

Started: Dec 7 at 9:17am

Quiz Instructions

Hi to all:)

Good luck on your exam! You have to answer all the questions both the problem solving part and the objective part by clicking it from the given choices, plus kindly email to me at donabel.deveas@dlsu.edu.ph the complete solutions also for the problem solving part until 1230 pm only, compile and email all the solutions before sending it at donabel.deveas@dlsu.edu.ph. Thank you and God bless you all:)

Question 1

2 pts

Which of the following defines voltage?

- ☒ Work required to move a charge particle
- ☐ Power required to move a charge particle
- ☐ Simply the charge over unit energy
- ☐ Amount of energy required per unit time

Question 2

2 pts

An ac circuit has an 80- ohm R , 20- ohm XL, and a 40- ohm XC in parallel. If the applied voltage is 24 Vac, what is the impedance angle of the circuit?

- ☐ -51.3
- ☒ + 63.4
- ☐ - 45
- ☐ + 26.6

Question 3

2 pts

Battery cells are connected in parallel to

Animospace Support

○ decrease the voltage output

○ decrease the current capacity

● increase the current capacity

○ increase the voltage output

Question 4

2 pts

A string of two 1000-ohm resistances is in series with a parallel bank of two 1000-ohm resistances. The total resistance of the series-parallel circuit equals

○ 250 ohms

○ 4000 ohms

○ 3000 ohms

● 2500 ohms

Question 5

2 pts

A voltage of 120 V is applied across two resistors, R1 and R2, in series. If the voltage across R2 equals 90 V, how much is the voltage across R1?

○ 90V

● 30V

○ 120V

Question 6

2 pts

The capacitive reactance, X_c , of a capacitor is

● inversely proportional to frequency

○ unaffected by frequency

○ directly proportional to frequency

○ directly proportional to capacitance

Question 7**2 pts**

A sine wave with a peak value of 20 V has an rms value of

- ☐ 56.6 V
- ☒ 14.14 V
- ☐ 12.74 V
- ☐ 28.28 V

Question 8**2 pts**

A closed switch has a resistance of approximately

- ☐ infinity
- ☒ zero ohms
- ☐ 1 Mega ohm

Question 9**2 pts**

How much is the inductance of a coil that draws 25 mA of current from a 24-Vac source whose frequency is 1 kHz?

- ☒ 152.8 mH
- ☐ 15.28 mH
- ☐ 6.37 H
- ☐ 63.7 μ H

Question 10**2 pts**

For an inductor in a sine-wave ac circuit



☒ VL leads iL by 90

☐ VL and iL are in phase

☐ VL lags iL by 90

Question 11

2 pts

In a parallel RC circuit where $I_R = 8 \text{ A}$ and $I_C = 10 \text{ A}$, how much is the total current?

☐ 18 A

☒ 12.81 A

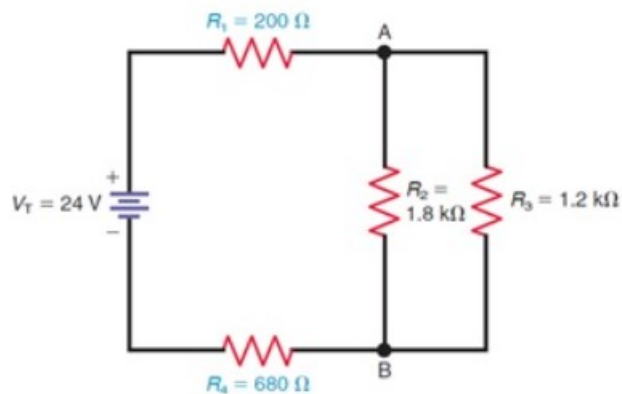
☐ 164 A

☐ 2 A

Question 12

2 pts

If R_3 becomes open, what happens to the voltage across points A and B?



