Wood-ward's rule for conjugated carbonyl cpd:

basic value:

* Ketone

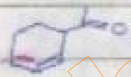
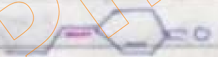
a) 6 membered or acyclic parent enone 215nm

b) 5 membered ring parent enone 202 nm

* aldehyde

270 nm

Increments:-

- homoannular  + 39
- extended conjugation  + 30
- exocyclic double bond  + 5

Substituents:-

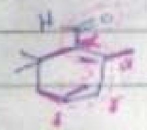
- alkyl or ring residue  α → 10nm, β → 12nm, γ, δ → 18nm

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

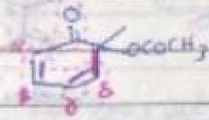
ما يمشي يكون في الـ δ لأنه حيكون الـ cycle مع الـ carbonyl

- Oalkyl: α 35, β 30, γ 17, δ 31

examples:-



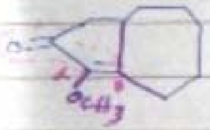
basic value	208
homoannular	39
extended	30
ring residue	α 10, β 12, δ 18
	316



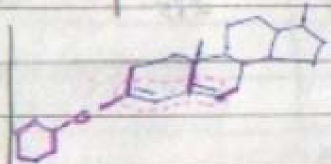
Ketone

	215
	39
	30
δ	18
	302

Ketone



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

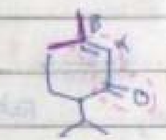
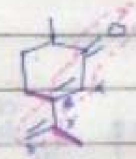
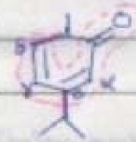
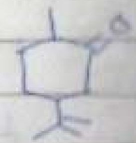


diene	215
	5
	3×5 = 15
	6
	241 nm

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

نحسب كل الـ chromophores الي موجودين ونشوف مين فيهم أطول

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

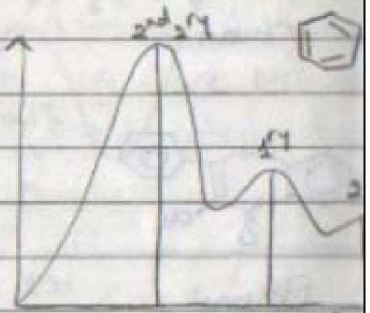





(Ketone)	(Ketone)	(Ketone)	no UV.
215	215	215	
β 12×2	30	39	
239	5	30	
	β 12	β 12	
	γ 18	δ 18	
	275	314	

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)

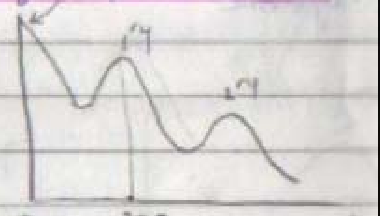
band 2: (1ry band - K band)

it's in UV absorption range & has good intensity

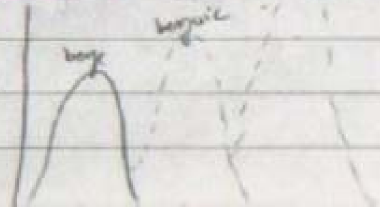
band 3: (2ry band - B band)

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

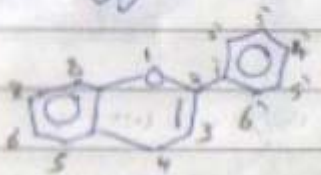


Flavonoidal glycosides:

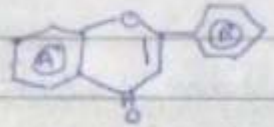


Flavone → benzoic
cinnamic

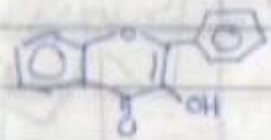
Flavonoid glycoside has C_{15} basic skeleton (C_6-C_3-C_6)



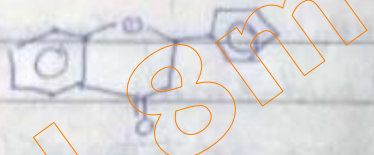
Flavan



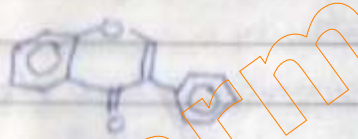
Flavone



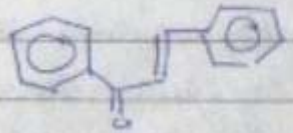
Flavonol



Flavanone



Iso flavone



chalone

The end of lecture 3