REGISTERED RESPIRATORY THERAPIST (RRT-TMC) PRACTICE EXAM (SAMPLE)

STUDY GUIDE

SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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. All of the following could cause a patient's right-hemidiaphragm to be elevated, EXCEPT

A. Right lower lobe atelectasis

B. Right side hyperlucency, absent vascular markings

C. Hepatomegaly

D. Right lower lobe consolidation with air bronchograms

2. What is the primary beneficial effect of PEEP in mechanically ventilated patients?

A. It reduces venous return

B. It recruits collapsed alveoli and improves oxygenation

C. It worsens lung compliance

D. It lowers work of breathing by reducing tidal volume

3. A post-operative thoracotomy patient is receiving incentive spirometry therapy Q2H. Breath sounds are diminished in the bases of the lungs with scattered crackles. The patient's inspiratory capacity has decreased over the past 2 days. A chest radiograph indicates thin-layered basilar densities. Which of the following has most likely occurred?

A. Consolidation

B. Atelectasis

C. Pneumonia

D. Pulmonary edema

4. In independent lung ventilation, which of the following is an appropriate rationale for delivering a smaller tidal volume to the operated lung?

A. To improve oxygenation of the operated lung

B. To protect the operated lung from barotrauma

C. To maximize overall lung compliance

D. To equalize pressures between lungs

5. Which formula determines physiologic deadspace?

A. (PaCO2 - PECO2) / PaCO2

B. PAO2 - PaO2

C. CaO2 - CvO2

D. CcO2 - CaO2 / CcO2 - CvO2

6. Which statement about PaO2/FiO2 ratio is most accurate?

A. A ratio around 500 is normal.

B. A ratio below 300 is consistent with ARDS criteria (mild or worse).

C. A ratio above 400 indicates severe hypoxemia.

D. The ratio is not related to oxygenation status.

7. A 48-year-old woman presents with chest pain, hypotension (60/40), respirations 20/min. The cardiac monitor shows sinus rhythm at 50/min with frequent multifocal PVC. The respiratory therapist should recommend administration of

A. Atropine

B. Lidocaine

C. Nitroglycerin

D. Amiodarone

8. A patient with high body weight is referred for sleep apnea; which diagnostic study is most appropriate?

A. Polysomnography

B. Spirometry

C. Pulse oximetry

D. Body plethysmography

9. A 62-year-old female patient on SIMV ventilation with ABG showing pH 7.50, PaCO2 30; The therapist should

A. Institute pressure support.

B. Switch to pressure control mode.

C. Decrease the minute volume.

D. Decrease the FiO2.

10. In a motor vehicle accident patient with a long bone fracture in traction who suddenly complains of chest pain and develops tachypnea and tachycardia, the respiratory therapist should

A. Administer 100% oxygen

B. Recommend heparin

C. Recommend streptokinase

D. Request a chest X-ray

Answers

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

Explanations

1. All of the following could cause a patient's right-hemidiaphragm to be elevated, EXCEPT

A. Right lower lobe atelectasis

B. Right side hyperlucency, absent vascular markings

C. Hepatomegaly

D. Right lower lobe consolidation with air bronchograms

Elevation of the right hemidiaphragm on a chest radiograph is a sign of reduced volume on that side or upward displacement from below. When the right lower lung loses volume due to atelectasis, the diaphragm is pulled upward. An enlarged liver (hepatomegaly) beneath the diaphragm pushes it upward from below. A lower-lobe consolidation with air bronchograms also reduces aeration and volume in the right lower zone, leading to diaphragmatic elevation. The finding described as right-sided hyperlucency with absent vascular markings points to a pneumothorax—air in the pleural space. This pattern reflects a different mechanism (pleural air with loss of vascular markings beyond the pleural line) and does not classically produce the same diaphragmatic elevation from lower-lung volume loss. Hence, it is the exception.

2. What is the primary beneficial effect of PEEP in mechanically ventilated patients?

A. It reduces venous return

B. It recruits collapsed alveoli and improves oxygenation

C. It worsens lung compliance

D. It lowers work of breathing by reducing tidal volume

The main idea is that PEEP works by keeping alveoli open at the end of expiration, which recruits collapsed airways and improves gas exchange. When alveoli stay inflated, more surface area is available for oxygen to diffuse into the blood, and ventilation-perfusion matching improves, leading to better arterial oxygenation. This is especially important in conditions like edema or ARDS where many alveoli tend to collapse or fill with fluid. Be aware that PEEP can raise intrathoracic pressure, which may reduce venous return and cardiac output—a potential downside rather than a benefit. It isn't primarily about lowering work of breathing by reducing tidal volume; tidal volume is set separately, and while PEEP can influence overall respiratory mechanics, its principal beneficial effect is alveolar recruitment and improved oxygenation.

