

FCC Exam Element 2 Question Pool for Technician Class
Effective 7/01/2018-6/30/2022

SUBELEMENT T5 - Electrical principles: math for electronics; electronic principles; Ohm's Law - [4 Exam Questions - 4 Groups]

T5A - Electrical principles, units, and terms: current and voltage; conductors and insulators; alternating and direct current; series and parallel circuits

T5A01 (D)

Electrical current is measured in which of the following units?

- A. Volts
- B. Watts
- C. Ohms
- D. Amperes

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T5A02 (B)

Electrical power is measured in which of the following units?

- A. Volts
- B. Watts
- C. Ohms
- D. Amperes

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T5A03 (D)

What is the name for the flow of electrons in an electric circuit?

- A. Voltage
- B. Resistance
- C. Capacitance
- D. Current

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T5A04 (B)

What is the name for a current that flows only in one direction?

- A. Alternating current
- B. Direct current
- C. Normal current
- D. Smooth current

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T5A05 (A)

What is the electrical term for the electromotive force (EMF) that causes electron flow?

- A. Voltage
- B. Ampere-hours
- C. Capacitance
- D. Inductance

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T5A06 (A)

How much voltage does a mobile transceiver typically require?

- A. About 12 volts
- B. About 30 volts
- C. About 120 volts
- D. About 240 volts

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T5A07 (C)

Which of the following is a good electrical conductor?

- A. Glass
- B. Wood
- C. Copper
- D. Rubber

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T5A08 (B)

Which of the following is a good electrical insulator?

- A. Copper
- B. Glass
- C. Aluminum
- D. Mercury

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T5A09 (A)

What is the name for a current that reverses direction on a regular basis?

- A. Alternating current
- B. Direct current
- C. Circular current
- D. Vertical current

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T5A10 (C)

Which term describes the rate at which electrical energy is used?

- A. Resistance
- B. Current
- C. Power
- D. Voltage

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T5A11 (A)

What is the unit of electromotive force?

- A. The volt
- B. The watt
- C. The ampere
- D. The ohm

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T5A12 (D)

What describes the number of times per second that an alternating current makes a complete cycle?

- A. Pulse rate
- B. Speed
- C. Wavelength
- D. Frequency

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T5A13 (A)

In which type of circuit is current the same through all components?

- A. Series
- B. Parallel
- C. Resonant
- D. Branch

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T5A14 (B)

In which type of circuit is voltage the same across all components?

- A. Series
- B. Parallel
- C. Resonant
- D. Branch

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T5B - Math for electronics: conversion of electrical units; decibels; the metric system

T5B01 (C)

How many milliamperes is 1.5 amperes?

- A. 15 milliamperes
- B. 150 milliamperes
- C. 1500 milliamperes
- D. 15,000 milliamperes

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T5B02 (A)

What is another way to specify a radio signal frequency of 1,500,000 hertz?

- A. 1500 kHz
- B. 1500 MHz
- C. 15 GHz
- D. 150 kHz

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T5B03 (C)

How many volts are equal to one kilovolt?

- A. One one-thousandth of a volt
- B. One hundred volts
- C. One thousand volts
- D. One million volts

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T5B04 (A)

How many volts are equal to one microvolt?

- A. One one-millionth of a volt
- B. One million volts
- C. One thousand kilovolts
- D. One one-thousandth of a volt

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T5B05 (B)

Which of the following is equal to 500 milliwatts?

- A. 0.02 watts
- B. 0.5 watts**
- C. 5 watts
- D. 50 watts

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T5B06 (C)

If an ammeter calibrated in amperes is used to measure a 3000-milliampere current, what reading would it show?

- A. 0.003 amperes
- B. 0.3 amperes
- C. 3 amperes**
- D. 3,000,000 amperes

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T5B07 (C)

If a frequency display calibrated in megahertz shows a reading of 3.525 MHz, what would it show if it were calibrated in kilohertz?