☒ It stays the same

☐ It increases

☐ It decreases

Question 13

2 pts

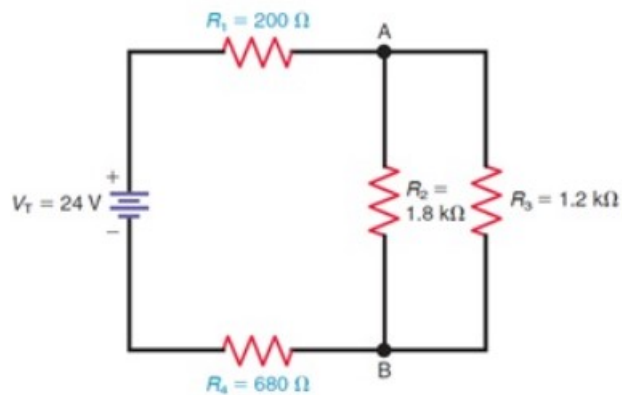
For a steady dc current, the X_L of an inductor is

- ☐ infinite
- ☒ 0 ohms
- ☐ usually about 10 kohms
- ☐ extremely high

Question 14

2 pts

How much is I_3 through R_3 ?



- ☐ 15mA
- ☒ 6mA
- ☐ 45mA
- ☐ 9mA

Question 15

2 pts

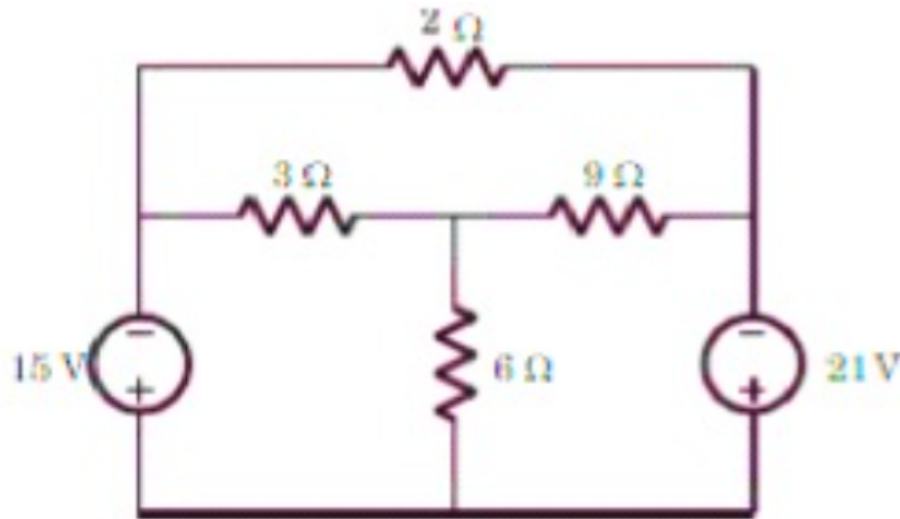
the inductive reactance, X_L , of an inductor is

- ☐ unaffected by frequency
- ☐ inversely proportional to frequency
- ☒ directly proportional to frequency

Question 16

2 pts

How many nodal equations can be derived from the circuit shown in figure below?

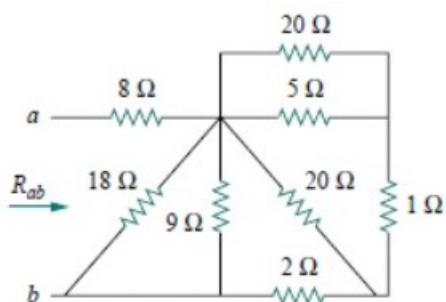


- ☐ 5
- ☒ 3
- ☐ 4
- ☐ 2

Question 17

2 pts

Find R_{ab} for the circuit



- ☐ 12 ohm

- ☒ 11 ohm
- ☐ 20 ohm

Question 18

2 pts

In a series RC circuit where $R = X_C$, the impedance angle is

- ☒ +45
- ☐ 90
- ☐ 0
- ☐ - 45 degrees

Question 19

2 pts

Which of the following is the BEST statement regarding the use of superposition theorem?

