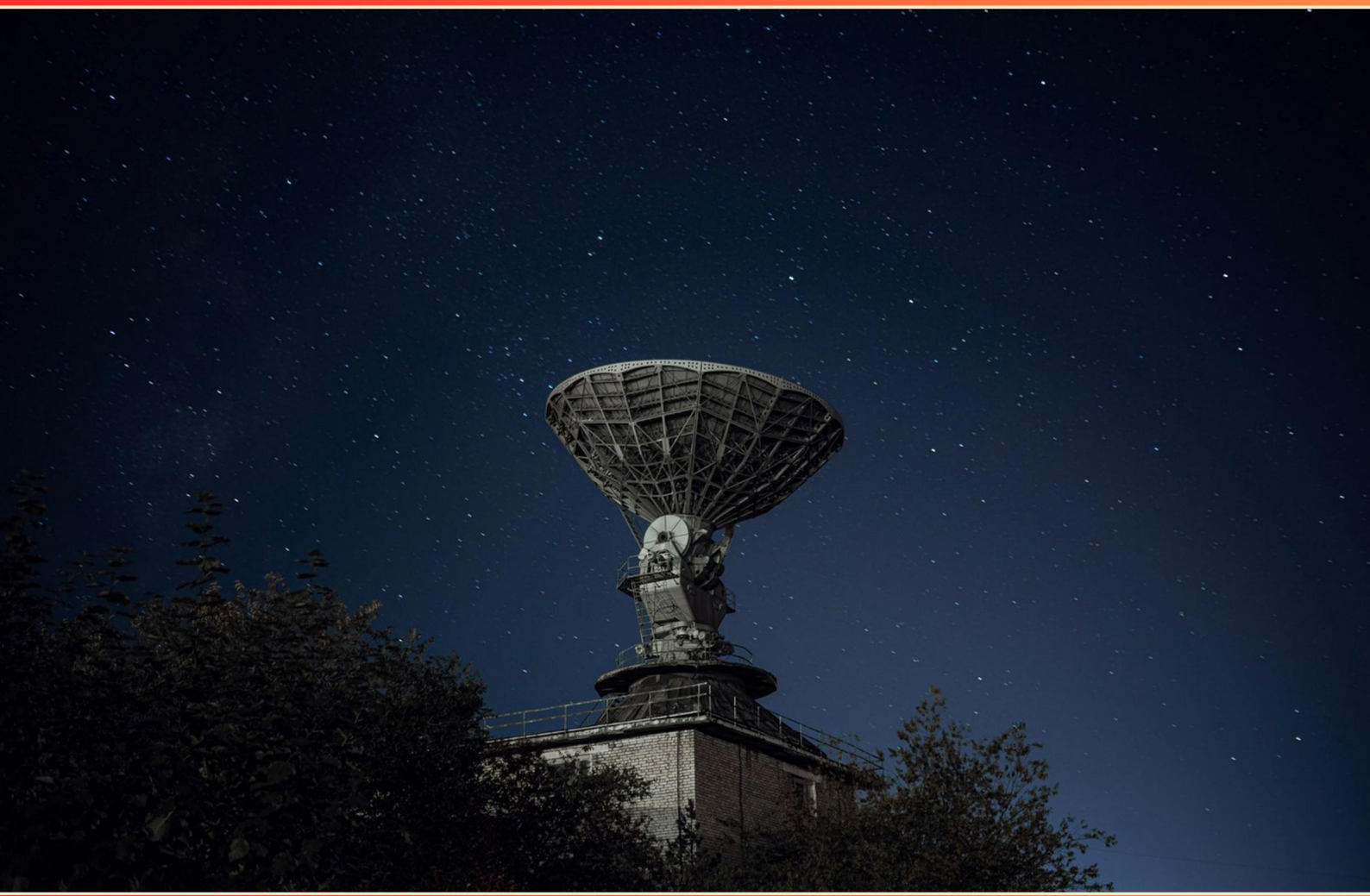
RADIO COMMUNICATIONS (RCOM) PRACTICE TEST (SAMPLE)

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.

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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!

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Questions

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1. How does increasing the height of an antenna affect the line-of-sight range at VHF/UHF frequencies?

