

TT-EE-001

This is the multiple choice and short answer portion of the electronics exam

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1. Name *

General Questions

2. What does PWM stand for?

Mark only one oval.

- ☐ Power Width Modularity
- ☐ Phase Widening Modifier
- ☐ Polarity Widening Modulator
- ☐ Pulse Width Modulation

3. How many electrons are there in an atom of Lithium?

Mark only one oval.

- ☐ 9
- ☐ 6
- ☐ 12
- ☐ 3

4. How many protons are there in an atom of Oxygen

Mark only one oval.

- ☐ 2
- ☐ 16
- ☐ 8
- ☐ 12

5. True or False: According to the Law of Charges, like charges attract

Mark only one oval.

- ☐ True
- ☐ False

6. Which of these is not a state of matter?

Mark only one oval.

- ☐ Plasma
- ☐ Gasoid
- ☐ Liquid
- ☐ Gas
- ☐ Solid

Breadboards

7. True or False: The pins in breadboard B are electrically connected.

Mark only one oval.

- ☐ False
- ☐ True

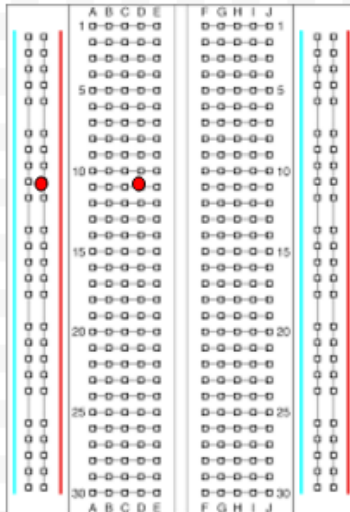
8. True or False: The pins in breadboard A are electrically connected.

Mark only one oval.

