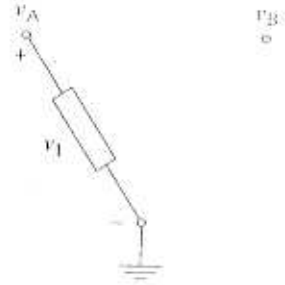


Case A

Case B

FIGURE 3 – 2 *Two possible connections of a two-terminal element.*

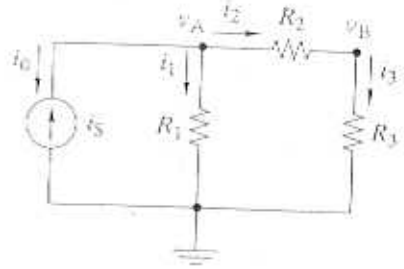


FIGURE 3 – 4 *Circuit for demonstrating node-voltage analysis.*

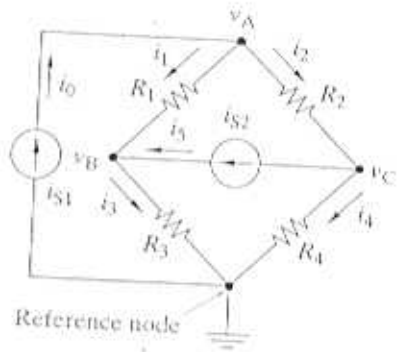


FIGURE 3 – 5

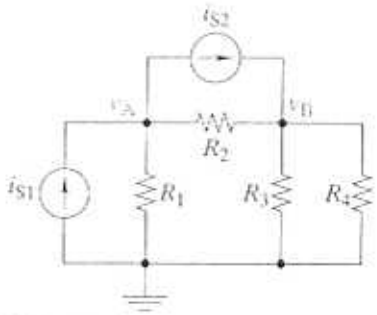


FIGURE 3 – 6 *Circuit for demonstrating writing node-voltage equations by inspection.*

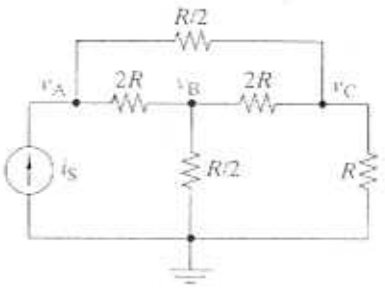
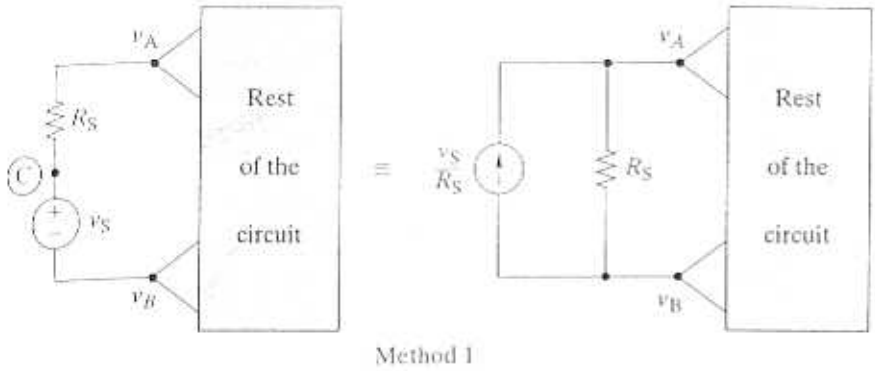
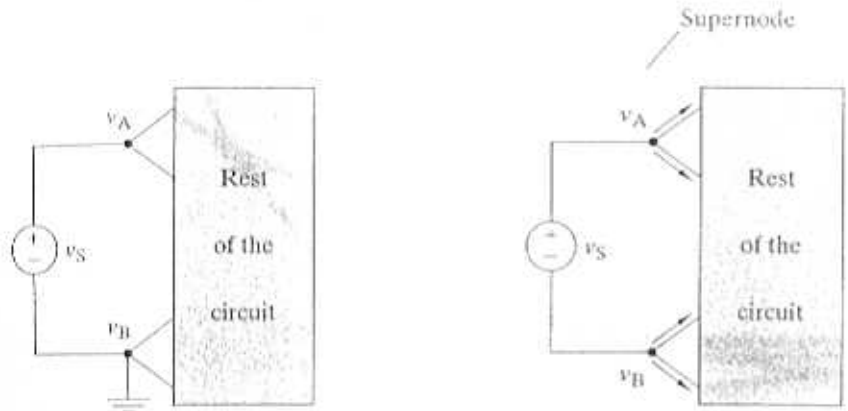


