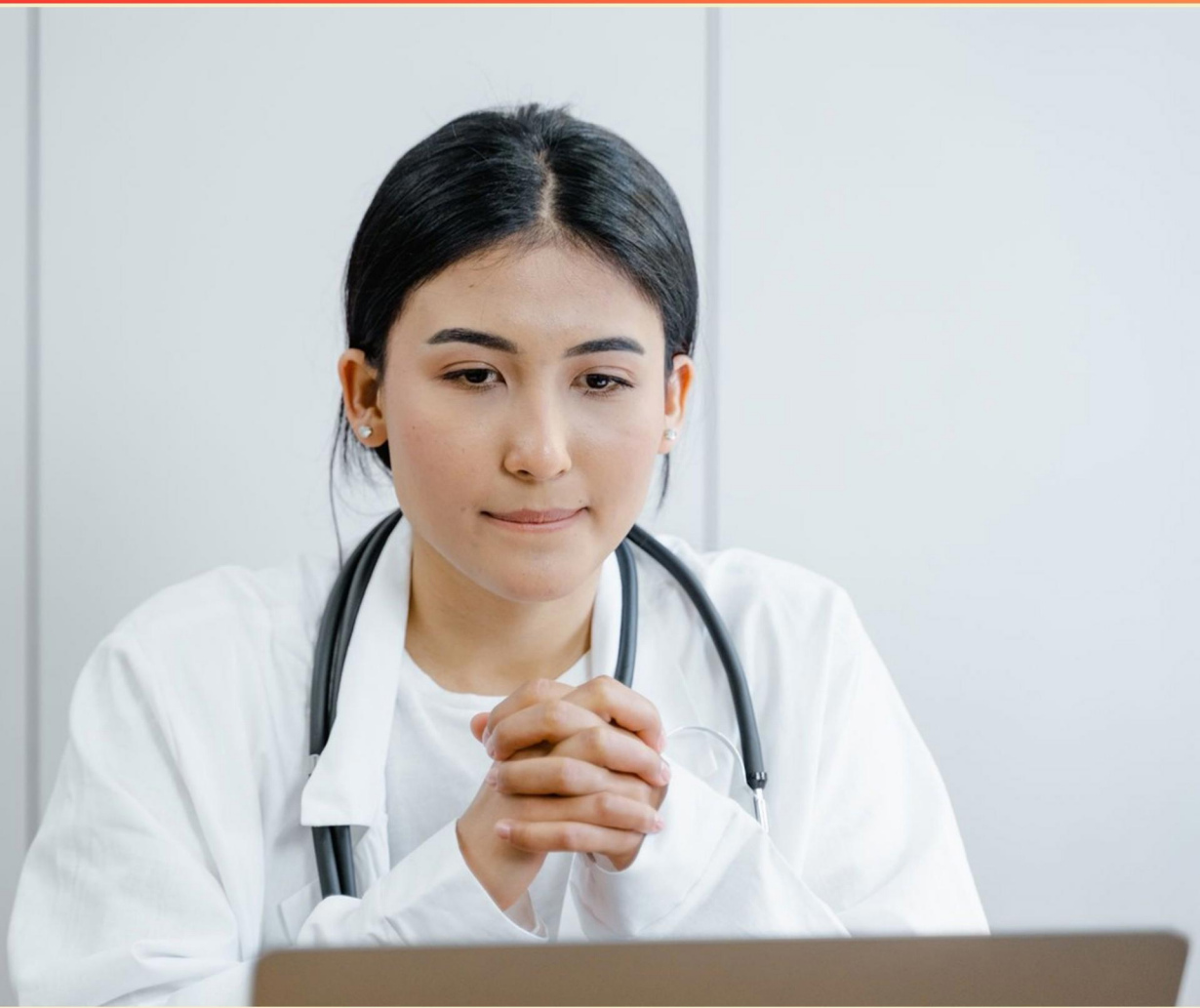


RESPIRATORY CAS PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

VISIT US ONLINE FOR
THE FULL VERSION STUDY GUIDE

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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. Rhinovirus belongs to which virus family?**
 - A. Adenoviridae
 - B. Coronaviridae
 - C. Picornaviridae
 - D. Flaviviridae

- 2. Which type of emphysema involves all parts of the acinus being damaged?**
 - A. Panacinar Emphysema
 - B. Centriacinar Emphysema
 - C. Bronchiectasis
 - D. Lower Lobe Emphysema

- 3. Functional residual capacity increases in which condition?**
 - A. Restrictive disease
 - B. Normal
 - C. Mixed disease
 - D. Obstructive disease

