RADIO NAVIGATION LEVEL 4 PRACTICE TEST (SAMPLE)

STUDY GUIDE

SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

Notice: Examzify makes every reasonable effort to obtain accurate, complete, and timely information about this product from reliable sources.

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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. Pulse width can be defined as:

A. The duration of the pulse, generally measured in microseconds

B. The frequency of the pulse

C. The amplitude of the pulse

D. The period between pulses

2. A radio aid has a wavelength of 2.4 m. The frequency is

A. 125 MHz

B. 250 MHz

C. 500 kHz

D. 50 MHz

3. A primary radar system has a pulse repetition frequency of 450 pps, ignoring pulse width and flyback at the CRT, the maximum range of the radar would be:

A. 180 NM

B. 90 NM

C. 360 NM

D. 540 NM

4. Which factor primarily determines the rate of attenuation of a radio wave travelling close to the Earth's surface?

A. Antenna gain

B. Polarization

C. Frequency of the wave

D. Transmitter power

5. The promulgated range for an NDB is applicable under which condition?

A. During Nighttime Only

B. During Daylight And Night Equally

C. During Daytime Only

D. Only When The Station Is Calibrated

6. In a Cathode Ray Tube, the grid is used to:

A. control the brightness

B. focus the beam

C. control the brilliance

D. accelerate electrons

7. In weather radar mode, the strongest returns on the display indicate:

A. Ground clutter

B. Areas of high concentration of large water droplets

C. Clear air

D. Small droplets

8. The modulation technique used in ILS is A8W, and a typical localiser frequency is?

A. A3E; 110.20 MHz

B. A2W; 110.30 MHz

C. A8W; 110.30 MHz

D. A8X; 110.50 MHz

9. During a 3° glidepath ILS approach, the groundspeed decreases from 150 kt to 120 kt. The effect on the rate of descent will be approximately:

A. 50 FT/MIN

B. 300 FT/MIN

C. 0 FT/MIN

D. 150 FT/MIN

10. Night effect for ADF transmissions is most pronounced at which time?

A. Midnight

B. Daylight Hours

C. At Dusk and Dawn

D. Noon

Answers

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

Explanations

1. Pulse width can be defined as:

A. The duration of the pulse, generally measured in microseconds

B. The frequency of the pulse

C. The amplitude of the pulse

D. The period between pulses

Pulse width is the duration the pulse is present, i.e., the time the signal stays high during one pulse. It is typically described in microseconds. This distinguishes it from the repetition rate (how often pulses occur per second), the amplitude (the pulse's height), or the interval between pulses (the time from the start of one pulse to the start of the next, known as the pulse repetition period). The width, together with the period, sets the duty cycle and influences factors like average power and how finely you can resolve targets in time-based systems.

2. A radio aid has a wavelength of 2.4 m. The frequency is

A. 125 MHz

B. 250 MHz

C. 500 kHz

D. 50 MHz

Frequency and wavelength are inversely related: f = c / λ. For radio waves in free space, the speed is about the speed of light, 3.0 × 10^8 m/s. With a wavelength of 2.4 m, the frequency is f = 3.0 × 10^8 / 2.4 = 1.25 × 10^8 Hz = 125 MHz. So the frequency matches 125 MHz. The other options would require different wavelengths: 250 MHz corresponds to about 1.2 m, 500 kHz to about 600 m, and 50 MHz to about 6 m, none of which equal 2.4 m.

3. A primary radar system has a pulse repetition frequency of 450 pps, ignoring pulse width and flyback at the CRT, the maximum range of the radar would be:

A. 180 NM

B. 90 NM

C. 360 NM

D. 540 NM

The important idea is that the maximum unambiguous range in a pulsed radar is set by how long you wait between pulses. Echoes must return before the next pulse is transmitted; otherwise returns from one pulse get mixed with the next, creating range ambiguity. With a pulse repetition frequency of 450 pps, the time between pulses is 1/450 seconds ≈ 0.00222 s. The radar can correctly assign a return to the right range only if the round-trip travel time (2R/c) is equal to or less than this interval. So set 2R/c = 1/450 and solve for R: R = c / 900 ≈ (299,792 km/s) / 900 ≈ 333 km ≈ 333/1.852 ≈ 180 nautical miles. Thus, the maximum unambiguous range is about 180 NM. The other numbers would correspond to different PRFs or would imply range that isn't unambiguous at this PRF.

4. Which factor primarily determines the rate of attenuation of a radio wave travelling close to the Earth's surface?

A. Antenna gain

B. Polarization

C. Frequency of the wave

D. Transmitter power

The rate at which a radio wave loses power as it travels close to the ground is controlled mainly by the wave's frequency. The earth and atmosphere interact with the wave, causing losses that increase with frequency, so higher frequency surface waves attenuate more quickly with distance than lower frequency ones. Antenna gain and transmitter power determine the initial strength of the transmitted signal but do not change how fast the energy is absorbed by the medium as it travels. Polarization can affect how efficiently energy couples into the ground, but it isn't the dominant factor in the rate of attenuation. Therefore, frequency is the primary determinant of attenuation rate for surface-propagating waves.

