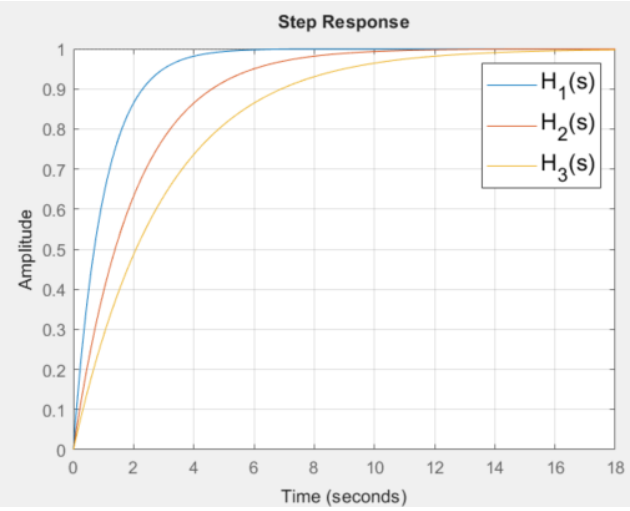
SCS

- multiple choice tests license June 2026 -

1. The responses to the unit step input of ~~a~~three RC-type circuits having the transfer function

$$H(s) = \frac{\frac{1}{RC}}{s + \frac{1}{RC}}$$

are:



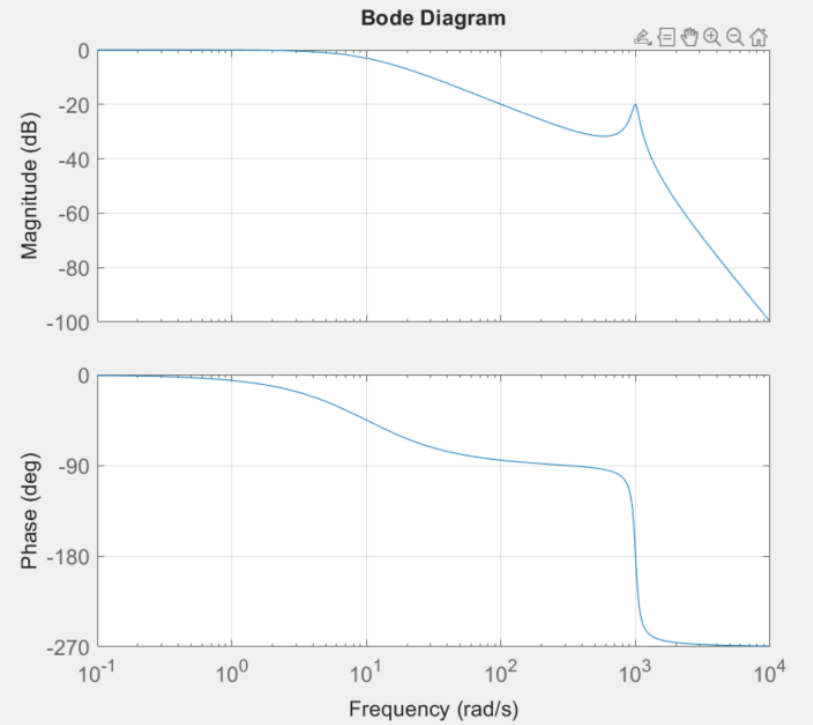
Which of the 3 systems has the smallest product $R \cdot C$?

a) $\boldsymbol{H_1(s)}$
b) $H_2(s)$
c) $H_3(s)$
d) There isn't enough information for an answer.

Correct answer: a)

1. ~~For a~~A circuit with the Bode diagrams represented below has ~~the~~ as input the signal:

$$e(t) = 2\cos(t) + \sin(10^3 t)$$



Which of the following relationships best models the output signal?

a) $\boldsymbol{y(t) = 2 \cdot \cos(t) + 10^{-1} \sin(10^3 t - \pi)}$

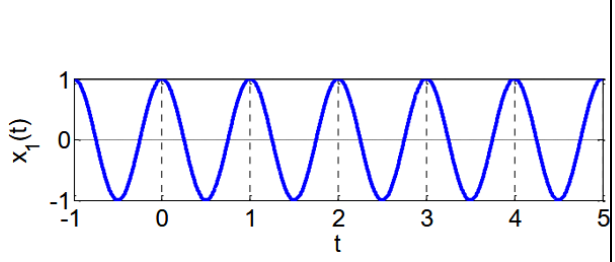
b) $y(t) = 2 \cdot \cos(t) + 10^{-20} \sin(10^3 t - \pi)$

c) $y(t) = 2 \cdot \cos(t) + \sin(10^3 t - \pi)$

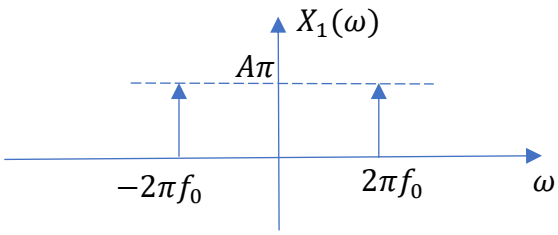
d) $y(t) = 2 \cdot 10^{-\pi} \cdot \cos(t) + 10^{-\frac{20}{20}} \sin(10^3 t)$