FIGURE 3 – 7



Method 1



Method 2

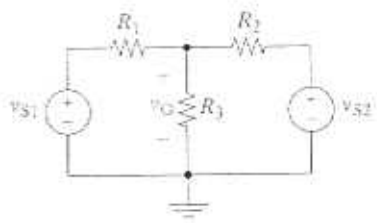
Method 3

FIGURE 3–11 *Three methods of treating voltage sources in node analysis.*

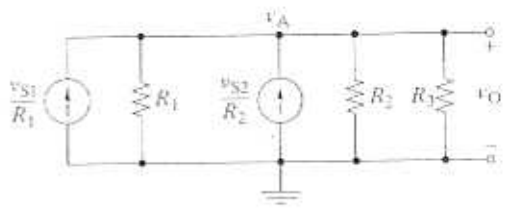
EXAMPLE 3–4

Use node-voltage analysis to find v_O in the circuit in Figure 3–12(a).

FIGURE 3–12



(a)

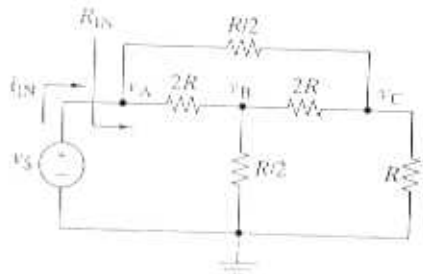


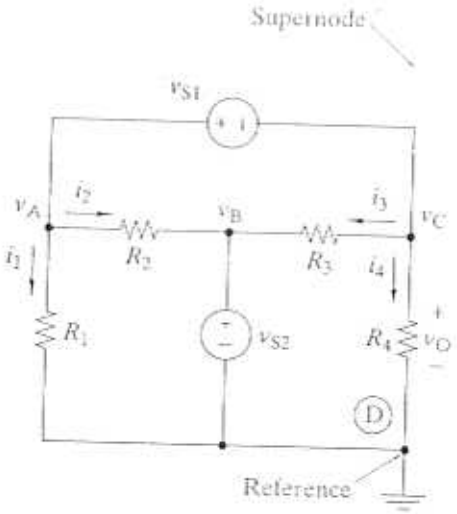
(b)

EXAMPLE 3–5

Find the input resistance of the circuit in Figure 3–13.

