YOUR FREE READER'S COMPANION

The CET Rapid-Review Pack

A companion to The EKG Technician Certification Study Guide · by Renata Colwell

Thanks for picking up the study guide. This companion is built for the last two weeks before your NHA CET exam. It strips the whole blueprint down to the numbers, the rhythm criteria, and the placements the exam tests over and over, plus a rhythm quick-table and a rapid-fire quiz you can drill like flashcards. Read it, cover it, and drill it out loud. If a value here disagrees with your instructor or a facility policy, follow local policy at the bedside but memorize the standard values below for the exam.

Nobody fails the CET because they cannot memorize. They fail because rhythm recognition never became automatic and the numbers stayed fuzzy. This pack is the boil-down: the normal intervals, the three rate methods, the tells that separate the rhythms people confuse, and the 12-lead placements that have to be exact. Quiz yourself out loud, cover the answers, and by test day it will be reflex. You have done the studying. This is how you lock it in. - Renata

The Exam at a Glance

The CET is 120 items total, 100 scored and 20 unscored pretest items you cannot pick out, in a 2-hour window. Treat every question as if it counts. The blueprint is weighted across three domains, and that weighting tells you where to spend your last two weeks.

Domain	Weight	What it covers
Safety, Compliance and Coordinated Patient Care	32%	Patient safety, infection control, HIPAA, communication, patient prep, professionalism, scope of practice
EKG Acquisition	44%	Equipment, leads and electrodes, exact 12-lead placement, running a clean tracing, standardization, artifact troubleshooting, Holter and telemetry hookup
EKG Analysis and Interpretation	24%	Rate and interval measurement, rhythm recognition, 12-lead ischemia, injury and infarct basics

Acquisition is the single biggest slice, so lead placement and clean-tracing technique are worth the most points. Do not let rhythm strips (the part that scares everyone) crowd out the placement and safety facts that are easier points.

High-Yield Cram Facts

Read this section out loud the day before the exam. If you can recite the normal values, the three rate methods, and the intrinsic pacemaker rates without looking, you have covered most of the number-based questions on the test.

Normal Values and Paper Standards (memorize these)

Item	Normal value	Notes
Paper speed	25 mm per second	Standard sweep speed; each second is 25 mm across
Calibration (standardization)	10 mm per mV	A 1 mV signal makes a 10 mm (2 large box) tall standardization mark
Small box (horizontal)	0.04 second	1 mm wide
Large box (horizontal)	0.20 second	5 mm wide, equals 5 small boxes
Small box (vertical)	0.1 mV	1 mm tall
Large box (vertical)	0.5 mV	5 mm tall
P wave	Less than or equal to 0.12 second wide, less than 2.5 mm tall	Upright in lead II; atrial depolarization
PR interval	0.12 to 0.20 second	Start of P wave to start of QRS
QRS duration	Less than 0.12 second (about 0.06 to 0.10)	Ventricular depolarization; wide if 0.12 or greater
QT interval	About 0.36 to 0.44 second	Varies with rate; should be less than half the R-R interval
ST segment	Isoelectric (flat on the baseline)	J point to start of T wave
T wave	Upright in most leads, rounded, asymmetric	Ventricular repolarization

- Quick sanity check: a normal PR interval is 3 to 5 small boxes, and a normal QRS is less than 3 small boxes. If the QRS fills 3 or more small boxes, call it wide.

The Three Rate-Calculation Methods

- 300 method (large-box method): count the number of large boxes between two R waves and divide 300 by that number. The memorized landmark sequence is 300, 150, 100, 75, 60, 50, 43 (one through seven large boxes). Best for a regular rhythm; fast at the bedside.
- 1500 method (small-box method): count the number of small boxes between two R waves and divide 1500 by that number. Most precise method for a regular rhythm, because each small box is 0.04 second.

- 6-second method (rule of tens): count the number of QRS complexes in a 6-second strip and multiply by 10. Most EKG paper marks 3-second intervals at the top, so two marked segments equal 6 seconds. This is the method of choice for an irregular rhythm such as atrial fibrillation, because you cannot use a single R-R interval.

