

NATIONAL SCIENCE BEE PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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. The element with symbol Li is a reactive alkali metal. Which option correctly identifies it?**
 - A. Sodium
 - B. Lithium
 - C. Potassium
 - D. Rubidium
- 2. Which term describes the energy stored in the movement of air that can be harnessed for electricity?**
 - A. Geothermal energy
 - B. Uranium
 - C. Wind energy
 - D. Chlorofluorocarbons
- 3. Which body system is responsible for gas exchange between the body and the environment, including the nose, trachea, and lungs?**
 - A. Digestive system
 - B. Nervous system
 - C. Circulatory system
 - D. Respiratory system
- 4. During mitosis, the daughter cells have:**
 - A. The same chromosome number as the parent cell
 - B. Twice the chromosome number of the parent cell
 - C. Half the chromosome number
 - D. A random chromosome number
- 5. Which statement best describes the purpose of a histogram?**
 - A. To display the distribution of a dataset across value ranges.
 - B. To show the relationship between two quantitative variables.
 - C. To display the frequency of data in ordered bins.
 - D. To summarize time-series data.

6. Who became the first human to travel into space?

- A. Neil Armstrong
- B. Buzz Aldrin
- C. Yuri Gagarin
- D. Valentina Tereshkova

7. NH_4^+ is the chemical symbol for which compound?

- A. Ammonium
- B. Neon
- C. Uranium
- D. DDT

8. Natural selection is best described as:

- A. Random mating in a population
- B. Differential survival and reproduction due to heritable variation
- C. A process that creates new species instantly
- D. The constant size of populations

9. Which energy source captures energy by the motion of air turning a turbine to generate electricity?

- A. Geothermal Energy
- B. Uranium
- C. Wind energy
- D. Chlorofluorocarbons

10. Which statement about HTML is true?

- A. It executes server-side logic.
- B. It structures content and markup web pages.
- C. It stores data in databases.
- D. It provides low-level hardware control.

Answers

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

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Explanations

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1. The element with symbol Li is a reactive alkali metal. Which option correctly identifies it?

- A. Sodium
- B. Lithium**
- C. Potassium
- D. Rubidium

Recognizing the symbol Li points directly to lithium, which is in Group 1, the alkali metals. Alkali metals are highly reactive and have one electron in their outer shell, which explains their vigorous reactions. Lithium is the lightest of these metals and has widespread uses in batteries. The other common alkali metals have different symbols—sodium is Na, potassium is K, and rubidium is Rb—so they do not match Li.

2. Which term describes the energy stored in the movement of air that can be harnessed for electricity?

- A. Geothermal energy
- B. Uranium
- C. Wind energy**
- D. Chlorofluorocarbons

Wind energy describes the energy stored in moving air that can be harnessed for electricity. When air moves, it has kinetic energy, and turbines capture that energy as the blades spin, turning it into electrical energy through a generator. Geothermal energy is heat from beneath the Earth's surface, uranium is a nuclear fuel used to produce heat in reactors, and chlorofluorocarbons are chemicals with no direct role in generating electricity. Wind energy is the term that fits the idea of using moving air to produce power.

3. Which body system is responsible for gas exchange between the body and the environment, including the nose, trachea, and lungs?

- A. Digestive system
- B. Nervous system
- C. Circulatory system
- D. Respiratory system**

Gas exchange between the body and the environment is performed by the respiratory system. It starts with the nose, which filters and warms or humidifies incoming air, then the air moves down the trachea into the lungs. In the lungs, tiny air sacs called alveoli sit next to a network of capillaries, and this is where the exchange happens. Oxygen moves from the air in the alveoli into the blood, while carbon dioxide moves from the blood into the alveoli to be exhaled. This exchange relies on differences in partial pressures and occurs across a very thin alveolar membrane. The circulatory system is essential for transporting these gases to and from tissues, but the actual transfer of gases occurs in the lungs. The digestive system handles nutrients from food, and the nervous system coordinates and controls body functions.

4. During mitosis, the daughter cells have:

- A. The same chromosome number as the parent cell
- B. Twice the chromosome number of the parent cell
- C. Half the chromosome number
- D. A random chromosome number

During mitosis, the goal is to distribute an identical set of chromosomes to each daughter cell. The DNA is replicated in S phase, so there are two sister chromatids per chromosome, but when mitosis proceeds, those chromatids are separated so that each daughter cell receives one copy of every chromosome. After cytokinesis, both daughters have the same number of chromosomes as the parent cell (for a diploid organism like humans, 46 in somatic cells). So the chromosome count is preserved across division, even though the DNA content was briefly doubled during replication. This is different from meiosis, where the chromosome number is halved to produce gametes.