FIGURE 3–13





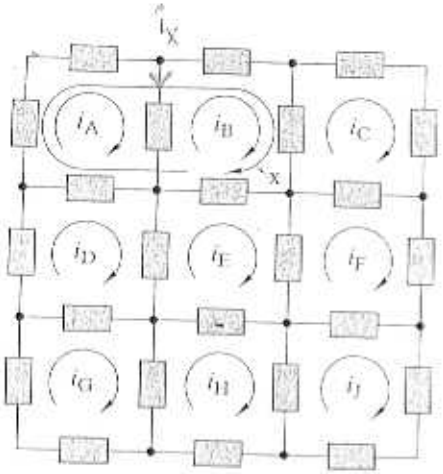


FIGURE 3 – 16 *Meshes in a planar circuit.*

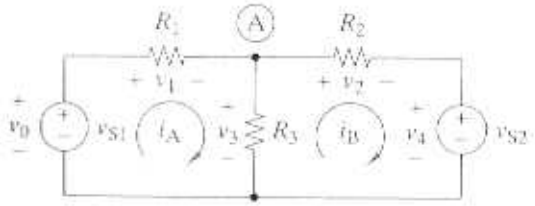


FIGURE 3 – 18 *Circuit for demonstrating mesh-current analysis.*

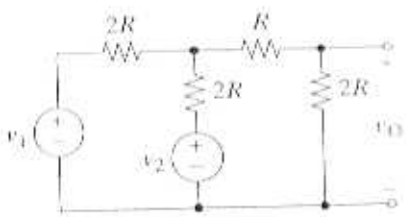


FIGURE 3 – 24

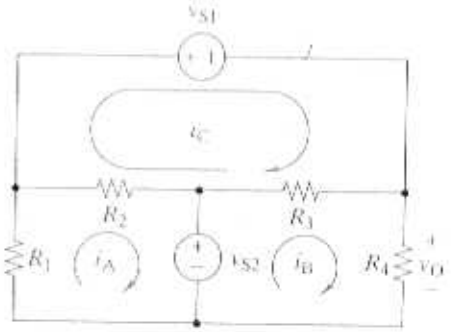


FIGURE 3 – 19

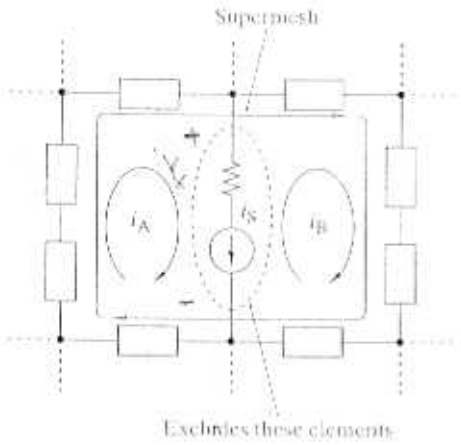


FIGURE 3 – 20 *Example of a supermesh.*

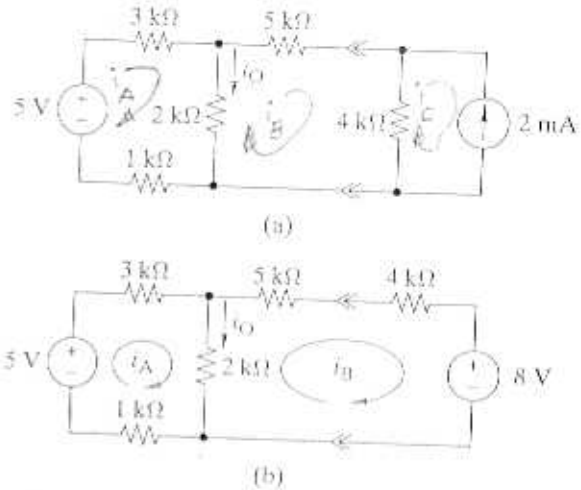


FIGURE 3 – 21

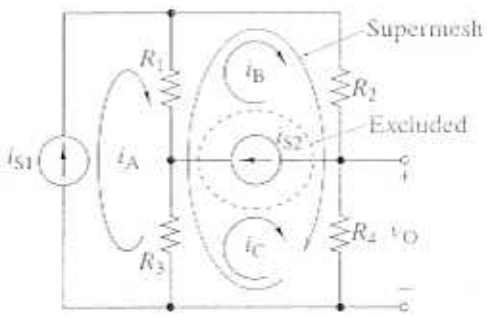


FIGURE 3 – 22

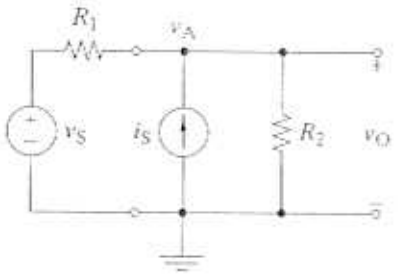


FIGURE 3 – 31 *Circuit used to demonstrate superposition.*