- ☐ Replace all resistors with a short circuit
- ☒ Zero all voltage and current sources except one
- ☐ Open all the voltage sources
- ☐ Open all the current sources

Question 20

2 pts

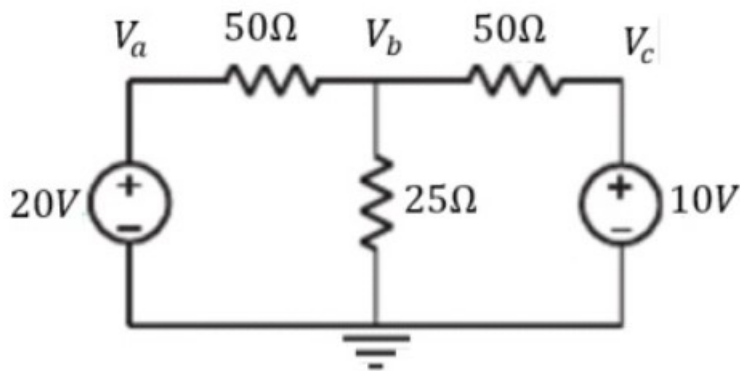
With 100 V applied across a 10,000-ohm resistance, the power dissipation equals

- ☐ 1kW
- ☒ 1W
- ☐ 1mW
- ☐ 100W

Question 21

2 pts

For the circuit shown in figure above, what is the voltage at node a ?


☐ 30 V

☐ 10 V

☐ -20V

☒ 20 V

Question 22

2 pts

Which of the following is defined as “motion of charge” or “the time rate of change of charge passing through a conductor”.

☐ Voltage

☐ Power

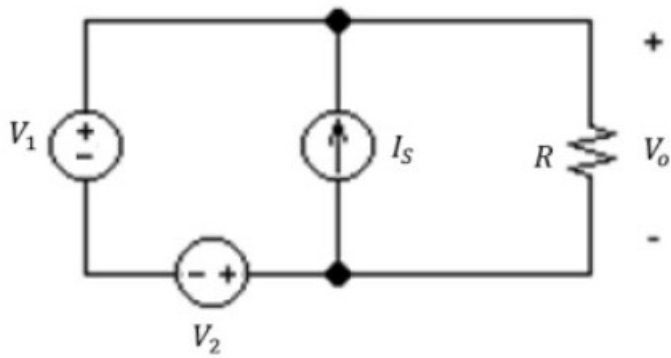
☒ Current

☐ Work

Question 23

2 pts

Find the output voltage, V_o , if $V_1 = 10V$, $V_2 = 4V$, $I_S = 2A$, and $R = 5\Omega$.



- ☐ - 6 V
- ☐ 10 V
- ☒ 6 V
- ☐ 4 V

Question 24

2 pts

with R constant

- ☒ V and I are directly proportional
- ☐ V and I are inversely proportional
- ☐ I and P are inversely related

Question 25

2 pts

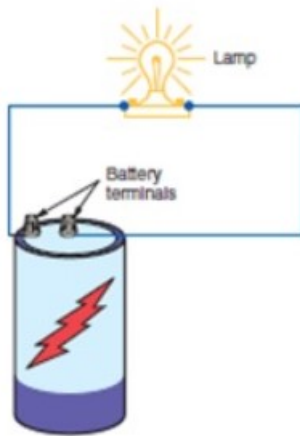
For direct current (dc), a capacitor acts like a(n)

- ☐ small resistance
- ☒ short
- ☐ open
- ☐ closed switch

Question 26

2 pts

TRUE or FALSE: The bulb has a potential difference of 1.5 V across its filament only when connected to the voltage source.



- ☒ True
- ☐ False

Question 27

2 pts

Which of the following statements is false?

