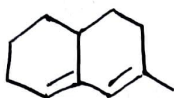


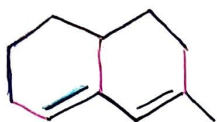
Electronic spectroscopy

Woodward-Fieser rules

Example: 1



Sol.



base value (heteroannular double bond) = 215 nm

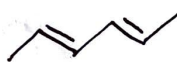
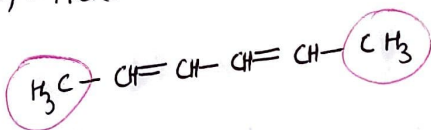
ring residues = $3 \times 5 = 15$ nm

- CH₃ group $1 \times 5 = 5$ nm

exocyclic double bond = 5 nm

240 nm

② 2, 4-Hexadiene



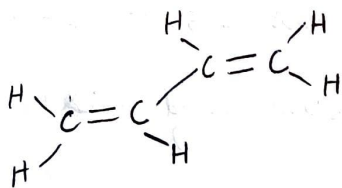
Sol.

base value = 215 nm

= -CH₃ substituent = $2 \times 5 = 10$ nm

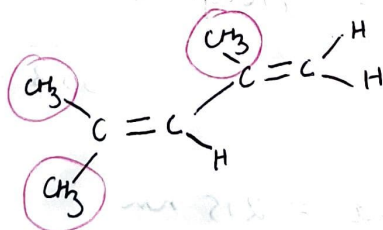
225 nm

③



215 nm

④

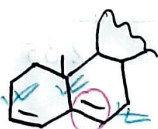


base value = 215 nm

= -CH₃ groups = $3 \times 5 = 15$ nm

230 nm

⑤

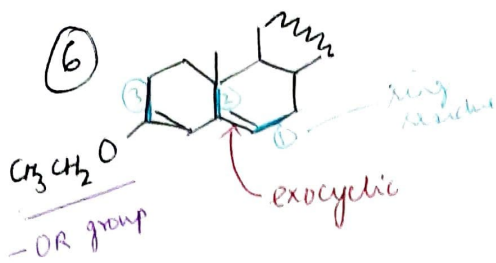


base value = 215 nm

ring residue = $3 \times 5 = 15$ nm

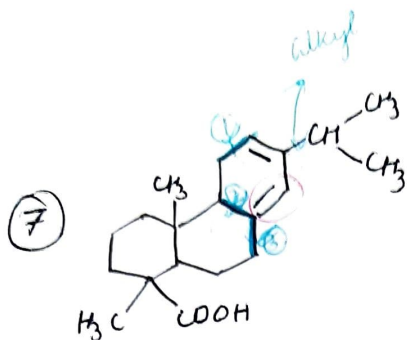
exocyclic double bond = 5 nm

235 nm



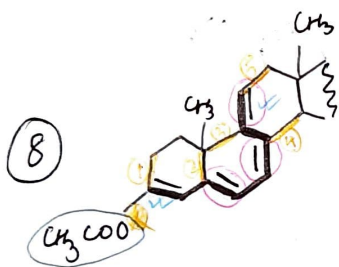
base value = 215 nm
ring residues = $3 \times 5 = 15$ nm
 -OR substituent = 6 nm
exocyclic double bond = 5 nm

 241 nm



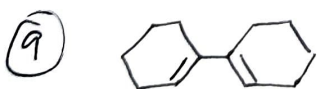
base value = 253 nm
 (homoannular ring)
exocyclic double bond = 5 nm
ring residues = $3 \times 5 = 15$ nm
alkyl group = 5 nm

 278 nm



base value = 253 nm
 (homoannular)
double bond extending conjugation
 = $2 \times 30 = 60$ nm
ring residues = $5 \times 5 = 25$ nm
exocyclic double bond = 15 nm
 (3x5)
CH₃COO - group = 0 nm

 353 nm



base value = 215 nm
ring residues = $4 \times 5 = 20$ nm

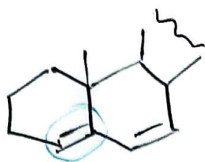
 235 nm



base value = ~~215~~ 253 nm
ring residues = $3 \times 5 = 15$ nm
exocyclic double bond = 5 nm

 273 ~~nm~~ nm

11



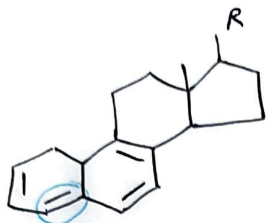
base value = 215 nm

ring residues = $3 \times 5 = 15$ nm

exocyclic double bond = 5 nm

235 nm

12



base value = 253 nm

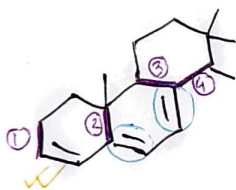
double bond extending
conjugation = $2 \times 30 = 60$ nm

exocyclic double bonds = $1 \times 5 = 5$ nm

ring residues = $5 \times 5 = 25$ nm

343 ~~328~~ nm

13



base value = 253 nm

double bond extending
conjugation = 30 nm

ring residues = $4 \times 5 = 20$ nm

exocyclic double bonds = $2 \times 5 = 10$ nm

313 nm