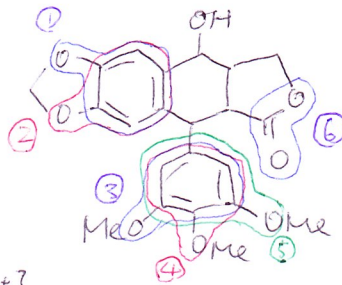
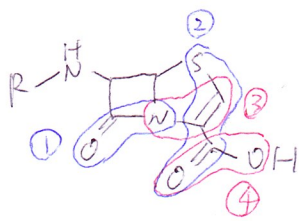


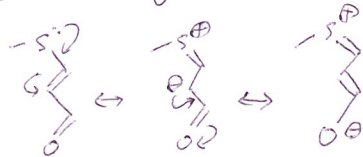
7章

3.

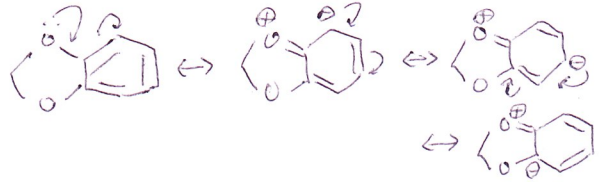


共役系 $\leftrightarrow$ 共鳴構造描ける

ex.

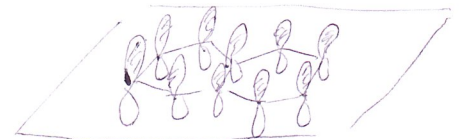
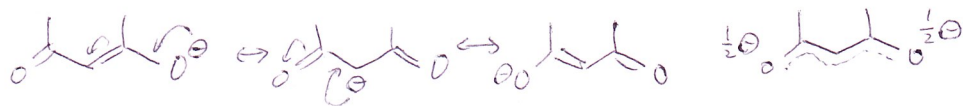
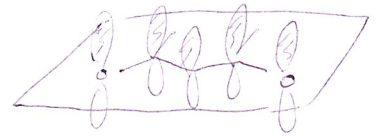
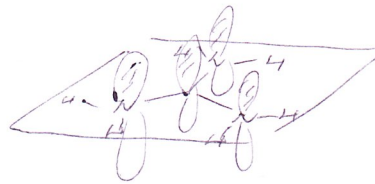
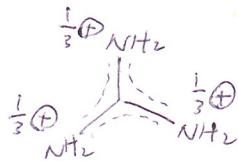
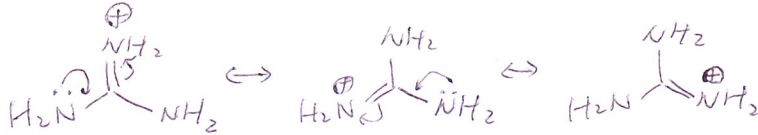


(Sは3p軌道なので共鳴への寄与は小さい)

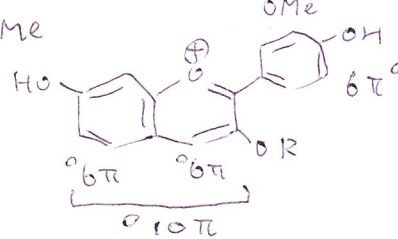
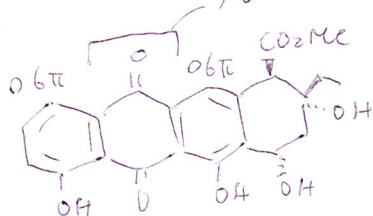
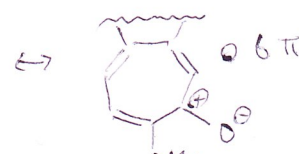
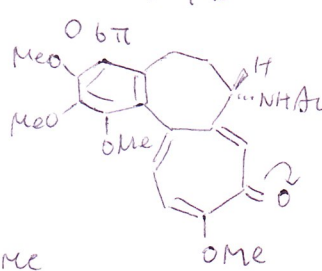
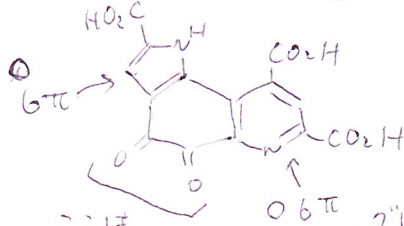
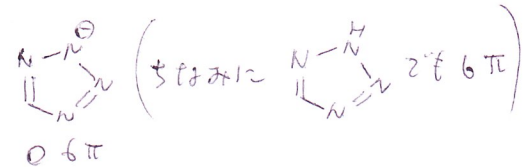
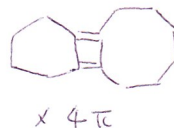
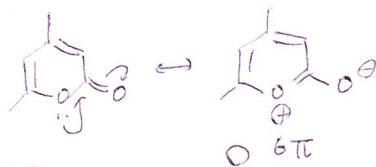


etc.

