

-CH, O개 ~ 2개!

• 공명결함선의 수.

• 공명결함수가 탄소수다 동일 ~ 2개!

$\left. \begin{array}{l} \text{환개인} \rightarrow 3n+1 \\ \text{환개} \rightarrow 3n \\ \text{이차인} \rightarrow 3n-1 \end{array} \right\}$

• $C_nH_m \rightsquigarrow$ -CH₀ a개 -CH₁ b개 -CH₂ c개 -CH₃ d개.

• $X = a + b + c + d$

• $Y = b + 2c + 3d$

• -CH₂ : -CH₂가 탄소 원자수랑 동일 ~ 2개!

• -CH₃ : 탄소 원자의 원자수보다 탄소 원자 수 3개.

↳ $\left. \begin{array}{l} \text{사슬 양 끝 탄소이고} \\ \text{각각에} \end{array} \right\}$ 탄소-탄소 단일결함은 이차인 탄소 2개!



C_4H_6



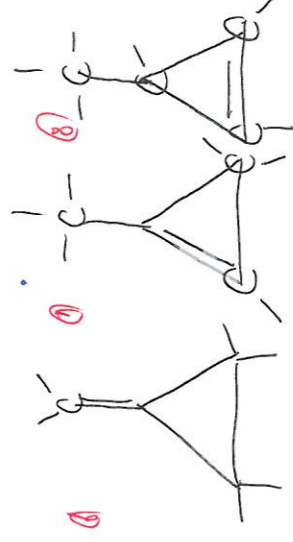
-CH₀
-CH₁
-CH₁
-CH₃



-CH₀ /
-CH₁ /
-CH₂ /
-CH₃ /



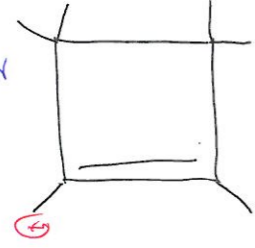
2
2



1 / 0
0 / 3
3 / 0
0 / 1



2
2

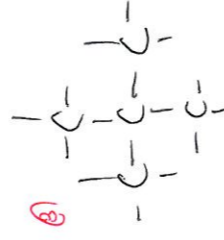


0 2 2 0

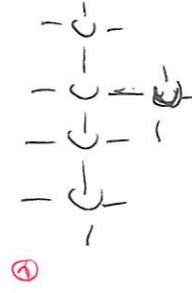
C_5H_{12}



-CH₀ 0
-CH₁ 0
-CH₂ 3
-CH₃ 2

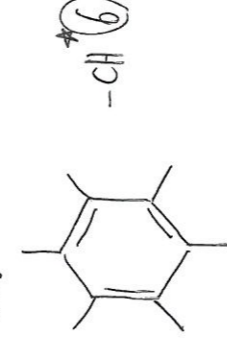


0 0 4

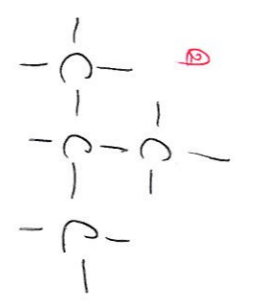
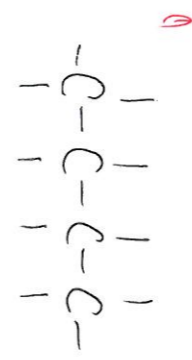


0 0 2 3

C_6H_6



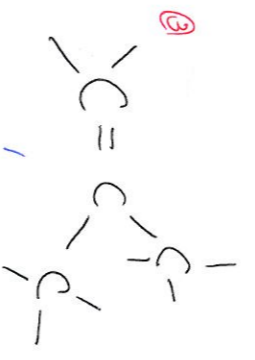
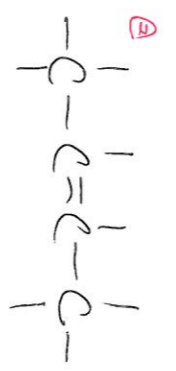
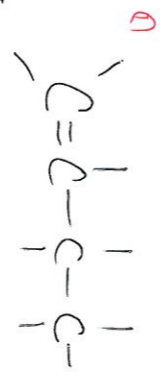
• C₄H₁₀



