

ELECTRICAL ENGINEERING DEPARTMENT

ELL202 CIRCUIT THEORY

MINOR I

27/8/2015

09:30-10:30

MM/30

Q1. Determine the particular solution of following system of equations.

$$2x'(t) + 3x(t) + y'(t) + 6y(t) = e^{-3t}u(t) \quad x'(t) + x(t) + y'(t) + 6y(t) = u(t) \quad (9)$$

Q2. For the network shown in Fig.1, determine the steady-state response $v_o(t)$. (6)

Q3. For the network shown in Fig.2, determine $v(t)$, $-\infty < t < \infty$. (6)

Q4. In the network in Fig.3, the switch S has been in position 1 for a long time and then thrown to position 2 at $t=0$.

(a) Without writing any differential equation, determine $v_c(t)$ and $\frac{dv_c}{dt}$ at $t=0^+$.

(b) Obtain the differential equation and solve for $v_c(t)$, $0 < t < \infty$. (9)

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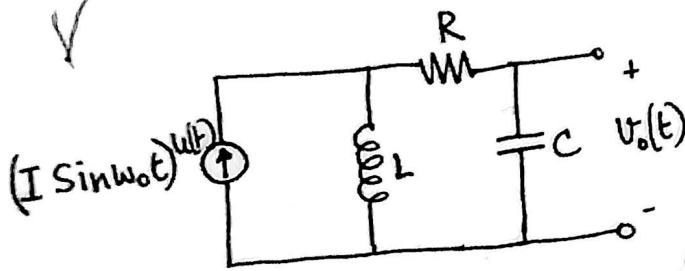


Fig. 1

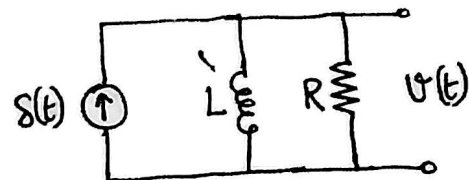


Fig. 2

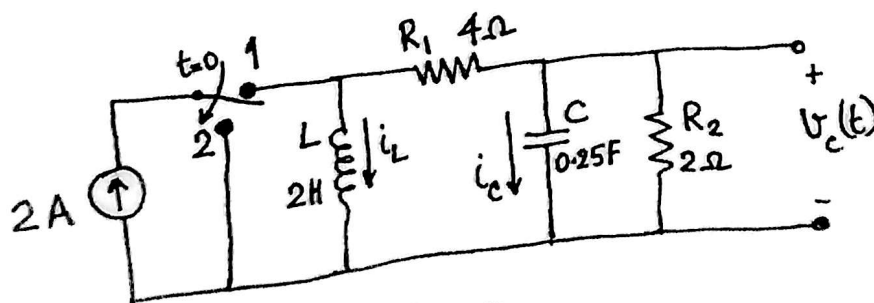


Fig. 3