

12-Lead Electrocardiogram (EKG) 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

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- 1. What feature distinguishes atrial flutter on an EKG?**
 - A. Definite P waves
 - B. Irregularly irregular rhythm
 - C. Sawtooth pattern of F waves
 - D. Widened QRS complex
- 2. What is the normal firing rate of the AV node?**
 - A. 30-60 beats per minute
 - B. 40-60 beats per minute
 - C. 60-80 beats per minute
 - D. 60-100 beats per minute
- 3. What type of arrhythmia is characterized by a ventricular rate of 150-250 bpm?**
 - A. Atrial fibrillation
 - B. Ventricular tachycardia
 - C. Premature ventricular contractions
 - D. Atrial flutter
- 4. What EKG trace indicates a patient is experiencing a STEMI?**
 - A. ST depression in contiguous leads
 - B. Normal sinus rhythm
 - C. ST elevation in contiguous leads
 - D. Prolonged QT interval
- 5. What might ST segment depression during exercise suggest?**
 - A. Normal cardiac response to exercise
 - B. Possible ischemia or coronary artery disease
 - C. High blood pressure
 - D. Arrhythmia
- 6. What EKG finding indicates pericardial effusion?**
 - A. High voltage QRS complexes
 - B. Normal amplitude P waves
 - C. Low voltage QRS complexes and ST segment alterations
 - D. ST segment elevation in multiple leads

- 7. What type of infarction is indicated by the interpretation of a 12 lead EKG from a specific image?**
- A. Lateral wall infarction
 - B. Inferior wall infarction
 - C. Anterior wall infarction
 - D. Septal wall infarction
- 8. What does a prolonged QT interval indicate?**
- A. Increased heart rate
 - B. Potential risk of arrhythmias
 - C. Myocardial ischemia
 - D. Cardiac hypertrophy
- 9. The ST segment leads up to which event in the heart?**
- A. Ventricular repolarization
 - B. Atrial repolarization
 - C. Ventricular depolarization
 - D. Atrial depolarization
- 10. What may indicate the presence of ventricular hypertrophy on an EKG?**
- A. Increased amplitude of R waves
 - B. Shortened P waves
 - C. Inverted T waves
 - D. Prolonged PR interval

Answers

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

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Explanations

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1. What feature distinguishes atrial flutter on an EKG?

- A. Definite P waves
- B. Irregularly irregular rhythm
- C. Sawtooth pattern of F waves**
- D. Widened QRS complex

Atrial flutter is characterized by a distinctive sawtooth pattern of F waves, often referred to as "flutter waves." This pattern is most commonly seen in the inferior leads (II, III, aVF) and demonstrates a regular and continuous rhythmic activity that resembles a "sawtooth" shape. This feature results from rapid reentrant circuits within the atria, leading to a regular atrial contraction but can also manifest as an organized pattern clearly visible on the EKG. Option C is correct because the identification of these flutter waves is crucial in distinguishing atrial flutter from other arrhythmias, such as atrial fibrillation, which would show irregularly undulating baseline without clear flutter waves. The clear sawtooth appearance in atrial flutter allows for easy recognition of this specific arrhythmia on an EKG reading.

2. What is the normal firing rate of the AV node?

- A. 30-60 beats per minute
- B. 40-60 beats per minute**
- C. 60-80 beats per minute
- D. 60-100 beats per minute

The normal firing rate of the AV node is typically between 40 to 60 beats per minute. The AV node serves as a crucial electrical relay between the atria and the ventricles, acting as a gatekeeper that regulates the conduction of electric signals. If the SA node, which normally initiates the heart's electrical impulse, fails or sends impulses too slowly, the AV node can take over as a secondary pacemaker within this rate. This range is important in maintaining a coordinated contraction between the heart chambers. In the context of this question, while other options might represent firing rates of different cardiac pacer sites (such as the SA node or the ventricles), they do not accurately reflect the specific intrinsic firing rate characteristic of the AV node.