5. Which statement best describes the purpose of a histogram?

- A. To display the distribution of a dataset across value ranges.
- B. To show the relationship between two quantitative variables.
- C. To display the frequency of data in ordered bins.
- D. To summarize time-series data.

A histogram shows how a dataset is distributed across value ranges. Data are grouped into consecutive intervals (bins), and the height of each bar represents how many observations fall into that range. This lets you see the overall shape of the data: where values cluster, whether the distribution is symmetric or skewed, if there are multiple peaks, and whether there are outliers at the extremes. It focuses on a single variable's distribution, unlike plots that reveal relationships between two variables or trends over time.

6. Who became the first human to travel into space?

- A. Neil Armstrong
- B. Buzz Aldrin
- C. Yuri Gagarin
- D. Valentina Tereshkova

Being the first person to travel into space means the first human to reach outer space and complete a flight outside Earth's atmosphere. That historic moment came when Yuri Gagarin, a Soviet pilot, flew aboard Vostok 1 on April 12, 1961 and completed one orbit around Earth in about 108 minutes. This demonstrated that a human could be launched into space, circle the planet, and return safely, marking the start of human spaceflight. The other figures show related but different milestones: Valentina Tereshkova was the first woman in space, achieved in 1963, while Neil Armstrong and Buzz Aldrin became the first and second humans to walk on the Moon in 1969. So the distinction here is the earliest human spaceflight, which belongs to Yuri Gagarin.

7. NH_4^+ is the chemical symbol for which compound?

A. Ammonium

B. Neon

C. Uranium

D. DDT

NH_4^+ identifies the ammonium ion, a positively charged polyatomic ion. It forms when ammonia (NH_3) accepts a proton (H^+), giving NH_4^+ . The four N–H bonds and the extra proton give the ion a formal charge of +1, which is why you see the plus sign. This ion appears in many salts, such as ammonium chloride (NH_4Cl). The other options are not related: Neon (Ne) is a noble gas, Uranium (U) is a heavy metal, and DDT is a pesticide.

8. Natural selection is best described as:

A. Random mating in a population

B. Differential survival and reproduction due to heritable variation

C. A process that creates new species instantly

D. The constant size of populations

Differential survival and reproduction due to heritable variation explains natural selection. In any population, individuals differ in traits because of genetic differences. The environment favors some variants because those traits help individuals survive longer or reproduce more successfully. Those advantageous alleles are passed on to offspring, so they become more common in the next generation. Over many generations, the population becomes better suited to its environment. Random mating by itself doesn't explain why certain traits become more common; it mixes genes but doesn't privilege any trait based on advantage. The idea that new species appear instantly isn't how natural selection works—speciation is typically a gradual process influenced by isolation and accumulation of differences over time. And natural selection doesn't require the population size to stay constant; change can happen even as populations grow or shrink.

9. Which energy source captures energy by the motion of air turning a turbine to generate electricity?

A. Geothermal Energy

B. Uranium

C. Wind energy

D. Chlorofluorocarbons

Energy captured from wind relies on turning the moving air into mechanical energy and then into electrical energy. When wind pushes the blades of a turbine, the rotor spins and drives a generator that converts that mechanical energy into electricity for use on the grid. This process uses the kinetic energy of air, which comes from solar heating differences that create wind patterns. Geothermal energy relies on heat from inside the Earth, not the motion of air. Uranium powers energy release through nuclear fission, not wind-driven turbine action. Chlorofluorocarbons are chemical compounds used in refrigerants and have no role as an energy source. So the energy source described is wind energy.

10. Which statement about HTML is true?

- A. It executes server-side logic.
- B. It structures content and markup web pages.**
- C. It stores data in databases.
- D. It provides low-level hardware control.

HTML structures content and markup web pages. It defines the elements that organize headings, paragraphs, lists, links, images, and forms so a browser can render the page in a meaningful order. It doesn't execute server-side logic—that's handled by server-side code. It doesn't store data in databases; databases hold data and pages interact with them through scripts. It also doesn't provide low-level hardware control; HTML operates in the browser to describe document structure, while styling and behavior come from CSS and JavaScript.

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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://natlsciencebee.examzify.com>

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

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