- A. 0.003525 kHz
- B. 35.25 kHz
- C. 3525 kHz**
- D. 3,525,000 kHz

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T5B08 (B)

How many microfarads are equal to 1,000,000 picofarads?

- A. 0.001 microfarads
- B. 1 microfarad**
- C. 1000 microfarads
- D. 1,000,000,000 microfarads

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T5B09 (B)

What is the approximate amount of change, measured in decibels (dB), of a power increase from 5 watts to 10 watts?

- A. 2 dB
- B. 3 dB**
- C. 5 dB
- D. 10 dB

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T5B10 (C)

What is the approximate amount of change, measured in decibels (dB), of a power decrease from 12 watts to 3 watts?

- A. -1 dB
- B. -3 dB
- C. -6 dB**
- D. -9 dB

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T5B11 (A)

What is the amount of change, measured in decibels (dB), of a power increase from 20 watts to 200 watts?

- A. 10 dB
- B. 12 dB
- C. 18 dB
- D. 28 dB

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T5B12 (A)

Which of the following frequencies is equal to 28,400 kHz?

- A. 28.400 MHz
- B. 2.800 MHz
- C. 284.00 MHz
- D. 28.400 kHz

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T5B13 (C)

If a frequency display shows a reading of 2425 MHz, what frequency is that in GHz?

- A. 0.002425 GHz
- B. 24.25 GHz
- C. 2.425 GHz
- D. 2425 GHz

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T5C - Electronic principles: capacitance; inductance; current flow in circuits; alternating current; definition of RF; definition of polarity; DC power calculations; impedance

T5C01 (D)

What is the ability to store energy in an electric field called?

- A. Inductance
- B. Resistance
- C. Tolerance
- D. Capacitance

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T5C02 (A)

What is the basic unit of capacitance?

- A. The farad
- B. The ohm
- C. The volt
- D. The henry

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T5C03 (D)

What is the ability to store energy in a magnetic field called?

- A. Admittance
- B. Capacitance
- C. Resistance
- D. Inductance

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T5C04 (C)

What is the basic unit of inductance?

- A. The coulomb
- B. The farad
- C. The henry
- D. The ohm

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T5C05 (A)

What is the unit of frequency?

- A. Hertz
- B. Henry
- C. Farad
- D. Tesla

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T5C06 (A)

What does the abbreviation "RF" refer to?

- A. Radio frequency signals of all types
- B. The resonant frequency of a tuned circuit
- C. The real frequency transmitted as opposed to the apparent frequency
- D. Reflective force in antenna transmission lines

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T5C07 (B)

A radio wave is made up of what type of energy?

- A. Pressure
- B. Electromagnetic
- C. Gravity
- D. Thermal

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T5C08 (A)

What is the formula used to calculate electrical power in a DC circuit?

- A. Power (P) equals voltage (E) multiplied by current (I)
- B. Power (P) equals voltage (E) divided by current (I)
- C. Power (P) equals voltage (E) minus current (I)
- D. Power (P) equals voltage (E) plus current (I)

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T5C09 (A)

How much power is being used in a circuit when the applied voltage is 13.8 volts DC and the current is 10 amperes?

- A. 138 watts
- B. 0.7 watts
- C. 23.8 watts
- D. 3.8 watts

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T5C10 (B)

How much power is being used in a circuit when the applied voltage is 12 volts DC and the current is 2.5 amperes?

- A. 4.8 watts
- B. 30 watts
- C. 14.5 watts
- D. 0.208 watts

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T5C11 (B)

How many amperes are flowing in a circuit when the applied voltage is 12 volts DC and the load is 120 watts?

- A. 0.1 amperes
- B. 10 amperes
- C. 12 amperes
- D. 132 amperes

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T5C12 (A)

What is impedance?

- A. A measure of the opposition to AC current flow in a circuit
- B. The inverse of resistance
- C. The Q or Quality Factor of a component
- D. The power handling capability of a component

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T5C13 (D)

What is a unit of impedance?

