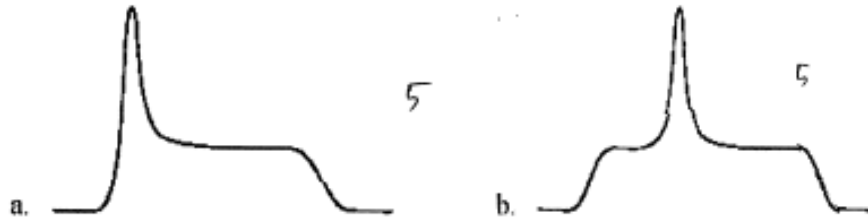


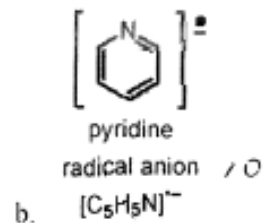
84-23

85

1. 다음의 absorption mode lineshape을 derivative mode lineshape으로 바꾸어라. (10)



2. 다음 radical들에서 EPR line의 개수는? (15)



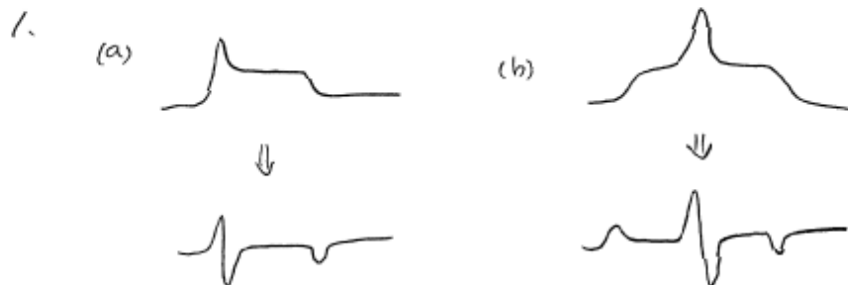
3. $[C_7H_7]^-$ 에서 line들의 intensity 비율은? (10)
4. $[CH_2D]^\bullet$ derivative mode EPR spectrum을 그려라. (D, I=1) (Line들의 intensity의 비율 표시할것) (A는 hyperfine interaction을 의미한다.) (20)
a. $A_H \gg A_D$ 10 b. $A_D \gg A_H$ 10
5. 가상의 라디칼 $[AB_2]^\bullet$ 의 EPR spectrum을 얻었더니 다음과 같았다. (A와 B의 I≠0. Line은 중복되어 있지 않다.) (30)



- a. A와 B의 nuclear spin number (I) 는? 10
b. A_A 와 A_B 중 큰 것은? 설명하여라. 10
c. 위의 실험 결과를 만족 시킬 수 있는 실제 $[AB_2]^\bullet$ 를 제안해 보아라. 10

①

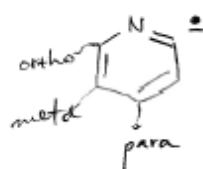
$$\frac{I_n}{I_0} = 1$$



2. (a) H, $I = \frac{1}{2}$ (x7) all equivalent

$$\therefore 2 \cdot 7 \left(\frac{1}{2} \right) + 1 = 8 \text{ lines}$$

(b)



• 3 kinds of protons

ortho : 2

meta : 2

para : 1

• 1 kind of nitrogen (x1)

$$\therefore \underbrace{(2 \cdot 2 \cdot \frac{1}{2} + 1)}_{\text{ortho}} \underbrace{(2 \cdot 2 \cdot \frac{1}{2} + 1)}_{\text{meta}} \underbrace{(2 \cdot 1 \cdot \frac{1}{2} + 1)}_{\text{para}} \underbrace{(2 \cdot 1 \cdot 1 + 1)}_{\text{nitrogen}}$$

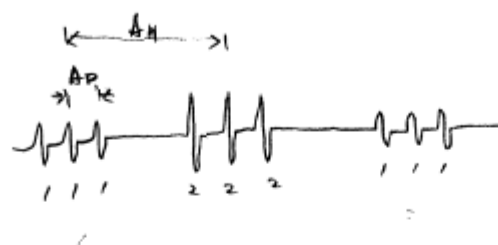
$$= 54 \text{ lines}$$

3. $1 : 7 : 21 : 35 : 35 : 21 : 7 : 1$

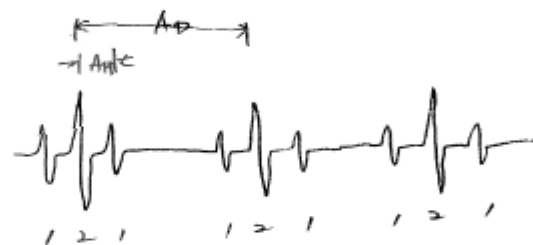
(2)

4.

(a) $[\text{CH}_2\text{D}]^{\cdot}$ $A_H \gg A_D$

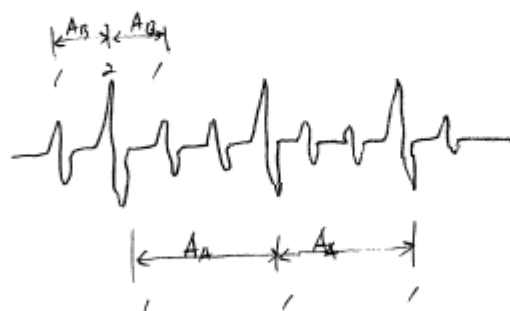


(b) $A_H \ll A_D$



5.

(a)



$$\therefore I_A = 1, \quad I_B = \frac{1}{2} \text{ (2H)}$$

(b) $A_A > A_B$

(c) $[\text{NH}_2]^{\cdot}$

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