

JONES COUNTY CAREER-TECHNICAL CENTER

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Dear Parents and Career Tech Students:

From the Faculty, Staff and Administration of the Jones County Career Technical Center, it is our intent to provide enrichment activities for our students and support for our parents during these difficult times.

The following enrichment activities will allow students to review the instruction that they already have received this year.

You will find questions with answers for you to study and review. There are no assignments to be returned to school.

If the JCCTC can be of any assistance to our students and parents with the enrichment activities, please feel free to call us at 601-425-2378 between the hours of 9:00 a.m. and 1:00 p.m. or contact the instructor by email. Email addresses are located under the program name on our webpage.

Sincerely,



Rex Buckhaults
Director, JCCTC

1. Technician A says that an atom with more electrons than protons has an overall positive charge. Technician B says that not all atoms can give up or accept electrons easily. Who is correct?
 - A) Technician A
 - B) Technician B
 - C) Both Technician A and Technician B
 - D) Neither Technician A nor B

2. Technician A says high resistance causes an increase in current flow. Technician B says a higher than normal voltage drop could indicate high resistance. Who is correct?
 - A) Technician A
 - B) Technician B
 - C) Both Technician A and Technician B
 - D) Neither Technician A nor B

3. What materials make a good insulator?
 - A) Copper and aluminum
 - B) Ceramic and plastic
 - C) Both A and B
 - D) None of the above

4. Technician A says a resistor is a component designed to extract energy from the current flow. Technician B says a DVOM can be used to check for a voltage drop. Who is correct?
 - A) Technician A
 - B) Technician B
 - C) Both Technician A and Technician B
 - D) Neither Technician A nor B

5. Ohm's law tells us that it takes 1 volt to push 1 amp through how many ohms?
 - A) 4 ohms
 - B) 3 ohms
 - C) 2 ohms
 - D) 1 ohm

6. In calculating Ohm's law using the formula $V = A \times R$, which of the following is true?
 - A) R stands for resistance.
 - B) A stands for amps.
 - C) V stands for voltage.
 - D) All of the answers listed

7. How many paths are there in a series circuit?
 - A) 1
 - B) 2
 - C) 3
 - D) 4

8. Technician A says parallel circuits are like links in a chain. Technician B says total current in a parallel circuit equals the sum of the current flowing in each branch of the circuit. Who is correct?
 - A) Technician A
 - B) Technician B
 - C) Both Technician A and Technician B
 - D) Neither Technician A nor B

9. When more branches are added to a parallel circuit the overall circuit resistance:
 - A) decreases.
 - B) depends on current flow.
 - C) increases.
 - D) stays the same.

10. Current in a series circuit:
 - A) is the same in all parts of the circuit.
 - B) is always direct current.
 - C) varies irregularly from point to point.
 - D) decreases as it goes through the circuit.

11. What are the two main components of an electric motor?
 - A) The field and brushes
 - B) The housing and bushings
 - C) Armature and the field
 - D) The armature and pulley

12. An ignition coil can be described as:
 - A) a step-up transformer.
 - B) an electrical storage device.
 - C) a device that uses low current flow to control a higher current flow.
 - D) a device that controls fuel flow to the engine.

13. Fuses prevent circuit damage by:
- A) stopping excessive current flow.
 - B) reducing wiring length.
 - C) limiting voltage increases.
 - D) decreasing circuit resistance.
14. Technician A says shielded wiring has five forms. Technician B says twisted pair is where two wires are twisted together. Who is correct?
- A) Technician A
 - B) Technician B
 - C) Both Technician A and Technician B
 - D) Neither Technician A nor B
15. To prevent noise, some vehicles use shielded wiring harnesses, which can be:
- A) twisted pair.
 - B) Mylar tape.
 - C) drain lines.
 - D) All of the answers listed.
16. _____ is a noninsulated wire that is wrapped within a wiring harness.
- A) Mylar tape
 - B) Twisted pair
 - C) A drain line
 - D) A wiring harness
17. Electrical interference is often referred to as:
- A) noise.
 - B) buzz.
 - C) crackle.
 - D) pop.
18. Wiring diagrams give information about:
- A) electrical circuits and their components.
 - B) voltage throughout a circuit.
 - C) current flow to components.
 - D) circuit resistance.