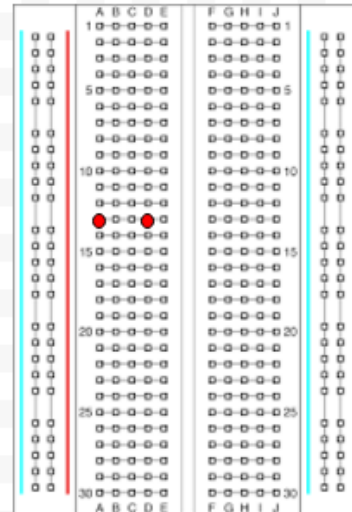
- ☐ False
- ☐ True

Breadboard A and Breadboard B

A



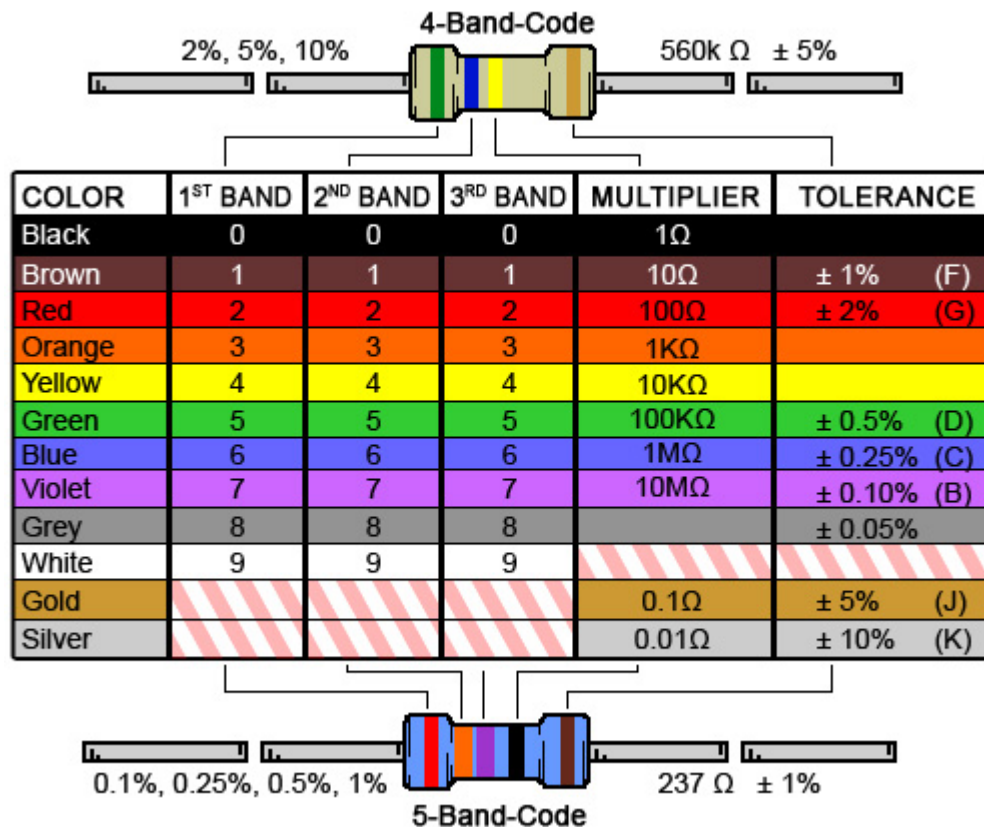
B



Resistors and Electrical Components

9. What would be the resistance value of a Brown Black Orange resistor?

Resistor Chart



10. What would be the resistance value of an Orange Orange Brown resistor?

11. What would be the resistance value of a Red Blue Yellow resistor?

Miscellaneous Wiring

12. I need to make a circuit that will detect the presence of light. I should use a(n):

Mark only one oval.

- ☐ Potentiometer
- ☐ Light Emitting Diode
- ☐ Photodiode
- ☐ Inductor

13. I need to make a circuit that will allow me to rotate a device in the real world. I should use a(n):

Mark only one oval.

- ☐ Servo Motor
- ☐ Inductor
- ☐ Push Button
- ☐ Potentiometer

14. I need to make a circuit that will allow me to vary the intensity of light to an LED using programming only. Which pin should I use on the arduino?

Mark only one oval.

- ☐ 5V
- ☐ D6 (PWM)
- ☐ D12 (No PWM)
- ☐ A3

15. True or False: I should always connect my breadboard to power before touching and moving electrical components.

Mark only one oval.

- ☐ False
- ☐ True

16. Select the correct three legs that correspond to a potentiometer (3 are correct)

Check all that apply.

- ☐ Ground
- ☐ Boost
- ☐ Power
- ☐ Signal
- ☐ Amplifier
- ☐ Selector

17. I need to make a circuit that will allow me to vary the intensity of an analog signal. I should use a(n):

Mark only one oval.

- ☐ Photodiode
- ☐ Push Button
- ☐ Potentiometer
- ☐ Inductor

18. Which leg of an LED light is the positive leg?

Mark only one oval.

- ☐ Short Leg
- ☐ Long Leg

19. **True or False: Red wires are supposed to be used for signal connections.**

Mark only one oval.

- ☐ False
☐ True

20. **I need to make a circuit that will allow me turn a light on and off using a mechanical device. I should use a(n):**

Mark only one oval.

- ☐ Zener Diode
☐ Push Button
☐ Potentiometer
☐ Inductor

21. **True or False: Green or black wires are supposed to be used for ground connections.**

Mark only one oval.

- ☐ True
☐ False

Short Answer Questions

Answer all of the following questions in 2-3 sentences: (Worth 2 points each)

22. **Describe in writing why we need to always use resistors with LED lights for 5V or higher circuits:**

23. **Describe in writing the difference between AC and DC power:**

24. **Describe in writing the difference between a servo motor and a normal motor:**

25. Describe in writing what a Transistor is and what they are used for:

26. Explain in writing what a Diode is and what it does:

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