DC Theory LMS Practice Test (Sample)

Study Guide

Everything you need from our exam experts!

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- **Practice answering questions under realistic conditions,**
- **Improve accuracy and speed,**
- **Review explanations to strengthen weak areas, and**
- **Approach the exam with greater confidence.**

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here’s how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don’t just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There’s no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

1. What is the unit for measuring resistance?

A. Volts

B. Ohms

C. Amps

D. Watts

2. A 100 µF capacitor is charged to 9 V. What is the energy stored?

A. 0.81 mJ

B. 4.05 mJ

C. 0.405 J

D. 0.0405 J

3. What happens to current when a source splits into two or more paths?

A. Current does not split

B. Current splits between paths

C. Total current increases

D. Total current decreases

4. The attraction or repulsion that occurs when magnets are held close to each other is caused by ?

A. Currents

B. Magnetic lines of force

C. Magnetic domains

D. Magnetism

5. Transform a 10 V voltage source in series with a 5 Ω resistor to its Norton equivalent.

A. I_N = 2 A; R_N = 5 Ω

B. I_N = 1 A; R_N = 5 Ω

C. I_N = 2 A; R_N = 10 Ω

D. I_N = 4 A; R_N = 5 Ω

6. In a parallel circuit with 6 Ω and 3 Ω across a 9 V source, find total current and branch currents.

A. I_total = 4 A; I6 = 1 A; I3 = 3 A

B. I_total = 6 A; I6 = 3 A; I3 = 3 A

C. I_total = 4.5 A; I6 = 1.5 A; I3 = 3 A

D. I_total = 5 A; I6 = 0.5 A; I3 = 4.5 A

7. A mechanical device designed to allow or interrupt current flow in a circuit is called a ?

A. Switch

B. Fuse

C. Load

D. Timer

8. The equation 0 = ΣIin − ΣIout expresses which law?

A. Kirchhoff's Current Law

B. Kirchhoff's Voltage Law

C. the Law of Proportionality

D. Ohm's Law

9. Which option correctly describes the magnetic field lines around a straight current-carrying conductor?

A. Parallel lines

B. Helical lines

C. Concentric circles

D. Radial spokes

10. In a series circuit, the current measured on the supply side of the load is equal to the current measured on the return path.

A. None of the above

B. The same as

C. The greater than

D. Less than

Answers

1. B
2. B
3. B
4. B
5. A
6. C
7. A
8. A
9. C
10. B

Explanations

1. What is the unit for measuring resistance?

A. Volts

B. Ohms

C. Amps

D. Watts

Resistance is measured in ohms. This follows Ohm's law, V = IR. If you solve for R, you get R = V/I, so the unit that naturally fits is volt per ampere, defined as one ohm. The ohm is symbolized by the Greek omega. Volts measure electrical potential, amps measure current, and watts measure power, so the unit for resistance stands apart as the ohm. For example, if 2 volts are across a component drawing 0.5 amps, the resistance is 4 ohms.

2. A 100 µF capacitor is charged to 9 V. What is the energy stored?

A. 0.81 mJ

B. 4.05 mJ

C. 0.405 J

D. 0.0405 J

Energy stored in a charged capacitor is given by E = 1/2 C V^2. Convert 100 µF to farads: 100 µF = 100 × 10^-6 F = 1.0 × 10^-4 F. With V = 9 V, E = 0.5 × (1.0 × 10^-4 F) × (9^2) = 0.5 × 1.0 × 10^-4 × 81 = 4.05 × 10^-3 J, which is 0.00405 J or 4.05 mJ. So the energy stored is 4.05 millijoules. This matches the given value because all steps follow the standard capacitor energy formula and proper unit conversion.

3. What happens to current when a source splits into two or more paths?

A. Current does not split

B. Current splits between paths

C. Total current increases

D. Total current decreases

When a source splits into two or more paths, the current divides among those parallel paths. The same voltage appears across each path, so how much current goes through each path depends on that path's resistance: lower resistance draws more current, higher resistance draws less. The currents in all the branches add up to give the total current drawn from the source. If the path resistances are equal, the current splits evenly; if not, the distribution shifts toward the lower-resistance paths. In general, adding parallel paths lowers the overall resistance, which can increase the total current from a fixed-voltage source, but the essential idea is that the current splits between the paths.

4. The attraction or repulsion that occurs when magnets are held close to each other is caused by ?

A. Currents

B. Magnetic lines of force

C. Magnetic domains

D. Magnetism

The force between magnets comes from the magnetic field they each create, which can be visualized as lines of force extending from a magnet's north pole to its south pole. When two magnets are near, these field lines interact: opposite poles align their lines to connect, pulling the magnets together (attraction), while like poles push the lines apart, causing the magnets to repel (repulsion). This field-driven interaction is what produces the observed attraction or repulsion. The broader term magnetism describes the property in general, and magnetic domains are about internal alignment within a material, not the direct interaction between two separate magnets. Currents can generate magnetic fields, but the immediate cause of the attraction/repulsion between magnets is the magnetic field represented by its lines of force.

