

Academic Bee – Final Round

Regulation Tossups

(1) Applying boundary conditions to this equation for an infinite potential well yields quantized energy levels proportional to n squared. Solutions to this equation are wavefunctions whose squared magnitude gives a probability density according to the interpretation proposed by (+) Max Born. This equation can be written in time-dependent form involving the reduced Planck's constant. (*) For the points, name this fundamental equation of non-relativistic quantum mechanics formulated by a namesake German physicist.

ANSWER: Schrödinger equation (accept time-dependent Schrödinger equation; accept one-dimensional time-independent Schrödinger equation; accept Schrödinger wave-equation)

(2) This work's author published *Two Upbuilding Discourses* as a companion to it, and in the first part of this work, "A" gives essay lectures to the "sympananekromenoi" and includes a presage to a later work by its author, *The Concept of Anxiety*. (+) The second part of this work involves Eremita discovering a group of letters from "B," also known as Judge Vilhelm. (*) For the points, name this first book of Søren Kierkegaard, which uses the title dichotomy to discuss ethics versus aesthetics.

ANSWER: Either/Or

(3) This artist is believed to have designed Rossenarra House in County Kilkenny, and civic buildings designed by this man include the Charleston County Courthouse, which he modeled after Leinster House. Along with William Thornton, this man helped the design the brick (+) Octagon House in Foggy Bottom, and this man won a competition using a two-story facade design, shortly after meeting George (*) Washington. For the points, name this Irish-American architect who created the original design for the White House.

ANSWER: James Hoban

(4) The PUREX method for purifying fuel for nuclear reactors is based on this procedure to separate uranium from plutonium, and this method has also been used to procure metals such as cobalt and nickel. Tools often utilized to perform this procedure include (+) separatory funnels in laboratory settings, and this procedure uses centrifugal contactors in industrial settings. (*) For the points, name this procedure in which a substance is moved from one liquid to another immiscible liquid.

ANSWER: liquid-liquid extraction

(5) Because this article was ratified by only eleven states, this is the only component of the Bill of Rights not incorporated into the Constitution. The final version of this law created a mathematical paradox by replacing the phrase "less than one" with "more than one." (+) If this amendment had been passed in its original version, one group would have been expanded from 435 to (*) thousands. For the points, name this proposed bill that would have regulated the number of seats in the House of Representatives.

ANSWER: Congressional Apportionment Amendment (or Article the First)

(6) During World War Two, this artist began work on the unfinished painting *Victory Boogie Woogie*, and two years earlier, this artist painted *New York City*, featuring a grid of mostly yellow lines. With Theo (+) van Doesburg, this artist co-founded the art movement De Stijl [[deh SHTYLE]] in Leiden. (*) For the points, name this painter who depicted primary colored-rectangles with black lines in between, such as in *Composition with Red, Blue and Yellow*.

ANSWER: Piet Mondrian (or Pieter Cornelis Mondrian)

(7) One form of this mineral is citrine, which bears a yellowish-orangish color and is usually created by heating a violet variety of this material. This substance makes up most of (+) granite by mass, and, when irradiation occurs with trace amounts of iron present, geodes of this mineral can take on the form of amethyst. This material, whose pure form is transparent, defines a (*) "seven" on the Mohs scale. For the points, name this mineral composed of silicon dioxide, the most commonly used gemstone in jewelry.

ANSWER: quartz (prompt on "silicon dioxide" before mentioned)

(8) This city's Bompata area is often referred to as "Roman Hill," and this city's outskirts include Lake Bosumtwi, a lake situated in an impact crater where fishing is only permitted on wooden piers. This city is sometimes called Oseikrom after Osei Kofi Tutu the First, (+) and this city known for its kente cloths is where Okomfo Anokye received the Golden Stool. This city serves as the capital of the (*) Ashanti Region. For the points, name this second-largest city of Ghana.

ANSWER: Kumasi

(9) The life of St. Francis of Assisi inspired a ballet by this man titled *The Noblest Vision*. A 1934 opera composed by this man later yielded a symphony whose final movement is based on *The Temptation of St. Anthony*. (+) Eventually emigrating to the U.S. amid Nazi denunciation of "degenerate" music, this composer's output ranged from the contrapuntal *Ludus Tonalis* to the *Symphonic Metamorphosis of Themes by Carl Maria von Weber*. (*) For the points, name this German musician best known for *Mathis der Maler*.

ANSWER: Paul Hindemith

(10) In order to avoid assassination attempts, this scientist's identity was only revealed posthumously, and this scientist used the moniker "Chief Designer" throughout his career. This scientist served in the Voskhod program. (+) which resulted in Alexei Leonov becoming the first person to perform a spacewalk. (*) For the points, name this scientist, who served as the lead Soviet rocket engineer during the Space Race and invented both the R-Seven Rocket and *Sputnik One*.

