

3. Sınav için denklemler ve sabitler

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	$pK_a = -\log [K_a]$
$R = 8,315 \text{ J K}^{-1} \text{ mol}^{-1}$	$pOH = -\log [OH^-]$
$\mathfrak{F}(\text{Faraday sabiti}) = 96,485 \text{ C mol}^{-1}$	$pH = -\log[H_3O^+]$
$1V = 1 \text{ J/C}$ $1A = 1C/s$	$pH \cong pK_a - \log\left(\frac{HA}{A^-}\right)$
$K_{su} = 1,00 \times 10^{-14}$, 25°C de	$\Delta E^\circ(\text{pil}) = E^\circ(\text{katot}) - E^\circ(\text{anot})$
$14,00 = pH + pOH$, 25°C de	$RT/\mathfrak{F} = 0,025693 \text{ V}$, $25,00^\circ\text{C}$ de
$\Delta G^\circ = -RT \ln K$	$\mathfrak{F}/RT = 38,921 \text{ V}^{-1}$, $25,00^\circ\text{C}$ de
$\Delta G = \Delta G^\circ + RT \ln Q$	$\Delta E(\text{pil}) = E^\circ(\text{pil}) - (RT/\mathfrak{F} n) \ln Q$
$\Delta G^\circ = \Delta H^\circ - T\Delta S^\circ$	$\ln K = (n\mathfrak{F}/RT) \Delta E^\circ$
$\ln\left(\frac{K_2}{K_1}\right) = -\left(\frac{\Delta H^\circ}{R}\right) \left(\frac{1}{T_2} - \frac{1}{T_1}\right)$	$E_3^\circ = [n_1 E_1^\circ(\text{ind}) - n_2 E_2^\circ(\text{yük.})]/n_3$ $\Delta G^\circ_{\text{pil}} = -(n)(\mathfrak{F}) \Delta E^\circ_{\text{pil}}$
$K_{su} = K_a K_b$	$Q = It$

Standart İndirgenme Potansiyelleri (25°C de)

Yarı tepkimeler	$E^\circ(\text{volt})$
$Au^+(aq) + e^- \Rightarrow Au(k)$	1.69
$MnO_4^-(aq) + 8H^+(aq) + 5e^- \rightarrow Mn^{2+}(aq) + 4H_2O(s)$	1.51
$Ag^+(aq) + 1e^- \rightarrow Ag(k)$	0.80
$Cu^{2+}(aq) + 2e^- \Rightarrow Cu(k)$	0.34
$AgCl(k) + 1e^- \rightarrow Ag(s) + Cl^-(aq)$	0.22
$Sn^{4+}(aq) + 2e^- \rightarrow Sn^{2+}(aq)$	0.15
$2H^+(aq) + 2e^- \Rightarrow H_2$	0
$Pb^{2+}(aq) + 2e^- \Rightarrow Pb(k)$	-0.13
$Sn^{2+}(aq) + 2e^- \Rightarrow Sn(k)$	-0.14
$Ni^{2+}(aq) + 2e^- \Rightarrow Ni(k)$	-0.23
$Fe^{2+}(aq) + 2e^- \rightarrow Fe(k)$	-0.44
$Cr^{3+}(aq) + 3e^- \Rightarrow Cr(k)$	-0.74
$Zn^{2+}(aq) + 2e^- \Rightarrow Zn(k)$	-0.76