- ☐ There is no current in an open circuit
- ☐ The resistance of a short circuit is practically zero
- ☒ The resistance of an open circuit is practically zero
- ☐ The resistance of an open circuit is infinitely high

Question 28

2 pts

It represents a single element such as a voltage source or a resistor.

- ☒ branch
- ☐ nodes
- ☐ loops

Question 29

2 pts

A 46-mH inductive coil has a resistance of 10 ohms. How much current will it draw if connected across a 100-V 60-Hz source?

- ☒ 5 angle of -60 deg or 5 cis -60 degress
- ☐ 3-j4
- ☐ 11.66-j9
- ☐ 3-j5

Question 30

2 pts

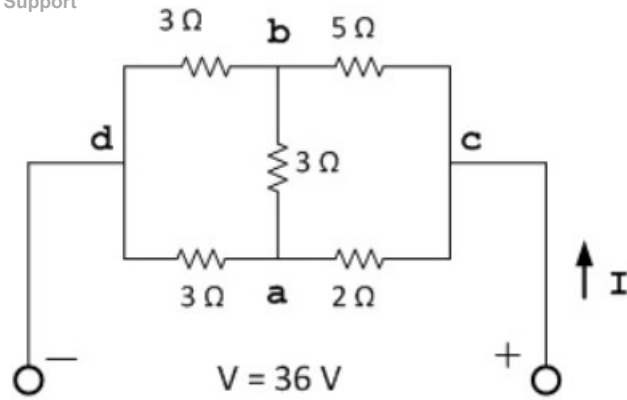
An RL high-pass filter uses a 60-mH L and a 1-kohm R. What is its cutoff frequency?

- ☐ 600 kHz
- ☒ 2.65 kHz
- ☐ 32 kHz
- ☐ 256 kHz

Question 31

2 pts

Find the current I

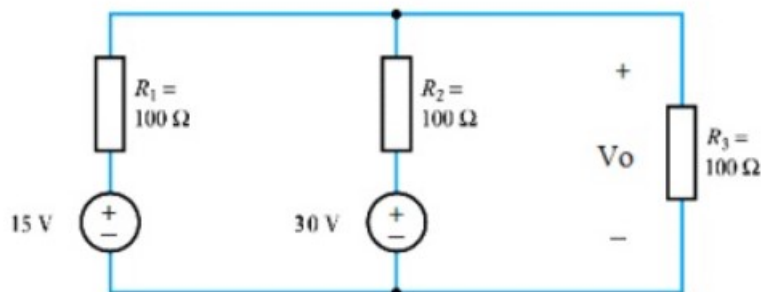


- ☐ 13A
☐ 20A
☒ 12A
☐ 15A

Question 32

2 pts

What is the voltage contribution of the 15V source to the output voltage, V_o , in the circuit shown in figure ?



- ☒ 15 V
☐ 5 V
☐ 12 V
☐ 10 V

Question 33

2 pts

A 10-ohm and 15-ohm resistor are in series across a dc voltage source. If the 10-ohm resistor has a voltage drop of 12 V, how much is the applied voltage?

- ☒ 30V
- ☐ 18V
- ☐ 12V

Question 34

2 pts

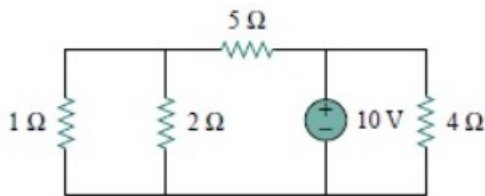
A 220-ohm R1, 2.2-kohm R2, and 200-ohm R3 are connected across 15 V of applied voltage. What happens to Req if the applied voltage is doubled to 30 V?

- ☒ Req does not change
- ☐ Req increases but is not double its original value.
- ☐ Req cuts in half
- ☐ Req doubles

Question 35

2 pts

How many branches and nodes does the circuit in Figure below have?



