

**2022-2026 Technician Class
FCC Element 2 Question Pool
Effective 7/01/2022 – 6/30/2026**

SUBELEMENT T5 – ELECTRICAL PRINCIPLES – [4 Exam Questions - 4 Groups]

T5A – Current and voltage: terminology and units, conductors and insulators, alternating and direct current

T5A01

Electrical current is measured in which of the following units?

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

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T5A02

Electrical power is measured in which of the following units?

- A. Volts
- B. Watts**
- C. Watt-hours
- D. Amperes

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T5A03

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

What are the units of electrical resistance?

- A. Siemens**
- B. Mhos
- C. Ohms**
- D. Coulombs

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T5A05

What is the electrical term for the force that causes electron flow?

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

T5A06

What is the unit of frequency?

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

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T5A07

Why are metals generally good conductors of electricity?

- A. They have relatively high density
- B. They have many free electrons
- C. They have many free protons
- D. All these choices are correct

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T5A08

Which of the following is a good electrical insulator?

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

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T5A09

Which of the following describes alternating current?

- A. Current that alternates between a positive direction and zero
- B. Current that alternates between a negative direction and zero
- C. Current that alternates between positive and negative directions
- D. All these answers are correct

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T5A10

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

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

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T5A11

What type of current flow is opposed by resistance?

- A. Direct current
- B. Alternating current
- C. RF current
- D. All these choices are correct

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T5A12

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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T5B - Math for electronics: conversion of electrical units, decibels

T5B01

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

Which is equal to 1,500,000 hertz?

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

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T5B03

Which is 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

Which is 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

Which is equal to 500 milliwatts?

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

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T5B06

Which is equal to 3000 milliamperes?

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

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T5B07

Which is equal to 3.525 MHz?

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

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T5B08

Which is 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

Which decibel value most closely represents 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

Which decibel value most closely represents 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

Which decibel value represents 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

Which is equal to 28400 kHz?

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

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T5B13

Which is equal to 2425 MHz?

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

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T5C – Capacitance and inductance terminology and units; Radio frequency definition and units; Impedance definition and units; Calculating power

T5C01

What describes the ability to store energy in an electric field?

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

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T5C02

What is the unit of capacitance?

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

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T5C03

What describes the ability to store energy in a magnetic field?

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

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T5C04

What is the unit of inductance?

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

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T5C05

What is the unit of impedance?

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

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T5C06

What does the abbreviation "RF" mean?

- 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

What is the abbreviation for megahertz?

- A. MH
- B. mh
- C. Mhz
- D. MHz

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T5C08

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

- A. $P = I \times E$
- B. $P = E / I$
- C. $P = E - I$
- D. $P = I + E$

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T5C09

How much power is delivered by a voltage of 13.8 volts DC and a current of 10 amperes?

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

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T5C10

How much power is delivered by a voltage of 12 volts DC and a current of 2.5 amperes?

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

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T5C11

How much current is required to deliver 120 watts at a voltage of 12 volts DC?

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

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T5C12

What is impedance?

- A. The opposition to AC current flow
- 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

What is the abbreviation for kilohertz?

- A. KHZ
- B. khz
- C. khZ
- D. kHz

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T5D – Ohm's Law; Series and parallel circuits

T5D01

What formula is used to calculate current in a circuit?

A. $I = E \times R$

B. $I = E / R$

C. $I = E + R$

D. $I = E - R$

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T5D02

What formula is used to calculate voltage in a circuit?

A. $E = I \times R$

B. $E = I / R$

C. $E = I + R$

D. $E = I - R$

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T5D03

What formula is used to calculate resistance in a circuit?

A. $R = E \times I$

B. $R = E / I$

C. $R = E + I$

D. $R = E - I$

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T5D04

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

A. 3 ohms

B. 30 ohms

C. 93 ohms

D. 270 ohms

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T5D05

What is the resistance of 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

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

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

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

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

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

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

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

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

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

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T5D14

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

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

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