19. The most effective and safest tool to use to strip insulation from electrical wire is a:
- A) set of wire strippers.
 - B) knife.
 - C) set of side cutters.
 - D) set of combination pliers.
20. The type of solder that is safe for electrical wires and incorporates flux in the core of the solder is referred to as:
- A) rosin flux solder.
 - B) acid cored solder.
 - C) silver solder.
 - D) tinning solder.
21. Which factor below affects the resistance of a conductor?
- A) Type of material
 - B) Length of the conductor
 - C) Diameter of the conductor
 - D) All of the answers listed
22. Resistance is measured in:
- A) ohms.
 - B) volts.
 - C) watts.
 - D) amps.
23. A material that allows electricity to flow through it easily and is made up of atoms with one to three valence ring electrons is:
- A) a conductor.
 - B) a resistor.
 - C) an insulator.
 - D) a semi-conductor.
24. All matter is made up of:
- A) atoms.
 - B) electrons.
 - C) protons.
 - D) nucleus.

25. When an atom has an equal number of protons and electrons it is said to:
- A) have no overall charge.
 - B) have minimal charge.
 - C) be overcharged.
 - D) be undercharged.
26. What is the most common automotive conductor material?
- A) Copper.
 - B) Aluminum.
 - C) Carbon impregnated fiberglass or linen.
 - D) Silver
27. Technician A says in a parallel circuit, the more branches that are added, the more current flow increases. Technician B says a series-parallel circuit is made of parallel branches only. Who is correct?
- A) Technician A
 - B) Technician B
 - C) Both Techs A and B
 - D) Neither Technician A nor B
28. Energy is the potential to:
- A) do work.
 - B) infer work.
 - C) store work.
 - D) release work.
29. The unit of power is the:
- A) watt.
 - B) ampere.
 - C) ohm.
 - D) volt.
30. According to Ohm's law, current equals what?
- A) Voltage divided by resistance
 - B) Resistance divided by voltage
 - C) The reciprocal of voltage times resistance
 - D) Voltage times resistance

31. When more branches are added to a parallel circuit the overall circuit resistance:
- A) decreases.
 - B) depends on current flow.
 - C) increases.
 - D) stays the same.
32. A switch is used to:
- A) protect a circuit.
 - B) allow current to flow only one way.
 - C) reduce the current flow.
 - D) turn current flow on and off.
33. The armature in a standard electric motor:
- A) is bolted to the motor case so it can't move.
 - B) moves laterally.
 - C) is an electromagnet.
 - D) is another name for the carbon brushes.
34. Ignition coils:
- A) use electromagnetism to produce mechanical movement.
 - B) use electromagnetism to produce electricity.
 - C) use electromagnetism to lower the voltage
 - D) resist a current running through them.
35. Technician A says there are three standard labeling systems for relays. Technician B says relays are labeled 85, 86, 30, 87a, and 87, or 1, 2, 3, 4, and 5. Who is correct?
- A) Technician A
 - B) Technician B
 - C) Both Techs A and B
 - D) Neither Technician A nor B
36. Technician A says a solenoid is an electromechanical device that converts electrical energy into mechanical linear movement. Technician B says solenoids can be pull or push. Who is correct?
- A) Technician A
 - B) Technician B
 - C) Both Techs A and B
 - D) Neither Technician A nor Technician B

37. Two technicians are discussing relays. Technician A says that some relays have an internal switch that is normally open (NO). Technician B says that some relays have an internal switch that is normally closed (NC). Who is correct?
- A) Technician A
 - B) Technician B
 - C) Both Technician A and Technician B
 - D) Neither Technician A nor Technician B
38. _____ are generally cylinders with connecting metal leads projecting along the axis of the cylinder at each end.
- A) Fixed resistors
 - B) Variable resistors
 - C) Rheostats
 - D) Potentiometers
39. Movement of current that flows in one direction only is referred to as:
- A) NO.
 - B) NC.
 - C) AC.
 - D) DC.
40. _____ states that the sum of the current flowing into a junction is the same as current flowing out of the junction.
- A) Ohm's law
 - B) Kirchhoff's current law
 - C) Junction law
 - D) None of the answers listed

Answer Key

1. B
2. B
3. B
4. C
5. D
6. D
7. A
8. B
9. A
10. A
11. C
12. A
13. A
14. B
15. D
16. C
17. A
18. A
19. A
20. A
21. D
22. A
23. A
24. A
25. A
26. A
27. A
28. A
29. A
30. A
31. A
32. D
33. C
34. B
35. B
36. C
37. C
38. A
39. D
40. B

1. There are _____ main components of a DVOM.
 - A) two
 - B) three
 - C) four
 - D) five

2. Technician A says that an ohmmeter is used to measure the amount of current flowing in a circuit. Technician B says that an ammeter is connected in series within the circuit. Who is correct?
 - A) Technician A
 - B) Technician B
 - C) Both Technician A and B
 - D) Neither Technician A nor B

3. Technician A says that to test a component for resistance a technician must calibrate the ammeter. Technician B says that to test a component for resistance a technician must verify that the vehicle's battery is at least 75% charged. Who is correct?
 - A) Technician A.
 - B) Technician B.
 - C) Both Technician A and B
 - D) Neither Technician A nor B

