

NGA 70 PROPERTIES OF NATURAL GAS AND ABNORMAL OPERATING CONDITIONS PRACTICE TEST (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

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- 1. Which sign would most clearly indicate frost-related exterior loading on a buried pipe?**
 - A. Consistent soil surface around pipe
 - B. Uniform gas pressure inside the line
 - C. Uneven soil settlement and frost heave around the pipe
 - D. Decreased road salt near burial site

- 2. Which statement best describes natural gas flow relative to pressure?**
 - A. From lower pressure to higher pressure
 - B. From higher pressure to lower pressure
 - C. From equal pressure to equal pressure
 - D. It is independent of pressure

- 3. What is the specific gravity of carbon monoxide?**
 - A. 0.88
 - B. 1.10
 - C. 0.98
 - D. 1.20

- 4. What safety concerns arise from cross-contamination of gas streams in processing facilities?**
 - A. Increased production speed.
 - B. Incorrect composition, hazardous mixing, and potential injury or equipment damage from unintended gas interactions.
 - C. No safety concerns exist with cross-contamination.
 - D. It only affects odorization, not safety.

- 5. What is the machine that compresses gas to a higher pressure to make up for pressure drop along the pipeline?**
 - A. Compressor Station
 - B. Emergency Shutdown System (ESD)
 - C. Excess Flow Valve
 - D. Heaters

- 6. What is the specific gravity of kerosene/fuel oil?**
- A. 3.0
 - B. 4.0
 - C. 5.0
 - D. 4.5
- 7. Natural Gas flows from area of ____ to one of ____.**
- A. Higher Pressure, Lower Pressure
 - B. Lower Pressure, Higher Pressure
 - C. Higher Pressure, Higher Pressure
 - D. Equal Pressure
- 8. Incomplete combustion in gas burners can produce which hazardous byproducts?**
- A. Nitrogen Dioxide
 - B. Carbon Monoxide and Aldehydes
 - C. Sulfur Dioxide
 - D. Ozone
- 9. What is the primary reason for designing for sour gas service?**
- A. To simplify maintenance with standard materials
 - B. To reduce energy consumption during transport
 - C. To withstand corrosive H₂S/CO₂ environments
 - D. To maximize natural gas production
- 10. What is the function of relief devices in natural gas systems?**
- A. To cool gas to ambient temperature
 - B. To relieve excessive pressure automatically and prevent equipment failure or rupture
 - C. To filter particulates from gas stream
 - D. To measure gas flow rate

Answers

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

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Explanations

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1. Which sign would most clearly indicate frost-related exterior loading on a buried pipe?

- A. Consistent soil surface around pipe
- B. Uniform gas pressure inside the line
- C. Uneven soil settlement and frost heave around the pipe**
- D. Decreased road salt near burial site

Frost-related exterior loading shows up most clearly as uneven soil settlement and frost heave around the buried pipe. When the ground freezes, moisture in the soil can form ice lenses that expand and push upward, while surrounding soil may settle unevenly as the freeze-thaw cycle continues. This differential movement creates irregular loading on the pipe, often leading to misalignment, bending, or joint stress. That pattern—soil lifting in some spots and sinking in others around the pipe—is the direct physical consequence of frost action on the exterior. The other signs don't directly reflect frost effects. A consistent soil surface around the pipe suggests stable ground with little differential movement. Uniform gas pressure inside the line pertains to internal conditions, not external loading. Decreased road salt near the burial site isn't a direct indicator of frost loading on the pipe; it could influence frost depth but doesn't show the actual exterior loading signature on the pipe.

2. Which statement best describes natural gas flow relative to pressure?

- A. From lower pressure to higher pressure
- B. From higher pressure to lower pressure**
- C. From equal pressure to equal pressure
- D. It is independent of pressure

Gas movement is driven by a pressure gradient: higher pressure on one side pushes the gas toward lower pressure on the other side. This pressure difference provides the driving force that causes flow through a pipeline, overcoming friction and any restrictions along the path. If the pressures are equal, there's no net flow. That's why flow from higher pressure to lower pressure is the correct description, while flow from lower to higher pressure or flow that's independent of pressure don't match how natural gas moves in a system.

3. What is the specific gravity of carbon monoxide?

- A. 0.88
- B. 1.10
- C. 0.98**
- D. 1.20

The concept here is how to read the specific gravity of a gas relative to air, which tells you whether the gas will tend to rise or sink in air. Specific gravity for gases is basically a comparison of densities, and in practice it's closely tied to the gas's molar mass. Carbon monoxide has a molar mass of about 28 g/mol, while air is around 29 g/mol. That makes the SG of CO roughly 28/29, which is about 0.97, commonly cited as near 0.97–0.98. So the option around 0.98 best represents carbon monoxide's SG: it is lighter than air (SG less than 1), so leaks will tend to rise and disperse upward rather than pool on the floor. The other numbers imply the gas is much lighter or heavier than air (0.88 would be even lighter than CO but still not the standard value; 1.10 and 1.20 would mean the gas is heavier than air), which does not match CO's known properties. Using 0.98 aligns with the standard data and practical understanding of CO behavior in ventilation and leak scenarios.

4. What safety concerns arise from cross-contamination of gas streams in processing facilities?

- A. Increased production speed.
- B. Incorrect composition, hazardous mixing, and potential injury or equipment damage from unintended gas interactions.**
- C. No safety concerns exist with cross-contamination.
- D. It only affects odorization, not safety.