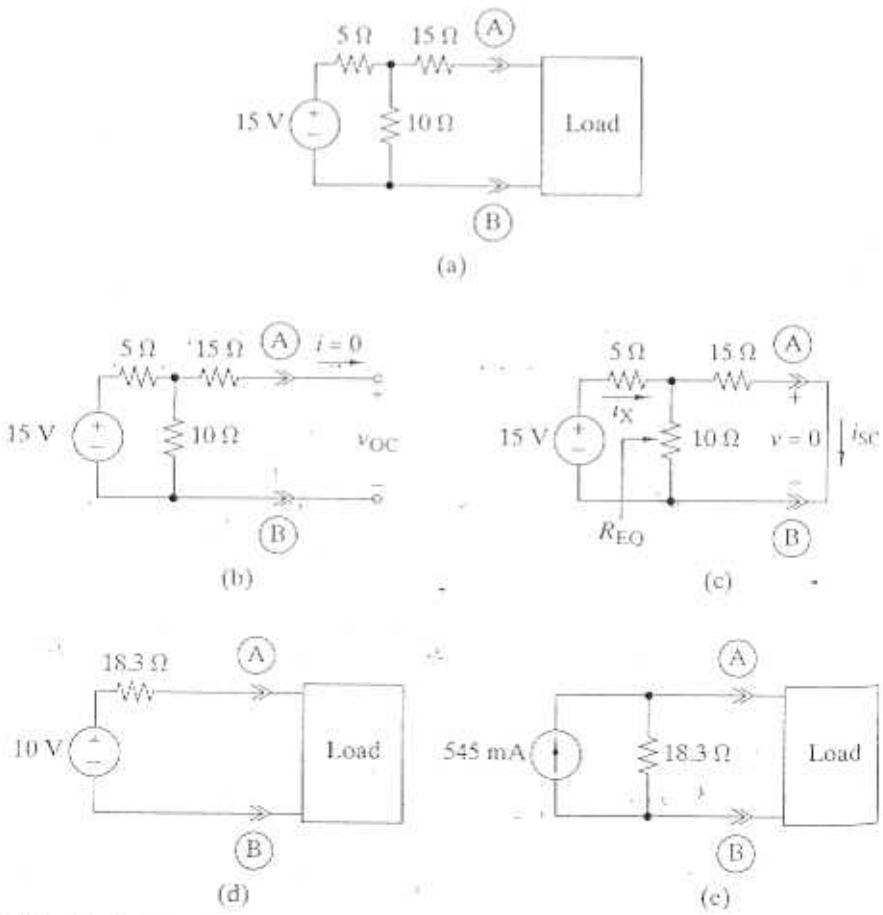
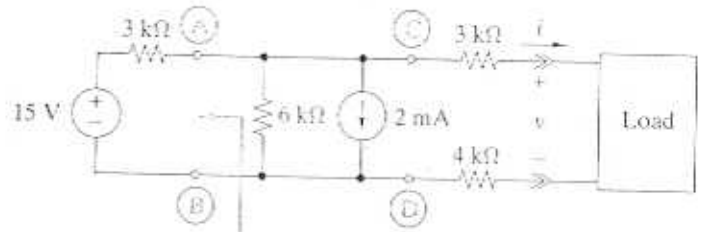
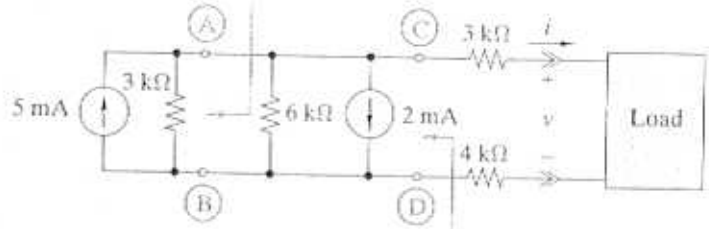


FIGURE 3 – 39 *Example of finding the Thévenin and Norton equivalent circuits: (a) The given circuit. (b) Open circuit yields the Thévenin voltage. (c) Short circuit yields the Norton current. (d) Thévenin equivalent circuit. (e) Norton equivalent circuit.*

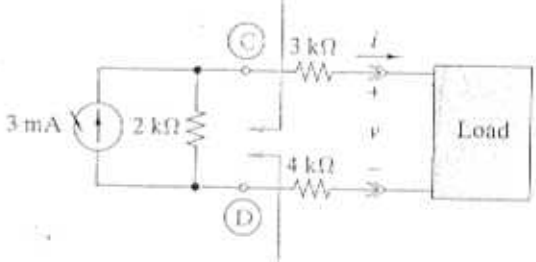
(a)


3 kΩ
A
C
3 kΩ
i
15 V
6 kΩ
2 mA
v
Load
4 kΩ
B
D

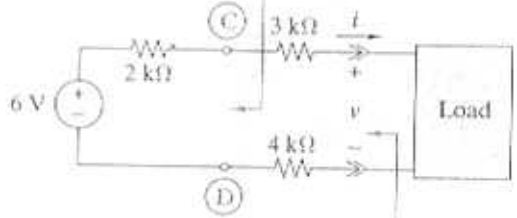
(b)


A
C
3 kΩ
i
3 kΩ
5 mA
6 kΩ
2 mA
v
Load
4 kΩ
B
D

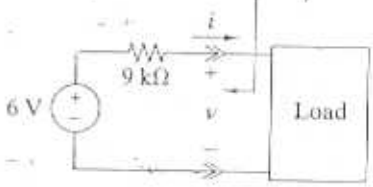
(c)

