

# TEST BANK FOR ECGS MADE EASY 5TH EDITION BY AEHLERT

## Chapter 5 TRUE/FALSE

1. The AV junction consists of the AV node and the nonbranching portion of the bundle of His.

ANS: T

OBJ: Describe the location, function, and (where appropriate), the intrinsic rate of the following structures: sinoatrial (SA) node, atrioventricular (AV) bundle, and Purkinje fibers.

2. An escape rhythm is initiated by a lower pacemaker site when the sinoatrial (SA) node slows or fails to initiate an impulse

ANS: T

OBJ: Describe the location, function, and (where appropriate) the intrinsic rate of the following structures: sinoatrial (SA) node, atrioventricular (AV) bundle, and Purkinje fibers.

3. Adenosine is the drug of choice when treating a symptomatic patient with a junctional rhythm at a rate of 40 beats/min.

ANS: F

Atropine (not adenosine) is the drug of choice when treating a symptomatic patient with a junctional rhythm at a rate of 40 beats/min.

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for a junctional escape rhythm.

4. The pacemaker cells in the AV junction are located near the nonbranching portion of the bundle of His.

ANS: T

OBJ: Describe the location, function, and (where appropriate) the intrinsic rate of the following structures: sinoatrial (SA) node, atrioventricular (AV) bundle, and Purkinje fibers.

### **MULTIPLE CHOICE**

1. A beat originating from the AV junction that appears later than the next expected sinus beat is called a \_\_\_\_\_.
  - a. junctional escape beat
  - b. period of SA block
  - c. premature junctional complex (PJC)
  - d. premature atrial complex (PAC)

ANS: A

Junctional complexes may come early (before the next expected sinus beat) or late (after the next expected sinus beat). If the complex is early, it is called a *premature junctional complex*. If the complex is late, it is called a *junctional escape beat*. To determine whether a complex is early or late, you need to see at least two sinus beats in a row to establish the regularity of the underlying rhythm.

OBJ: Explain the difference between premature junctional complexes and junctional escape beats.

2. Which of the following medications increases heart rate by accelerating the SA node discharge rate and blocking the vagus nerve?
- a. Digitalis
  - b. Atropine
  - c. Amiodarone
  - d. Beta -blocker

ANS: B

Atropine is a vagolytic drug that is used to increase the heart rate. *Vago* refers to the vagus nerves (right and left), which are the main nerves of the parasympathetic division of the autonomic nervous system. *Lytic* refers to “lyse,” which means to “dissolve.” Atropine works by blocking acetylcholine at the endings of the vagus nerves. The vagus nerves innervate the heart at the SA and AV nodes. Thus, atropine is most effective for narrow QRS bradycardia. By blocking the effects of acetylcholine, atropine allows more activity from the sympathetic division of the autonomic nervous system. As a result, the rate at which the SA node can fire is increased. Areas of the heart that are not innervated or that are minimally innervated by the vagus nerves (e.g., the ventricles) will not respond to atropine. Thus, atropine is usually ineffective for the treatment of wide-QRS bradycardia. Atropine also increases the rate at which an impulse is conducted through the AV node. It has little or no effect on the force of contraction.

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for a junctional escape rhythm.

3. In a junctional rhythm viewed in lead II, where is the location of the P wave on the ECG if atrial and ventricular depolarization occur simultaneously?

a. Before the QRS complex

b. During the QRS complex

c. After the QRS complex

ANS: B

If the atria and ventricles depolarize at the same time, a P wave will not be visible because it will be hidden in the QRS complex.

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for a junctional escape rhythm.

4. Common causes of junctional dysrhythmias may include acute coronary syndromes and \_\_\_\_\_.

a. hyperthyroidism

b. hypovolemia

c. digitalis toxicity

d. hypoxia

ANS: C

Toxicity or excess of digitalis is a common cause of junctional dysrhythmias.

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for a junctional escape rhythm.

5. Identify the following rhythm (lead II).

a. Accelerated junctional rhythm

b. Sinus rhythm

c. Junctional rhythm

d. Sinus arrhythmia

ANS: A

The rhythm strip shows an accelerated junctional rhythm.

