

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false

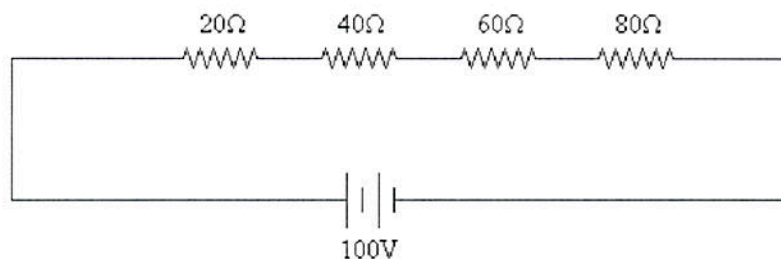
- 1) Conventional current is the flow of positive charge from higher to lower potential 1) _____
- 2) Electron flow is in the direction of conventional current 2) _____
- 3) The resistivity of the material of a wire is inversely proportional to the resistance of the wire 3) _____
- 4) Four equal resistors connected in series have same current and same voltage across each resistor 4) _____
- 5) Kirchhoff's voltage rule is an example of conservation of energy. 5) _____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question

- 6) A wire of resistivity ρ must be replaced in a circuit by a wire four times as long. If, however, the total resistance is to remain as before, the diameter of the new wire must 6) _____
- 7) The length of a certain wire is doubled while its radius is kept constant. What is the change in the resistance of this wire? 7) _____
- 8) The length of a certain wire is doubled while the radius is reduced by a factor of 4. What is the change in the resistance of this wire? 8) _____
- 9) When the current through a resistor is increased by a factor of 4, the power dissipated by it 9) _____
- 10) Four unequal resistors are connected in a series circuit. Which one of the following statements is correct about this circuit? 10) _____
- 11) Kirchhoff's junction rule is a statement of 11) _____
- 12) An electric device delivers a current of 5.0 A for 10 seconds. How many electrons flow through this device? 12) _____
- 13) The resistivity of the material of a wire is $1.76 \times 10^{-8} \Omega\text{m}$. If the diameter of the wire is $2 \times 10^{-3} \text{ m}$ and its length is 2 m, what is its resistance? 13) _____
- 14) The potential difference between the ends of a resistor is 9 V when a current of 1 A flows through it. What is the value of that resistor? 14) _____
- 15) The resistivity of a 1.0 m long wire is $1.72 \times 10^{-8} \Omega\text{m}$ and its cross sectional area is $2.0 \times 10^{-6} \text{ m}^2$. If the wire carries a current of 0.20 A, what is the voltage across the wire? 15) _____
- 16) A 100-W light bulb is connected to a 110-V source. What is the resistance of this bulb? 16) _____

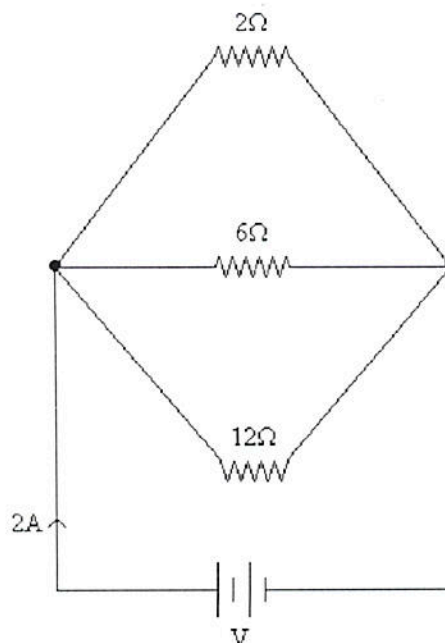
- 17) The power rating of a resistor is 0.80 W. If the value of the resistor is 400Ω , what is the maximum current it can draw? 17) _____
- 18) A simple circuit has a total resistance of 30Ω . If a 2.0-A current is maintained in this circuit, how much energy is dissipated in this circuit in 4.0 seconds? 18) _____
- 19) Four resistors of 20Ω , 40Ω , 60Ω , and 80Ω are connected across a DC voltage source. If the current through this circuit is 0.5 A, what is the voltage applied to this circuit? 19) _____
- 20) Four resistors of 20Ω , 40Ω , 60Ω , and 80Ω are connected across a 50-V DC source. What is the current through this circuit? 20) _____

