



INTERNATIONAL Science Bee

2024-2025 Regional Finals Study Guide – Beta Question Set

Instructions: This study guide should be your first resource in preparing for the International Science Bee that is run on the Beta Set of questions for the 2024-2025 academic year. Most of the facts below are found at some point in the preliminary rounds of this Set. Thus, we have selected these facts for this study guide to help make your preparation easier and more efficient. This study guide is particularly meant to help new players and teams – not to determine the ultimate winner of the tournament. For that, you will need to do more preparation. In particular, we recommend reviewing the past questions that are posted on the website at www.ihbbeurope.com, www.iacompetitionsasia.com, or www.ihbbcanada.com as well as the other resources there. Remember that the questions are all short paragraphs on a particular topic, so if a topic is referenced below, then it is a good idea to learn a bit more about it on your own than what is listed here (since additional facts about a topic will also be referenced in the question). On the other hand, it is generally not helpful to memorize the dates of events or of famous people’s birth and death years, as those are provided below for historical context, not because we will likely ask for those. It is also helpful to read, at a minimum, the introduction of a Wikipedia page on a topic to gain additional context about why it is significant. Good luck!

Biology & Anatomy

1. [Mitochondria](#) are cell organelles that are commonly referred to as “the powerhouse of the cell”.
2. [Moths](#) are flying insects that are attracted to light and genetically related to butterflies.
3. [Cancer](#) is a disease characterized by malignant tumors composed of cells growing at abnormal rates.
4. The [blue whale](#) is an aquatic mammal that is the largest animal to have ever existed on Earth.
5. [Triceratops](#) is a dinosaur whose name means “three-horned face”. Its primary predator was Tyrannosaurus Rex.
6. [Viruses](#) multiply by infecting host cells with genetic material.
7. [Photosynthesis](#) is an anabolic process in plants that converts carbon dioxide into glucose.

Astronomy

1. Andromeda, Cancer and Orion are examples of [constellations](#), star collections that form fixed patterns.
2. A [new moon](#) is the lunar phase during which the moon appears invisible when viewed from Earth.
3. [Neptune](#) became the farthest planet from the Sun following [Pluto](#)’s demotion to a dwarf planet.
4. A [light-year](#) is approximately 6 trillion miles, or the distance light travels in one year.
5. Arecibo in Puerto Rico is a former example of a [radio telescope](#), which detects electromagnetic waves from space.
6. An [exoplanet](#) is located outside of the Solar System, and thus, does not orbit our Sun.
7. The [asteroid belt](#) is located between Mars and Jupiter. It is home to [Ceres](#), the largest asteroid, which is considered a dwarf planet.

Chemistry

1. [Silver](#) is a metal that is the most electrically conductive element, and has the chemical symbol Ag.
2. [Chlorine](#) is a yellow-green gaseous halogen that is used to chemically treat swimming pools.
3. [Neon](#), the fifth most abundant element in the universe, is used in fluorescent lamps and signs.
4. The [periodic table](#) of the elements is a tabular arrangement of the chemical elements first developed by Dmitri Mendeleev.
5. [Pasteurization](#) is a method of heat treatment that is used to destroy microorganisms on food products. It is named for the French chemist Louis Pasteur who developed it.
6. [Tin](#) is a metallic element whose main ore is Cassiterite and forms the alloy bronze along with copper.
7. [pH](#) is a metric used to measure the acidity or basicity of a substance. It is commonly said to range from 0 to 14. Values close to 0 are more acidic; values close to 14 are more basic.
8. [Organic chemistry](#) is a subdiscipline concerned with compounds containing Carbon, an element with atomic number 6. Carbon and organic compounds form the basis of all known life.

Computer Science

1. [Cryptocurrency](#), examples of which include Ethereum and Bitcoin, is a form of digital decentralized currency.
2. [HTML](#) is the standard language used to create webpages on the World Wide Web.
3. [Virtual reality](#) is a fully artificial environment that is generally experienced through use of a headset.

Earth Science

1. The [Gulf Stream](#) is a warm water current that passes by the Florida coast and moderates Europe's climate.
2. [Ozone](#) is a molecule formed from three oxygen atoms that absorbs ultraviolet radiation from the sun.
3. The [Last Glacial Period](#), also known as the Last Ice Age, peaked approximately 22,000 years ago and ended about 11,700 years ago.
4. [Lava](#) is molten rock that is expelled during a volcano eruption.
5. [Erosion](#) is the geological process by which water and/or wind transports and removes soil.

Math

1. [Prime numbers](#) are natural numbers whose only factors are one and themselves. The only even prime number is 2.
2. A [complex number](#) consists of a real part and an imaginary part.
3. [Pi](#) is a [transcendental number](#) equal to approximately 3.14159. It denotes the ratio of a circle's circumference to its diameter.

Physics

1. [Isaac Newton](#) (1642-1727) developed the law of gravity legendarily after an apple fell on his head.
2. [Magnets](#) are objects whose namesake fields can attract or repel each other. They can be created by passing current through a wire.
3. The atomic [nucleus](#) is the dense region at the center of an atom that contains protons and neutrons.
4. [Combustion](#) is a reaction between a fuel and an oxidant, giving off heat and light.
5. [X-rays](#) are electromagnetic waves discovered by Wilhelm Roentgen used to create images of the body's internal structure.
6. [Drag](#) is the force that resists a body's motion through a fluid.