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for an accelerated junctional rhythm.

6. Identify the following rhythm (lead II).

a. Sinus arrhythmia

b. Sinus rhythm with junctional escape beats

c. Sinus tachycardia with premature atrial complexes

d. Sinus tachycardia with premature junctional complexes

ANS: D

The rhythm strip shows a sinus tachycardia with premature junctional complexes.

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for premature junctional complexes (PJs).

7. Identify the following rhythm (lead II).
  - a. Junctional tachycardia
  - b. Sinus rhythm with PACs
  - c. Sinus rhythm with PJs
  - d. Accelerated junctional rhythm

ANS: D

The rhythm strip shows an accelerated junctional rhythm.

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for an accelerated junctional rhythm.

8. A junctional escape rhythm occurs because of \_\_\_\_\_.
  - a. severe chronic obstructive pulmonary disease
  - b. multiple irritable sites firing within the AV junction
  - c. slowing of the rate of the heart pacemaker

- d. intrathoracic pressure changes associated with the normal respiratory cycle

ANS: C

The atrioventricular (AV) junction may assume responsibility for pacing the heart if (1) the sinoatrial (SA) node fails to discharge (such as sinus arrest), (2) an impulse from the SA node is generated but blocked as it exits the SA node (such as SA block), (3) the rate of discharge of the SA node is slower than that of the AV junction (such as a sinus bradycardia or the slower phase of a sinus arrhythmia), and (4) an impulse from the SA node is generated and is conducted through the atria, but is not conducted to the ventricles (such as an AV block).

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for a junctional escape rhythm.

- 9. In a junctional rhythm viewed in lead II, where is the location of the P wave on the ECG if atrial depolarization precedes ventricular depolarization?
  - a. Before the QRS complex
  - b. During the QRS complex
  - c. After the QRS complex

ANS: A

If the AV junction paces the heart and the atria depolarize before the ventricles, an inverted P wave will be seen before the QRS complex and the PR interval will usually measure 0.12 seconds or less. The PR interval is shorter than usual because

an impulse that begins in the AV junction does not have to travel as far to stimulate the ventricles.

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for a junctional escape rhythm.

10. The usual rate of nonparoxysmal junctional tachycardia is \_\_\_\_\_ beats/min.
- a. 50 to 80

b. 80 to 120

c. 101 to 140

d. 150 to 300

ANS: C

Nonparoxysmal (i.e., gradual onset) junctional tachycardia usually starts as an accelerated junctional rhythm, but the heart rate gradually increases to more than 100 beats/min. The usual ventricular rate for nonparoxysmal junctional tachycardia is 101 to 140 beats/min.



OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for junctional tachycardia.

11. The atrioventricular (AV) junction consists of the \_\_\_\_\_.
- a. SA and AV nodes
  - b. AV node and the Purkinje fibers
  - c. AV node and nonbranching portion of the bundle of His
  - d. AV node, bundle of His, and the right and left bundle branches

ANS: C

The AV node and the nonbranching portion of the bundle of His are called the *AV junction*. The bundle of His has pacemaker cells that are capable of discharging at a rhythmic rate of 40 to 60 beats/min.

OBJ: Describe the location, function, and (where appropriate) the intrinsic rate of the following structures: sinoatrial (SA) node, atrioventricular (AV) bundle, and Purkinje fibers.

12. If seen, the P wave of a rhythm originating in the AV junction will appear \_\_\_\_\_ in lead II.

- a. upright
- b. inverted
- c. tall and peaked
- d. wide and notched

ANS: B

If the AV junction paces the heart, the electrical impulse must travel in a backward (retrograde) direction to activate the atria. If a P wave is seen, it will be inverted in leads II, III, and aVF because the impulse is traveling away from the positive electrode.

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for a junctional escape rhythm.

13. Depending on the severity of the patient's sig management of slow rhythms originating from the AV junction may require intervention including \_\_\_\_\_.
- a. defibrillation
  - b. intravenous atropine
  - c. synchronized cardioversion
  - d. vagal maneuvers or adenosine, or both

ANS: B

Atropine, administered intravenously, is the drug of choice for symptomatic bradycardia. Defibrillation, synchronized cardioversion, vagal maneuvers, and adenosine are not indicated in the treatment of slow cardiac rhythms.