- ☐ 5 branches & 4 nodes
- ☐ 3 branches & 5 nodes
- ☒ 5 branches & 3 nodes
- ☐ 4 branches & 4 nodes

Question 36**2 pts**

The source voltage v is divided among the resistors in direct proportion to their resistances; the larger the resistance, the larger the voltage drop.

- ☐ Ohm's law
- ☒ principle of voltage division
- ☐ Kirchhoff's Voltage law
- ☐ principle of current division

Question 37**2 pts**

In a parallel RL circuit, where $I_R = 1.2 \text{ A}$ and $I_L = 1.6 \text{ A}$, how much is the total current?

- ☐ 400 mA
- ☒ 2 A
- ☐ 4 A
- ☐ 2.8 A

Question 38**2 pts**

In a series RL circuit where $V_L = 9 \text{ V}$ and $V_R = 12 \text{ V}$, how much is the total voltage?

- ☐ 21V
- ☐ 3V
- ☒ 15V
- ☐ 225V

Question 39**2 pts**

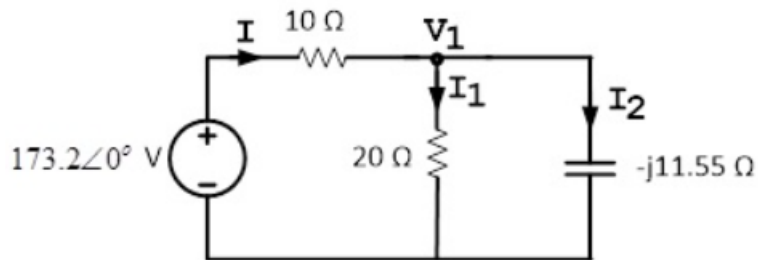
If you do not go completely around the loop when applying Kirchhoff's voltage law, then

- ☒ the algebraic sum is the voltage between the start and finish points.
- ☐ the algebraic sum of the voltages cannot be determined
- ☐ the algebraic sum of the voltages will always be negative
- ☐ the algebraic sum of the voltages will always be positive

Question 40

2 pts

Find V_1

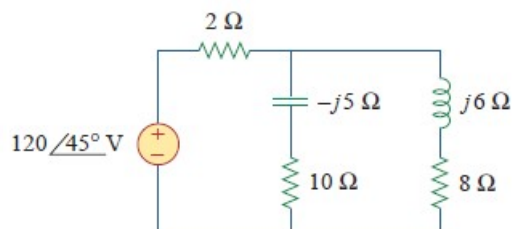


- ☐ 5.5 cis -25.2
- ☒ 100 cis -30
- ☐ 22.5 cis 178.4
- ☐ 25.5 cis -154.83

Question 41

2 pts

For the entire circuit, calculate: the power factor



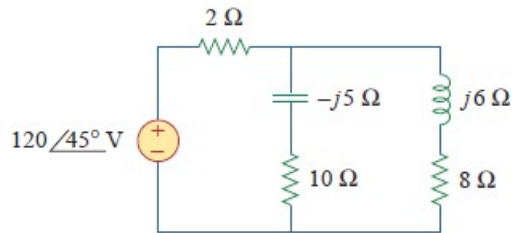
- ☐ (0.7556 (leading))

- ☒ 0.9956 (lagging)
- ☐ 0.7556 (lagging)
- ☐ 0.9956 (leading)

Question 42

2 pts

For the entire circuit, calculate: the the average power delivered by the source, and the complex power respectively.



- ☐ 1.751 kW, $(1,751 + j174.91) \text{ VA}$
- ☐ 1.751 kW, $(2,751 + j164.9) \text{ VA}$
- ☐ 1.751 kW, $(1,751 + j274.77) \text{ VA}$
- ☒ 1.751 kW, $(1,751 + j164.9) \text{ VA}$

Quiz saved at 12:25pm

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