Ve 216: Introduction to Signals and Systems Quiz

Yong Long

The University of Michigan- Shanghai Jiao Tong University Joint Institute
Shanghai Jiao Tong University

Quiz 3

Quiz

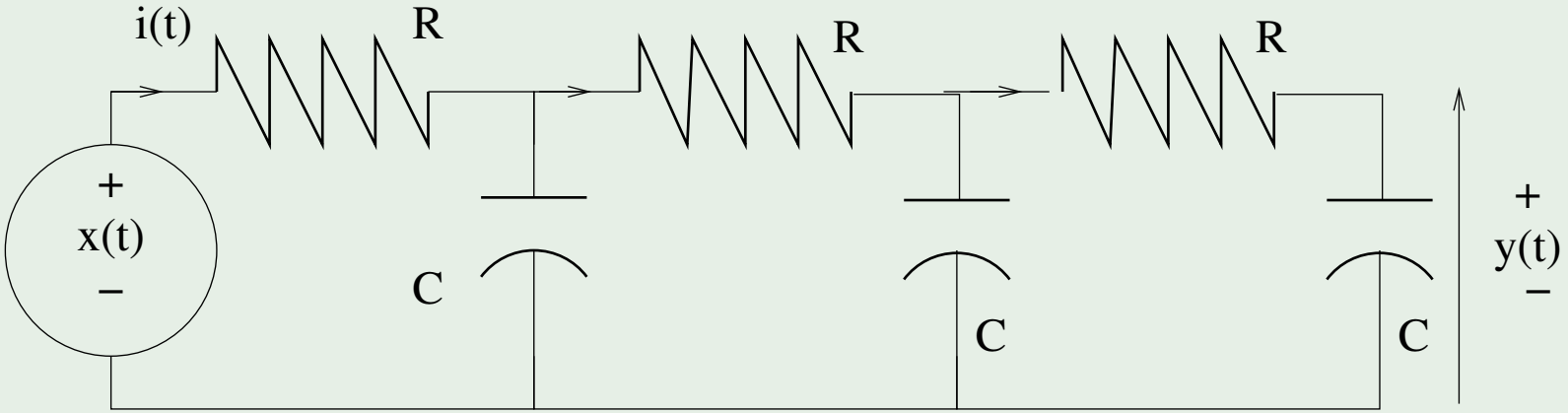
Example (5)

A signal $x(t)$ with spectrum $X(\omega) = (1 - 4|\omega|)\,\mathrm{rect}(2\omega)$ is modulated by the following modified impulse train:
$p(t) = \sum_{n=-\infty}^{\infty} 2\delta(t - 5n) - \delta(t - 5n - 1) - \delta(t - 5n + 1)$.
Determine and sketch the magnitude spectrum of the resulting signal.

Quiz

Example (5)

Three of the RC circuits discussed in class are connected in series. Find the frequency response $H(\omega)$ for this circuit.



Example

Example (5)

A 2 Hz cosinusoidal signal of 4 volt peak-to-peak amplitude is applied to a system described by the following differential equation

$$3y(t) + 2\frac{\mathrm{d}}{\mathrm{d}t}y(t) = 6x(t) - 4\frac{\mathrm{d}}{\mathrm{d}t}x(t).$$

Determine the output signal. (selected from Exam 2 in Summer 2014)