absorbing molecules.

37

- 1) Crush the sample with an oily mulling agent (usually Nujol). A thin film of the mull is smeared onto salt plates and measured.
- 2) Grind a quantity of the sample with a specially purified salt (usually potassium bromide) finely (to remove scattering effects from large crystals). This powder mixture is then pressed in a mechanical press to form a translucent pellet.
- 3) The "cast film" technique, which is used mainly for polymeric materials. The sample is first dissolved in a suitable solvent, which is then evaporated to dryness and the film formed on the cell is analysed directly.
- * Care is important to ensure that the film is not too thick otherwise light cannot pass through.
- * 4) The final method is to use microtomy to cut a thin (20–100 μm) film from a solid sample. This is one of the most important ways of analysing failed plastic products for example because the integrity of the solid is preserved.

Infrared (IR)

Procedure

1. Grind a small quantity of KBr salt using a mortar and pestle

37

عاطيك الطول 5 cm حول ل ديسيس
عاطيك تركيز 6.15 غ لكل 100 مل
اقسم على 100 عشان تكون لكل مل
وعاطيك

1.2 اوبزيرفد روتايشن
وبدو سبيسيفك روتيشن
بتطلع 39

بعدها سؤال تابع للي قبل
نفس السوليوشن بس صار الطول 10 سم
وبدو اوبزيرفد
بتطلع 2.4

49w Like Reply



بتجربة ايش هذول القوانين 🤔

29w Like Reply

تجربة بوليمرزششش .. سهله تطبيق
مباشر

~~بالتأكيد~~
كاتبلك انه اوبزيرفد روتيشن وايش الغلط عنها
كان انها بتعتمد عالحرارة

49w Like Reply

~~بالتأكيد~~
كان في خيار اشي بخص اللون كانه ولا
بسؤال ثاني؟

49w Like Reply

~~بالتأكيد~~
بسؤال ثاني يمكن

49w Like Reply

~~بالتأكيد~~
طيب متذكرة الخيارات لهالسؤال؟

49w Like Reply

~~بالتأكيد~~
اي واحد

49w Like Reply

40

~~أحمد~~
اللي انت كاتباه

49w Like Reply

١١

~~أحمد~~

~~أحمد~~

كان انو

كل الي مكتوب صح ما عدا :