4.



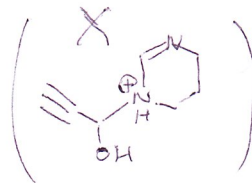
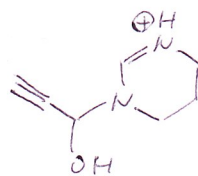
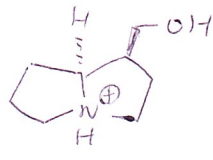
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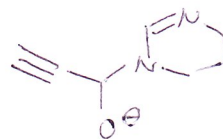
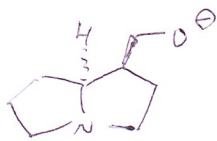
8 $\frac{1}{2}$ 7

4

a)



b)



7.

(a)

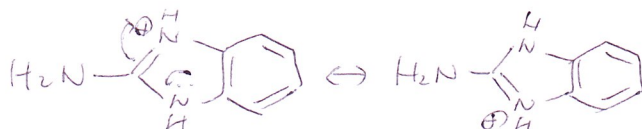


(b)

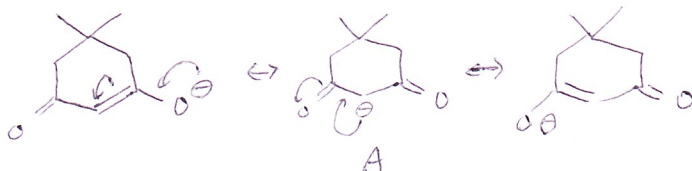


8.

D₂O に 2 倍 1 倍 する 2 倍 1 倍 する 2 倍 1 倍

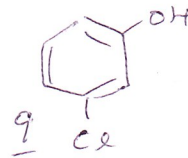
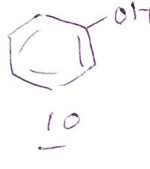
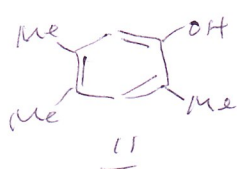
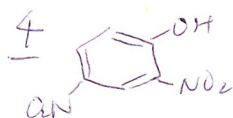


¹³C シグナル 4 本

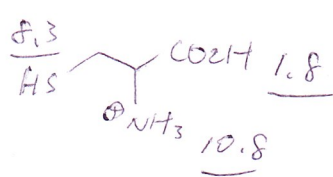


C 上に ⊖ のある A は 寄与しやすくて観測される ¹³C シグナル 5 本

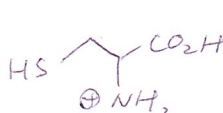
9.



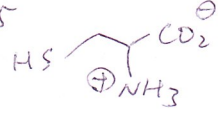
11.



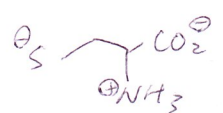
pH 1



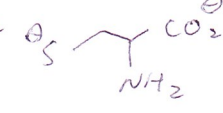
pH 5



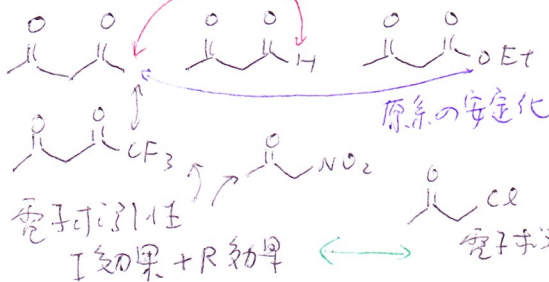
pH 9



pH 12

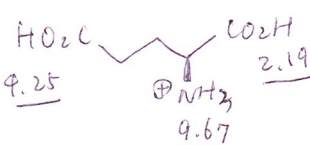


12



cf. 1.1 x 10⁻⁴ の δ (para)
 NO₂ 0.778
 COCH₃ 0.502
 COOEt 0.45
 Cl 0.227

13



全て I 効果により説明できる

-CO₂Et は 電子求引性 → -NH₃⁺ の pK_a ↓
 -CO₂H は pH > 5 で -CO₂⁻ となり ⊖ 効果の I 効果は 電子供与性 → -NH₃⁺ の pK_a ↑

-NH₃⁺ は 電子求引性 → -CO₂H の pK_a 下がる