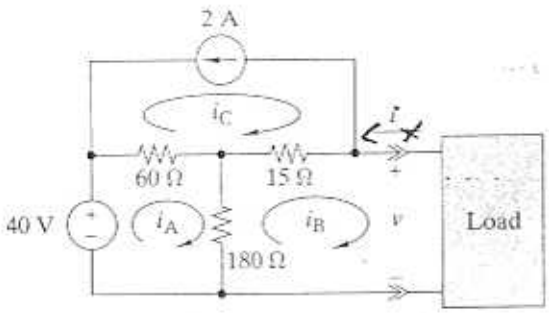

C
3 kΩ
i
3 mA
2 kΩ
v
Load
4 kΩ
D

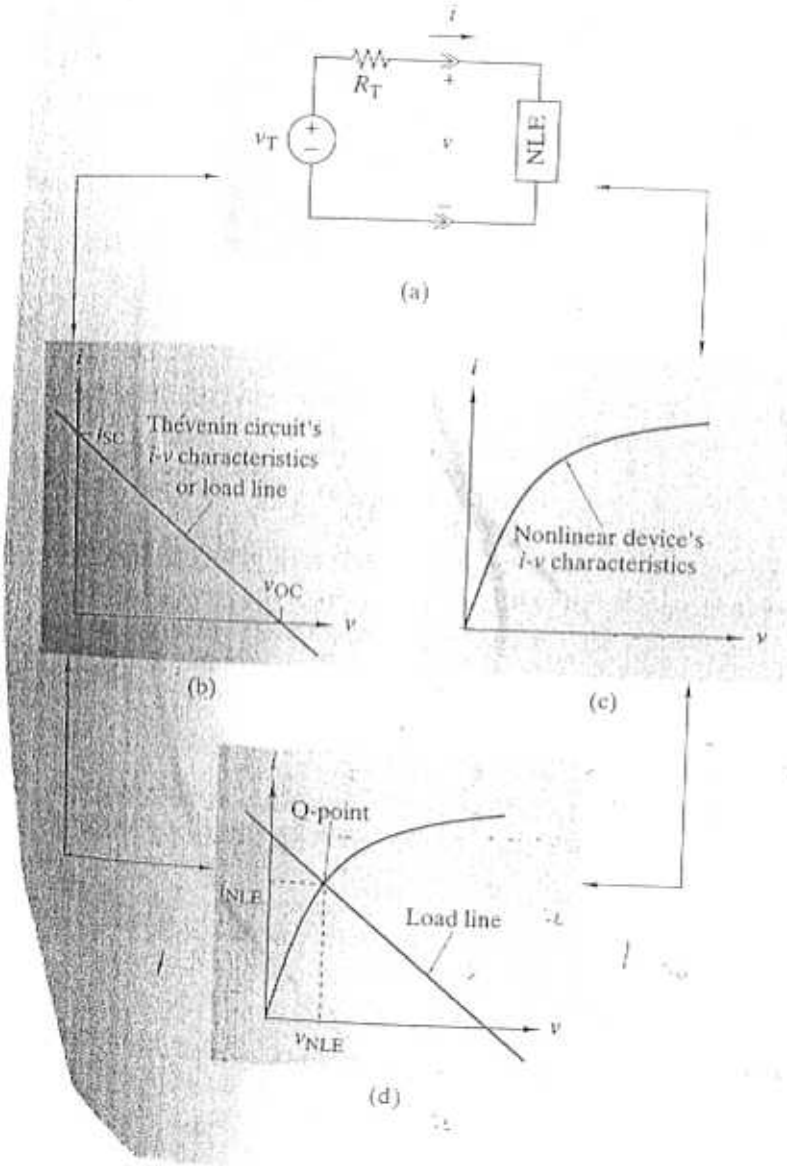
(d)


C
3 kΩ
i
2 kΩ
6 V
v
Load
4 kΩ
D

(e)


i
9 kΩ
6 V
v
Load


2 A
i_C
i
60 Ω
15 Ω
40 V
i_A
i_B
v
Load
180 Ω


i
R_T
+
v_T
v
NLE
(a)
i
i_{SC}
Thévenin circuit's
i-v characteristics
or load line
v_{OC}
v
(b)
i
Nonlinear device's
i-v characteristics
v
(c)
Q-point
i_{NLE}
Load line
v
v_{NLE}
(d)