Figure 21-4



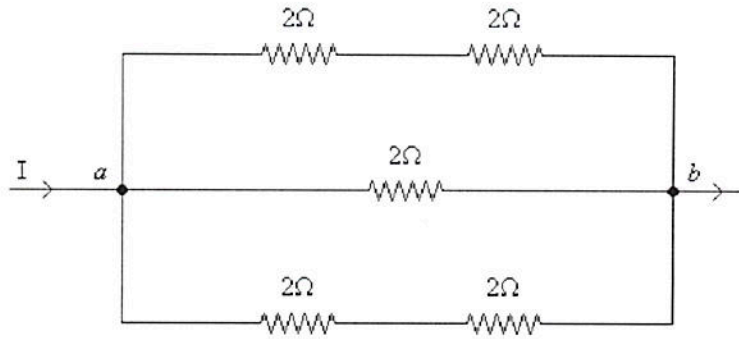
- 21) A 100 V DC signal is applied to four resistors as shown in Figure 21-4. The values of the resistors are 20Ω , 40Ω , 60Ω , and 80Ω . What is the voltage across the 40Ω resistor? 21) _____

Figure 21-5



- 22) Three resistors of values 2Ω , 6Ω and 12Ω are connected across a DC voltage source as shown in Figure 21-5. If the total current through the circuit is 2.0 A, what is the applied voltage? 22) _____

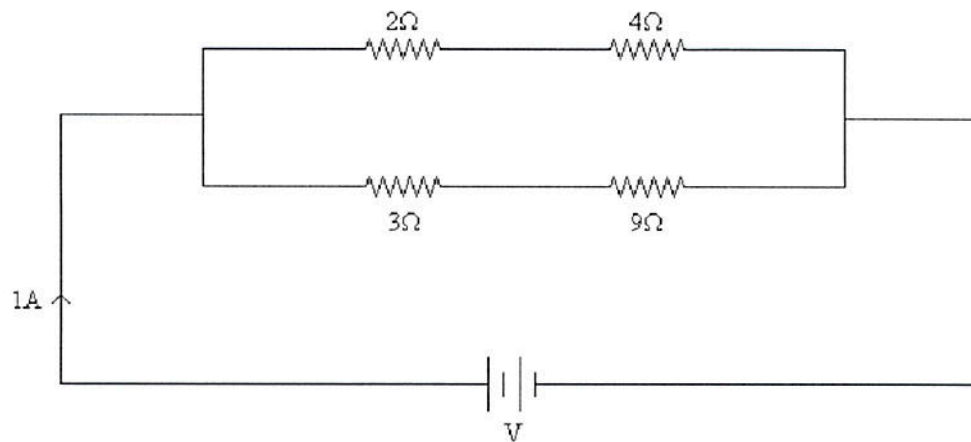
Figure 21-8



- 23) Five equal resistors, of value $2.0\ \Omega$ each, are connected as shown in Figure 21-8. What is the equivalent resistance of this circuit?

