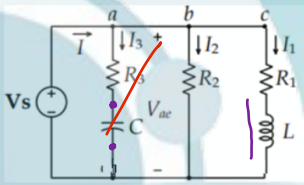
EE204: Winter 2021_Final Exam (EE204_2nd semester)

3

According to the figure shown below, which statement is true:
(2 Points)



Assume Vs is DC power supply → capacitor → open circuit
→ inductor → short circuit

R3=2R1=4R2
2

- Both A and C are correct
- Both B and C are correct
- B. The current I1 is double of I2
- D. I1 is one fourth of I2
- C. I3 = 0
- A. The current I1 is half I2

$V = IR$

$I_1 = \frac{V}{2R_2}$

$I_2 = \frac{V}{R_2}$

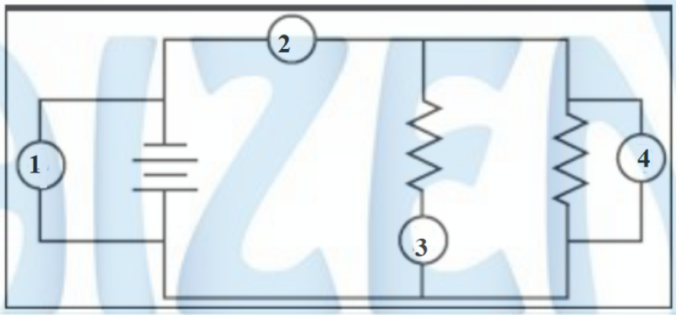
I_1 is half I_2

$I_3 = 0$ because it becomes open circuit

EE204: Winter 2021_Final Exam (EE204_2nd semester)

4

You are asked to connect the following circuit in the lab, to connect it correctly:
(1 Point)



- A. Devices 1 and 4 are ammeters, Devices 2 and 3 are voltmeters
- ✓ B. Devices 2 and 3 are ammeters, Devices1 and 4 are voltmeters
- Both A and C are correct
- C. Devices 2 and 4 are ammeters, Devices 1 and 3 are voltmeters
- None of these.

Voltmeter → parralel

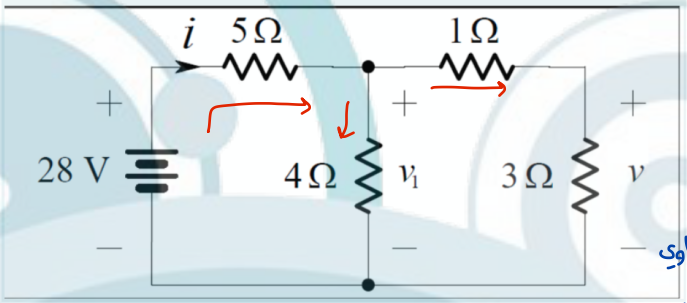
Ammeter → series

EE204: Winter 2021_Final Exam (EE204_2nd semester)

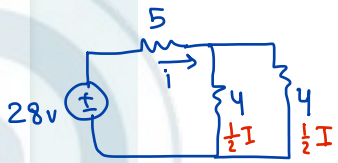
5

According to the figure, which statement is correct:
(1 Point)

V=IR



بالمنطق
Series ← 1,3



i سوف يتقسم بشكل متساوي
لأن المقاومتان متساويتان

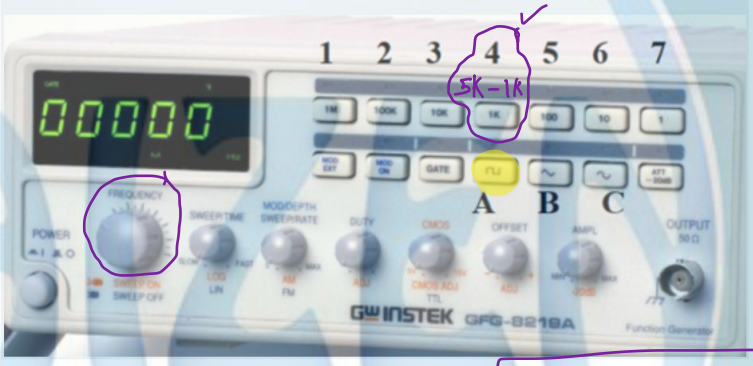
- None of these
- ✓ C. The current through 4 ohm is equal to the current through 3 ohm
- A. The voltage across 4 ohm is higher than the voltage across 5 ohm
- B. The current through 4 ohm is higher than the current through 3 ohm
- Both A and C

EE204: Winter 2021_Final Exam (EE204_2nd semester)

6

For the shown function generator device, if you want to generate a square wave with 3000 Hz, which buttons you have to press:
(1 Point)