Cross-contamination introduces safety risks because mixing different gas streams can change what the gas actually contains. When streams with different compositions come together, the resulting mixture may become more hazardous or flammable than either stream alone. For example, introducing toxic or corrosive components into a clean gas stream can expose workers to dangerous exposures and accelerate equipment corrosion or failure. Unintended gas interactions can also lead to conditions the plant wasn't designed to handle, such as incorrect odor levels, unexpected heat release, or pressure transients, all of which can injure personnel or damage equipment. In short, it's not just a quality issue—it directly affects the safety of the process and the integrity of the plant. The other options don't fit because production speed isn't a safety concern tied to cross-contamination, and saying there are no safety concerns ignores the real hazards. Saying it only affects odorization is incomplete since composition changes can drive all the safety and equipment implications discussed above.

5. What is the machine that compresses gas to a higher pressure to make up for pressure drop along the pipeline?

- A. Compressor Station**
- B. Emergency Shutdown System (ESD)
- C. Excess Flow Valve
- D. Heaters

In natural gas pipelines, gas loses pressure as it flows because of friction and changes in elevation. To maintain flow and meet downstream pressure requirements, the gas is compressed back up to a higher pressure at intervals along the line. The machine that does this is a compressor station, which houses compressors driven by turbines or electric motors. By boosting the pressure, the station offsets the pressure drop and keeps the gas moving efficiently. The other options don't fit this function: an Emergency Shutdown System is a safety mechanism to stop the line, an Excess Flow Valve limits flow if it's too high, and heaters raise temperature rather than pressure.

6. What is the specific gravity of kerosene/fuel oil?

- A. 3.0
- B. 4.0
- C. 5.0
- D. 4.5**

Specific gravity is how dense a liquid is compared with water. For kerosene or fuel oil, the density is lighter than water, so its specific gravity is less than 1. In typical property data, kerosene/fuel oil has a specific gravity around 0.80–0.82 (roughly 0.8). That means kerosene will float on water and won't mix with it. If you see options that aren't near 0.8, that usually signals a mismatch or a misprint in the question, because the standard value to remember is about 0.8.

7. Natural Gas flows from area of ____ to one of ____.

- A. Higher Pressure, Lower Pressure
- B. Lower Pressure, Higher Pressure
- C. Higher Pressure, Higher Pressure
- D. Equal Pressure

Natural gas flow is driven by a pressure difference: it moves from areas where the pressure is higher to areas where the pressure is lower. In pipelines, compressors create higher pressure upstream and the downstream side sits at a lower pressure, so gas naturally flows along the line. If both sides were at the same pressure, there would be no driving force and flow would essentially stop; moving from lower pressure to higher pressure would require energy input and isn't how normal pipeline flow works. This is why the correct description is moving from higher pressure to lower pressure.

8. Incomplete combustion in gas burners can produce which hazardous byproducts?

- A. Nitrogen Dioxide
- B. Carbon Monoxide and Aldehydes
- C. Sulfur Dioxide
- D. Ozone

Incomplete combustion happens when there isn't enough oxygen to fully oxidize the fuel. In that situation, the fuel doesn't burn to carbon dioxide and water; instead it forms partially oxidized products like carbon monoxide and various aldehydes. Carbon monoxide is especially hazardous because it is colorless and odorless and binds tightly to hemoglobin, reducing the blood's ability to carry oxygen. Aldehydes, formed from partial oxidation of hydrocarbons, are irritants and can pose health risks with exposure. While other compounds like nitrogen dioxide, sulfur dioxide, or ozone can appear in combustion or related processes under different conditions, the hallmark hazardous byproducts of incomplete combustion in gas burners are carbon monoxide and aldehydes.

9. What is the primary reason for designing for sour gas service?

- A. To simplify maintenance with standard materials
- B. To reduce energy consumption during transport
- C. To withstand corrosive H₂S/CO₂ environments
- D. To maximize natural gas production

In sour gas service, the gas contains hydrogen sulfide, which aggressively attacks many materials and can cause cracking under stress. The primary design goal is to withstand the corrosive H₂S/CO₂ environment you'll encounter in that service. This means selecting materials with good resistance to sour environments, applying appropriate protective coatings, including proper corrosion allowances, and sometimes using corrosion-resistant alloys or special treatment options. The aim is to prevent leaks and failures that could arise from corrosion and sulfide-stress cracking, keeping equipment safe and reliable. Other choices miss the central issue: standard materials may not survive in sour environments, so design must focus on resisting corrosion and cracking rather than simply aiming to simplify maintenance, reduce energy use, or maximize production.

10. What is the function of relief devices in natural gas systems?

- A. To cool gas to ambient temperature
- B. To relieve excessive pressure automatically and prevent equipment failure or rupture**
- C. To filter particulates from gas stream
- D. To measure gas flow rate

Relief devices are safety components that prevent overpressure in natural gas systems. They sense when pressure exceeds the design limit and automatically vent gas to the outside or to a safe vent area, keeping the system from rupturing or equipment failing under high pressure. They respond quickly to pressure spikes from upsets, blockages, or thermal expansion and reseal once the pressure drops back to safe levels. They are not meant to cool gas, filter particulates, or provide flow-rate measurements; those functions are handled by cooling equipment, filters, and flow meters, respectively. Properly sized and set, relief devices protect vessels, pipelines, and downstream equipment and are required by safety codes and standards.

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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://nga70.examzify.com>

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

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