5. The promulgated range for an NDB is applicable under which condition?

A. During Nighttime Only

B. During Daylight And Night Equally

C. During Daytime Only

D. Only When The Station Is Calibrated

The key idea is how NDB signals propagate and how that affects the reliability of the published range. NDBs operate on low to medium frequencies, so their reception is mainly a ground-wave signal during the day. During daylight hours the ionospheric D-layer is present and tends to absorb or attenuate MF/NF signals, which shortens the reliable reception distance. The range that is published on charts—the promulgated range—is based on those daytime, predictable ground-wave conditions. At night, the D-layer dissipates and ionospheric conditions change, allowing signals to travel farther by skywave, but this makes reception more variable and less predictable. Because of that variability, the published range isn't guaranteed to apply at night. So the promulgated range is specified for daytime conditions only. That's why daytime-only is the best answer. The other options don't fit because the published range isn't asserted for nighttime, doesn't apply equally to day and night, and isn't tied to station calibration in this context.

6. In a Cathode Ray Tube, the grid is used to:

A. control the brightness

B. focus the beam

C. control the brilliance

D. accelerate electrons

In a CRT, what you see on the screen—the brightness of the spot or image—depends on how many electrons are actually reaching the phosphor. The grid acts as the gate that controls that electron flow. By applying a negative bias to the control grid, you repel some electrons back toward the cathode, reducing the beam current and making the spot dimmer. Making the grid less negative (or more positive) allows more electrons to reach the phosphor, increasing brightness. So the grid's job is to regulate the electron current, and that directly sets how bright the display appears. Focusing and accelerating the beam are handled by other electrodes: focusing concentrates the beam, while the anode voltage (and sometimes an accelerating grid) speeds it up.

7. In weather radar mode, the strongest returns on the display indicate:

A. Ground clutter

B. Areas of high concentration of large water droplets

C. Clear air

D. Small droplets

Weather radar strength grows rapidly with how big the droplets are. Each droplet scatters radar energy, but larger droplets have a much bigger effect—roughly dominating the reflectivity signal as droplet size increases. So areas with many large water droplets, such as heavy rain or hail, produce the strongest echoes on the display. Ground clutter and clear air produce much weaker returns, and while many small droplets can scatter some energy, they don't reach the intensity of regions with large drops.

8. The modulation technique used in ILS is A8W, and a typical localiser frequency is?

A. A3E; 110.20 MHz

B. A2W; 110.30 MHz

C. A8W; 110.30 MHz

D. A8X; 110.50 MHz

ILS localizer uses a specific amplitude-modulation coding that identifies the modulation scheme used, denoted by a code such as A8W. The localizer carrier sits in the VHF band from 108.10 to 111.95 MHz and is assigned in 0.05 MHz steps, so 110.30 MHz is a valid and typical example. Among the options, the pair that matches the standard ILS modulation code and a valid localizer frequency is A8W with 110.30 MHz. The other options mix different modulation codes that aren't used for the ILS localizer in this context, so they don't fit.

9. During a 3° glidepath ILS approach, the groundspeed decreases from 150 kt to 120 kt. The effect on the rate of descent will be approximately:

A. 50 FT/MIN

B. 300 FT/MIN

C. 0 FT/MIN

D. 150 FT/MIN

On a 3° glidepath, the vertical rate of descent depends on how fast you are moving horizontally. The glide slope drops about 318 ft per nautical mile. So the descent rate equals 318 ft per NM times the number of NM you travel each minute, which is your groundspeed in knots divided by 60. With a groundspeed of 150 kt, you cover 2.5 NM per minute, giving about 2.5 × 318 ≈ 795 ft/min. If the speed drops to 120 kt, you cover 2.0 NM per minute, giving about 2.0 × 318 ≈ 636 ft/min. The descent rate therefore decreases by roughly 795 − 636 ≈ 159 ft/min, i.e., about 150 ft/min. So the effect of slowing from 150 to 120 kt on a 3° glidepath is a decrease of roughly 150 ft/min in the descent rate.

10. Night effect for ADF transmissions is most pronounced at which time?

A. Midnight

B. Daylight Hours

C. At Dusk and Dawn

D. Noon

The main point is how ADF reception is affected by ionospheric conditions that alter low-frequency propagation. NDB signals travel mainly as ground waves, but at night the ionosphere changes in a way that allows more skywave to reach the receiver. This adds a competing signal path and causes interference with the direct ground-wave signal, making the bearing reading swing or become unreliable. The transition periods around sunset and sunrise are when these ionospheric changes are most dramatic, so the night effect is strongest then. That's why the answer is the times of dusk and dawn. Midday tends to suppress the night effect because the D-layer is present and absorbs low-frequency skywave, reducing interference, and midnight is a more steady night condition than the transitional periods.

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://radionavlevel4.examzify.com

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