ANSWER: Sergei Korolev (or Sergei Pavlovich Korolev)

(11) This leader ordered the Beheadings of Moca during a military retreat, and this leader's policy of forced labor, known as the corvée, resulted in the construction of the Sans-Souci Palace, (+) his personal residence, as well as Citadelle Laferrière. This ruler created a kingdom in the northern part of his country to rival a republic led by Alexandre Pétion, after the death of Jean-Jacques (*) Dessalines. For the points, name this man, who, between 1811 and 1820, served as the only king of Haiti.

ANSWER: Henri Christophe (or Henry the First of Haiti)

(12) A poem by this author satirized anti-Chinese sentiment by describing a game of euchre [[YOO-kur]] in which Irishman William Nye and Chinese immigrant Ah Sin attempt to out-cheat one another. In one story by this author of "The Heathen Chinee," a playing card is found with an epitaph for a man who (+) "struck a streak of bad luck...and handed in his checks," and in another story by this author, the title character dies in a flood after being cared for by a group of prospectors. (*) For the points, name this author of "The Outcasts of Poker Flat" and "The Luck of Roaring Camp."

ANSWER: Bret Harte (or Francis Brett Hart)

(13) I. I. Thomson explored the composition of canal rays by channeling streams of this element's ions through a magnetic and an electric field. In 2014, the price of this inactive element jumped by (+) 600 percent after the Russian annexation of Crimea, and the red version of this element is the only type that is actually contained in its namesake (*) lighting. For the points, identify this second-lightest noble gas, which is located just beneath helium on the periodic table.

ANSWER: neon (or Ne)

(14) This island's Spiaggia dei Conigli, or "Rabbit Beach," has been voted the world's best beach by TripAdvisor, and this island is the largest of the Pelagie Islands, administered by the Province of Agrigento. This island was where the film (+) *Fire at Sea* was shot, and a ship carrying migrants from Libya capsized off this island's coast in 2013. (*) For the points, name this southernmost island of Italy, which is located between Sicily and Tunisia and serves as a major entry point for refugees.

ANSWER: Lampedusa

(15) **This artist assembled the first display of Pablo Picasso's artwork in the United States at his gallery 291. In a photograph by this artist, an object described as a (+) "funnel" is a ship's mast leaning to the left, perpendicular to a nearby gangway and a crowded group of lower-income passengers on the SS Kaiser Wilhelm the Second.** (*) For the points, name this American photographer of *The Steerage* who also created many portraits of his wife, Georgia O'Keeffe.

ANSWER: Alfred **Stieglitz** [[STEE-glitz]]

(16) **This chemist pioneered a technique to mass-produce phosphorus, turning Sweden into a top producer of matches. This chemist discovered lactic acid and identified elements such as tungsten, (+) barium, and hydrogen. This chemist was the namesake of a copper arsenite that was used as a green pigment, but later phased out due to its toxicity.** (*) For the points, identify this German-born chemist who is credited with discovering oxygen, independent of Joseph Priestley.

ANSWER: Carl Wilhelm **Scheele** (accept **Scheele**'s green)

(17) **This politician briefly resigned from his highest post after the signing of the Armistice of Villafranca. This man initiated diplomatic collaboration between his state and Napoleon the Third's France (+) following Felice Orsini's attempted assassination of the latter. During this man's term, he involved Piedmont in the Crimean War, and, following his death, this man's country was completely (*) unified with the capture of Rome.** For the points, name this first prime minister of Italy.

ANSWER: Camilo **Benso**, Count of **Cavour** (accept either underlined portion)

(18) **This character, who is the subject of a work by Peter Schilling subtitled "I'm Coming Home" which topped West Germany's music charts. Though allegedly autobiographical, this figure has drawn comparisons to men with surname Mattingly and Stafford, the latter of whom took part on the (+) Apollo 10 mission. Chris Hadfield once performed a 1969 song aboard the ISS which focuses on this man, who claims "Planet Earth is (*) blue, and there's nothing I can do".** For the points, name this fictional astronaut who appears in David Bowie's "Space Oddity".

ANSWER: Major **Tom** (accept "Ground Control to Major **Tom**"; prompt on "Space Oddity")

(19) **The Zizian philosophy was heavily influenced by this thought experiment, which its leader believes is real. This thought experiment was first conceptualized in 2010 under the title "Solutions to the Altruist's burden: the Quantum Billionaire Trick."** (+) As a result, this thought experiment was heavily criticized by LessWrong founder Eliezer Yudkowsky, and it was supposedly the subject of the first exchange between musician Grimes and (*) Elon Musk. For the points, name this thought experiment which states that a benevolent AI would punish those who knew of its conception but did not contribute.

ANSWER: **Roko's Basilisk**

(20) An army from this dynasty fought the Duchy of Aquitaine and Alfonso the Battler at the Battle of Cutanda, and this dynasty emerged victorious at the Battle of Fraga. This dynasty and its Sanhaja leader (+) Yusuf ibn Tashfin fought the Battle of Sagrajas [[sah-GRAH-hahs]] against the Kingdoms of León, Castile, and Aragon. Possibly responsible for the conquest of the Ghana Empire, (*) for the points, which Berber dynasty in Morocco was succeeded by the Almohad Caliphate?