Correct answer: a)

2. The Fourier transform of the signal $x_1(t) = Acos(2\pi f_0 t)$ shown in figure (a), is shown in figure (b).

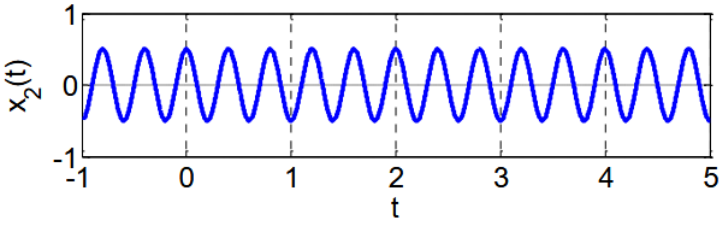


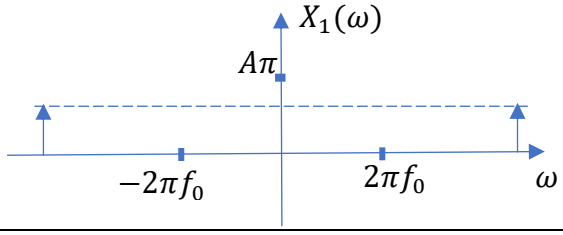
a)



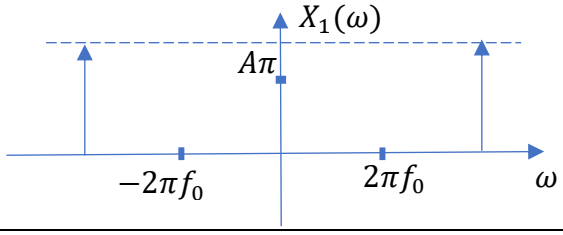
b)

What is the Fourier transform of the signal $x_2(t)$?

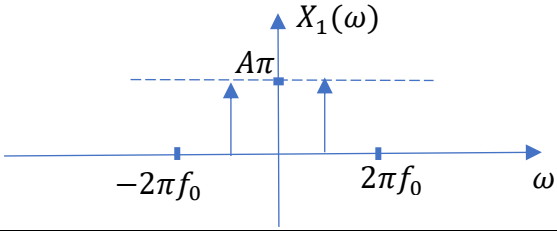




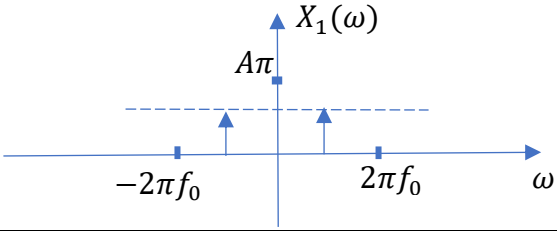
a)



b)



c)



d)

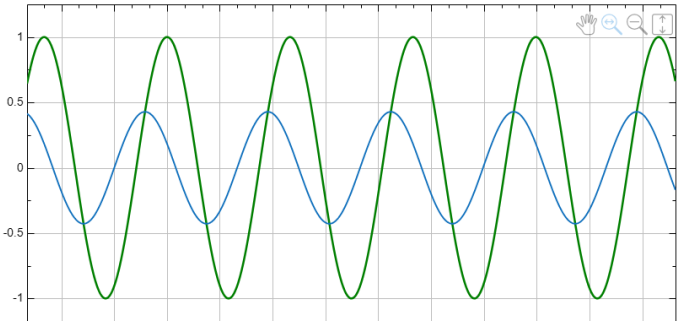
Correct answer: a)

3. ~~For a~~A system with the transfer function:

$$H(s) = \frac{10s}{s^2 + 10s + 10^4}$$

has as input the signal $e(t) = \sin(\omega_0 t)$.

The input and the output signals are (the input is represented with green and output is represented with bleu):

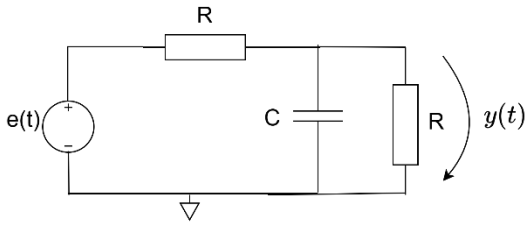


Which is the correct answer?

a) $\boldsymbol{\omega_0 < 100\ rad/sec}$
b) $\omega_0 > 100\ rad/sec$
c) $\omega_0 = 100\ rad/sec$
d) $\omega_0 > 10^4\ rad/sec$

Correct answer: a)

