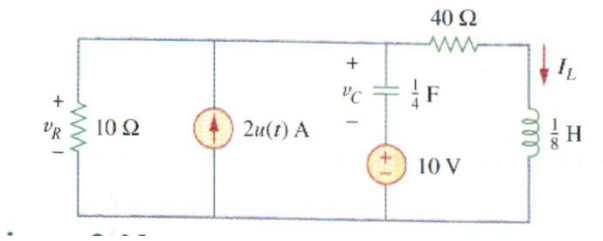
8.3 Refer to the circuit shown in Fig. 8.64. Calculate:

(a) $i_L(0^+)$, $v_C(0^+)$, and $v_R(0^+)$,

(b) $di_L(0^+)/dt$, $dv_C(0^+)/dt$, and $dv_R(0^+)/dt$,

(c) $i_L(\infty)$, $v_C(\infty)$, and $v_R(\infty)$.



The 2u(t) source is OFF for t<0 and ON for t>0.

ANSWER

a) iL(0+) = 0 A
Vc(0+) = -10 V
Vr(0+) = 0V

b) diL(0+)/dt = 0
dVc(0+)/dt = 8 V/s
dVr(0+)/dt = 8 V/s

c) iL(inf) = 0.4A
Vc(inf) = 6V
Vr(inf) = 16 V

8.4 In the circuit of Fig. 8.65, find:

(a) $v(0^+)$ and $i(0^+)$,

(b) $dv(0^+)/dt$ and $di(0^+)/dt$,

(c) $v(\infty)$ and $i(\infty)$.

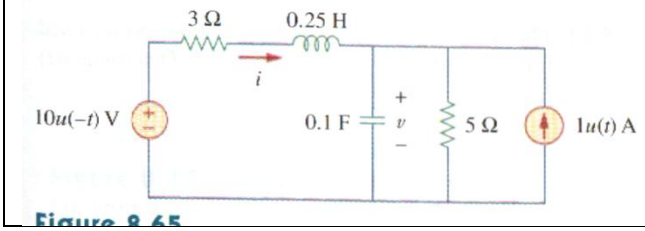


Figure 8.65

The 10u(-t) source is ON for t<0 and OFF for t>0
The 1u(t) source is OFF for t<0 and ON for t>0

ANSWER

a) v(0+) = 6.25 V
i(0+) = 1.25 A

b) dv(0+)/dt = 10 V/s
di(0+)/dt = -40 A/s

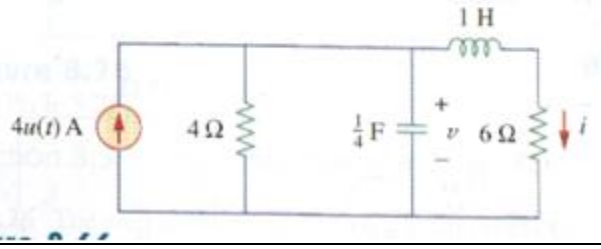
c) v(inf) = 1.875 V
i(inf) = 0.625 V

8.5 Refer to the circuit in Fig. 8.66. Determine:

(a) $i(0^+)$ and $v(0^+)$,

(b) $di(0^+)/dt$ and $dv(0^+)/dt$,

(c) $i(\infty)$ and $v(\infty)$.



ANSWER

a) i(0+) = v(0+) = 0

b) di(0+)/dt = 0
dv(0+)/dt = 16 V/s

c) i(inf) = 1.6 A
v(inf) = 9.6 V