A

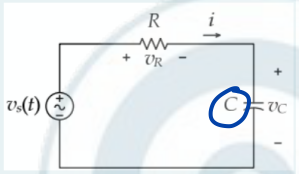


- B then 4, then rotate the frequency knob
- None of the above
- A then 5, then rotate the frequency knob ما بنفع X
- C then 4, then rotate the frequency knob
- ✓ A then 2, then rotate the frequency knob بنفع
- C then 2, then rotate the frequency knob

A 4 Frequence knob
هاي صح أكثر لكن لأنها غير موجودة
بختار من الموجود

EE204: Winter 2021_Final Exam (EE204_2nd semester)

7



For the series RC circuit shown, given that the source frequency is 150 Hz, R= 2000 ohm and the total impedance phase angle is (-75) degree. The capacitor C value is:
(2 Points)

- 142.2 nF
- 1.422 nF
- 14.22 nF
- 142.2 microF
- None of the above

$-75^\circ = -\tan^{-1}\left(\frac{1}{\omega CR}\right)$

$\tan(75^\circ) = \frac{1}{300\pi \times C \times 2000}$

$C = 1.42 \times 10^{-7}\ F$

$= 142.15\ nF$

$\omega = 2\pi f$

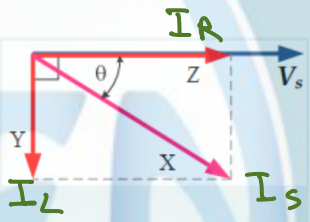
$= 2\pi \times 150$

$\omega = 300\pi$

EE204: Winter 2021_Final Exam (EE204_2nd semester)

- None of the above

8



According to the phasor diagram for a parallel RL circuit shown, the symbols X, Y and Z are referred to:
(2 Points)

- X is for inductor current, Y is for source current and Z is for the resistor current
- X is for resistor current, Y is for source current and Z is for the inductor current
- X is for source current, Y is for resistor current and Z is for the inductor current
- X is for source current, Y is for inductor current and Z is for the resistor current
- None of the above
- X is for resistor current, Y is for inductor current and Z is for the source current
- X is for inductor current, Y is for resistor current and Z is for the source current

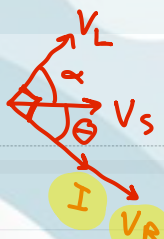
EE204: Winter 2021_Final Exam (EE204_2nd semester)

- X is for inductor current, Y is for source current and Z is for the resistor current
- X is for resistor current, Y is for source current and Z is for the inductor current
- X is for source current, Y is for resistor current and Z is for the inductor current
- X is for source current, Y is for inductor current and Z is for the resistor current
- None of the above
- X is for resistor current, Y is for inductor current and Z is for the source current
- X is for inductor current, Y is for resistor current and Z is for the source current

9 V_R I_s

The resistor voltage in a series RL circuit is always out of phase with the source current.
(2 Points)

- True
- False



(I, V_R) in phase

EE204: Winter 2021_Final Exam (EE204_2nd semester)

- B

11

For a series R-L circuit :

(Note that you can select more than one choice if needed, but the wrong choice will cancel the correct one.)
(2 Points)

- the inductor impedance is minimum at high frequency
- None of the above
- the total impedance Z is totally real
- the source current is maximum at low frequeny
- the power factor is equal one

$$Z = \frac{V}{I}$$

$$2\pi f L = \frac{V}{I}$$

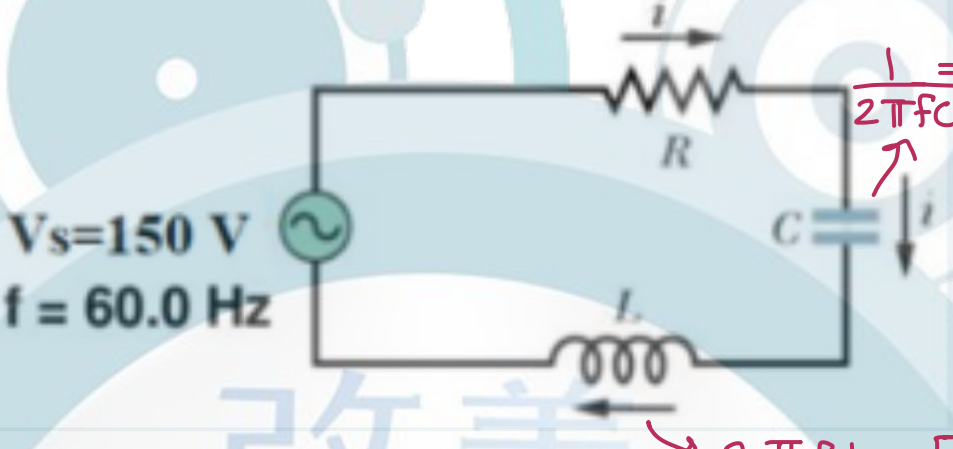
in (R-L) series

$$I \propto \frac{1}{f}$$

علاقة عكسية

EE204: Winter 2021_Final Exam (EE204_2nd semester)

For the series R-L-C circuit shown, Given that R=200 ohm, L = 1.5 H and C = 3.5 microfarad. answer the following questions:



12

The magnitude of total impedance in (ohm) is:
(2 Points)

- 54.68
- 303.62
- None of above
- 1529.92
- 1229

EE204: Winter 2021_Final Exam (EE204_2nd semester) Close

13

The magnitude of the source current is:
(2 Points)

- 0.49 A
- 2.74 A
- 4.9 A
- None of above
- 1.5 A

14

The phase angle between the current and the voltage in (degree) is:
(2 Points)

- -70.8
- - 43.9
- -8.72

EE204: Winter 2021_Final Exam (EE204_2nd semester)

EE204: Winter 2021_Final Exam (EE204_2nd semester) ...