3. What type of arrhythmia is characterized by a ventricular rate of 150-250 bpm?

- A. Atrial fibrillation
- B. Ventricular tachycardia**
- C. Premature ventricular contractions
- D. Atrial flutter

The type of arrhythmia characterized by a ventricular rate of 150-250 beats per minute is ventricular tachycardia (VT). This condition arises when the electrical signals in the ventricles of the heart become erratic and rapid, leading to a significant increase in heart rate. During ventricular tachycardia, the heart is unable to pump blood effectively, which can reduce cardiac output and may result in serious complications, including loss of consciousness or even cardiac arrest. In VT, the heart's ventricles contract at a much higher rate than normal, which is typically between 60 and 100 beats per minute for a resting adult. The rapid rate of 150-250 bpm is a defining characteristic of this arrhythmia, differentiating it from other types of arrhythmias, which may present with different rate ranges and underlying mechanisms. This understanding of ventricular tachycardia is crucial for clinical diagnosis and management, as the condition often requires immediate medical intervention, particularly if it is sustained or associated with other symptoms such as chest pain or syncope.

4. What EKG trace indicates a patient is experiencing a STEMI?

- A. ST depression in contiguous leads
- B. Normal sinus rhythm
- C. ST elevation in contiguous leads**
- D. Prolonged QT interval

The presence of ST elevation in contiguous leads on an EKG trace is a classic indicator of a ST-Elevation Myocardial Infarction (STEMI). This elevation signifies that there is significant myocardial ischemia due to a complete blockage of a coronary artery, leading to damage in the heart muscle. The elevation typically appears in at least two adjacent leads (contiguous leads) as it reflects the area of the heart that is affected by the blocked artery. In a STEMI, the ST segment rises above the baseline, indicating that there is acute injury to the myocardial tissue. This finding is crucial for timely diagnosis and intervention, as it underscores the need for urgent medical treatment to restore blood flow to the affected area and minimize heart damage. The focus on contiguous leads is important as it provides a clearer picture of the cardiac event associated with specific regions of the heart affected by the infarction. Recognizing this pattern is vital for clinicians, as it directly influences the urgency and direction of the therapeutic approach, such as the need for reperfusion therapies like angioplasty or thrombolysis. Thus, the identification of ST elevation in contiguous leads forms a critical part of the assessment of patients suspected of having a STEMI.

5. What might ST segment depression during exercise suggest?

- A. Normal cardiac response to exercise
- B. Possible ischemia or coronary artery disease**
- C. High blood pressure
- D. Arrhythmia

ST segment depression during exercise is significant because it often indicates that the heart muscle is not receiving enough oxygenated blood, suggesting ischemia. This condition can arise due to coronary artery disease (CAD) or other factors that restrict blood flow. When the heart is stressed during exercise, it normally increases blood flow to meet heightened oxygen demands. However, if there are narrowed or blocked coronary arteries, this process can be compromised, leading to ST segment depression on the EKG. In a healthy individual, the ST segment remains flat or may even elevate slightly during physical exertion; any depression could prompt further investigation into potential cardiovascular issues. While it is essential to consider various factors that can affect EKG readings, ST segment depression is primarily associated with ischemic changes, making it a critical signal for potential underlying coronary artery disease.

6. What EKG finding indicates pericardial effusion?

- A. High voltage QRS complexes
- B. Normal amplitude P waves
- C. Low voltage QRS complexes and ST segment alterations**
- D. ST segment elevation in multiple leads

The presence of low voltage QRS complexes and ST segment alterations is indicative of pericardial effusion on an EKG. In cases of pericardial effusion, there is a fluid accumulation in the pericardial space, which can dampen the electrical signals from the heart. This results in low amplitude or low voltage QRS complexes when measured across the leads. Additionally, the fluid can also influence the position and configuration of the ST segments, leading to alterations that might include depression or elevation in certain leads. This finding is significant because it helps differentiate pericardial effusion from other cardiac conditions that may present similarly. For instance, other cardiac issues might show elevated voltages or clear changes in ST segments, but low voltage along with the specified alterations is a hallmark of fluid around the heart, thus aiding in prompt diagnosis and management.