3. A post-operative thoracotomy patient is receiving incentive spirometry therapy Q2H. Breath sounds are diminished in the bases of the lungs with scattered crackles. The patient's inspiratory capacity has decreased over the past 2 days. A chest radiograph indicates thin-layered basilar densities. Which of the following has most likely occurred?

A. Consolidation

B. Atelectasis

C. Pneumonia

D. Pulmonary edema

Postoperative patients are prone to atelectasis from shallow breathing and pain-limited deep inspiration; incentive spirometry is used to recruit collapsed alveoli by increasing inspiratory volume. The basilar, plate-like densities seen on the radiograph, along with a reduced inspiratory capacity and diminished breath sounds at the bases with crackles, point to collapse of the dependent lung zones rather than infection or fluid overload. Atelectasis commonly presents as thin-layered densities at the bases after thoracic surgery and responds to measures that raise lung volumes. Consolidation or pneumonia would typically show localized or confluent infiltrates with signs of infection, while pulmonary edema would usually present with diffuse interstitial or alveolar edema and often cardiomegaly rather than isolated basilar collapse.

4. In independent lung ventilation, which of the following is an appropriate rationale for delivering a smaller tidal volume to the operated lung?

A. To improve oxygenation of the operated lung

B. To protect the operated lung from barotrauma

C. To maximize overall lung compliance

D. To equalize pressures between lungs

Independent lung ventilation lets you ventilate each lung separately, using different tidal volumes and pressures based on the condition of each lung. The operated lung is typically more fragile after surgery and may have reduced compliance, edema, air leaks, or other injury. Delivering a smaller tidal volume to that lung reduces the distending and plateau pressures it experiences, lowering the risk of barotrauma or volutrauma. This protective approach keeps the operated lung safer while the non-operated lung receives ventilation appropriate to its own mechanics. Other aims, like maximizing overall oxygenation or equalizing pressures, don't address the specific vulnerability of the operated lung as effectively.

5. Which formula determines physiologic deadspace?

A. (PaCO2 - PECO2) / PaCO2

B. PAO2 - PaO2

C. CaO2 - CvO2

D. CcO2 - CaO2 / CcO2 - CvO2

Physiologic dead space is quantified using the CO2-based Bohr relationship. It compares the CO2 in the alveolar/arterial compartment with the CO2 present in the mixed expired gas. The dead-space fraction is given by the difference between CO2 in the arterial (or alveolar) compartment and the mixed-expired CO2, divided by the CO2 in the arterial/alveolar compartment: (PaCO2 - PECO2) / PaCO2 (or using PACO2 instead of PaCO2). This means that when mixed-expired CO2 is lower than arterial/alveolar CO2, a portion of ventilation is not contributing to gas exchange, increasing the dead-space fraction. The other formulas point to different concepts: the alveolar-arterial O2 gradient (PAO2 - PaO2) reflects diffusion or V/Q mismatch, not dead space; the difference in oxygen content between arterial and venous blood (CaO2 - CvO2) relates to oxygen delivery/consumption; and the final option does not describe a standard calculation for physiologic dead space.

6. Which statement about PaO2/FiO2 ratio is most accurate?

A. A ratio around 500 is normal.

B. A ratio below 300 is consistent with ARDS criteria (mild or worse).

C. A ratio above 400 indicates severe hypoxemia.

D. The ratio is not related to oxygenation status.

The PaO2/FiO2 ratio shows how well oxygen moves from the lungs into the blood, so it's a direct measure of oxygenation. Normal values are roughly in the 400–500 range (for example, PaO2 around 100 mmHg on room air FiO2 of 0.21 gives about 476). In ARDS, the Berlin criteria use a PaO2/FiO2 of 300 or less (on a minimum PEEP of 5 cm H2O) to define disease presence, with lower values indicating greater severity. So a ratio below 300 aligns with ARDS criteria (mild or worse). A ratio above 400 actually indicates better oxygenation, not hypoxemia, and the ratio is indeed related to oxygenation status.