بتعتمد عالتراكيز observed rotaion

Observed rotaion عال بتعتمد lenght

Observed rotaion عال بتعتمد

optical purity

Observed rotaion عال بتعتمد

wavelength

Observed rotaion بتعتمد عالحرارة

الجواب الصح هو تااع الحرارة

لأنها ما بتعتمد عالحرارو والحرارة ملهاش

دخل

49w Like Reply

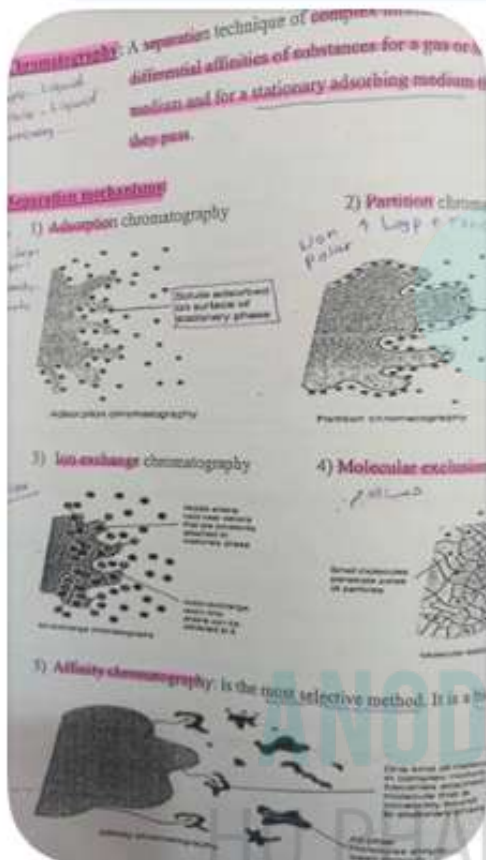
~~أحمد~~

مش قادرة أتذكر شو حطيتها 😳

نص الامتحان عن flame طبعاً

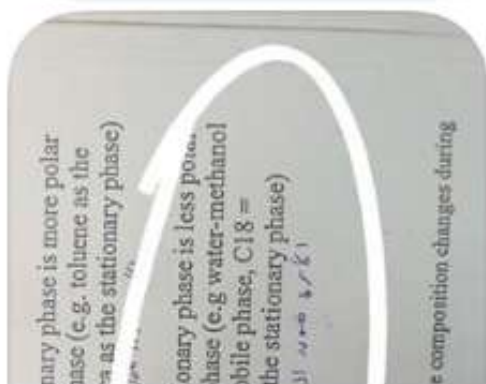
49w Like Reply

ابصموهم كثير سال عنهم هداول الانواع



49w Like Reply

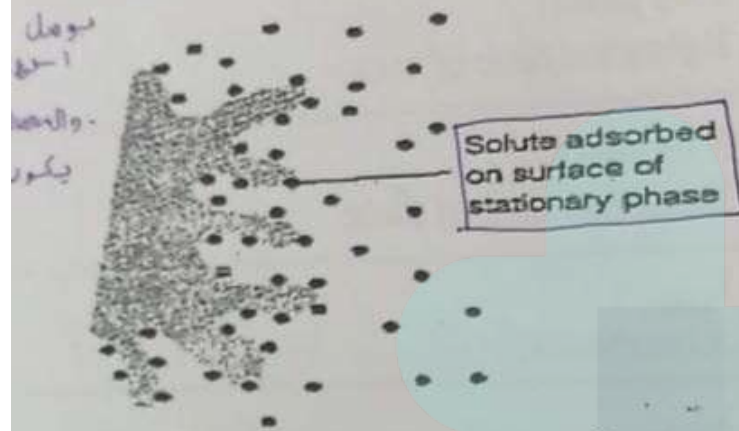
سؤالين هيك



Chromatography: A separation technique of complex mixtures that differential affinities of substances for a gas or liquid medium and for a stationary adsorbing medium through which they pass.

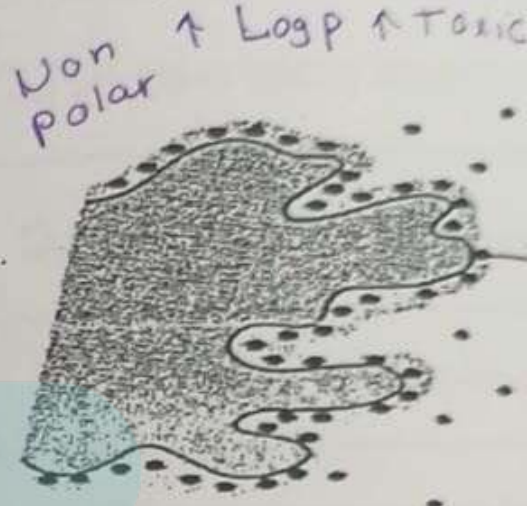
Separation mechanisms:

1) Adsorption chromatography



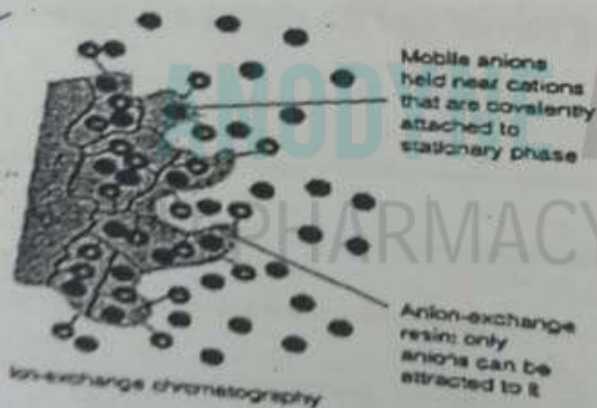
Adsorption chromatography

2) Partition chromatography



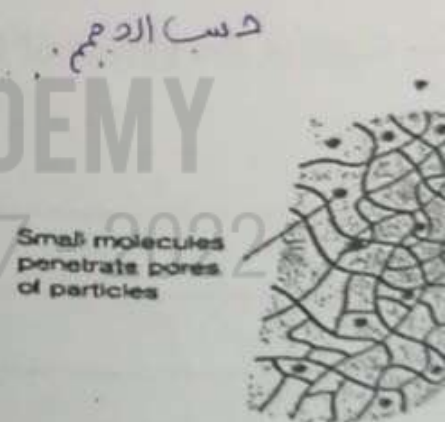
Partition chromatography

3) Ion exchange chromatography



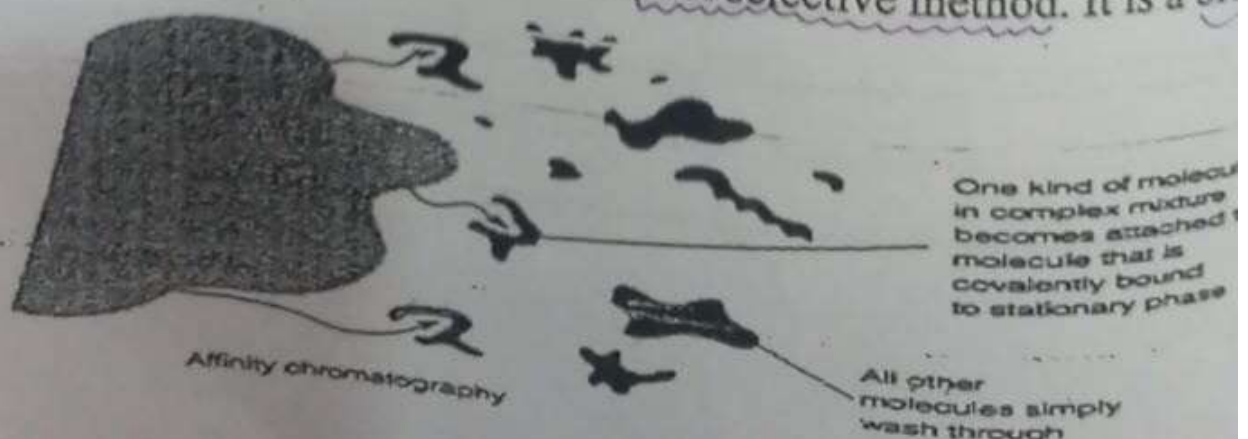
Ion-exchange chromatography

4) Molecular exclusion chromatography



Molecular exclusion chromatography

5) Affinity chromatography: is the most selective method. It is a bi



Affinity chromatography

All other molecules simply wash through

→ Normal Phase; in which the stationary phase is more polar than the mobile phase (e.g. toluene as the mobile phase, silica as the stationary phase)

TLC

→ Reversed Phase; in which the stationary phase is less polar than the mobile phase (e.g. water-methanol mixture as the mobile phase, C18 = octadecylsilyl as the stationary phase)