4. What does DVOM stand for?
 - A) Digital volt-hour meter
 - B) Digital volt-ohmmeter
 - C) Digital valve ohmmeter
 - D) Digital variable oval meter

5. Two technicians are discussing a resistance measurement. Technician A states that components being measured should be removed or isolated from the circuit. Technician B states that power to the circuit should be disconnected when measuring resistance. Which technician is correct?
 - A) Technician A
 - B) Technician B
 - C) Both Technicians A and B
 - D) Neither Technician A nor B

6. Two technicians are discussing an amperage measurement. Technician A states that a DVOM must be connected in parallel when measuring amperage directly. Technician B states that inductive current clamps are needed when measuring amperage above the meter rating. Which technician is correct?
 - A) Technician A
 - B) Technician B
 - C) Both Technician A and Technician B
 - D) Neither Technician A nor Technician B
7. Two technicians are discussing the use of a DVOM. Technician A states that back-probing is a technique used to reduce the chance of damage while measuring. Technician B states that insulation piercing probes do not increase the chance of corrosion or damage to the conductor. Which technician is correct?
 - A) Technician A
 - B) Technician B
 - C) Both Technicians A and Technician B
 - D) Neither Technician A nor Technician B
8. What is the minimum CAT rating you need your digital volt-ohmmeter (DVOM) to be rated to in order to work on a hybrid?
 - A) CAT I
 - B) CAT II
 - C) Cat III or CAT IV
 - D) Cat IV or CAT V
9. When reading a digital volt-ohmmeter (DVOM), you have a reading of 2168 mV, which is the same as:
 - A) 2168 millivolts.
 - B) 2168 volts.
 - C) 1000 mV.
 - D) . 21680 mV.
10. Technician A says the leads on a multimeter are negative and positive. Technician B says the test leads on an oscilloscope are normally different colors for each test channel. Who is correct?
 - A) Technician A
 - B) Technician B
 - C) Both Technician A and Technician B
 - D) Neither Technician A nor Technician B

11. When probing wires, you should do all of the following, EXCEPT:
 - A) back probe when possible.
 - B) use caution when piercing wiring not to damage the wire internally.
 - C) reinsulate the hole with room temperature vulcanizing silicone.
 - D) never use excessive force.

12. The most common measurements taken with DVOMs are:
 - A) voltage.
 - B) resistance.
 - C) current.
 - D) All of the answers listed

13. Two technicians are discussing unwanted circuit resistance. Technician A says that a voltage drop test is best to find unwanted resistance in wires and connectors. Technician B says that an ohmmeter test is best. Who is correct?
 - A) Technician A
 - B) Technician B
 - C) Both Technician A and Technician B
 - D) Neither Technician A nor Technician B

14. An ammeter must always be connected:
 - A) in series with the circuit.
 - B) in parallel to the circuit.
 - C) across the battery terminals.
 - D) across the ground.

15. A technician connects a voltmeter in parallel across two points in a circuit. Technician A says this will provide a reading of the potential difference in volts. Technician B says that this will also show the amperage flowing in the circuit. Who is correct?
 - A) Technician A
 - B) Technician B
 - C) Both Technician A and B
 - D) Neither Technician A nor B

16. All these statements are true about protection devices, EXCEPT:
 - A) fuses and fusible links are sacrificial.
 - B) circuit breakers can be reset.
 - C) you should always replace fuses and fusible links with higher rated ones.
 - D) protection devices are designed to prevent excessive current from flowing.

17. Technician A says you can use Ohm's law in two ways when diagnosing electrical circuits. Technician B says the first is by using it to perform the math to predict and verify the measurements. Who is correct?
- A) Technician A
 - B) Technician B
 - C) Both Technician A and Technician B
 - D) Neither Technician A nor Technician B
18. Technician A says amperage cannot exist without both voltage and resistance. Technician B says if amperage is high, then you know that one of two conditions is present: low voltage or high resistance. Who is correct?
- A) Technician A
 - B) Technician B
 - C) Both Technician A and Technician B
 - D) Neither Technician A nor Technician B
19. Technician A says test lights are great for simple tests such as testing fuses. Technician B says you can use a test light to check SRS circuits and computer circuits. Who is correct?
- A) Technician A
 - B) Technician B
 - C) Both Technicians A and B
 - D) Neither Technician A nor B
20. What is an example of an open circuit?
- A) Wire that has rubbed into a power wire
 - B) A break in the electrical circuit
 - C) Wire that has rubbed into the ground
 - D) All of the answers listed
21. Two technicians are discussing nonpowered test lights. Technician A says that nonpowered test lamps are useful in determining if electrical power is present in part of a circuit. Technician B says that if the light illuminates, the two ends of the test light are touching both a power and a ground. Who is correct?
- A) Technician A
 - B) Technician B
 - C) Both Technician A and Technician B
 - D) Neither Technician A nor Technician B