5) If R=1 Ω and C=0.5 F, what is the transfer function of the circuit?



a) $H(s) = \frac{2}{s+4}$

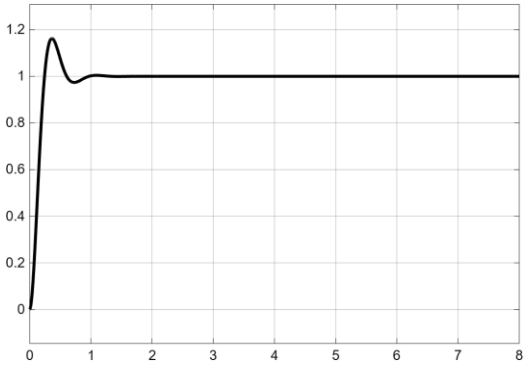
b) $H(s) = \frac{s+1}{s+2}$

c) $H(s) = \frac{2}{s+2}$

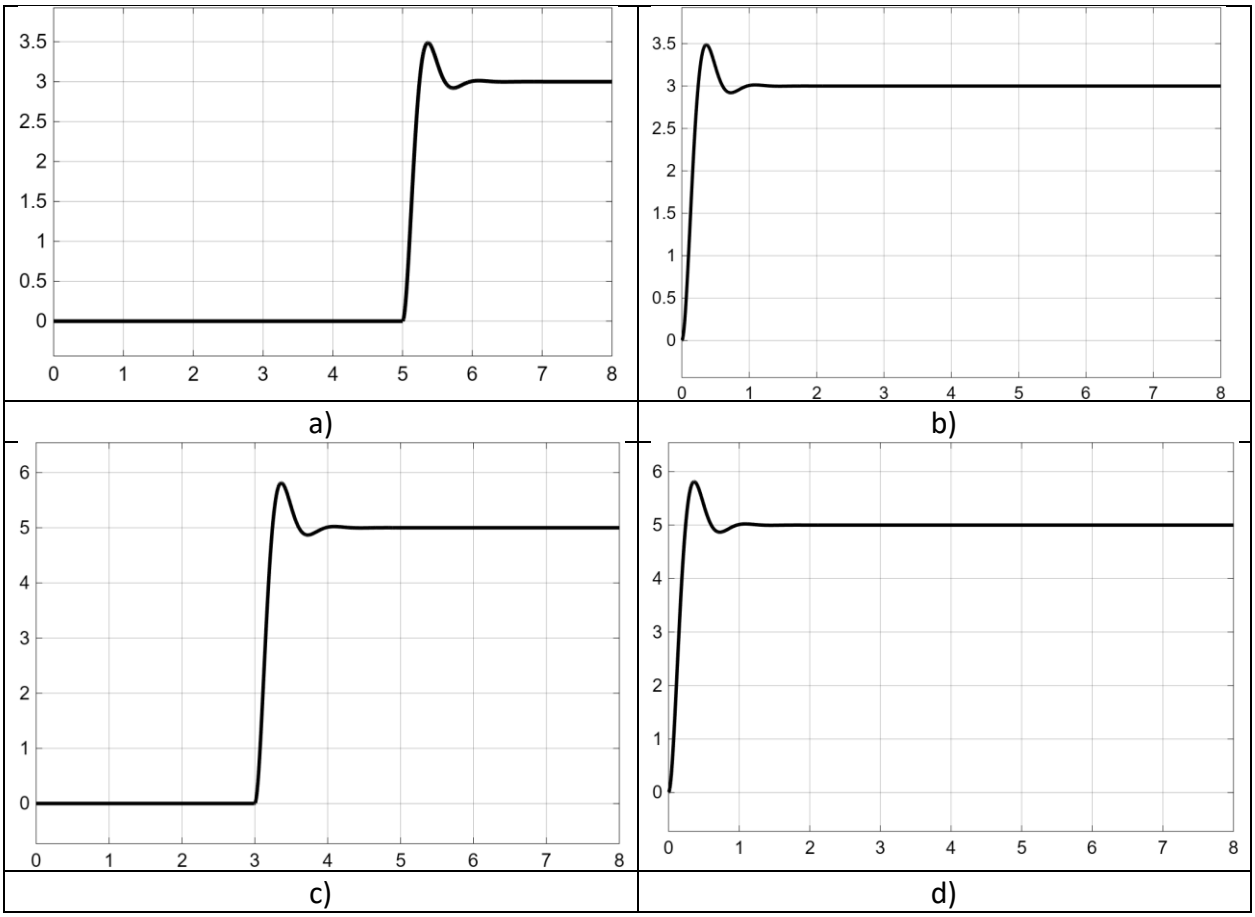
d) $H(s) = \frac{1}{s+2}$

Correct answer: a)

6) If a linear and time-invariant system responds to the unit step σ(t) as shown,



what is the response to the signal $3\sigma(t-5)$?



Correct answer: a)