A. It reduces line-of-sight range due to taller structures

B. It increases line-of-sight distance, improving coverage

C. It has no effect on line-of-sight range

D. It only affects ground reflections

2. What are the power settings of the VU1?

A. Low and High

B. Medium only

C. Low, Medium, and High

D. High only

3. What does the F mean on the EUFD?

A. Fixed Frequency

B. Frequency Hopping

C. Frame Sync

D. Fast Transmission

4. In the Doppler shift formula $f_d = (v/\lambda) \cos \theta$, what does $\cos \theta$ represent?

A. The cosine of the angle between the relative motion and the line of sight

B. The speed of light

C. The wavelength

D. The transmitter power

5. What is the maximum number of presets the A/C can hold at one time?

A. 60 presets

B. 50 presets

C. 30 presets

D. 120 presets

6. S11 in S-parameters corresponds to which quantity?

A. Transmission from port 1 to port 2

B. Reflection coefficient at port 1

C. Reflection at port 2

D. Insertion loss

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7. Which platform is used to create and edit COMSETS?

A. CCP

B. EUFD

C. AMPS

D. IDMS

8. What is the purpose of a coaxial to waveguide transition and where is it used?

A. To connect fiber optic lines.

B. To shield the cable from radiation.

C. To reduce impedance at DC.

D. To connect coaxial feedlines to waveguide structures in high-frequency RF systems; used in microwave and higher-frequency components.

9. What is the difference between an isotropic radiator and a real antenna?

A. Isotropic radiator is a theoretical perfect radiator with 4π coverage; real antennas have patterned gain and losses

B. Isotropic radiator is a real device with perfect efficiency

C. Real antennas have no directional pattern

D. Isotropic radiator has zero gain

10. In free space, which equation correctly relates propagation speed v, frequency f, and wavelength λ?

A. $v = f \lambda$

B. $v = f/\lambda$

C. $v = \lambda/f$

D. $v = c f$

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Answers

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

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Explanations

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1. How does increasing the height of an antenna affect the line-of-sight range at VHF/UHF frequencies?

A. It reduces line-of-sight range due to taller structures

B. It increases line-of-sight distance, improving coverage

C. It has no effect on line-of-sight range

D. It only affects ground reflections

Raising antenna height increases the line-of-sight range because VHF/UHF signals travel mostly in straight lines and the Earth's curvature limits how far the signal can reach. The higher the antenna, the farther the horizon for that station, so the path clears more terrain and obstacles. Practically, the horizon distance scales roughly with the square root of the height, and the total line-of-sight range is roughly the sum of the horizons from both transmitter and receiver. So increasing height directly improves coverage. The other statements don't fit: height doesn't reduce range, and the effect isn't limited to ground reflections.

2. What are the power settings of the VU1?

A. Low and High

B. Medium only

C. Low, Medium, and High

D. High only

Power settings on the VU1 are adjustable to fit different operating conditions, and it provides three distinct levels: Low, Medium, and High. This range lets you conserve battery life or reduce interference with Low, use a balanced setting with Medium for typical operation, or maximize range with High when needed. The correct choice is the one that includes all three options, since that reflects the full set of available settings. Choices that list only two or a single level miss one of the actual settings and aren't accurate.

3. What does the F mean on the EUFD?

A. Fixed Frequency

B. Frequency Hopping

C. Frame Sync

D. Fast Transmission

The F signals Frequency Hopping. In this mode, the radio rapidly switches the carrier frequency across a set of frequencies according to a predefined pattern shared by both ends. This spread-spectrum technique helps resist interference on any single channel and makes eavesdropping harder because the signal hops unpredictably to different frequencies. Why this fits better than the other interpretations: staying on one fixed frequency would contradict the idea of a frequency-changing scheme, which is what the F indicates. Frame Sync is about aligning timing for data frames, not about changing the frequency, and Fast Transmission refers to data rate rather than how the carrier frequency is managed.

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4. In the Doppler shift formula $f_d = (v/\lambda) \cos \theta$, what does $\cos \theta$ represent?

A. The cosine of the angle between the relative motion and the line of sight

B. The speed of light

C. The wavelength

D. The transmitter power

The factor cos θ comes from projecting the relative motion onto the line of sight. In Doppler shift, only the part of the motion that is along the line of sight to the observer changes the observed frequency. θ is the angle between the direction of the relative motion and that line of sight, so v cos θ is the effective speed toward or away from you. When motion is directly toward or away, cos θ is ±1 and you get the full shift; when the motion is perpendicular, cos θ is 0 and there's no shift. The other terms are the relative speed and the wavelength of the wave; the transmitter power or the speed of light don't determine this angle factor.

