

Foundations of Electrical Engineering

Electrical Engineering · Practice Test · 18 Questions

1. Which unit is defined as one joule of energy per coulomb of charge?

- A) Ampere
- B) Volt
- C) Ohm
- D) Watt

2. According to Ohm's Law, what happens to the current in a circuit if the resistance is doubled while the voltage remains constant?

- A) It doubles
- B) It remains the same
- C) It is halved
- D) It quadruples

3. What is the primary function of a capacitor in an electrical circuit?

- A) To resist current flow
- B) To store energy in an electric field
- C) To convert AC to DC
- D) To increase voltage levels

4. In a series circuit consisting of three resistors with values 2 Ω , 3 Ω , and 5 Ω , what is the total resistance?

- A) 1.0 Ω
- B) 10 Ω
- C) 30 Ω
- D) 0.1 Ω

5. Which component is used to limit or regulate the flow of electrical current in an electronic circuit?

- A) Transistor
- B) Diode
- C) Resistor
- D) Capacitor

6. What does a diode allow to happen in an electrical circuit?

- A) Store energy
- B) Amplify a signal
- C) Allow current to flow in one direction
- D) Increase the voltage

7. Which device is used to transform electrical energy from one voltage level to another using electromagnetic induction?

- A) Generator
- B) Transformer
- C) Rectifier
- D) Inverter

8. What is the SI unit for electrical capacitance?

- A) Henry
- B) Farad
- C) Coulomb
- D) Weber

9. In a parallel circuit, which of the following quantities remains constant across all branches?

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

10. Which material is commonly used as a semiconductor in the manufacturing of transistors?

- A) Copper
- B) Silicon
- C) Aluminum
- D) Rubber

11. What happens to the magnetic field strength of an electromagnet if the number of turns in the coil is increased?

- A) It decreases
- B) It stays the same
- C) It increases
- D) It reverses polarity

12. What is the standard frequency of alternating current (AC) in most Australian residential power grids?

- A) 50 Hz
- B) 60 Hz
- C) 100 Hz
- D) 120 Hz

13. Which law states that the sum of currents entering a junction must equal the sum of currents leaving it?

- A) Ohm's Law
- B) Kirchhoff's Current Law
- C) Faraday's Law
- D) Lenz's Law

14. What is the relationship between power (P), voltage (V), and current (I)?

- A) $P = V / I$
- B) $P = I / V$
- C) $P = V * I$
- D) $P = V^2 * I$

15. What unit is used to measure electrical inductance?

- A) Tesla
- B) Henry
- C) Siemens
- D) Joule

16. Which electrical safety device is designed to break a circuit when current exceeds a safe limit?

- A) Transformer
- B) Fuse
- C) Capacitor
- D) Transistor

17. What is the primary purpose of an inverter in an electrical system?

- A) Convert DC to AC
- B) Step down AC voltage
- C) Store DC charge
- D) Increase resistance

18. What material property determines how easily electrons can flow through a substance?

- A) Inductance
- B) Conductivity
- C) Capacitance
- D) Reluctance