15

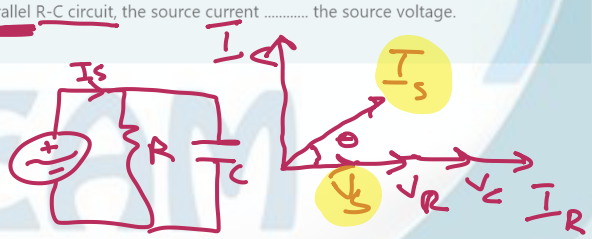
For a parallel R-L circuit, the correct statement is:
(2 Points)

- As source frequency decrease, the inductor current will decrease
- Vs lag I
- As source frequency increase, XL increase
- None of these
- As source frequency decrease, R will decrease

16

In the case of a parallel R-C circuit, the source current ..... the source voltage.
(2 Points)

- None of these
- Lags

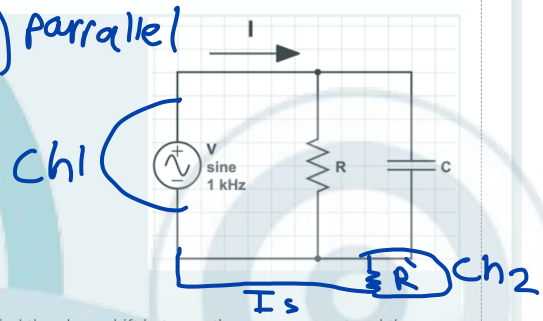


in (R-C)

Is leads Vs by θ always

17

(R-C) parralel



Ch1

Ch2

For the circuit shown, if we want to find the phase shift between the source current and the source voltage using the oscilloscope device, then we had to:
(2 Points)

Vs

- connect CH1 across V, and connect CH2 in series with V
- connect CH1 across R, and connect CH2 in series with C
- An element to the circuit must be added and connect CH2 parallel to it while CH1 is connected to V
- connect CH1 across V, and connect CH2 across C
- None of these
- connect CH1 across V, and connect CH2 across R

18

↓ (R-C) Parralel Frequency ↑

As frequency decreases, which of the following statements is true?
(2 Points)

- both series and parallel RC impedance decrease
- series RC impedance increases and parallel RC impedance decreases
- None of these
- series RC impedance decreases and parallel RC impedance increases
- both series and parallel RC impedance increase

X_C ↓ in series

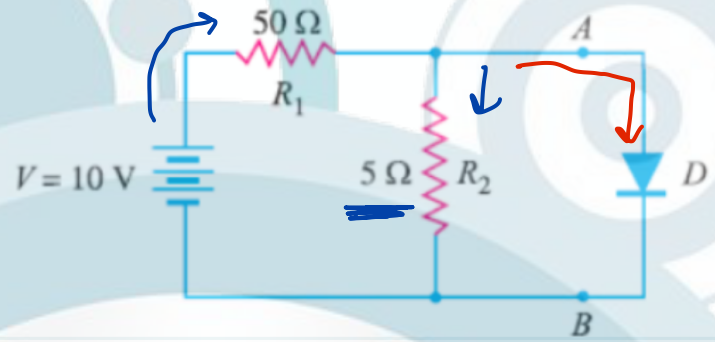
X_C ↓ in parallel

in R-C

(frequency) $\frac{1}{\alpha}$ (X_C)

EE204: Winter 2021_Final Exam (EE204_2nd semester)

Use the figure to answer the following questions, assume practical germanium diode (V_γ = 0.3 V)



19

The voltage (in volt) cross 5 ohm resistor is:
(2 Points)

- None of above
- 0.3
- 0.809
- 0.909
- 0.7
- 0.55

EE204: Winter 2021_Final Exam (EE204_2nd semester) ...

For a series R-L-C circuit, the resistor voltage variation with frequency is shown in the figure, answer the following questions:

23

The lower and upper cutoff (corner) frequencies, respectively (fL and fH) are:
(2 Points)

- None of the above
- 4 and 6
- 2 and 8
- 1 and 9
- 3 and 7
- 5 only

24

The voltage at the resonance frequency is:
(1 Point)

- 3
- 4.5
- 5
- 3.5