Lect (3)

Woodward's rule for conjugated carbonyl cpd:

basic value:

Ketone

a) 6 membered or acyclic parent enone — 215 nm

b) 5 membered ring parent enone — 202 nm

aldehyde

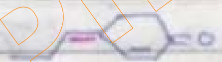
210 nm

Increments:

- homoannular +39

- extended conjugation +30

- exocyclic double bond +5



Substituents:

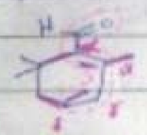
- alkyl or ring residue — α +10 nm, β +12 nm, γ,δ +18 nm

- Oacyl +6 nm
- OH — α +35, β +30, δ +50

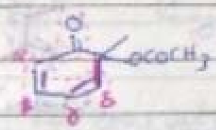
ما يعنيني يكون في الـ δ لأنه هكذا خرج الـ cycle مع الـ carbonyl

- OalKyl — α 35, β 30, γ 17, δ 31

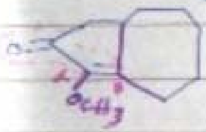
Examples:



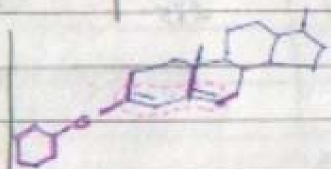
basic value 202
homoannular 39
extended 30
ring residue α 10, β 12, δ 18
316



Ketone
215
39
30
δ 18
302



Ketone
202
exo 5
OAlkyl 35
ring residue 12×2 = 24
266 nm



diene
215
5
3×5 = 15
6
241 nm

215	215	215	Ketone
30	5	30	
5	12×2	β 12×2	
18		γ 18	
18		5	
286	244	(292)	

حسب كل الـ chromophores اللي موجودين و نشوف مين فيهم أطول

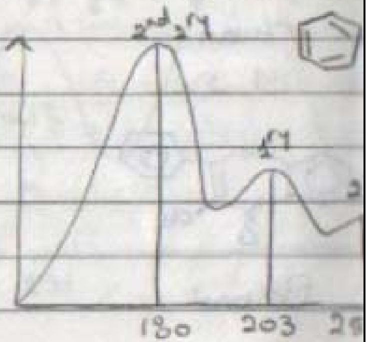
UV calculations can differentiate between diff. isomers in the same V.o :-

(Ketone)	(Ketone)	(Ketone)	no UV
215	215	215	
β 12×2	30	30	
239	5	30	
	β 12	β 12	
	γ 18	δ 18	
	[illegible] 275	314	

b] UV of aromatic cpds:

1) Benzene:

3 bands of diff λ max & intensities.

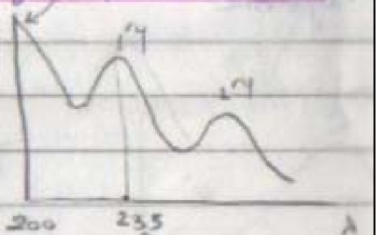


band 1: (2nd 2ry band)
is out of UV absorption range (vacuum)

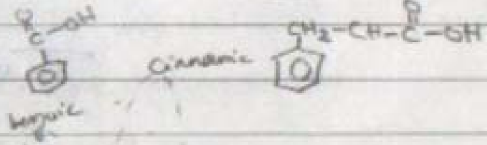
band 2: (1ry band - K band)
it's in UV absorption range & has good intensity

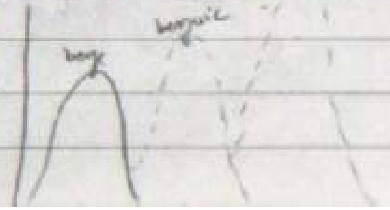
band 3: (2ry band - B band)
it's within UV absorption range but low intensity.

- Substitution or conjugation cause bathochromic shift & the 2nd 2ry band will appear as the end of absorption behavior



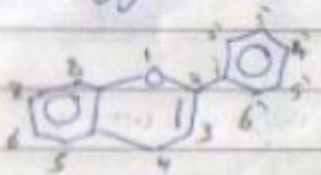
Flavonoidal glycosides:-



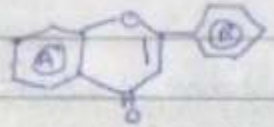


Flavone → benzoic
Cinnamic

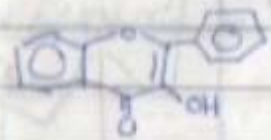
Flavonoid glycoside has C_{15} basic skeleton (C_6-C_3-C_6)



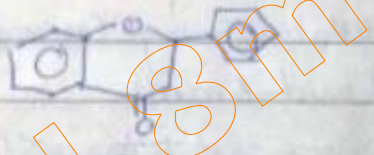
Flavan



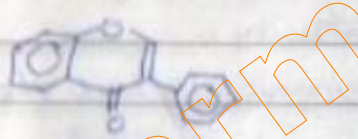
Flavone



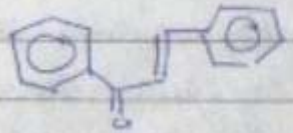
Flavonol



Flavanone



Iso flavone



chalone

The end of lecture 3