- CH₀ .
- CH₁ .
- CH₂ 2
- CH₃ 2

- .
- 1
- .
- 3

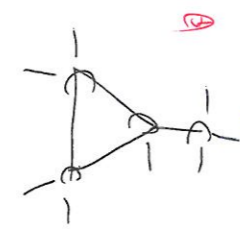
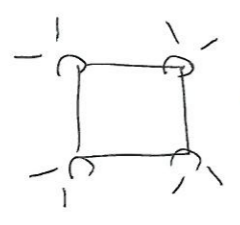
• C₄H₈



- CH₀ 0
- CH₁ 1
- CH₂ 2
- CH₃ 1

- 0
- 2
- 0
- 2

- .
- 1
- .
- 2



- CH₀ .
- CH₁ 0
- CH₂ 4
- CH₃ 0

- .
- 1
- 2
- 1

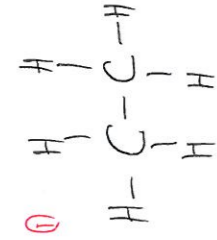
<탄화수소>

• 구조식

• CH_4



• C_2H_6



• C_2H_4



• C_2H_2



-CH₀

-CH₁

-CH₂

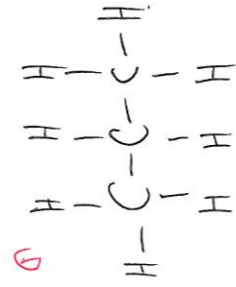
-CH₃

2

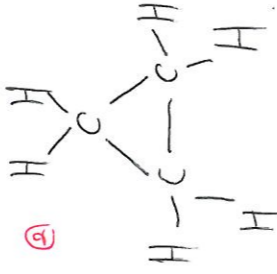
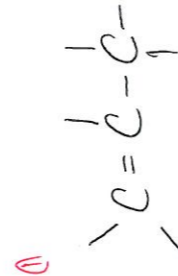
2

2

• C_3H_8



• C_3H_6



-CH₀

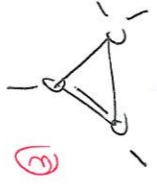
-CH₁

-CH₂

-CH₃

3

• C_3H_4



-CH₀

-CH₁

-CH₂

-CH₃

2

2

1

• -CH₃, 0개 ~ 2리!

• 공리화상선의 수.

• 단일결합수가 탄소수와 동일 ~ 2리!

$\left\{ \begin{array}{l} \text{삼각인} \rightarrow 3n+1 \\ \text{사각인} \rightarrow 3n \\ \text{일차인} \rightarrow 3n-1 \end{array} \right.$

• C_nH_{2n} ~ -CH₀ a개 -CH₁ b개 -CH₂ c개 -CH₃ d개.

• $x = a+b+c+d$

• $y = b+2c+3d$

• -CH₂ : -CH₂가 탄소 개수와 동일 ~ 2리!

• -CH₃ : 탄소 개수의 2배와 동일 ~ 3리!

↳ 사슬의 양 끝 탄소이고 끝자락에 탄소-탄소 단일결합만 이루어진 탄소가 2개!



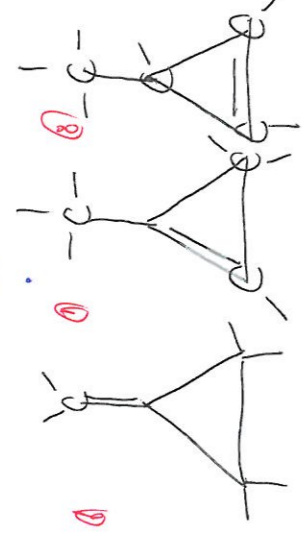
• C₄H₆.



