Quiz 01 - Electrical Fundamentals

Due Dec 14 at 11:59pm **Points** 145 **Questions** 33
Available Aug 24 at 12pm - Dec 14 at 11:59pm 4 months **Time Limit** None
Allowed Attempts 2

Instructions

Covers lecture and lab topics from classes 1 through 5.

Attempt History

	Attempt	Time	Score
KEPT	Attempt 2	6 minutes	145 out of 145
LATEST	Attempt 2	6 minutes	145 out of 145
	Attempt 1	26 minutes	138.33 out of 145

Score for this attempt: **145** out of 145
Submitted Sep 14 at 1:54pm
This attempt took 6 minutes.

Question 1 — 5 / 5 pts

This scientist wrote the paper "On the Constitution of Atoms and Molecules" that set the foundation for modern electrical theory.

- Issac Newton
- Correct! Niels Bohr
- Michael Faraday
- Nicola Tesla

Question 2

5 / 5 pts

Atoms with this many valence electrons make excellent conductors

- 4
- 1 Correct!
- 6
- 8

Question 3

5 / 5 pts

Atoms with this many valence electrons make excellent insulators

- 1
- 8 Correct!
- 2
- 4

Question 4

5 / 5 pts

Atoms with this many valence electrons conduct under certain circumstances and insulate under other conditions.

- 4 Correct!
- 1

- 2
- 8

Question 5

5 / 5 pts

Potential difference is

- The accumulation of stationary electrical charge
- The potential for different current flows in a circuit.

Correct!

- The force required to move a charged particle in the prescence of an electro-static field.
- Measured in Ohms.

Question 6

5 / 5 pts

There are this many electrons in one Coulomb of charge.

- 6.18×10^{25}
- $10^{25} \times 8.16$
- 6.28×10^{18}

Correct!

- 6.25×10^{18}

Question 7

5 / 5 pts

Coulomb's Law shows that forces resulting from static charges are small and insignificant.

- True
- Correct! False

Question 8

5 / 5 pts

Choose all answers that apply;

Electrostatic lines of force

- Point from negative to positive
- Indicate magnitude only
- Indicate fields direction with line density
- Correct! Point from positive to negative
- Correct! Indicate both magnitude and direction
- Correct! Indicate field strength with line density

Question 9

5 / 5 pts

Match the best definition for the circuit component

- Correct! **Source** — Seperates charge, provide ▾

Correct! **Load** — The device performing use

Correct! **Conductor** — Provides a low resistance p

Correct! **Control** — A device for controlling ele

Other Incorrect Match Options:

- Provides charge storage

Question 10

5 / 5 pts

Select all correct answers

A circuit schematic diagram

Correct! ☑ Does not use pictorial graphics

Correct! ☑ Shows source, load, conductors, control components and their interconnections

☐ Is a scale drawing of circuit components

Correct! ☑ Is not a scale drawing

Question 11

1 / 1 pts

This schematic symbol represents what electrical device

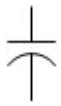
- DC source
- AC source

Correct!

- Inductor
- Capacitor
- Resistor

Question 12

1 / 1 pts



This schematic symbol respresents what electrical device

- Resistor
- Capacitor

Correct!

- Transistor
- Inductor
- Diode

Question 13

1 / 1 pts

This schematic symbol respresents what electrical device

- Capacitor
- SCR
- MOSFET
- Resistor
- Inductor

Correct!

Question 14

1 / 1 pts

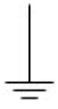
This schematic symbol respresents what electrical device

- Transformer
- Operational Amplifier
- Capacitor
- Inductor
- Resistor

Correct!

Question 15

1 / 1 pts



This schematic symbol respresents what electrical device

- Transorb
- Chassis ground

Correct!

- Earth ground
- Flux capacitor
- Variable resistor

Question 16

5 / 5 pts

An idealized ground is;

- not a characteristic of a practical circuit
- A reasonably constant reference for the measurement of other potentials

Correct!

- An infinite electron sink and source
- ideally suited for equipment grounding

Question 17

5 / 5 pts

An earth ground placed on either the line side or the load side of a DC source will damage the circuit

- True

Correct!

- False

Question 18

5 / 5 pts

Mechatronics Technicians become shock current paths when they

- Make contact between points of the same electrical potential
- Make contact between points of different electrical potential

Correct!

- Make contact with ground
- Make contact with a single point of electrical potential

Question 19

5 / 5 pts

Work / Energy is

- Force times mass
- applied around a pivot point
- Mass times acceleration
- Force applied through a distance

Correct!