22. Two technicians are discussing shorts and resistance. Technician A says that a short to power refers to a condition where power from one circuit leaks into another circuit. Technician B says that high resistance refers to a circuit where there is no unintended resistance. Who is correct?
- A) Technician A
 - B) Technician B
 - C) Both Technician A and B
 - D) Neither Technician A nor B
23. Two technicians are discussing voltage drop testing. Technician A says that there are two ways to do a voltage drop test: the direct method and the indirect method. Technician B says that the direct method uses both leads on the same side of the circuit. Who is correct?
- A) Technician A
 - B) Technician B
 - C) Both Technician A and Technician B
 - D) Neither Technician A nor Technician B
24. The _____ method of voltage drop testing involves taking two voltage readings and subtracting them from each other to determine the voltage drop.
- A) direct
 - B) indirect
 - C) subtraction
 - D) differential
25. Which of the following would likely have a CAT I rating?
- A) Portable tool
 - B) Appliance
 - C) Main power wires from the utility company
 - D) Low power electronic equipment
26. To conduct a continuity test with an ohmmeter, circuit power is:
- A) disconnected.
 - B) connected.
 - C) either connected or disconnected. It doesn't matter.
 - D) fused.

27. When checking circuit continuity with an ohmmeter:
- A) the circuit must be powered down to avoid a wrong reading.
 - B) the power supplied to the circuit during operation **MUST** be switched ON.
 - C) the reading will be given in volts.
 - D) the reading will be given in amperes.
28. Which of the following is most often used for locating opens, shorts, grounds, and high-resistance faults?
- A) DVOMs
 - B) Test lamps
 - C) Simulated loads
 - D) All of the answer listed
29. When doing a voltage drop test, the _____ method uses both test leads on the same side of the circuit.
- A) parallel
 - B) direct
 - C) indirect
 - D) linear
30. To measure voltage drop, the red lead of the DVOM is normally connected to the _____ side of the component.
- A) positive
 - B) negative
 - C) upper left
 - D) upper right
31. To measure current, the DVOM must be set to read :
- A) AC amps.
 - B) DC amps.
 - C) Both A and B
 - D) Neither A nor B
32. Vehicle wiring diagrams or schematics are available in which format?
- A) Paper-based manual
 - B) Computer program
 - C) Online
 - D) All of the answers listed

33. Two technicians are discussing their options to measure voltage using a voltmeter. Technician A says that the simple voltage test works best. Technician B says that the better test is the voltage drop test. Who is correct?
- A) Technician A
 - B) Technician B
 - C) Both Technician A and Technician B
 - D) Neither Technician A nor Technician B
34. Technician A states that jumper leads can be used in a number of ways to assist in checking circuits, and they can be created by the technician or purchased in a range of sizes, lengths, and fittings. Technician B states that jumper leads are used to extend connections to allow circuit readings or tests to be undertaken with a DVOM, oscilloscope, current clamps on fuses, relays, and connector plugs on components. Who is correct?
- A) Technician A
 - B) Technician B
 - C) Both Technician A and Technician B
 - D) Neither Technician A nor Technician B
35. Inspection of electrical devices usually begins with:
- A) electrical testing.
 - B) visual inspection.
 - C) DVOM testing.
 - D) ohmmeter testing.
36. Which setting is often used to measure vehicle battery voltage while the engine is cranking or the battery is charging?
- A) Maximum
 - B) Minimum
 - C) Min/max
 - D) Optimal
37. When OL appears on a meter display this means:
- A) overload.
 - B) over limits.
 - C) over land.
 - D) out of limits.

38. _____ is a condition in which the current flows along an unintended route.
- A) Grounds
 - B) Short circuit
 - C) Short to power
 - D) Open circuit
39. _____ is a condition in which current flows from one circuit to another.
- A) Grounds
 - B) Short circuit
 - C) Short to power
 - D) Open circuit
40. The _____ is a setting on a DVOM to store the present reading.
- A) release function
 - B) probe function
 - C) reset function
 - D) hold function

Answer Key

1. A
2. B
3. D
4. B
5. C
6. B
7. A
8. C
9. A
10. B
11. C
12. D
13. A
14. A
15. A
16. C
17. C
18. A
19. A
20. B
21. C
22. A
23. C
24. B
25. C
26. A
27. A
28. D
29. B
30. A
31. B
32. D
33. B
34. C
35. B
36. C
37. A
38. B
39. C
40. D