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18 ^a																
IA	IIA	IIIB	IVB	VB	VIB	VII B	VIII B	VIIIB		IB	IIB	IIIA	IVA	VA	VIA	VIIA	VIIIA ^b																
The Active Metals 1 H 1.008 3 Li 6.941 11 Na 22.990 19 K 39.098 37 Rb 85.468 55 Cs 132.905 87 Fr (223) 4 Be 9.012 12 Mg 24.305 20 Ca 40.08 38 Sr 87.62 56 Ba 137.33 88 Ra 226.025																																	
The Noble Gases 2 He 4.003 10 Ne 20.179 18 Ar 39.948 36 Kr 83.80 54 Xe 131.29 86 Rn (222)																																	
The Nonmetals 5 B 10.81 7 N 14.007 9 F 18.998 17 Cl 35.453 35 Br 79.904 53 I 126.904 85 At (210) 6 C 12.011 8 O 15.999 16 S 32.06 34 Se 78.96 52 Te 127.60 84 Po (209) 13 Al 26.982 15 P 30.974 33 As 74.922 51 Sb 121.75 83 Bi 208.98 14 Si 28.086 32 Ge 72.59 50 Sn 118.69 82 Pb 207.2 31 Ga 69.72 49 In 114.82 81 Tl 204.38 30 Zn 65.38 48 Cd 112.41 80 Hg 200.59 29 Cu 63.546 47 Ag 107.868 79 Au 196.966 28 Ni 58.69 46 Pd 106.42 78 Pt 195.08 27 Co 58.933 45 Rh 102.906 77 Ir 192.22 26 Fe 55.847 44 Ru 101.07 76 Os 190.2 25 Mn 54.938 43 Tc (98) 75 Re 186.21 24 Cr 51.996 42 Mo 95.94 74 W 183.85 23 V 50.942 41 Nb 92.906 73 Ta 180.948 22 Ti 47.88 40 Zr 91.224 72 Hf 178.49 21 Sc 44.956 39 Y 88.906 71 Lu 174.967 20 Ca 40.08 38 Sr 87.62 70 Yb 173.054 19 K 39.098 37 Rb 85.468 69 Tm 168.934 18 Ar 39.948 36 Kr 83.80 68 Er 167.26 17 Cl 35.453 35 Br 79.904 67 Ho 164.930 16 S 32.06 34 Se 78.96 66 Dy 162.50 15 P 30.974 33 As 74.922 65 Tb 158.925 14 Si 28.086 32 Ge 72.59 64 Gd 157.25 13 Al 26.982 31 Ga 69.72 63 Eu 151.96 12 Mg 24.305 30 Zn 65.38 62 Sm 150.36 11 IB 107.868 29 Cu 63.546 61 Pm (145) 10 IVA 121.75 28 Ni 58.69 60 Nd 144.24 9 VIIIB 126.904 27 Co 58.933 59 Pr 140.908 8 <th>VIIIB</th><th>126.904</th> 26 Fe 55.847 58 Ce 140.12 7<th>VII B</th><th>126.904</th> 25 Mn 54.938 57 La 138.905 6<th>VIB</th><th>126.904</th> 24 Cr 51.996 56 Ba 137.33 5<th>VB</th><th>126.904</th> 23 V 50.942 55 Cs 132.905 4<th>IVB</th><th>126.904</th> 22 Ti 47.88 54 Xe 131.29 3<th>IIIB</th><th>126.904</th> 21 Sc 44.956 53 I 126.904 2<th>IIA</th><th>126.904</th> 20 Ca 40.08 52 Te 127.60 1<th>IA</th><th>126.904</th> 19 K 39.098 51 Sb 121.75																		VIIIB	126.904	VII B	126.904	VIB	126.904	VB	126.904	IVB	126.904	IIIB	126.904	IIA	126.904	IA	126.904
Inner Transition Metals 58 Ce 140.12 90 Th 232.038 59 Pr 140.908 91 Pa 231.036 60 Nd 144.24 92 U 238.029 61 Pm (145) 93 Np 237.048 62 Sm 150.36 94 Pu (244) 63 Eu 151.96 95 Am (243) 64 Gd 157.25 96 Cm (247) 65 Tb 158.925 97 Bk (247) 66 Dy 162.50 98 Cf (251) 67 Ho 164.930 99 Es (252) 68 Er 167.26 100 Fm (257) 69 Tm 168.934 101 Md (258) 70 Yb 173.04 102 No (259) 71 Lu 174.967 103 Lr (260)																																	
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