ECE 3455 – ELECTRONICS

HOMEWORK #9

Sedra and Smith 7th Ed. Chapter 6: Problems 6.15, 6.28, 6.29, 6.68

Problems E9.1, E9.2 (see below)

E9.1:



E9.2: (Note: There are no a) and c) circuits.)



Numerical Solutions

6.15) a) ** = 20; ** = 0.9524; *IE* = 1.05[mA]; *Is* = 1.03 x 10-15[A]

 b) ** = 14.3; ** = 0.9346; *IB* = 70[A]; *Is* = 1.03 x 10-15[A]

 c) ** = 18.6; ** = 0.9489; *IC* = 0.13[mA]; *Is* = 10.9 x 10-15[A]

1. ** = 84.2; ** = 0.9883; *IE* = 10.22[mA]; *Is* = 285 x 10-18[A]
2. ** = 70.4; ** = 0.986; *IC* = 73.95[mA]; *Is* = 420 x 10-18[A]

6.28) a) *I1* = 1[mA]

1. *V3* = -2[V]
2. *V4* = 1[V]; *I5* = 1[mA]
3. *V7* = -4.48[V]; *I6* = 0.965[mA]

6.29) a) ** = 93

1. ** = 99
2. ** = 90

6.63) a) *V1* = -0.92[V]; *V2* = 1.42[V]

1. *V3* = 1.34[V]; *I4* = 1.05[mA]
2. *V5* = -0.91[V]; *V6* = -0.21[V]; *V7* = 1.5[V]
3. *V8* = 1.6[V]; *V9* = -0.88[V]
4. *V10* = 0.93[V]; *V11* = 1.63[V]; *V12* = -0.93[V]

9.1) (voltages only…)

 a) VE = 1.4[V] VB = 2.6[V] VC = 11.22[V]

 b) VE = 6.9[V] VB = 7.6[V] VC = 7.22[V]

 c) VE = 10.6[V] VB = 9.8[V] VC = -10.2[V]

 d) VE = 5.7[V] VB = 5.0[V] VC = -5.7[V]

9.2) (voltages only…)

 a) VE = 2.3[V] VB = 3.0[V] VC = 15.0[V]

 b) VE = -0.7[V] VB = 0[V] VC = 3.6[V]

 c) VE = 0.2[V] VB = -0.5[V] VC = 0[V]

 d) VE = 0[V] VB = -10.0[V] VC = 5[V]

 e) VE = 0[V] VB = 0.7[V] VC = 0.2[V]