Attribution Nidhal Abdulaziz

ENGG104 Tutorial **2** extra **Problems** (revision)
(Solutions**)**

Name_____ Student Number_____

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

1) Resistance decreases as the cross–sectional area of a conductor increases. 1) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

2) Doubling the area of a conductor 2) _____
A) cuts the resistance in half. B) decreases resistance by a factor of 4.
C) increases resistance by a factor of 4. D) doubles the resistance.

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

3) Resistance is directly proportional to the length of a conductor. 3) _____

4) A 1000 watt load that operates for one hour consumes the same amount of energy as a 100 watt load that operates for 10 hours. 4) _____

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

5) If an electric circuit requires 1 amp at 50 volts, how much current will it require if the voltage is increased to 75 volts? 5) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

6) The current consumed by a digital wristwatch is 20 μA. What is the equivalent resistance of the watch if it is powered by a 1.5 V battery? 6) _____
A) 75 kΩ B) 75 Ω C) 33.3 kΩ D) 30 μΩ

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

7) One *watt* is the same as one joule per second. 7) _____

8) Power is directly proportional to the resistance times the current squared. 8) _____

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

9) What is the power dissipated by a 1.2 Kilohm resistor if the voltage drop across the resistor is 56 volts? 9) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

10) How many joules of energy will a 10 watt lamp dissipate in one minute? 10) _____
A) 3600 joules B) 10 joules C) 600 joules D) 60 joules

11) One kilowatt–hour is equivalent to 11) _____
A) 6.0×10^4 joules B) 1.0×10^3 joules C) 6.0×10^3 joules D) 3.6×10^6 joules

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

12) Using Ohm's Law, find V when the current I = 4.2 milliamps and R = 1.5 Kilohms. 12) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

13) The statement that "the algebraic sum of voltage drops around a closed electrical circuit must equal zero" is: 13) _____

A) Coulomb's voltage law
B) Ohm's voltage law
C) Kirchhoff's voltage law
D) Faraday's voltage law

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

14) The voltage measured across an shorted component in a series circuit is equal to _____. 14) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

15) If the voltage dropped across a resistor increases by a factor of 10, the power dissipated by the resistor 15) _____

A) decreases.
B) increases by a factor of 100.
C) increases by a factor of 20.
D) increases by a factor of 10.

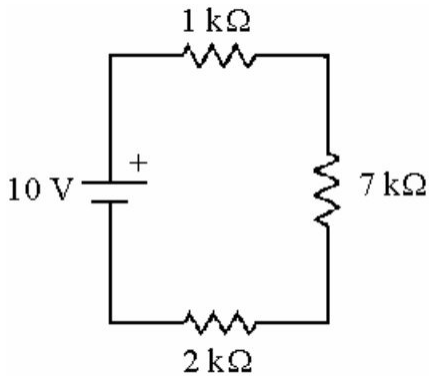

Figure 5.1

16) See Figure 5.1. The total resistance in this circuit is 16) _____

A) 2 kΩ B) 7 kΩ C) 1 kΩ D) 10 kΩ

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

17) What is the total resistance of thirty 6 ohm resistors connected in series? 17) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

18) A series circuit dissipates a total of 56.25 mW of power with a current of 3.75 mA. If R_2 dissipates 21.09 mW of power, what is the value of R_1? 18) _____

A) 2000 ohms B) 1000 ohms C) 2500 ohms D) 1500 ohms

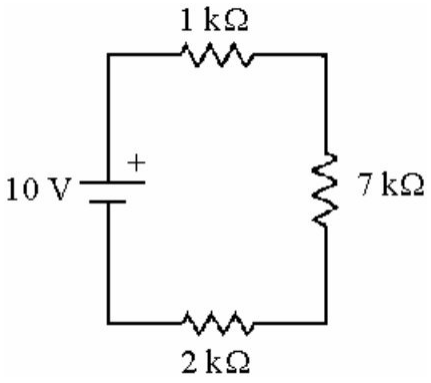

Figure 5.1

19) See Figure 5.1. The total current flowing from the battery is 19) _____
A) 1 mA B) 5 mA C) 1.43 mA D) 10 mA

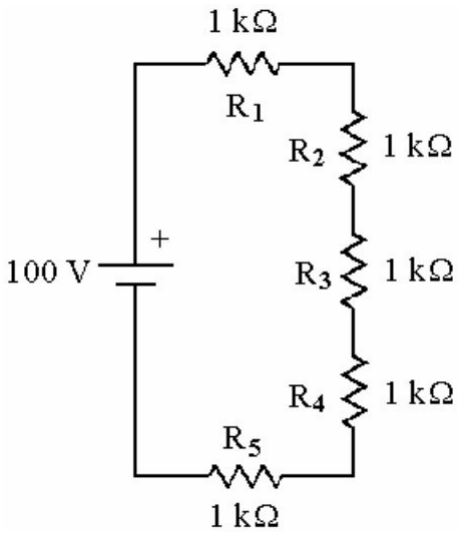

Figure 5.2

20) See Figure 5.2. If R_3 is short circuited, how much power is dissipated by R_5? 20) _____
A) 2.5 W B) 625 mW C) 325 mW D) 1.25 W

21) Given a series circuit containing resistors of different values, which statement is not true? 21) _____
A) The total resistance is the sum of the value of the resistors.
B) The sum of the voltage drops across each resistive element will be equal to the source voltage.
C) The current through each resistor is the same.
D) The voltage drop across each resistor will be the same.

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

22) The sum of the voltage drops in a series circuit is always equal to the applied voltage. 22) _____

Answer Key
Testname: ENGG104 TUT2

1) TRUE
2) A
3) TRUE
4) TRUE
5) 1.5 A
6) A
7) TRUE
8) TRUE
9) 2.6 watts
10) C
11) D
12) 6.3 volts
13) C
14) zero
15) B
16) D
17) 180 ohms
18) C
19) A
20) B
21) D
22) TRUE