7. A 48-year-old woman presents with chest pain, hypotension (60/40), respirations 20/min. The cardiac monitor shows sinus rhythm at 50/min with frequent multifocal PVC. The respiratory therapist should recommend administration of

A. Atropine

B. Lidocaine

C. Nitroglycerin

D. Amiodarone

Symptomatic bradycardia with hypotension needs a rapid boost in cardiac output to improve perfusion. Atropine does this by blocking the parasympathetic (vagal) influence on the heart, which increases SA node automaticity and AV node conduction. The result is a faster heart rate and improved blood pressure, addressing the patient's unstable condition. This is the first-line treatment for symptomatic bradycardia in many ACLS scenarios, provided there isn't a high-grade AV block where atropine may be ineffective. Lidocaine is aimed at ventricular ectopy or ventricular tachyarrhythmias and does not address the bradycardia driving the hypotension. Nitroglycerin would drop preload and blood pressure, making the hypotension worse. Amiodarone treats certain tachyarrhythmias (VT/VF) and some atrial tachyarrhythmias, not bradycardia with hypotension, so it isn't the right initial choice here. If atropine doesn't adequately raise the heart rate and improve perfusion, escalation to pacing or an infusion of dopamine or epinephrine is appropriate.

8. A patient with high body weight is referred for sleep apnea; which diagnostic study is most appropriate?

A. Polysomnography

B. Spirometry

C. Pulse oximetry

D. Body plethysmography

Polysomnography is the most appropriate study because it provides a full picture of what happens during sleep. It records brain activity to determine sleep stages, along with respiratory effort, airflow, oxygen saturation, heart rate, snoring, and limb movements. This combination lets you identify obstructive events and hypopneas, distinguish them from central events, and quantify severity with the apnea–hypopnea index. In someone with obesity, this comprehensive overnight test is essential to confirm sleep apnea and guide treatment decisions, such as CPAP therapy. Other tests don't offer this level of detail for sleep-disordered breathing. Spirometry assesses lung volumes and airflow but not events that occur during sleep. Pulse oximetry alone shows oxygen levels and can miss transient or non-desaturating events, and it doesn't reveal sleep stages or differentiate types of apneas. Body plethysmography measures lung volumes and airway resistance, not overnight sleep-related breathing.

9. A 62-year-old female patient on SIMV ventilation with ABG showing pH 7.50, PaCO2 30; The therapist should

A. Institute pressure support.

B. Switch to pressure control mode.

C. Decrease the minute volume.

D. Decrease the FiO2.

High pH with a low PaCO2 means the patient is being over-ventilated, causing respiratory alkalosis. On SIMV, how fast and how deeply you ventilate is determined by minute ventilation (tidal volume multiplied by respiratory rate). To correct the alkalosis, you need to reduce the amount of CO2 being removed, so you decrease minute ventilation. This is best done by lowering tidal volume, lowering the respiratory rate, or both, and then rechecking after a short interval. Options that would increase ventilation (like adding pressure support or switching to a mode that tends to deliver more breaths or higher volumes) would worsen the alkalosis. Decreasing FiO2 won't address the CO2 problem and could risk hypoxemia if oxygenation becomes inadequate. After adjusting, monitor the patient and obtain another ABG to confirm the CO2 and pH move toward normal.

10. In a motor vehicle accident patient with a long bone fracture in traction who suddenly complains of chest pain and develops tachypnea and tachycardia, the respiratory therapist should

A. Administer 100% oxygen

B. Recommend heparin

C. Recommend streptokinase

D. Request a chest X-ray

Immediate priority is to maximize oxygen delivery. In a patient with a long-bone fracture who suddenly develops chest pain, rapid breathing, and a fast heart rate, fat embolism syndrome is a likely cause of acute respiratory distress. The lungs are affected by fat droplets that obstruct microvasculature and trigger inflammation, leading to hypoxemia and increased work of breathing. Providing 100% oxygen helps raise the arterial oxygen level, improves oxygen delivery to tissues, and supports ventilation while you assess and manage the underlying process. Anticoagulants or thrombolytics are not the appropriate first step here because the scenario most strongly suggests fat embolism rather than a thrombotic pulmonary embolism, and these medications carry bleeding risks in a trauma patient without clear evidence of a clot-based PE. Chest imaging is important for diagnosis and to guide further management, but it does not treat the immediate hypoxemia. Stabilize with high-flow oxygen now, then pursue imaging and definitive care as the situation allows.

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:

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