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for a junctional escape rhythm.

### COMPLETION

1. A(n) \_\_\_\_\_ pause often follows a PJC and represents the delay during which the SA node resets its rhythm for the next beat.

ANS: noncompensatory

OBJ: Explain the difference between a compensatory and noncompensatory pause.

2. If the AV junction paces the heart, the electrical impulse must travel in a backward direction to activate the atria. This is called \_\_\_\_\_ conduction.

ANS: retrograde

OBJ: Explain the difference between premature junctional complexes and junctional escape beats.

3. A beat originating from the AV junction that appears later than the next expected sinus beat is called a(n) \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_.

ANS: junctional escape beat

OBJ: Explain the difference between premature junctional complexes and junctional escape beats.

## SHORT ANSWER

1. Identify the following rhythm (lead II):  
\_\_\_\_\_

ANS:

Sinus tachycardia at 136 beats/min with frequent PJC's (the PJC's are beats 2, 5, 8, and 11 from the left)

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for premature junctional complexes (PJC's).

2. Identify the following rhythm (lead II):  
\_\_\_\_\_

ANS:

Accelerated junctional rhythm at 75 beats/min

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for an accelerated junctional rhythm.

3. Identify the following rhythm (lead II):  
\_\_\_\_\_

ANS:

Sinus rhythm at 75 beats/min

OBJ: Describe the ECG characteristics of a sinus rhythm.

4. Identify the following rhythm (lead II):  
\_\_\_\_\_

ANS:

Sinus rhythm changing to an accelerated junction rhythm at 79 beats/min  
back to a sinus rhythm

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for an accelerated junctional rhythm.

5. Identify the following rhythm (lead II):

\_\_\_\_\_

ANS:

Sinus rhythm at 94 beats/min with a PAC (second beat from left) and a junctional escape beat (third beat from left)

OBJ: Describe the ECG characteristics and possible causes for junctional escape beats.

6. Identify the following rhythm (lead II):

\_\_\_\_\_

ANS:

Sinus tachycardia at 115 beats/min with a PJC (beat 5 is the PJC)

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for premature junctional complexes (PJCs).

7. Identify the following rhythm (lead II):

\_\_\_\_\_

ANS:

Junctional escape rhythm at 52 beats/min with elevated T waves

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for a junctional escape rhythm.

8. Identify the following rhythm (lead II)

ANS:

Junctional rhythm at 45 beats/min; ST segment elevation

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for a junctional escape rhythm.

9. Identify the following rhythm (lead II):

\_\_\_\_\_

ANS:

Junctional rhythm at 37 beats/min converting to a sinus rhythm

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for a junctional escape rhythm.

10. Identify the following rhythm (lead II):

\_\_\_\_\_

ANS:

Accelerated junctional rhythm at 83 beats/min

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for an accelerated junctional rhythm.

11. Identify the following rhythm (lead II):

\_\_\_\_\_

ANS:

Sinus tachycardia at 125 beats/min changing to a junctional tachycardia at 125 beats/min

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for junctional tachycardia.

12. Identify the following rhythm: \_\_\_\_\_

ANS: Junctional rhythm at 44 beats/min; ST segment elevation

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for a junctional escape rhythm.

13. Identify the following rhythm (lead II):  
\_\_\_\_\_

ANS: Narrow-QRS tachycardia (probably junctional tachycardia) at 138 beats/min

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for junctional tachycardia.

14. Identify the following rhythm (lead II):

ANS:

Accelerated junctional rhythm at 100 beats/min

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for an accelerated junctional rhythm.

15. Identify the following rhythm: \_\_\_\_\_

ANS: Sinus rhythm at 63 beats/min with PJC's (junctional trigeminy)

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for premature junctional complexes (PJC's).

16. Identify the following rhythm: \_\_\_\_\_

ANS: Sinus bradycardia at 33 beats/min to junctional bradycardia at 32 beats/min

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for a junctional escape rhythm.

