

ASVAB Electronics Information

Quick Study Guide

Electrical Units

- Voltage: volts (V)
- Current: amperes (A)
- Resistance: ohms (Ω)
- Power: watts (W)
- Frequency: hertz (Hz)

Important Formulas

Ohm's Law

$$V = I \times R$$

- V = voltage
- I = current
- R = resistance

Electrical Power

$$P = V \times I$$

- P = power
- V = voltage
- I = current

Circuit Fundamentals

- Series circuit: The same current flows through every component.
- Parallel circuit: The voltage is the same across each branch.
- AC: Alternating current periodically reverses direction.
- DC: Direct current flows in one direction.

- Fuse: Protects a circuit from excessive current.
- Diode: Conducts primarily in one direction.
- Capacitor: Stores energy in an electric field.
- Transformer: Changes AC voltage levels.
- Transistor: Can amplify signals or act as a switch.
- Rectifier: Converts AC into DC.

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Name: _____

Date: _____

Instructions: Choose the best answer for each question. Complete all 20 questions before checking the separate answer key.

1. What is the unit of electrical resistance?
 - A. Volt
 - B. Ampere
 - C. Ohm
 - D. Watt
2. What unit is used to measure electrical current?
 - A. Ampere
 - B. Ohm
 - C. Volt
 - D. Watt
3. Which device stores electrical energy in an electric field?
 - A. Resistor
 - B. Capacitor
 - C. Fuse
 - D. Switch
4. What is the primary function of a fuse?
 - A. Increase voltage
 - B. Store electricity
 - C. Measure current

- D. Protect a circuit from excessive current
- 5. Which material is a good electrical conductor?
 - A. Rubber
 - B. Glass
 - C. Copper
 - D. Plastic
- 6. What is the unit of electrical power?
 - A. Watt
 - B. Ohm
 - C. Ampere
 - D. Coulomb
- 7. Which instrument measures voltage?
 - A. Ammeter
 - B. Voltmeter
 - C. Ohmmeter
 - D. Thermometer
- 8. In a series circuit, what happens if one component breaks and opens the circuit?
 - A. Current increases
 - B. Voltage becomes infinite
 - C. All components stop operating
 - D. The other components receive more current
- 9. What type of current periodically reverses direction?
 - A. Direct current (DC)
 - B. Static electricity

- C. Ground current
- D. Alternating current (AC)

10. What is the main function of a resistor?

- A. Oppose the flow of current
- B. Generate magnetic fields only
- C. Store chemical energy
- D. Convert AC to DC

11. Which component allows current to flow mainly in one direction?

- A. Capacitor
- B. Diode
- C. Transformer
- D. Resistor

12. What is the purpose of a transformer?

- A. Measure resistance
- B. Store electric charge
- C. Change AC voltage levels
- D. Stop all current flow

13. What is the standard unit of frequency?

- A. Joule
- B. Watt
- C. Volt
- D. Hertz

14. Which formula expresses Ohm's law?

- A. $V = IR$

- B. $P = I/R$
- C. $R = VI$
- D. $I = VR$

15. In a parallel circuit, what is the same across each branch?

- A. Current in every branch
- B. Voltage
- C. Resistance
- D. Power

16. What does a battery convert into electrical energy?

- A. Sound energy
- B. Light energy
- C. Chemical energy
- D. Nuclear energy

17. Which component is commonly used to amplify electronic signals?

- A. Fuse
- B. Switch
- C. Insulator
- D. Transistor

18. What is the purpose of grounding an electrical system?

- A. Provide a path for fault current and improve safety
- B. Increase resistance in every branch
- C. Eliminate the need for insulation
- D. Make voltage unlimited

19. If a circuit has 12 volts and a resistance of 4 ohms, what is the current?

- A. 48 amperes
- B. 3 amperes
- C. 8 amperes
- D. 0.33 amperes

20. Which device converts AC voltage to DC voltage in a power supply?

- A. Transformer alone
- B. Resistor
- C. Rectifier
- D. Circuit breaker alone

Answer Key and Explanations

Question Correct Answer		Explanation
1	C — Ohm	Electrical resistance is measured in ohms (Ω).
2	A — Ampere	Electrical current is measured in amperes (A).
3	B — Capacitor	A capacitor stores energy in an electric field.
4	D — Protect a circuit	A fuse opens the circuit when excessive current flows.
5	C — Copper	Copper is an excellent electrical conductor.
6	A — Watt	Electrical power is measured in watts (W).
7	B — Voltmeter	A voltmeter measures voltage.
8	C — All components stop operating	An open series circuit interrupts current throughout the circuit.
9	D — Alternating current	AC periodically reverses direction.
10	A — Oppose current flow	A resistor limits or opposes electrical current.
11	B — Diode	A diode conducts primarily in one direction.
12	C — Change AC voltage levels	A transformer can step AC voltage up or down.
13	D — Hertz	Frequency is measured in hertz (Hz).
14	A — $V = IR$	Ohm's law states that voltage equals current multiplied by resistance.
15	B — Voltage	Every branch of an ideal parallel circuit has the same voltage.

Question	Correct Answer	Explanation
16	C — Chemical energy	A battery converts chemical energy into electrical energy.
17	D — Transistor	Transistors are commonly used for amplification and electronic switching.
18	A — Provide a fault-current path	Grounding helps improve electrical safety and provides a path for fault current.
19	B — 3 amperes	Current = voltage ÷ resistance = $12 \div 4 = 3$ A.
20	C — Rectifier	A rectifier converts alternating current into direct current.