Intrinsic Pacemaker Rates

Pacemaker site	Intrinsic rate (beats per minute)
SA node (primary pacemaker)	60 to 100
AV junction (backup)	40 to 60
Ventricles / Purkinje (last-resort escape)	20 to 40

The fastest site sets the pace and overdrive-suppresses the slower ones. When a higher pacemaker fails, the next site down should step in as an escape rhythm.

Rhythm Recognition Quick-Table

Cover the right side and work each rhythm with your five steps (rate, regularity, P waves, PR interval, QRS width). The "key clue" column is the one tell that separates it from the rhythm it gets confused with.

Rhythm	Rate (bpm)	P wave	Regularity	Key clue
Normal sinus rhythm	60 to 100	Upright, one before each QRS	Regular	Everything normal
Sinus bradycardia	Less than 60	Normal upright	Regular	Slow but otherwise normal sinus
Sinus tachycardia	100 to about 150	Normal upright	Regular	Fast sinus, gradual onset
Atrial fibrillation	Ventricular varies	No true P waves	Irregularly irregular	Chaotic wavy baseline, no P
Atrial flutter	Atrial about 250 to 350	Sawtooth flutter waves	Regular or regular pattern	Sawtooth baseline, often 2:1, 3:1, 4:1
Supraventricular tachycardia (SVT)	150 to 250	Hidden or absent	Regular	Fast, narrow, abrupt onset and offset
First-degree AV block	Underlying rate	Normal, one per QRS	Regular	PR greater than 0.20 second, constant
Second-degree Mobitz I (Wenckebach)	Atrial greater than ventricular	Normal, some not conducted	Irregular	PR lengthens, then a QRS drops
Second-degree Mobitz II	Atrial greater than ventricular	Normal, some not conducted	Regular or regular pattern	PR constant, sudden dropped QRS
Third-degree (complete) block	Atrial faster than ventricular	Present, unrelated to QRS	P-P and R-R each regular, dissociated	AV dissociation, independent P and QRS
Premature ventricular complex (PVC)	Underlying rate	None before the PVC	Irregular (early beat)	Early wide bizarre QRS, compensatory pause
Ventricular tachycardia	100 to 250	Absent or dissociated	Regular (monomorphic)	Wide, fast, uniform QRS
Ventricular fibrillation	None countable	Absent	Chaotic	No organized QRS, quivering baseline
Asystole	None	Absent	Flat	Flat line, confirm in two leads
Ventricular-paced rhythm	Set by device	Pacer spike present	Regular	Spike before wide QRS

Tells that trip people up:

- Sinus tach vs SVT: sinus tach has visible upright P waves and a gradual onset; SVT is faster, hides its P waves, and starts and stops abruptly.

- AFib vs AFlutter: AFib is irregularly irregular with a chaotic baseline and no P waves; AFlutter has an organized sawtooth at about 250 to 350 and is often regular.
- Mobitz I vs Mobitz II: Mobitz I lengthens the PR until a beat drops; Mobitz II keeps the PR constant and drops a beat without warning.
- VTach vs SVT: both can be fast and regular, but VTach is wide (0.12 second or more); a narrow complex points above the ventricles.
- VFib vs asystole: VFib is a chaotic quivering baseline; asystole is a flat line you confirm in two leads before calling it.

12-Lead Placement Quick-Reference

A standard 12-lead uses ten electrodes: four limb and six chest. Memory aid for the limb electrodes: "white on right, smoke over fire, and the green ground goes anywhere," meaning white (RA) on the right arm, black (LA) over red (LL), and green (RL) as the ground.

Lead	Exact placement	Region viewed
RA (white)	Right arm, distal forearm or wrist	Reference
LA (black)	Left arm, distal forearm or wrist	Reference
LL (red)	Left leg, lower calf or ankle	Reference
RL (green)	Right leg, lower calf or ankle	Ground (no view)
V1	Fourth intercostal space, right sternal border	Septum
V2	Fourth intercostal space, left sternal border	Septum
V3	Midway between V2 and V4	Anterior wall
V4	Fifth intercostal space, left midclavicular line	Anterior wall
V5	Left anterior axillary line, same level as V4	Lateral wall
V6	Left midaxillary line, same level as V4 and V5	Lateral wall

Placement notes that show up on the exam:

- Place V1 and V2 first at the fourth intercostal space, then V4 at the fifth intercostal space midclavicular line, then fill in V3 between V2 and V4.
- V4, V5, and V6 stay on the same horizontal plane; do not follow the rib line upward.
- For breast tissue, place the electrode under the breast rather than on it, to keep the chest leads on the correct rib spaces.
- Reversing the RA and LA electrodes produces a negative P and QRS in lead I and can mimic dextrocardia.