17. Identify the following rhythm: \_\_\_\_\_

ANS: Atrial flutter at 58 to 79 beats/min

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for atrial flutter.

18. Identify the following rhythm: \_\_\_\_\_

ANS: Accelerated junctional rhythm at 75 beats/min; ST-segment depression

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for an accelerated junctional rhythm.

19. Identify the following rhythm (lead II):  
\_\_\_\_\_

ANS: Sinus rhythm at 70 beats/min with a nonconducted PAC (note distortion of the T wave of the beat preceding the pause) and a junctional escape beat

OBJ: Describe the ECG characteristics and possible causes for junctional escape beats.

20. Identify the following rhythm (lead II):  
\_\_\_\_\_

ANS: Junctional bradycardia at 30 beats/min to sinus bradycardia at 56 beats/min

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for a junctional escape rhythm.

21. Identify the following rhythm (lead II):  
\_\_\_\_\_

ANS: Sinus rhythm at 90 beats/min with a PJC

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for premature junctional complexes (PJCs).

22. Identify the following rhythm (lead II):  
\_\_\_\_\_

ANS: Atrial fibrillation at 65 to 103 beats/min

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for atrial fibrillation.



23. Identify the following rhythm (lead II):

\_\_\_\_\_

ANS:

Accelerated junctional rhythm at 75 beats/min

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for an accelerated junctional rhythm.

24. Identify the following rhythm (lead II):

\_\_\_\_\_

ANS:

Sinus tachycardia at 107 beats/min with a junctional escape beat (third beat from the left) and a nonconducted PAC (buried in the T wave of the fourth beat from the left)

OBJ: Describe the ECG characteristics and possible causes for junctional escape beats.

25. Identify the following rhythm (lead II):

\_\_\_\_\_

ANS: Sinus rhythm at 64 beats/min with an episode of sinus arrest and a junctional escape beat

OBJ: Explain the difference between premature junctional complexes and junctional escape beats.

26. Identify the following rhythm (lead II):

\_\_\_\_\_

ANS: Junctional bradycardia with a ventricular response of 19 to 26 beats/min

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for a junctional escape rhythm.

27. Complete the following ECG criteria for a junctional escape rhythm:

28. List four reasons why the AV junction may assume responsibility for pacing the heart.

ANS:

The AV junction may assume responsibility for pacing the heart if: (1) the SA node fails to discharge (such as sinus arrest), (2) an impulse from the SA node is generated but blocked as it exits the SA node (such as SA block), (3) the rate of discharge of the SA node is slower than that of the AV junction (such as a sinus bradycardia or the slower phase of a sinus arrhythmia), (4) an impulse from the SA node is generated and is conducted through the atria but is not conducted to the ventricles (such as an AV block).

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for a junctional escape rhythm.

29. Complete the following ECG criteria for a junctional tachycardia:

Rhythm	_____
Rate	_____
P waves	_____
PR interval	_____
QRS duration	_____

Rhythm            Regular.

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Rate 101 to 180 beats/min.

P waves May occur before, during, or after the QRS; if visible, the P wave is inverted in leads II, III, and aVF.

PR interval If a P wave occurs before the QRS, the PR interval will usually be 0.12 sec or less; if no P wave occurs before the QRS, there will be no PR interval.

QRS duration 0.11 seconds or less unless abnormally conducted.

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for junctional tachycardia.

30. Complete the following ECG criteria for an accelerated junctional rhythm:

Rhythm \_\_\_\_\_

Rate \_\_\_\_\_

P waves \_\_\_\_\_

PR interval \_\_\_\_\_

QRS duration \_\_\_\_\_

ANS:

Rhythm            Regular.

Rate                61 to 100 beats/min.

P waves                      May occur before, during, or after the QRS; if visible, the P wave is inverted in leads II, III, and aVF.

PR interval                If a P wave occurs before the QRS, the PR interval will usually be 0.12 sec or less; if no P wave occurs before the QRS, there will be no PR interval.

QRS duration              0.11 seconds or less unless abnormally conducted.

OBJ: Describe the ECG characteristics, possible causes, signs and symptoms, and initial emergency care for an accelerated junctional rhythm.