المرحلة العاكسة

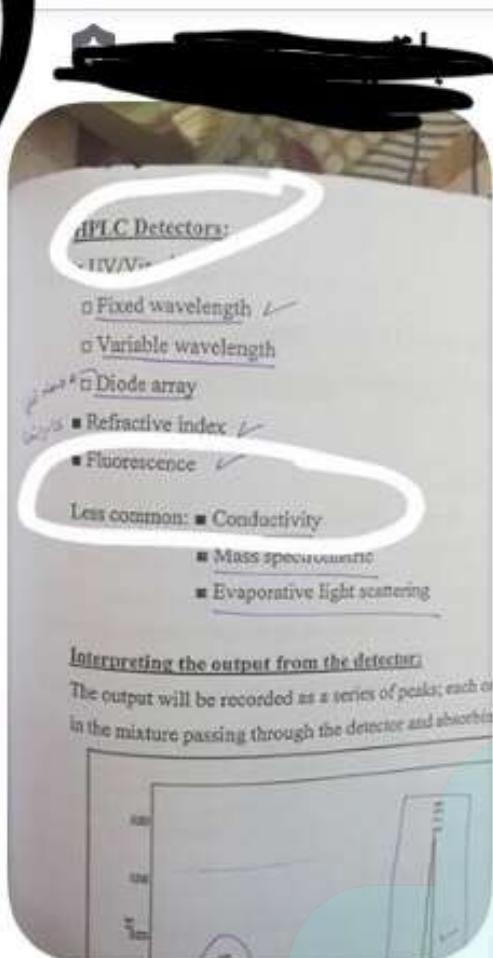
Isocratic

Gradient

either a pure solvent or a mixture, throughout the run.

The mobile phase composition changes during the separation.

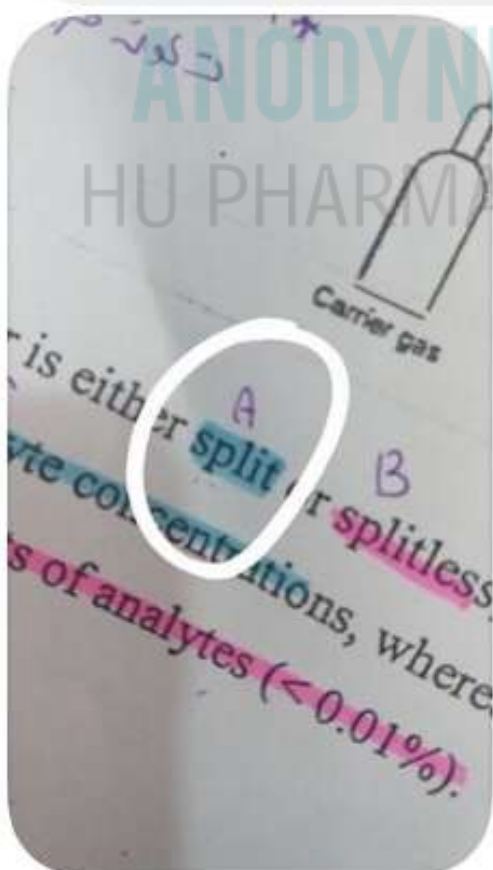
HPLC



45

49w Like Reply

Pure compound



49w Like Reply

HPLC Detectors:

UV/Vis

☐ Fixed wavelength ✓

☐ Variable wavelength

◀ Diode array

■ Refractive index ✓

■ Fluorescence ✓

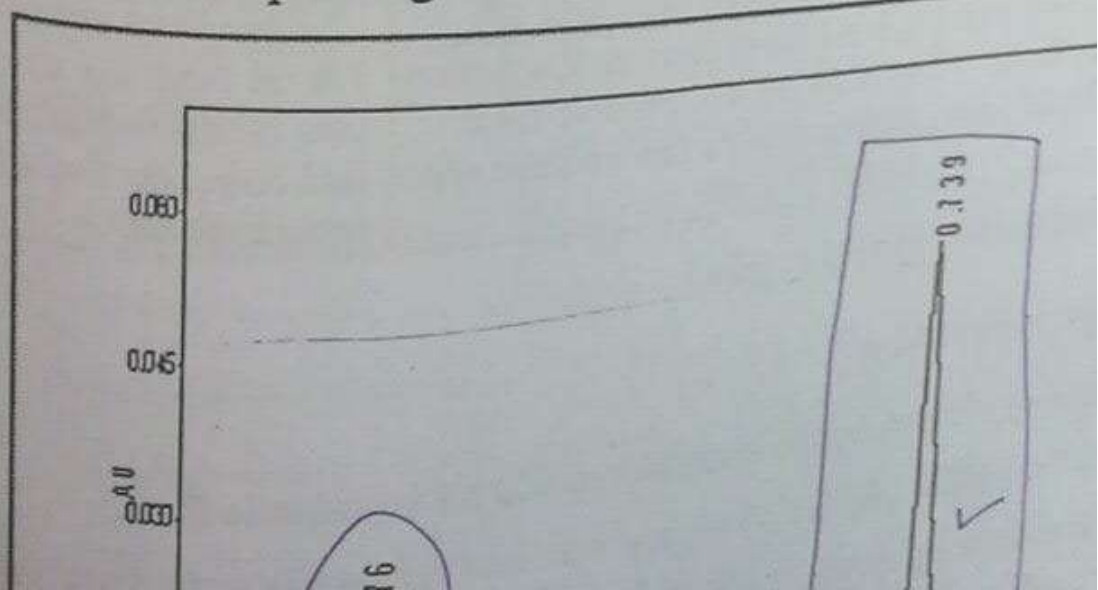
Less common: ■ Conductivity

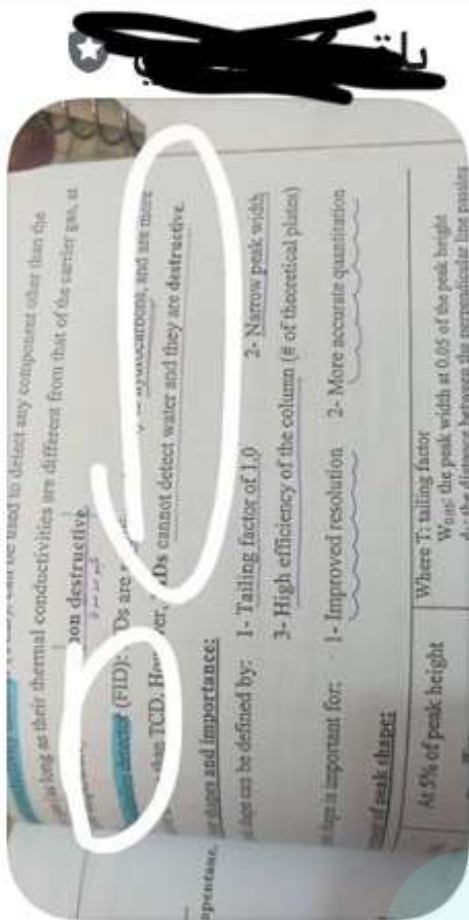
■ Mass spectrometric

■ Evaporative light scattering

Interpreting the output from the detector:

The output will be recorded as a series of peaks; each one represents a component in the mixture passing through the detector and absorbing





47

49w Like Reply

الاسئلة الي حظيتهم انا بالبوستات اجا منهم
نسبة منيحة

49w Like Reply

حاسة الدكتور مفكر انه امتحان المادة اليوم
مش اللاب



Write a comment



conductivity detector (Kovats) can be used to detect any component other than the carrier gas (as long as their thermal conductivities are different from that of the carrier gas, at a temperature of 0.1-0.2 μS)

non destructive.

Flame ionization detector (FID): FIDs are sensitive to hydrocarbons, and are more sensitive than TCD. However, FIDs cannot detect water and they are destructive.

pentane. their shapes and importance:

- peak shape can be defined by:
- 1- Tailing factor of 1.0
 - 2- Narrow peak width
 - 3- High efficiency of the column (# of theoretical plates)

peak shape is important for:

- 1- Improved resolution
- 2- More accurate quantitation

of peak shape:

At 5% of peak height

Where T: tailing factor

$W_{0.05}$: the peak width at 0.05 of the peak height

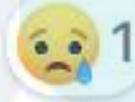
d : the distance between the perpendicular line passing

