

L A M P I R A N

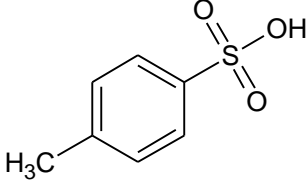
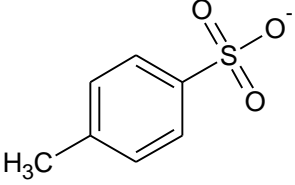
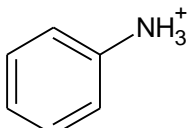
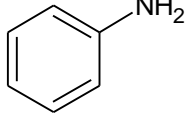
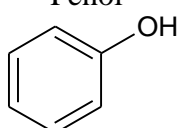
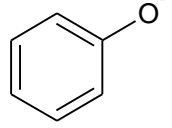
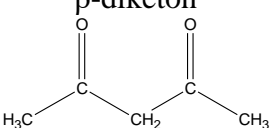
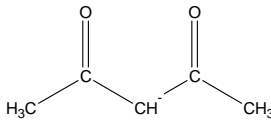
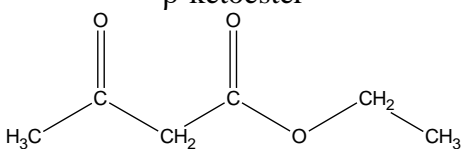
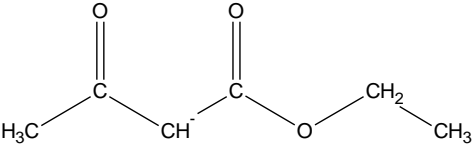
Tabel A Energi Ikatan untuk Disosiasi Beberapa Ikatan dalam Reaksi $A - X \rightarrow A\cdot + X\cdot$
(dalam kkal/mol)

Ikatan Tunggal	Energi Ikatan (kkal/ mol)								
	X = H	F	Cl	Br	I	OH	NH ₂	CH ₃	CN
A - X									
CH ₃ - X	105	108	84	70	57	92	85	90	122
CH ₃ CH ₂ - X	100	108	80	68	53	94	84	88	-
(CH ₃) ₂ CH - X	96	107	81	68	54	94	84	86	-
(CH ₃) ₃ C - X	96	-	82	68	51	93	82	84	-
H - X	104	136	103	88	71	119	107	105	124
X - X	104	38	59	46	36	-	-	90	-
Ph - X	111	126	96	81	65	111	102	101	-
CH ₃ C(O) - X	86	119	81	67	50	106	96	81	-
H ₂ C = CH - X	106	-	-	-	-	-	-	-	-
HC = C - X	132	-	-	-	-	-	-	-	-
Ikatan Majemuk	Energi Ikatan (kkal/ mol)								
H ₂ C = CH ₂	163								
HC ≡ CH	230								
H ₂ C = NH	154								
HC ≡ N	224								
H ₂ C = O	175								
C ≡ O	257								

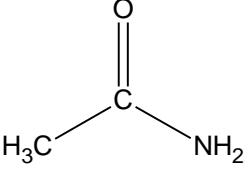
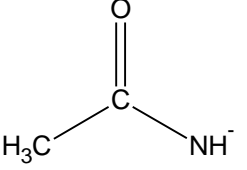
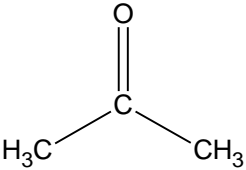
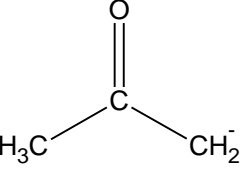
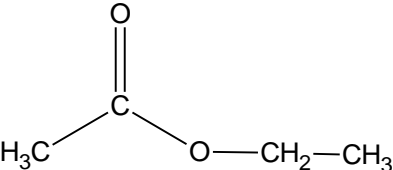
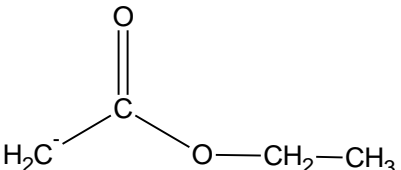
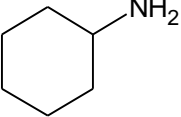
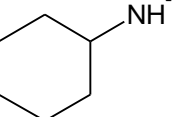
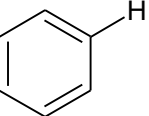
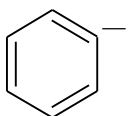
Tabel B. Panjang Ikatan dari Beberapa Ikatan (dalam Angstrom Å)

Ikatan Tunggal		Ikatan Rangkap		Ikatan Rangkap Tiga	
Ikatan	Panjang (Å)	Ikatan	Panjang (Å)	Ikatan	Panjang (Å)
H – H	0,74	C = C	1,33	C ≡ C	1,20
H – F	0,92	C = O	1,21	C ≡ N	1,16
H – Cl	1,27			C ≡ O	1,13
H – Br	1,41				
H – I	1,61				
H – OH	0,96				
H – NH ₂	1,01				
H – CH ₃	1,09				
F – F	1,42				
Cl – Cl	1,98				
Br – Br	2,29				
I – I	2,66				
H – C=	1,08				
H – Ph	1,08				
H – C≡	1,06				
C – C	1,54				
C – N	1,47				
C – O	1,43				
C – F	1,38				
C – Cl	1,77				
C – Br	1,94				
C – I	2,21				

Tabel C. Keasaman yang Khas dari Beberapa Gugus Fungsi Organik

Nama dan Contoh	pKa	Basa Konjugat
Asam klorida, HCl	-7	Cl ⁻
Asam sulfat, H ₂ SO ₄	-3	HSO ₄ ⁻
Asam sulfonat	0 – 2	
	-1	
Asam Karboksilat	3 – 5	
CH ₃ COOH	4,74	CH ₃ COO ⁻
Ion arilamonium	4 – 5	
	4,6	
Ion Amonium, NH ₄ ⁺	9,3	
Fenol	9 – 10	NH ₃
	10	
β-diketon	9 – 10	
	9	
Tiol	8 – 12	
CH ₃ CH ₂ SH	10,6	CH ₃ CH ₂ S ⁻
β-ketoester	10 – 11	
	10,7	
Ion Alkilamonium	10 – 12	
CH ₃ CH ₂ NH ₃ ⁺	10,7	CH ₃ CH ₂ NH ₂
Air, H ₂ O	15,7	OH ⁻

Tabel C. Keasaman yang Khas dari Beberapa Gugus Fungsi Organik

Nama dan Contoh	pKa	Basa Konjugat
Alkohol CH ₃ CH ₂ OH	15 – 19 15,9	CH ₃ CH ₂ O ⁻
Amida 	15 – 19 15	
Aldehida, keton 	17 – 20 19	
Ester 	23 – 25 24,5	
Alkuna HC≡CH	23 – 25 24	HC≡C ⁻
Amonia, NH ₃	33	NH ₂ ⁻
Hidrogen, H ₂	35	H ⁻
Alkilamina 	-40 42	
Alkena H ₂ C = CH ₂	-45 44	H ₂ C = CH ⁻
Hidrokarbon aromatik 	41 – 43 43	
Alkana CH ₄	50 – 60 50	CH ₃