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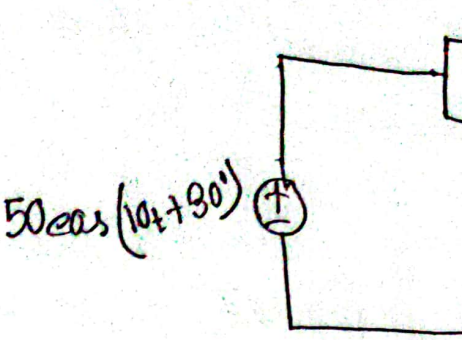
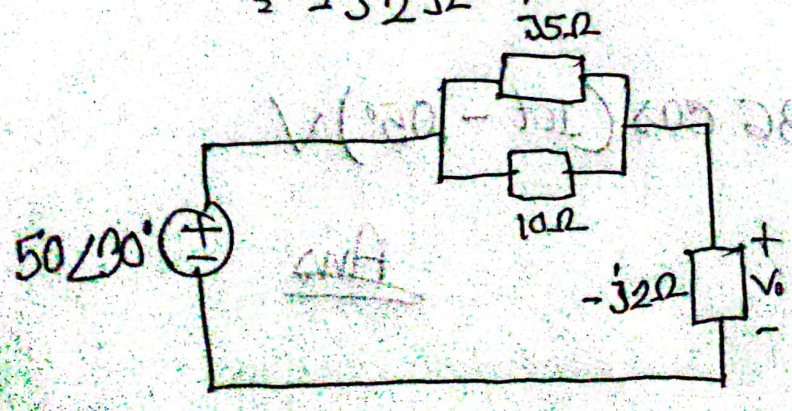
ID: 2020-2-60-037

Answer to the question no: 01



$$Z_L = j\omega L$$
$$= (j \times 10 \times 0.5)\Omega$$
$$= j5\Omega$$

$$Z_C = \frac{-j}{\omega C}$$
$$= \frac{-j}{10 \times \frac{1}{20}}$$
$$= -j2\Omega$$

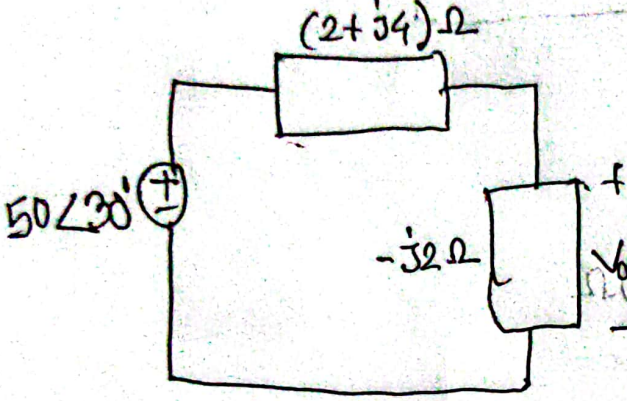


So,

$$Z' = (j5 \,||\, 10)\,\Omega$$

$$= \frac{j5 \times 10}{j5 + 10}\,\Omega$$

$$= (2 + j4)\,\Omega$$



Therefore,

$$V_o = \frac{-j2}{2 + j4 - 2j} \times 50\angle 30^\circ$$

$$= 35.36\angle -105^\circ$$

$$v_o(t) = 35.36 \cos(10t - 105^\circ)\,V$$

Ans

Answer to the question: 02

Given

$$V(t) = 2.5 \sin(25t + 50^\circ)$$

amplitude; $V_m = 2.5V$

Phase; $\phi = 50^\circ$

$\omega = 25$

Period, $T = \frac{2\pi}{25}$

$= 0.2513s$

Frequency, $f = \frac{1}{T}$

$= \frac{1}{0.2513}$

$= 3.979 Hz$