5. Transform a 10 V voltage source in series with a 5 Ω resistor to its Norton equivalent.

A. $I_N = 2$ A; $R_N = 5$ Ω

B. $I_N = 1$ A; $R_N = 5$ Ω

C. $I_N = 2$ A; $R_N = 10$ Ω

D. $I_N = 4$ A; $R_N = 5$ Ω

Transforming a voltage source with a series resistor into a Norton equivalent uses $I_N = V_s / R_s$ and $R_N = R_s$. The 10 V source in series with 5 Ω becomes a 2 A current source in parallel with 5 Ω. This matches the short-circuit current (10 V / 5 Ω = 2 A) and leaves the same impedance seen from the terminals, 5 Ω. The Norton form preserves the same behavior for any load connected across the terminals. So the correct Norton equivalent is a 2 A current source in parallel with 5 Ω.

6. In a parallel circuit with 6 Ω and 3 Ω across a 9 V source, find total current and branch currents.

A. $I_{total} = 4$ A; $I6 = 1$ A; $I3 = 3$ A

B. $I_{total} = 6$ A; $I6 = 3$ A; $I3 = 3$ A

C. $I_{total} = 4.5$ A; $I6 = 1.5$ A; $I3 = 3$ A

D. $I_{total} = 5$ A; $I6 = 0.5$ A; $I3 = 4.5$ A

In a parallel circuit, the voltage across each branch is the same as the source, and the total current is the sum of the branch currents. With a 9 V source across both resistors, use Ohm's law for each branch: the current through 6 Ω is 9 V / 6 Ω = 1.5 A, and the current through 3 Ω is 9 V / 3 Ω = 3 A. Adding these gives the total current: 1.5 A + 3 A = 4.5 A. You can also see this from the equivalent resistance of parallel resistors: $R_{eq} = (6 \times 3) / (6 + 3) = 18/9 = 2$ Ω, so $I_{total} = 9$ V / 2 Ω = 4.5 A, which matches the sum of the branch currents. Therefore, $I_{total} = 4.5$ A, $I6 = 1.5$ A, $I3 = 3$ A.

7. A mechanical device designed to allow or interrupt current flow in a circuit is called a ?

A. Switch

B. Fuse

C. Load

D. Timer

This question tests understanding of devices that control whether current can flow in a circuit. A switch is a device that intentionally makes or breaks the electrical path. When you close a switch, the circuit is complete and current can flow; when you open it, the path is broken and the current stops. This manual, mechanical action directly controls the flow of electricity, which is exactly what a switch does. The other items aren't designed to actively enable or interrupt current in the same way. A fuse is a protective device that interrupts current automatically if something goes wrong, and after it trips it must be replaced. A load is simply the component that uses power. A timer changes when a circuit is allowed to run, but it doesn't by itself provide a continuous on/off path like a switch does.

8. The equation 0 = ΣIin − ΣIout expresses which law?

A. Kirchhoff's Current Law

B. Kirchhoff's Voltage Law

C. the Law of Proportionality

D. Ohm's Law

At a junction, the total current that flows into the node must equal the total current flowing out. The equation 0 = ΣIin − ΣIout expresses that balance: if you subtract the currents leaving the node from the currents entering, you get zero. In other words, the net current at a node is zero, which is the essence of Kirchhoff's Current Law. This reflects conservation of charge and is fundamental for solving circuits by nodal analysis. Kirchhoff's Voltage Law, by contrast, concerns voltages around a closed loop, stating their sum is zero; Ohm's Law relates voltage, current, and resistance for a component; the Law of Proportionality isn't a standard circuit principle.

9. Which option correctly describes the magnetic field lines around a straight current-carrying conductor?

A. Parallel lines

B. Helical lines

C. Concentric circles

D. Radial spokes

Magnetic field lines around a straight current-carrying conductor form closed loops that encircle the wire, lying in planes perpendicular to the wire. These lines are concentric circles centered on the wire, with the direction given by the right-hand rule: point the thumb of your right hand along the current, and the curled fingers show the magnetic field direction around the wire. The field strength decreases with distance from the wire, following B = μ0 I / (2π r), so closer to the wire the lines are denser. This is why the description of concentric circles is the best fit. Parallel lines would imply a uniform field, which isn't what happens around a straight current. Helical lines would require a component of the field along the wire, as seen in other setups like solenoids or moving charges in a field. Radial spokes would indicate lines radiating outward from the wire, which magnetic fields around a straight conductor do not do.

10. In a series circuit, the current measured on the supply side of the load is equal to the current measured on the return path.

A. None of the above

B. The same as

C. The greater than

D. Less than

In a series circuit the same amount of current flows through every component along the single path. Because there is only one path for charge to take, what leaves the source must return through the same path, so the current entering the load on the supply side equals the current leaving the load on the return side. The voltages across the individual components can differ, adding up to the total supply voltage, but the current remains constant as it traverses the loop. If there were multiple paths (a parallel circuit), currents could split and differ between paths, but in a series arrangement they stay the same throughout.

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

https://dctheorylms.examzify.com

We wish you the very best on your exam journey. You've got this!