23) _____

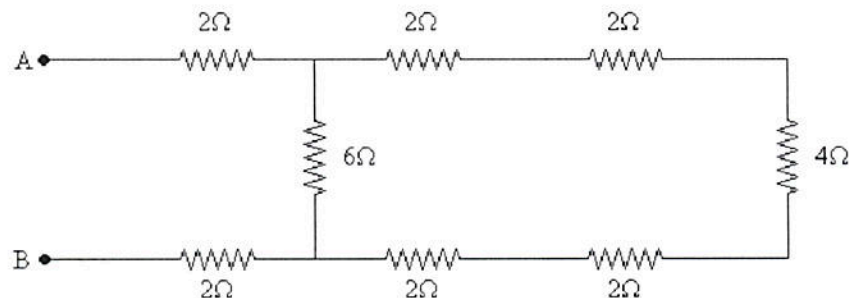
Figure 21-11



- 24) Four resistors of values $2\ \Omega$, $4\ \Omega$, $3\ \Omega$, and $9\ \Omega$ are connected across a DC source with voltage V as shown in Figure 21-11. If the total current through this circuit is $1\ \text{A}$, what is the value of the voltage V ?

24) _____

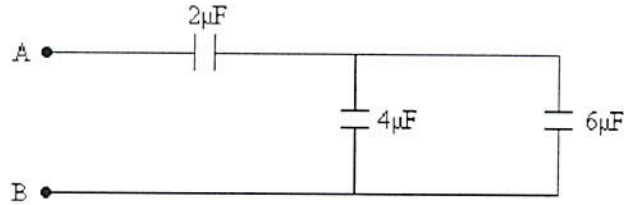
Figure 21-13



- 25) A number of resistors are connected across points A and B as shown in Figure 21-13. What is the equivalent resistance between points A and B?

25) _____

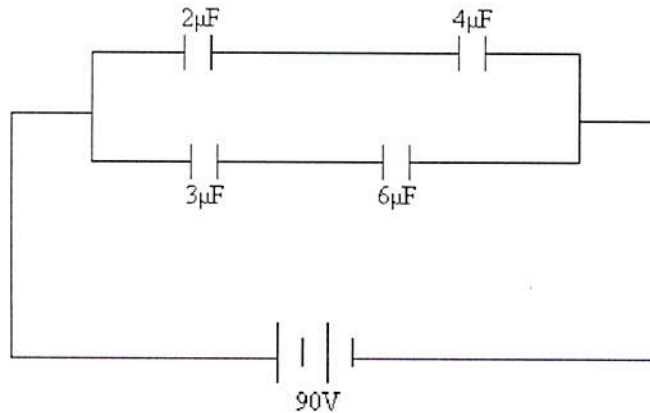
Figure 21-17



- 26) Three capacitors are connected as shown in Figure 21-17. What is the equivalent capacitance between points A and B?

26) _____

Figure 21-18



- 27) A system of capacitors is connected across a 90 V DC voltage source as shown in Figure 21-18. What is the equivalent capacitance of this system?

27) _____

- 28) A $5.0\mu\text{F}$ and a $7.0\mu\text{F}$ capacitor are connected in series across an 8.0-V DC source. What is the voltage across the $5.0\mu\text{F}$ capacitor?

28) _____

Answer Key

Testname: UNTITLED2

- 1) TRUE
- 2) FALSE
- 3) FALSE
- 4) TRUE
- 5) TRUE
- 6) be two times larger.
- 7) It is doubled.
- 8) It is increased by a factor of 32.
- 9) increases by a factor of 16.
- 10) The total resistance is more than the largest resistor.
- 11) the law of conservation of charge.
- 12) 3.1×10^{20}
- 13) $0.0112 \, \Omega$
- 14) $9 \, \Omega$
- 15) $1.7 \, \text{mV}$
- 16) $121 \, \Omega$
- 17) $45 \, \text{mA}$
- 18) $480 \, \text{J}$
- 19) $100 \, \text{V}$
- 20) $0.25 \, \text{A}$
- 21) $20 \, \text{V}$
- 22) $2.7 \, \text{V}$
- 23) $1.0 \, \Omega$
- 24) $4 \, \text{V}$
- 25) $8 \, \Omega$
- 26) $1.7 \, \mu\text{F}$
- 27) $3.3 \, \mu\text{F}$
- 28) $4.7 \, \text{V}$