12-Lead MI Localization

Region	Leads with ST changes	Likely artery
Septal	V1, V2	Left anterior descending (LAD)
Anterior	V3, V4	Left anterior descending (LAD)
Anteroseptal	V1 to V4	Left anterior descending (LAD)
Lateral	I, aVL, V5, V6	Left circumflex (LCx) or LAD diagonal
Inferior	II, III, aVF	Right coronary artery (RCA), sometimes LCx

Posterior	Tall R and ST depression in V1 to V3 (mirror), confirm with V7 to V9	RCA or LCx
Right ventricle	V4R (right-sided leads)	Right coronary artery (RCA)

Reciprocal changes are ST depression in the leads opposite the injured wall. Your job as a tech is to acquire a clean tracing quickly and alert the provider when you see ST elevation, not to make the final diagnosis.

Electrolyte EKG Effects

Disturbance	Classic EKG change
Hyperkalemia (high potassium)	Tall, peaked, narrow-based T waves first; then widened QRS, flattened or lost P waves, prolonged PR
Hypokalemia (low potassium)	Flattened T waves, prominent U waves, ST depression, apparent long QT; risk of torsades
Hypercalcemia (high calcium)	Shortened QT interval
Hypocalcemia (low calcium)	Prolonged QT interval

Memory hook: high potassium peaks the T, low potassium digs a U. High calcium shortens the QT, low calcium stretches it.

Rapid-Fire Recall Quiz

Read the question, say the answer out loud, then uncover it. Do the whole set the night before and again the morning of.

Question	Answer
Standard paper speed?	25 mm per second
Standard calibration?	10 mm per mV
Small box in seconds?	0.04 second
Large box in seconds?	0.20 second
Normal PR interval?	0.12 to 0.20 second
Normal QRS duration?	Less than 0.12 second
The three rate methods?	300 (large box), 1500 (small box), 6-second times 10
Best rate method for an irregular rhythm?	6-second strip times 10
Intrinsic SA node rate?	60 to 100 bpm
Intrinsic junctional rate?	40 to 60 bpm
Intrinsic ventricular rate?	20 to 40 bpm
Irregularly irregular, no P waves?	Atrial fibrillation
Sawtooth baseline at 250 to 350?	Atrial flutter
PR that lengthens until a beat drops?	Second-degree AV block Mobitz I (Wenckebach)
Constant PR with a sudden dropped beat?	Second-degree AV block Mobitz II
Constant PR longer than 0.20 second, all conducted?	First-degree AV block
Independent P waves and QRS complexes?	Third-degree (complete) AV block
Early, wide, bizarre QRS with no P?	Premature ventricular complex (PVC)
Wide, fast, uniform QRS with no P?	Monomorphic ventricular tachycardia
Flat line, confirmed in two leads?	Asystole
Sharp spike before a wide QRS?	Ventricular-paced rhythm
Exact spot for V1?	Fourth intercostal space, right sternal border
Exact spot for V4?	Fifth intercostal space, left midclavicular line
Exact spot for V6?	Left midaxillary line, level with V4
Leads for an inferior MI?	II, III, aVF (RCA)
Leads for an anterior MI?	V3, V4 (LAD)
Hyperkalemia EKG sign?	Tall, peaked T waves

Hypokalemia EKG sign?	U waves
Which lowers the QT, high or low calcium?	High calcium shortens QT
Biggest domain on the CET?	EKG Acquisition (44%)

That is the whole pack. Drill the normal values, the three rate methods, and the rhythm tells until they are automatic, then trust yourself. You have done the work. Walk in and pass. - Renata