- A. Volts
- B. Amperes
- C. Coulombs
- D. Ohms

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T5C14 (D)

What is the proper abbreviation for megahertz?

- A. mHz
- B. mhZ
- C. Mhz
- D. MHz

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T5D - Ohm's Law: formulas and usage; components in series and parallel

T5D01 (B)

What formula is used to calculate current in a circuit?

- A. Current (I) equals voltage (E) multiplied by resistance (R)
- B. Current (I) equals voltage (E) divided by resistance (R)
- C. Current (I) equals voltage (E) added to resistance (R)
- D. Current (I) equals voltage (E) minus resistance (R)

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T5D02 (A)

What formula is used to calculate voltage in a circuit?

- A. Voltage (E) equals current (I) multiplied by resistance (R)
- B. Voltage (E) equals current (I) divided by resistance (R)
- C. Voltage (E) equals current (I) added to resistance (R)
- D. Voltage (E) equals current (I) minus resistance (R)

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T5D03 (B)

What formula is used to calculate resistance in a circuit?

- A. Resistance (R) equals voltage (E) multiplied by current (I)
- B. Resistance (R) equals voltage (E) divided by current (I)
- C. Resistance (R) equals voltage (E) added to current (I)
- D. Resistance (R) equals voltage (E) minus current (I)

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T5D04 (B)

What is the resistance of a circuit in which a current of 3 amperes flows through a resistor connected to 90 volts?

- A. 3 ohms
- B. 30 ohms
- C. 93 ohms
- D. 270 ohms

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T5D05 (C)

What is the resistance in a circuit for which the applied voltage is 12 volts and the current flow is 1.5 amperes?

- A. 18 ohms
- B. 0.125 ohms
- C. 8 ohms
- D. 13.5 ohms

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T5D06 (A)

What is the resistance of a circuit that draws 4 amperes from a 12-volt source?

- A. 3 ohms
- B. 16 ohms
- C. 48 ohms
- D. 8 ohms

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T5D07 (D)

What is the current in a circuit with an applied voltage of 120 volts and a resistance of 80 ohms?

- A. 9600 amperes
- B. 200 amperes
- C. 0.667 amperes
- D. 1.5 amperes

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T5D08 (C)

What is the current through a 100-ohm resistor connected across 200 volts?

- A. 20,000 amperes
- B. 0.5 amperes
- C. 2 amperes
- D. 100 amperes

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T5D09 (C)

What is the current through a 24-ohm resistor connected across 240 volts?

- A. 24,000 amperes
- B. 0.1 amperes
- C. 10 amperes
- D. 216 amperes

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T5D10 (A)

What is the voltage across a 2-ohm resistor if a current of 0.5 amperes flows through it?

- A. 1 volt
- B. 0.25 volts
- C. 2.5 volts
- D. 1.5 volts

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T5D11 (B)

What is the voltage across a 10-ohm resistor if a current of 1 ampere flows through it?

- A. 1 volt
- B. 10 volts
- C. 11 volts
- D. 9 volts

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T5D12 (D)

What is the voltage across a 10-ohm resistor if a current of 2 amperes flows through it?

- A. 8 volts
- B. 0.2 volts
- C. 12 volts
- D. 20 volts

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T5D13 (B)

What happens to current at the junction of two components in series?

- A. It divides equally between them
- B. It is unchanged
- C. It divides based on the on the value of the components
- D. The current in the second component is zero

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T5D14 (A)

What happens to current at the junction of two components in parallel?

- A. It divides between them dependent on the value of the components
- B. It is the same in both components
- C. Its value doubles
- D. Its value is halved

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T5D15 (C)

What is the voltage across each of two components in series with a voltage source?

- A. The same voltage as the source
- B. Half the source voltage
- C. It is determined by the type and value of the components
- D. Twice the source voltage

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T5D16 (D)

What is the voltage across each of two components in parallel with a voltage source?

- A. It is determined by the type and value of the components
- B. Half the source voltage
- C. Twice the source voltage
- D. The same voltage as the source

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