أجى عن ال volume لل Bp
وال USp

49w Like Reply

~~بسم الله الرحمن الرحيم~~
الله

حسبي الله بس
خليني ساكتة



49w Like Reply

~~بسم الله الرحمن الرحيم~~
طولي بالك

49w Like Reply

49

ANUDYNE ACADEMY

HUMANITY ACADEMY 2017 - 2022

اجى شو ال wavelenght لل near ir

الخياراات كلها wavenumber 🤔🤔😊

😊 none of above واخر خيار

الدكتور بحكي الويف لينث م تفرق عن ويف
نمبر كله نفس الشي لهيك م تحطوا none of
above

49w Like Reply

👤 [REDACTED]
خليني ساكتة



49w Like Reply

50

49w Like Reply

[REDACTED]

🙄🙄 12800 مهو 12.00 لا تساوي

49w Like Reply



[REDACTED]

لا مسمم حلكشش 😂😂 عند دكتور نبيل

بتساوي 😭😭

49w Like Reply



[REDACTED]



51

ANODYNE ACADEMY



49w Like Reply



جواب سؤال انه ال con

6.15 gram in 100 ml

وال ال lenght 5 cm

واعطى الفا اوبسيرفد بده الفا سيسفك
طلعت ماينس ٣٩

بالسؤال الي بعده بده الفا اوبسيرفد بحالة ال
lenght ... ١٠ سم .. يعني بدك تثبت ال
سيسفك وتغير اللينث وتطبق عالقانون بتطلع
ماينس ٢.٤

49w Like Reply

بالق
خطيتو

49w Like Reply

Write a reply...

عندك بورقة الاجابة رقم 29 مش موجود حاط
بداله 39





جواب تعریف ال wavenumber

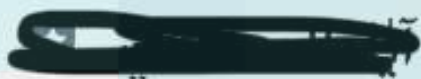
49w Like Reply



صح

49w Like Reply

Write a reply...



طلع ال D عنصر 🤔😂😂😂

Is a C-D bond better than C-H bond? I mean if carbon has a chance to either for a bond with deuterium or hydrogen what would it choose and why? What if tritium competes too?

asked Feb 5 '15 at 18:18

edited Feb 5 '15 at 18:46

2 Answers

C-H would be the weakest bond, then C-D, then C-T would be the strongest.

This is due to the zero point energy of the bond and the fact the zero point energy is proportional to:

$$\sqrt{\frac{m_C + m_H}{m_C m_H}}$$

Zero point energy is the minimum energy the quantum harmonic oscillator can have.

Because the greatest mass isotope has the smallest zero point energy, the...



49w Like Reply

53

[Redacted]

طيب وبناء ع هيك شو الجواب

49w Like Reply

[Redacted]

Re [Redacted] low wavenumber

49w Like Reply

Re [Redacted]

بيحكليك اضعف رابطة
هي ال c-h يعني اقل طاقة

49w Like Reply

[Redacted]

لا [Redacted]

مش هيك القصة

49w Like Reply

54

[Redacted]

https://www.google.com/amp/s/www.researchgate.net/post/The_contradiction_of_IR_spectroscopy_and_kinetic_isotope_effects/amp

Write a comment...



researchgate.net

The contradiction of IR spectroscopy and kinetic isotope effects?

From kinetic isotope effects, we know k_H is higher than k_D (assume primary kinetic isotope effects), which means C-H is more reactive compared to C-D. However, from the IR spectroscopy, the wavenumber of C-H is higher than C-D (stretching vibration) which leads to higher energy is needed to break the C-H bond. This confuses me. Could you guys help me? Thanks.

Infrared Spectroscopy Isotopes Kinetics

Answer

Popular Answers 1

Alexandra V. Domanskaya 2 years ago
at 33.91 Physikalisches-Technische...