7. What type of infarction is indicated by the interpretation of a 12 lead EKG from a specific image?

- A. Lateral wall infarction
- B. Inferior wall infarction
- C. Anterior wall infarction
- D. Septal wall infarction**

A septal wall infarction is indicated by the presence of Q waves or ST segment changes in the anterior leads (V1-V2) of the EKG, which suggest ischemia or necrosis in the septal region of the heart. In a 12-lead EKG, septal wall infarctions can affect the leads directly over the septum, particularly V1 and V2. These changes are interpreted in the context of the location of the coronary arteries; the septal wall is primarily supplied by the left anterior descending artery. If this artery is occluded, the reflected changes on the EKG in the specified leads provide insight into the degree and location of damage. In contrast, lateral wall infarctions would typically show changes in leads I, aVL, V5, and V6; inferior wall infarctions would reflect changes in leads II, III, and aVF; and anterior wall infarctions would encompass leads V3 and V4. Understanding these relationships and how they manifest on an EKG is crucial for diagnosing the specific area of infarction.

8. What does a prolonged QT interval indicate?

- A. Increased heart rate
- B. Potential risk of arrhythmias**
- C. Myocardial ischemia
- D. Cardiac hypertrophy

A prolonged QT interval is a significant finding on an electrocardiogram that indicates a potential risk of arrhythmias. The QT interval represents the time it takes for the heart's ventricles to depolarize and then repolarize, essentially encompassing the period from the start of the heart's electrical activity until the heart is ready for the next beat. When the QT interval is prolonged, it can lead to a disruption in the normal electrical conduction of the heart, increasing the risk of dangerous arrhythmias such as Torsades de Pointes, ventricular tachycardia, or even more severe complications like sudden cardiac death. This is particularly critical because it can occur in various clinical scenarios, such as medication effects, electrolyte imbalances, or genetic factors that influence ion channel function. In contrast, while increased heart rate and other conditions like myocardial ischemia and cardiac hypertrophy can influence the ECG, they do not directly correlate with the implications of a prolonged QT interval, which specifically points towards inherent risk in the heart's electrical stability. Understanding the significance of the QT interval is crucial for predicting and managing patients at risk for serious cardiac events.

9. The ST segment leads up to which event in the heart?

- A. Ventricular repolarization**
- B. Atrial repolarization
- C. Ventricular depolarization
- D. Atrial depolarization

The ST segment of the electrocardiogram represents the period during which the ventricles are in a state of depolarization and are preparing for repolarization. This segment follows the QRS complex, which indicates ventricular depolarization, and leads into the process of ventricular repolarization. During this time, the heart muscle cells are transitioning back to their resting state after having contracted. The correct choice highlights that the ST segment is crucial in indicating when the ventricles are re-establishing their electrical equilibrium in preparation for the next heartbeat. Recognizing this phase is essential for understanding various cardiac conditions, especially those related to ischemia and other heart abnormalities.

10. What may indicate the presence of ventricular hypertrophy on an EKG?

A. Increased amplitude of R waves

B. Shortened P waves

C. Inverted T waves

D. Prolonged PR interval

The presence of ventricular hypertrophy can be indicated by an increase in the amplitude of R waves observed on an EKG. This increase occurs because as the ventricular muscle becomes thicker due to hypertrophy, it generates stronger electrical signals during depolarization. The left ventricular hypertrophy, for example, often shows significant increases in the R wave amplitude in specific leads, particularly the left precordial leads (V5 and V6), and can also have corresponding changes in the S waves in other leads. Other potential indicators of left ventricular hypertrophy include changes in the S wave amplitude or the presence of specific patterns such as the "strain" pattern in the T waves. However, the key indicator among the options provided is the increased amplitude of R waves. The other choices, while they may indicate other types of cardiac conditions or abnormalities, do not directly correlate with ventricular hypertrophy.

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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://12leadekg.examzify.com>

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

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