LEAVING CERTIFICATE PHYSICS 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

1. The weight of an object is

A. The force of air resistance on the object

B. The force of Earth's gravity on the object

C. The object's mass

D. The object's velocity

2. Using the Rayleigh criterion, estimate the angular resolution for light with wavelength 550 nm observed through an aperture of diameter 2.0 cm.

A. 3.36×10^-5 rad

B. 1.22×10^-4 rad

C. 6.9×10^-5 rad

D. 2.7×10^-6 rad

3. Dispersion is the separation of light into its different colours or wavelengths.

A. Dispersion

B. Electric field

C. Coulomb's Law

D. Potential difference

4. In an elastic collision with m1=2 kg moving at 3 m/s and m2=1 kg at rest, what is the velocity of m2 after the collision?

A. 2 m/s

B. 4 m/s

C. 0 m/s

D. 6 m/s

5. Using the lens maker formula for a thin lens in air with n = 1.50, R1 = +20 cm, R2 = -20 cm, what is the focal length f?

A. f = +20 cm

B. f = +40 cm

C. f = -20 cm

D. f = +10 cm

6. EMF is described as which quantity?

A. Capacitance

B. Potential Difference

C. Resistance

D. EMF

7. What is the heat required to raise the temperature of 0.5 kg of water by 6 K (c = 4184 J/kg K)?

A. 12.6 kJ

B. 7.9 kJ

C. 25.0 kJ

D. 5.0 kJ

8. If the tension on a string is doubled while μ stays constant, by what factor does the wave speed change?

A. Increases by sqrt(2) ≈ 1.414

B. Increases by a factor of 2

C. Remains unchanged

D. Decreases by sqrt(2) ≈ 0.707

9. Calculate the power dissipated by a 5 Ω resistor carrying 2 A.

A. 20 W

B. 10 W

C. 2 W

D. 50 W

10. Which material is defined as having a resistivity between that of a good conductor and a good insulator?

A. A material with extremely low resistivity

B. A perfect insulator

C. A semiconductor

D. A superconducting material

Answers

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

Explanations

1. The weight of an object is

A. The force of air resistance on the object

B. The force of Earth's gravity on the object

C. The object's mass

D. The object's velocity

Weight is the gravitational force acting on an object. On Earth, this force equals the object's mass times the acceleration due to gravity, W = m g, so it has units of newtons. This means weight reflects how strongly Earth's gravity pulls on the object, not how heavy the object feels in a particular environment. The mass is the amount of matter in the object, which remains the same anywhere, while weight changes with the strength of gravity. The other ideas describe different things: air resistance is drag from the air, velocity is how fast the object moves, and neither is the gravitational force acting on the object.

2. Using the Rayleigh criterion, estimate the angular resolution for light with wavelength 550 nm observed through an aperture of diameter 2.0 cm.

A. 3.36×10^-5 rad

B. 1.22×10^-4 rad

C. 6.9×10^-5 rad

D. 2.7×10^-6 rad

The Rayleigh criterion says the smallest resolvable angle for a circular aperture is θ ≈ 1.22 λ / D. Using λ = 550 nm = 5.50 × 10^-7 m and D = 2.0 cm = 0.02 m, the ratio λ/D is 5.50e-7 / 0.02 = 2.75 × 10^-5. Multiplying by 1.22 gives θ ≈ 3.36 × 10^-5 rad. This is the estimated angular resolution. In arcseconds, that's about 6.9", illustrating how a modest aperture limits the detail you can resolve with visible light.

3. Dispersion is the separation of light into its different colours or wavelengths.

A. Dispersion

B. Electric field

C. Coulomb's Law

D. Potential difference

Dispersion describes why white light splits into a spectrum when it passes through a material like a prism. Different colours have different wavelengths, so they travel at different speeds inside the medium (v = c/n(λ)) and bend by different amounts. Because the refractive index depends on wavelength, each colour emerges at its own angle, spreading the light into a range of colours. That separation into colours is what dispersion is all about. The other terms relate to electric fields or potentials between charges and don't describe this splitting of light by wavelength, so they don't fit the idea of dispersion.

4. In an elastic collision with m1=2 kg moving at 3 m/s and m2=1 kg at rest, what is the velocity of m2 after the collision?

A. 2 m/s

B. 4 m/s

C. 0 m/s

D. 6 m/s

In an elastic collision both momentum and kinetic energy are conserved. When one mass of 2 kg moving at 3 m/s collides elastically with a 1 kg mass at rest, the final velocity of the second mass can be found from the standard result for u2 = 0: v2 = (2 m1)/(m1 + m2) × u1. Plugging in gives v2 = (2×2)/(2+1) × 3 = 4 m/s. So the second mass moves in the same direction as the first at 4 m/s after the collision.