5. What is the maximum number of presets the A/C can hold at one time?

A. 60 presets

B. 50 presets

C. 30 presets

D. 120 presets

Presets are memory slots that store frequencies for quick recall, so the question tests how much of that memory the A/C can dedicate to stored channels. In this model, the preset memory capacity is sixty slots. That means you can save up to sixty distinct frequencies or channels and switch to any one of them with a quick selection, without re-entering numbers. Having sixty presets provides ample room for common frequencies you use often—such as different towers, approach frequencies, or regional contacts—while staying within the radio's hardware and firmware memory limits. A smaller number would restrict how many you can keep handy, while a larger number would require more memory and processing resources that the unit isn't designed to allocate.

6. S11 in S-parameters corresponds to which quantity?

A. Transmission from port 1 to port 2

B. Reflection coefficient at port 1

C. Reflection at port 2

D. Insertion loss

In RF networks, S-parameters describe how signals propagate between ports when the other ports are terminated in matched loads. S11 is the reflection coefficient at the input port, indicating what fraction of the incident signal at port 1 is reflected back due to impedance mismatch. It is defined as S11 = b1 / a1 with port 2 matched (a2 = b2 = 0), so it directly quantifies the input reflection. This is why it corresponds to the reflection at port 1. The other quantities mapped to the choices are different: transmission from port 1 to port 2 is S21, reflection at port 2 is S22, and insertion loss relates to how much signal is lost in transmission (often tied to |S21| under matched conditions), not S11.

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7. Which platform is used to create and edit COMSETS?

A. CCP

B. EUFD

C. AMPS

D. IDMS

COMSETs define the radio configuration you'll use, and the tool that creates and edits those configurations is AMPS. AMPS provides the dedicated interface to define all the COMSET parameters—like channels, frequencies, and related settings—and to save, validate, and deploy them across the system. The other platforms are used for different system tasks and aren't the tools used to author or modify COMSETs, so AMPS is the correct choice.

8. What is the purpose of a coaxial to waveguide transition and where is it used?

A. To connect fiber optic lines.

B. To shield the cable from radiation.

C. To reduce impedance at DC.

D. To connect coaxial feedlines to waveguide structures in high-frequency RF systems; used in microwave and higher-frequency components.

This is about connecting a coaxial feedline to a waveguide in high-frequency RF systems. A coaxial-to-waveguide transition lets the signal carried by a coax, which is TEM, enter a rectangular waveguide that supports TE modes (typically the TE10 mode). The transition provides a well matched, low reflection interface so power can move efficiently from the coax into the waveguide across microwave and higher frequencies. You'll find these transitions in systems that need to feed a waveguide from a coax source, such as radar transmitters, microwave links, and RF test setups. Fiber optic connections are for optical signals, not RF waves. Shielding is a general function of the cable or enclosure, not the purpose of the transition itself. Impedance changes at DC aren't what this device is about, since it's designed to work at microwave frequencies where waveguide behavior and mode coupling matter.

9. What is the difference between an isotropic radiator and a real antenna?

A. Isotropic radiator is a theoretical perfect radiator with 4π coverage; real antennas have patterned gain and losses

B. Isotropic radiator is a real device with perfect efficiency

C. Real antennas have no directional pattern

D. Isotropic radiator has zero gain

An isotropic radiator is a theoretical reference that would radiate the same amount of power in every direction, giving a uniform pattern over the entire sphere (4π steradians). Its gain is defined as 1, which corresponds to 0 dBi, and it assumes perfect efficiency with no losses. Real antennas, however, do not radiate uniformly; they concentrate energy in certain directions, creating a directional radiation pattern. Their actual gain relative to an isotropic source is the product of directivity (how well the antenna focuses energy) and efficiency (how much of the input power is radiated versus lost as heat or reflected). So real antennas have patterned gain and practical losses, rather than isotropic, ideal behavior. It's also important to note that isotropic radiators are not physical devices; they're used as a baseline for comparing antenna performance.

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10. In free space, which equation correctly relates propagation speed v, frequency f, and wavelength λ?

A. $v = f \lambda$

B. $v = f/\lambda$

C. $v = \lambda/f$

D. $v = c f$

The speed of a wave is given by multiplying its frequency by its wavelength, so $v = f \lambda$. This makes sense because frequency tells how many wave cycles pass each second and wavelength tells how far a single cycle travels; together they determine how far the wavefront moves per second. In free space, that speed is the speed of light, so you can also say $\lambda = c / f$ if you know the frequency. The other options don't match the units or the fundamental relation: f/λ has units of per meter, not speed; λ/f has units of meters·seconds, not speed; and $c f$ would have units of meters per second squared, not a speed.

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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://rcom.examzify.com

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

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