Question 20

5 / 5 pts

SI & US Customary Work / Energy units of measure include

- Joules (newton meters), pound foot

Correct!

- Impedance (Z), $X_L + X_C$

- Watts (joules/sec), horsepower (HP)
- Ohms (volts/current), VARs (volt amp reactance)

Question 21

5 / 5 pts

Electric potential is

- AKA RMS current
- Similar to water in the hydraulic analogy
- The potential charge accumulation between source plates

Correct!

- (•) The work required to move a charged particle in the presence of an electrical field

Question 22

5 / 5 pts

Select all correct answers

Describes electric potential;

Correct!

- [x] AKA electro-motive force, potential difference, voltage
- [ ] Newton meter
- [ ] Coulomb / sec

Correct!

- [x] Volt
- [ ] Ampere turns

Correct!

- [x] Joules / coulomb

Question 23

5 / 5 pts

Electric current is the charge per unit time that passes a point in a circuit.

It requires electric potential, free electrons, and a current path for free electron flow.

Answer 1:

Correct!

charge

orrect Answer

electrons

Answer 2:

Correct!

unit

Answer 3:

Correct!

potential

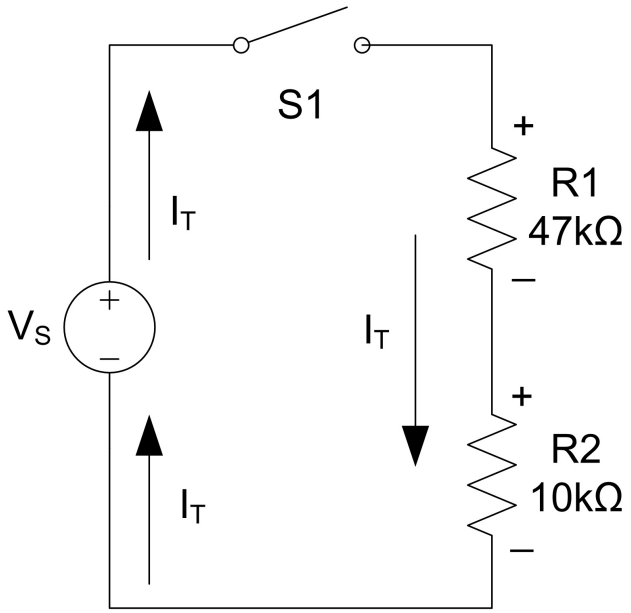
Answer 4:

Correct!

electrons

Question 24

5 / 5 pts



This schematic represents conventional current flow

Correct!

- (•) True
- ( ) False

Question 25

5 / 5 pts

Significant figures are the number of digits whose value is not known with certainty

- ( ) True

Correct!

- (•) False

Question 26

5 / 5 pts

Ohm's Law states that current in a circuit is directly proportional to the applied voltage .

Ohm's Law also states that current is inversely proportional to the circuit resistance .

Answer 1:

Correct! voltage

Answer 2:

Correct! resistance

Question 27

5 / 5 pts

Match the Ohm's Law variable with its description

Correct! **E** — Voltage

Correct! **I** — Current

Correct! **R** — Resistance

Question 28

5 / 5 pts

A circuit has a 24V supply and 10K resistance. Find the total current to 3 significant figures. Enter your answer in milliamps with no units of measure.

Correct!

2.4

orrect Answers

2.4 (with margin: 0.12)

Question 29

5 / 5 pts

A circuit has 5k total resistance with a total current of 20mA. Find the supply voltage to three significant figures.

Correct!

100

orrect Answers

100 (with margin: 5)

Question 30

5 / 5 pts

A circuit has a total resistance of 47 Ohms with a voltage of 12V. Find the total current to 3 significant figures. Enter your answer in milliamps with no units of measure.

Correct!

255

orrect Answers

255 (with margin: 12.75)

Question 31

5 / 5 pts

Watt's Law states that power is directly proportional to current and potential .

Answer 1:

Correct! directly

Answer 2:

Correct! current

Answer 3:

Correct! potential

orrect Answer potential difference

orrect Answer voltage

Question 32

5 / 5 pts

A circuit has a supply voltage of 24 V with a total resistance of 100 Ohms. Find the total power consumed by the circuit in watts to three significant figures.

Correct! 5.76

orrect Answers 5.76 (with margin: 0.288)

Question 33

5 / 5 pts

A circuit has a total current of 10mA with a total resistance of 125 Ohms. Find the power consumed by the circuit in watts to three significant figures. Enter your answer in milliwatts with no units of measure.

Correct! 12.5

orrect Answers 12.5 (with margin: 0.625)

Quiz Score: **145** out of 145