- 4. Residual volumes decrease in which condition?**
 - A. Restrictive disease
 - B. Obstructive disease
 - C. Normal
 - D. Mixed disease

- 5. Charcot-Leyden crystals are derived from which cells?**
 - A. Neutrophil granules
 - B. Platelets
 - C. Lymphocyte granules
 - D. Eosinophilic granules

- 6. Which option best defines panacinar emphysema distribution?**
 - A. Localized to Central Acini
 - B. Affects Only Lower Lobes
 - C. Affects All Parts of the Acinus
 - D. Only the Respiratory Bronchioles

7. Functional residual capacity decreases in which condition?

- A. Obstructive disease
- B. Restrictive disease
- C. Normal
- D. Mixed disease

8. The Reid index is used in diagnosing which chronic lung condition?

- A. Emphysema
- B. Chronic bronchitis
- C. Asthma
- D. Pneumonia

9. Which organism is linked to cold agglutinin hemolytic anemia?

- A. Staphylococcus aureus
- B. Pseudomonas aeruginosa
- C. Mycoplasma
- D. Streptococcus pneumoniae

10. Which organism lacks a cell wall?

- A. Mycoplasma
- B. Streptococcus pneumoniae
- C. Staphylococcus aureus
- D. Pseudomonas aeruginosa

Answers

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

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Explanations

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1. Rhinovirus belongs to which virus family?

- A. Adenoviridae
- B. Coronaviridae
- C. Picornaviridae
- D. Flaviviridae

Classification by genome type and envelope status is what spots rhinoviruses in Picornaviridae. Rhinoviruses are small, non-enveloped viruses with a positive-sense single-stranded RNA genome and an icosahedral capsid. This combination—non-enveloped, +ssRNA, and small genome—is characteristic of Picornaviridae, which also includes poliovirus and other enteroviruses. The other families differ in these key features: some are enveloped, some are DNA viruses, and their genome organization doesn't match rhinoviruses. So rhinovirus belongs to Picornaviridae.

2. Which type of emphysema involves all parts of the acinus being damaged?

- A. Panacinar Emphysema
- B. Centriacinar Emphysema
- C. Bronchiectasis
- D. Lower Lobe Emphysema

The main idea is how emphysema destroys the lung's acinar units. The acinus, starting at the respiratory bronchiole and including the alveolar ducts and sacs, can be damaged in different patterns. In panacinar emphysema, the destruction is uniform across the entire acinus—every part is involved. This pattern is classically linked to alpha-1 antitrypsin deficiency and often affects the lower lungs. In contrast, centriacinar emphysema targets mainly the proximal part of the acinus around the respiratory bronchioles, with distal alveolar parts relatively spared. That's typically seen with smoking. Bronchiectasis isn't an emphysema pattern at all; it's dilation of the bronchi from chronic infection and wall damage, a different process. Lower lobe emphysema describes location rather than a destruction pattern of the acinus, and while panacinar can be lower-lobe predominant, the defining feature here is the uniform involvement of the whole acinus. So the description that fits all parts of the acinus being damaged is panacinar emphysema.

3. Functional residual capacity increases in which condition?

- A. Restrictive disease
- B. Normal
- C. Mixed disease
- D. Obstructive disease

Functional residual capacity is the volume in the lungs after a normal exhale, and it increases when air is trapped in the lungs at the end of expiration. In obstructive diseases, the airways are narrowed and expiratory flow is limited, so during expiration not all the air can be pushed out. This leads to air trapping and a higher end-expiratory lung volume, which raises the functional residual capacity. In contrast, restrictive diseases make the lungs stiffer and smaller, so the end-expiratory volume is reduced, not increased. Normal lungs sit at a baseline FRC, and mixed disease can vary but the characteristic rise due to air trapping points to obstructive pathology.

4. Residual volumes decrease in which condition?

- A. Restrictive disease
- B. Obstructive disease
- C. Normal
- D. Mixed disease

Residual volume is the air left in the lungs after a full forced exhalation. In restrictive disease, the lungs and chest wall are stiff and cannot expand well, causing a reduction in overall lung capacity. Because the lungs are smaller and airways aren't allowed to empty into a larger capacity, the amount of air left after exhalation (the residual volume) tends to be reduced. In obstructive disease, airway narrowing leads to air trapping, so residual volume increases. Mixed disease often follows the obstructive pattern with higher residual volume as well. Normal would have the usual, unchanged residual volume.