What you see in the IR are the transitions between the vibrational energy levels close to the bottom of the potential curve (see attached picture). To break the bond you need "pump" the whole D0 amount

49w Like Reply

55



انت عندك

C-H 3300 cm^{-1}

C-D 2100 cm^{-1}

العلاقة بين الماس و wavenumber عكسية

وهو سائل عن ir بتطلع

بالنسبة ل سي دي Low wavenumber

49w Like Reply



انا صح يعني ؟



Is a C-D bond better than C-H bond? I mean if carbon has a chance to either for a bond with deuterium or hydrogen what would it choose and why? What if tritium competes too?

share

improve this question



anjani raj

50 2 6

asked

Feb 6 '15 at 18:18

56



M.A.R. ଡ_ଡ

6,607 12 46 76

edited

Feb 6 '15 at 18:49

2 Answers

order by votes



7



C-H would be the weakest bond, then C-D, then C-T would be the strongest.

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Because the greatest mass isotope has the smallest zero point energy, the energy



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Infrared Spectroscopy

Isotopes

Kinetics

Answer

57

Popular Answers 1



Alexandra V. Domanskaya

2 years ago

33.91 Physikalisch-Technische...

What you see in the IR are the transitions between the vibrational energy levels close to the bottom of the potential curve (see attached picture). To break the bond you need "pump" the whole D_0 amount

جواب تعريف ال assay test كأنه
شو جوابها 🙄

49w Like Reply

5g

~~بشخصيتها~~
شخصيتها

49w Like Reply

~~الو~~
الو

Identification substances

49w Like Reply

ANODYNE ACADEMY

PHARMACY 2017 - 2022

انا شخصيتها انو تيست لل impurities 😊

49w Like Reply

فراس العناني
كله ضع دائرة صح!!

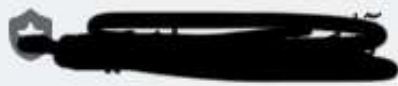
49w Like Reply

في سبكترا كان جوابها

Ch3ch2ch2cl

49w Like Reply

59



ايلافيو

49w Like Reply



آيت الله. عمري هلا والله

49w Like Reply



اكتر
بس خمس علامات اتوقع برمزين صح؟

49w Like Reply



بال 88 وحواليها ف ان شاء الله بتجيبها



49w Like Reply

partition chromatography في اشي عن ال
ions exchange انه هو اله علاقة بال
adsorption او
size او

حطيتها none of the above 🤔

49w Like Reply



ببرافو



49w Like Reply

60

Write a reply...

وفي اشي مش عارفة اذا السؤال هيك صح بس
انه لما الأيون يمسك بال stationary ايش
اسمها

حطيتها ions exchange



عرفتوا السؤال؟

49w Like Reply

وكم ان ال Hplc شو نوع الفصل فيها حطيت

😅 adsorption

شو جوابها؟

49w Like Reply

~~XXXXXXXXXX~~
😱 partition بحكو 😱 1

49w Like Reply

~~XXXXXXXXXX~~
adaorption مع اني حاسة

49w Like Reply

~~XXXXXXXXXX~~
~~XXXXXXXXXX~~
بتذكر الدكتور حكي انه partition كلها
non polar والاختلاف بينهم بال
polarity

وال hplc فيها polar



49w Like Reply

61

بالتأكيد

ليش بستخدم

Kbr nacl in ir spectroscopy ?

لانه ما الهم امتصاص هناك

49w

Like

Reply

بالتأكيد



كفاية ارجوك

49w

Like

Reply

بالتأكيد



متر خلص سكتت

49w

Like

Reply

2

في سؤال بتذكر اجانا انه اي نوع كروماتوغرافي
بستخدمه للاورغانيك ماتيريال

29w Like Reply

بأبيس اللي صح؟؟

29w Like Reply

63

والله ناسية
مواد الفصل هاد دعسوني

29w Like Reply

Write a reply...

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HU PHARMACY 2017 - 2022

وفي سؤال كان حاطط اكثر من مادة
وكاتب انه مين المادة يلي بتطلع اول اشي مع
الموبايل فيز

29w Like Reply

On [redacted] eh

في شكراً الف ٣٦ سؤال سنوات كل