5. Using the lens maker formula for a thin lens in air with n = 1.50, R1 = +20 cm, R2 = -20 cm, what is the focal length f?

A. f = +20 cm

B. f = +40 cm

C. f = -20 cm

D. f = +10 cm

The test is about how a thin lens in air focuses light, described by the lens maker formula: 1/f = (n − 1)(1/R1 − 1/R2). Here the lens material has n = 1.50, so n − 1 = 0.50. The curvatures are R1 = +20 cm and R2 = −20 cm, so 1/R1 = 0.05 cm ¹ and 1/R2 = −0.05 cm ¹. Plugging in gives 1/f = 0.50(0.05 − (−0.05)) = 0.50 × 0.10 = 0.05 cm ¹. Therefore f = 1/0.05 = 20 cm. The positive focal length means a converging lens, which matches a focal length of +20 cm. The other options would require different values of 1/f (for example, 1/f = 0.025 would give f = 40 cm, and a negative 1/f would imply a diverging lens), which isn't produced by these surface curvatures with this index.

6. EMF is described as which quantity?

A. Capacitance

B. Potential Difference

C. Resistance

D. EMF

EMF describes the energy transfer per unit charge that a source provides to charges as they pass through it, giving the driving potential that pushes current around a circuit. It's the voltage a source would supply if no current flowed (an open circuit). In real sources, internal resistance means the terminal voltage under load is lower than the EMF by I times the internal resistance, so terminal voltage ≈ EMF − I r_internal. So EMF is the energy-per-charge the source delivers, not a separate property like capacitance or resistance, and not simply the voltage seen across a component when current is flowing.

7. What is the heat required to raise the temperature of 0.5 kg of water by 6 K (c = 4184 J/kg K)?

A. 12.6 kJ

B. 7.9 kJ

C. 25.0 kJ

D. 5.0 kJ

The heat required to raise the temperature without changing phase is found from Q = m c ΔT. Here, m = 0.5 kg, c = 4184 J/(kg·K), and ΔT = 6 K. So Q = 0.5 × 4184 × 6 = 12552 J, which is about 12.6 kJ. This is the energy you need to add to heat the water by 6 K. (If there were a phase change, latent heat would come into play, but not here.)

8. If the tension on a string is doubled while μ stays constant, by what factor does the wave speed change?

A. Increases by sqrt(2) ≈ 1.414

B. Increases by a factor of 2

C. Remains unchanged

D. Decreases by sqrt(2) ≈ 0.707

The wave speed on a stretched string depends on tension and mass per unit length through v = sqrt(T/μ). With μ fixed, the speed scales with the square root of the tension. If the tension is doubled, the new speed is sqrt(2T/μ) = sqrt(2) × sqrt(T/μ), so it increases by a factor of sqrt(2) (about 1.414). This is why the correct option is the square-root increase. The speed wouldn't double simply because tension doubled, and it wouldn't stay the same or decrease—the change comes from the square-root relationship between v and T.

9. Calculate the power dissipated by a 5 Ω resistor carrying 2 A.

A. 20 W

B. 10 W

C. 2 W

D. 50 W

Power dissipated in a resistor is given by P = I^2 R (you can also use P = V I or P = V^2 / R). With a current of 2 A through a 5 Ω resistor, P = (2)^2 × 5 = 4 × 5 = 20 W. You can double-check by finding the voltage across the resistor: V = I R = 2 × 5 = 10 V, and then P = V I = 10 × 2 = 20 W. The other numbers would require a different current or voltage than what's given, so the power here is 20 watts.

10. Which material is defined as having a resistivity between that of a good conductor and a good insulator?

A. A material with extremely low resistivity

B. A perfect insulator

C. A semiconductor

D. A superconducting material

Materials with resistivity between that of a good conductor and a good insulator are semiconductors. Resistivity measures how strongly a material opposes the flow of electric current. Good conductors have very low resistivity, while insulators have very high resistivity. Semiconductors sit in between and are special because their conductivity can be controlled and changed by factors such as temperature, impurities (doping), exposure to light, or electric fields. That tunable behavior is what makes them essential for electronic devices like diodes, transistors, and integrated circuits. Typical examples include silicon and germanium. Why the other possibilities don't fit: a material with extremely low resistivity behaves like a conductor, not an intermediate material; a perfect insulator would resist current almost completely (infinite resistivity); a superconducting material has essentially zero resistivity at low temperatures, which is also not an intermediate state.

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://leavingcertphysics.examzify.com

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