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Mo Tu We Th Fr Sa Su

* Hoodward - Fieser rules for calculating Absorption maxima in Dienes:-

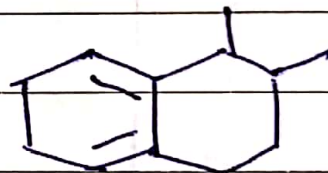
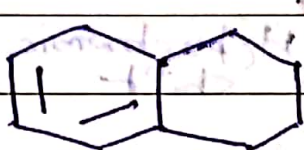
Rules:-

① Takes Parent value for butadiene system or a cyclic conjugated dienes.

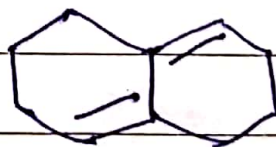
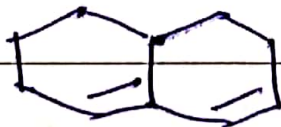
② dienes $\Rightarrow$ 217 nm.

③ Ayclic trienes $\Rightarrow$ 245 nm.

④ Homocyclic conjugated dienes $\Rightarrow$ 253 nm.



⑤ Heterocyclic conjugated dienes $\Rightarrow$ 215 nm.



⑥ Alkyl substituent on ring residue $\Rightarrow$ add 5 nm.

⑦ Exocyclic double bond $\Rightarrow$ add 5 nm.

⑧ Each double bond extending conjugation $\Rightarrow$ add 30 nm.



TITLE

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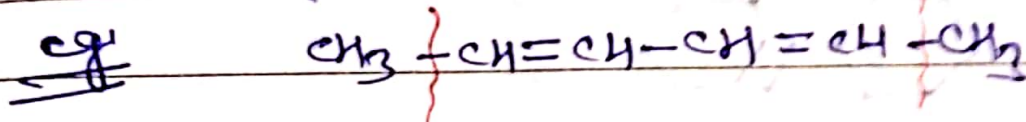
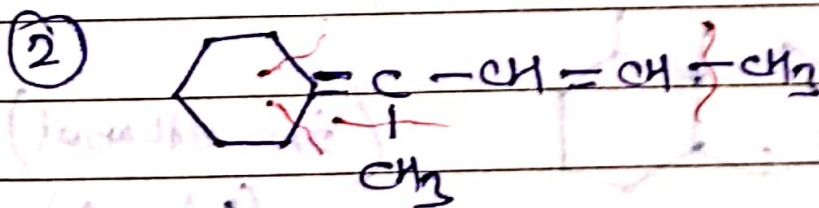
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for. Auxochromes $\Rightarrow$

- (a) $-\text{OR} \rightarrow$ add 6 m μ .
 (b) $-\text{SR} \rightarrow$ add 30 m μ .
 (c) $-\text{Cl} | -\text{Br} \rightarrow$ add 5 m μ .
 (d) $-\text{NR}_2 \rightarrow$ add 60 m μ .
 (e) $\text{O}-\text{CO}-\text{CH}_3 \rightarrow$ add 0 m μ .

 $\longrightarrow \times \longrightarrow$

① Hexadienes -

Base value = 217 m μ .Two alkyl substituents = $5 \times 2 = 10$ m μ $\lambda_{\text{max}} = 227 \text{ m}\mu$ Base value = 217 m μ two alkyl substituent = 10 m μ (5×2)two ring residues = 10 m μ (5×2)

Exoyclic double bond = 5

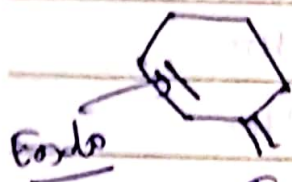
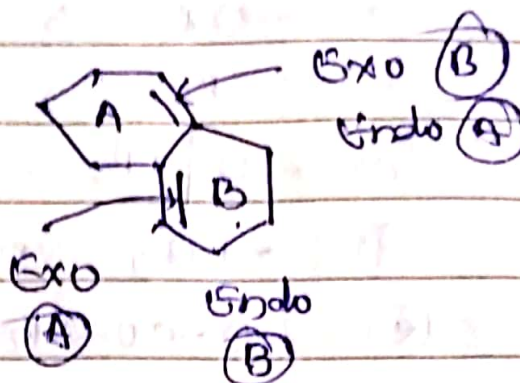
 $\underline{242 \text{ m}\mu}$



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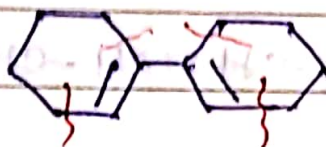
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ExoEndoExoExo

(A)

Endo

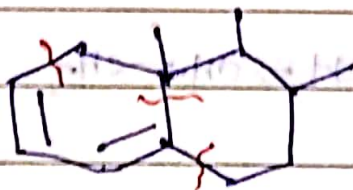
(B)

Q.

Base value = 215 Hz

 four ring
residue $(5 \times 4) = 20 \text{ Hz}$

Answer

225 HzQ.(in ethanol)
(Solvent)

Base value.

(Homoannular) $\Rightarrow 253 \text{ Hz}$ 3 ring residue $\Rightarrow 15 \text{ Hz } (5 \times 3)$ 1-exocyclic double bond $\Rightarrow 5 \text{ Hz}$ Answer = 273 Hz



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1



(in ethanol)

Heteroatom -

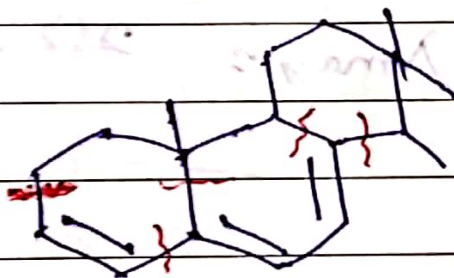
Base value = 215 nm

1-exocyclic

double bond = 5 nm

3-ring residue = $5 \times 3 = 15$ nm $\lambda_{max} = 235$ nm.

2



Base value = 253 nm.

(Homoatom) $\rightarrow$ 4-ring residue $\rightarrow 20$ nm (5×4)

1-double bond

extending

conjugation

 $\rightarrow 30$ nm

2-exocyclic double bond

 $\rightarrow 10$ nm $\lambda_{max} = 313$ nm



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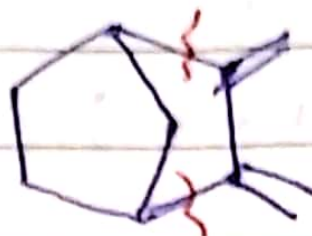
Th

Fr

Sa

Su

Q.



(Bicyclic)

Base value = 217 mμ

α-ring residue = 10 mμ (5x2)

α-exocyclic double bond = 10 mμ (5x2)

1-Bicyclic system = 15 mμ

 $\lambda_{max} = 252 \text{ m}\mu$