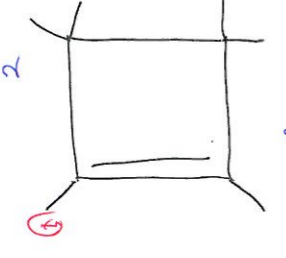
- CH₀
- CH₁
- CH₂
- CH₃



- CH₀ /
- CH₁ /
- CH₂ /
- CH₃ /

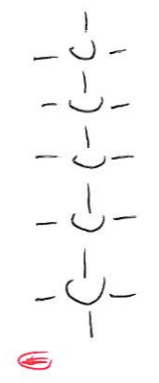


- CH₀ 1
- CH₁ 0
- CH₂ 3
- CH₃ 0

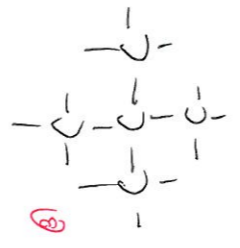


- CH₀ 0
- CH₁ 2
- CH₂ 2
- CH₃ 0

• C₅H₁₂

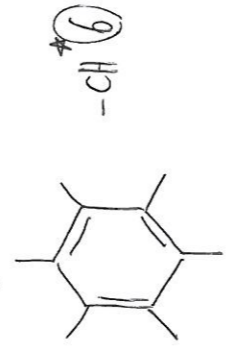


- CH₀ 0
- CH₁ 0
- CH₂ 3
- CH₃ 2

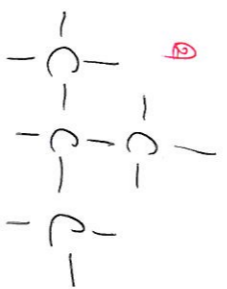
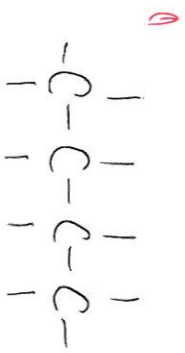


- CH₀ 0
- CH₁ 0
- CH₂ 4
- CH₃ 4

★ C₆H₆



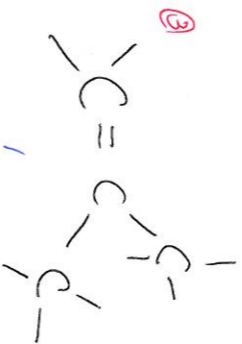
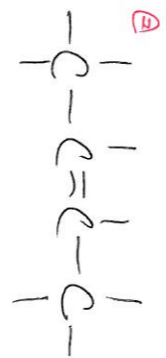
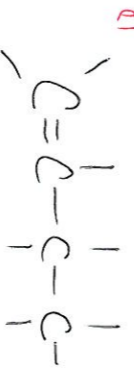
• C_4H_{10}



-CH₃ ·
-CH₁ ·
-CH₂ 2
-CH₃ 2

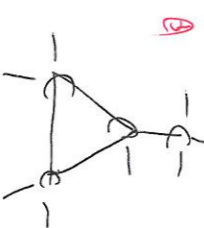
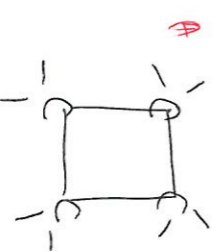
·
·
·
3

• C_4H_8



-CH₃ 0
-CH₁ 1
-CH₂ 2
-CH₃ 1

·
·
·
2



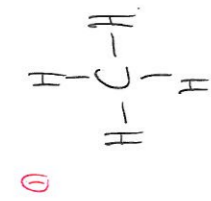
-CH₃ ·
-CH₁ 0
-CH₂ 4
-CH₃ 0

·
·
·
1
2
1

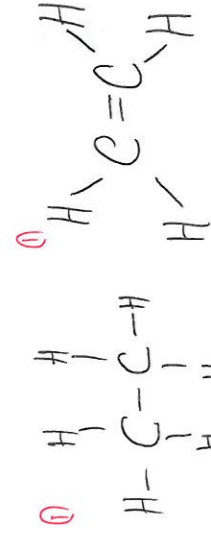
<탄화수소>

• 구조식

• C_2H_6



• C_2H_4



• C_2H_2



-CH₀

-CH₁

-CH₂

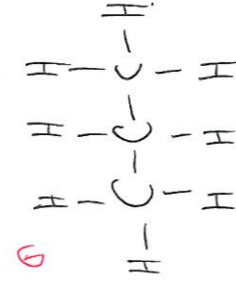
-CH₃

2

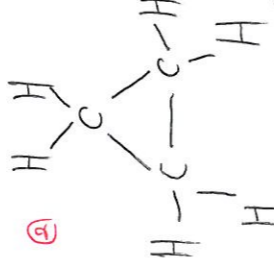
2

2

• C_3H_8



• C_3H_6



-CH₀

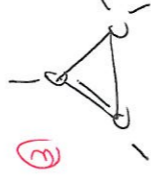
-CH₁

-CH₂

-CH₃

3

• C_3H_4



-CH₀

-CH₁

-CH₂

-CH₃

2

원자번호, s, p, d, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z

원자번호

원자번호	1	2	13	14	15	16	17	18
1	H							He
2	Li	Be	B	C	N	O	F	Ne
3	Na	Mg	Al	Si	P	S	Cl	Ar
4	K	Ca						

~ 100까지 201 ~

원자번호	원자번호	원자번호	원자번호	원자번호	원자번호	원자번호	원자번호	원자번호	원자번호
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

★ s, p, d, f 전자를 포함할 전자는 몇 개.