5. Charcot-Leyden crystals are derived from which cells?

- A. Neutrophil granules
- B. Platelets
- C. Lymphocyte granules
- D. Eosinophilic granules

Charcot-Leyden crystals come from eosinophils. They are made from galectin-10, a major protein stored in eosinophil granules. When eosinophils are activated and release their granule contents during allergic or parasitic inflammation, galectin-10 can crystallize and form the characteristic crystals seen in sputum or tissue. This association with eosinophilic inflammation explains why these crystals appear in conditions like asthma and parasitic infections. Neutrophils, platelets, or lymphocytes do not produce these crystals, so their granule contents don't form Charcot-Leyden crystals.

6. Which option best defines panacinar emphysema distribution?

- A. Localized to Central Acini
- B. Affects Only Lower Lobes
- C. Affects All Parts of the Acinus
- D. Only the Respiratory Bronchioles

Panacinar emphysema involves uniform destruction of the entire acinus, from the respiratory bronchioles through the alveolar ducts and alveoli. This means every part of the acinus is affected, not just a subset. That defining spread is why the best description is "affects all parts of the acinus." While panacinar disease is often more pronounced in the lower lungs, the key feature is the involvement of the entire acinar unit, unlike centrilobular emphysema (central acinar involvement) or patterns limited only to the respiratory bronchioles. The other descriptions describe restricted or localized involvement that doesn't match the full acinar distribution.

7. Functional residual capacity decreases in which condition?

- A. Obstructive disease
- B. Restrictive disease**
- C. Normal
- D. Mixed disease

Functional residual capacity (FRC) is the volume remaining in the lungs after a normal exhalation and is set by the balance between the lungs' elastic recoil and the chest wall's outward recoil. In restrictive disease, lung and/or chest wall compliance is reduced, so the lungs can't expand and hold as much air. This lowers the total lung volume, including the expiratory reserve, so the end-expiratory level shifts downward. The result is a decreased FRC. In contrast, obstructive diseases tend to increase FRC because air gets trapped and the lungs become hyperinflated, raising the end-expiratory volume. Mixed disease varies with which pattern dominates, but a restrictive component typically lowers FRC.

8. The Reid index is used in diagnosing which chronic lung condition?

- A. Emphysema
- B. Chronic bronchitis**
- C. Asthma
- D. Pneumonia

The Reid index measures the thickness of the mucous gland layer relative to the bronchial wall. In chronic bronchitis, glands in the bronchi undergo hypertrophy and secrete more mucus, so the gland layer becomes thicker and the Reid index increases. A Reid index above about 0.4 supports chronic bronchitis as the diagnosis. Emphysema centers on destruction of alveolar walls, not gland hypertrophy, so this index isn't used for it. Asthma involves airway hyperreactivity and remodeling but isn't defined by mucous gland thickness in the same way, and pneumonia is an acute infection, not a chronic glandular change. Therefore, the Reid index is most relevant for diagnosing chronic bronchitis.

9. Which organism is linked to cold agglutinin hemolytic anemia?

- A. Staphylococcus aureus
- B. Pseudomonas aeruginosa
- C. Mycoplasma**
- D. Streptococcus pneumoniae

Cold agglutinin hemolytic anemia occurs when IgM antibodies bind red blood cells in the cold and activate the complement system, causing RBC destruction. The infection most classically linked to this process is *Mycoplasma pneumoniae*. In this setting, the immune response generates IgM antibodies that target RBC antigens; when blood cools in the extremities, these antibodies bind RBCs and trigger complement, leading to hemolysis and anemia, sometimes with acrocyanosis due to peripheral cooling. Because of this well-established association, *Mycoplasma* is the best choice for what organism is linked to cold agglutinin hemolytic anemia. The other organisms listed are not characteristically linked to this specific immune-mediated hemolysis.

10. Which organism lacks a cell wall?

- A. Mycoplasma
- B. Streptococcus pneumoniae
- C. Staphylococcus aureus
- D. Pseudomonas aeruginosa

Mycoplasma lacks a cell wall. Most bacteria have a peptidoglycan cell wall that provides shape and rigidity, but Mycoplasma species have evolved to lose this wall and instead maintain their cell membrane with added sterols (often cholesterol) for stability. Because there's no peptidoglycan, these organisms don't Gram-stain reliably and are inherently resistant to antibiotics that target cell wall synthesis, such as beta-lactams. They also require special, cholesterol-containing media to grow and tend to be pleomorphic. The other organisms listed all have cell walls: Streptococcus pneumoniae and Staphylococcus aureus have thick peptidoglycan walls (Gram-positive), while Pseudomonas aeruginosa is Gram-negative with a peptidoglycan layer and an outer membrane.

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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://respiratorycas.examzify.com>

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

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