★ s 전자는 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

$$\frac{\text{전자의 수}}{\text{원자의 수}} = \frac{2}{1} \sim \frac{1}{1} \text{ 이면 } 6 \sim 10 \text{ 전자를 가짐}$$

전자가 들어있는 P비탈수.

1주	2	13	14	15	16	17	18
2주	2	3	4	5	5	5	5
3주	6	7	8	9	9	9	9

전자가 들어있는 P비탈수

1주	2	13	14	15	16	17	18
2주	0	1	2	3	3	3	3
3주	3	4	5	6	6	6	6

원자가 전자수 - 홀전자수.

1주	2	13	14	15	16	17	18
0	2	2	2	2	4	6	X

· 전자 2개 채워진 비탈수 X2 + 전자 1개 채워진 비탈수 = 2x2 + 6x1 = 14

계산기

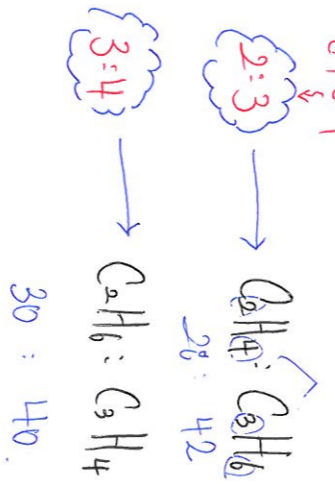
1차선	>	2차선	>	3차선	4차선
2 → 1 : $\frac{3}{4}E$		3 → 2 : $\frac{5}{8}E$		4 → 3 : $\frac{7}{14}E$	$n=1 \rightarrow n=\infty$
3 → 1 : $\frac{6}{9}E$		4 → 2 : $\frac{3}{6}E$			
4 → 1 : $\frac{15}{16}E$		5 → 2 : $\frac{21}{100}E$			
		6 → 2 : $\frac{2}{9}E$			

~ 3차선 탄소수 + X ~

비율

C_2H_6	30	C_2H_4	70
C_2H_4	28	C_2H_2	40
C_2H_2	26	C_2H_6	42

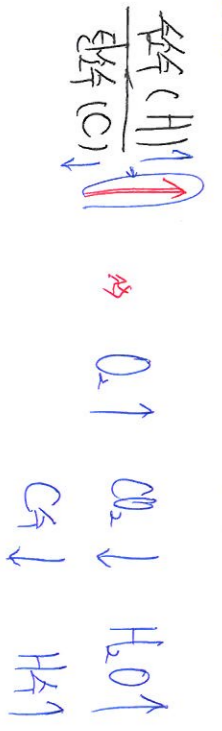
비율비



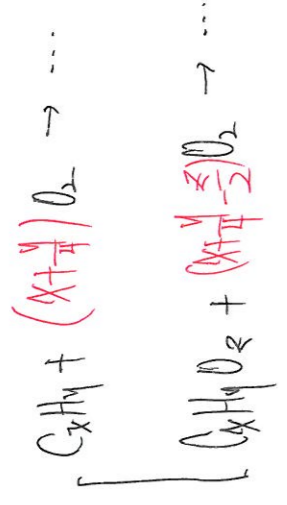
탄화수소
탄화수

탄화수 산화식 같아. → 같은 질량비에 들어있는 원자의 몰수 동일
피할 산소 양, 생성 CO_2 양, 생성 H_2O 양 동일.

탄화수 탄소산화식 다르다. (같은 질량에서)



계수

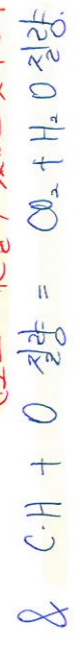


계산할 때

정량 기준
 { 계수이 ~ (계수 생략)
 결론 다 거임!



산소도 계산할 수 없으면 못 거임!



못 거임!

타라 싹

• 수소수 = 4 → 반응 전 후 몰수 동일



$$1 + m + 1 = m + 2$$

• (생산물 몰수 - 반응물 산소 몰수) 동일 = 수소수 동일!



$$x + \frac{y}{2} - x - \frac{y}{4} = \frac{y}{4}$$



$$m + \frac{n}{2} - (m + \frac{n}{4}) = \frac{n}{4}$$

$$\boxed{\therefore n = 4}$$