ANSWER: Almoravid dynasty (or Al-Murabitun)

(21) Angels fly above an ominous hill in this artist's depiction of the *Lamentation*, which appears in a chapel that also features this artist's depiction of seven virtues and vices. For Pope Benedict the Eleventh, this artist may have drawn a perfect circle without assistance, and this artist, who was taught by (+) Cimabue [[chee-muh-BOO-weh]], was commissioned by Enrico Scrovegni [[skroh-VEHN-ye]] to paint chapel walls in Padua. The Arena Chapel was painted by, (*) for the points, what Florentine master who is sometimes considered the first artist of the Italian Renaissance?

ANSWER: Giotto [[JYAH-toh]] di Bondone

(22) A more advanced programming language inspired by this language. Snap!, shares similar mathematical foundations in lambda calculus. Through the National Science Foundation, this language was developed in 2003 by Mitchel Resnick and Yasmin Kafai. (+) This language involves the use of different-colored blocks to correspond to commands, such as blue to command a sprite's movement and position. (*) For the points, name this programming language aimed at children and used as an educational tool.

ANSWER: Scratch

(23) This creature was sent by one god to attack Aethiopia after Queen Cassiopeia insulted the Nereids. A creature known as Tannin in the Hebrew Bible has had its name translated to this creature's, and this creature's name is also mentioned in the Book of (+) Jonah. It's not Medusa, but this creature was killed by Perseus to prevent Andromeda from being sacrificed to it. (*) For the points, name this sea monster in Greek mythology, which names a constellation often called "the whale."

ANSWER: Cetus (or Kêtos)

(24) One novel by this author shows the fall of Iron Rinn during the McCarthy era. Coleman Silk's brother cuts him off from the family when it is revealed that he is passing as white and has a white girlfriend in a novel by this author entitled *The Human Stain*. (+) In an alternative history novel by this author, a young boy loses his stamp collection and Franklin Roosevelt is elected to non-consecutive terms as president of the United States. (*) For the points, identify this Jewish American author of *The Plot Against America*.

ANSWER: Phillip Roth (or Philip Milton Roth)

(25) **This phenomenon's eponymous scientist received the 1958 Nobel Prize in Physics for discovering it alongside Igor Tamm and Ilya Frank. The IACT is a device used to image this phenomenon, which is emitted by (+) gamma rays when they strike the atmosphere. In this phenomenon, a charged particle passes through a medium at a speed greater than that medium's phase velocity of light. (*)** For the points, name this phenomenon which generates a characteristic blue glow in underwater nuclear reactors.

ANSWER: **Cherenkov** radiation

(26) **Prior to this specific event, Major Jim Cloud gave the order for protesters to disperse. ABC interrupted its *Judgment at Nuremberg* broadcast to show coverage of this event, and James "Spider" Martin captured a picture of organizer (+) Amelia Boynton during this event, lying unconscious on the ground after being beaten by law enforcement on a certain landmark. (*)** For the points, give this two-word name for the brutal suppression of the 1965 march across the Edmund Pettus Bridge that resulted in John Lewis's skull fracture.

ANSWER: **Bloody Sunday** (accept **march** across the Edmund **Pettus Bridge** before "Edmund"; prompt on **Selma to Montgomery** march)

(27) **The *Tales of My Landlord* is sometimes not included in this larger series, which includes works such as *The Black Dwarf*, as well as a novel about a national hero and outlaw. This series, which includes *Rob Roy*. (+)** is named for its first novel, which follows the namesake family during the Jacobite Rising of 1745 and is considered one of the earliest Western works of historical fiction. (*) For the points, name this 26-book series of popular novels by Sir Walter Scott.

ANSWER: **Waverley** novels

(28) **Two-word answer required. In morphology, this process produced similar body plans in animals like the thylacine and modern wolves despite their distant ancestry. (+)** One example of this process compares the wings of bats with those of insects and birds, which evolved independently as adaptations for flight. (*) For the points, name this evolutionary phenomenon in which unrelated organisms independently evolve similar traits due to similar environmental pressures.

ANSWER: **convergent evolution** (prompt on "evolution")

(29) **Supposedly, 500 ministers were convinced to support this leader's claim to the throne after Susima hit a bald minister, and this leader's last wife killed the Bodhi tree with thorns and was named Tissarakkha. This leader, the father of (+) Mahendra and Kunala, defeated a kingdom based in modern Odisha and Andhra Pradesh during the Kalinga war, later creating many (*) "pillars of the Dharma."** For the points, name this third leader of the Mauryan empire who advanced Buddhism with his rock edicts.

ANSWER: **Ashoka** the Great (or **Asoka** Maurya; accept pillars of **Ashoka**)

(30) **This painting, which features the *Rückenfigur* motif, is on display at the Hamburg Art Hall, and Robert Macfarlane called the subject of this painting the archetypal image of the mountain-climbing visionary.** A painting that has become symbolic of the (+) Romantic era, this work also became a cultural focal point of the German unification movement. (*) For the points, name this painting which depicts a man with his back to the viewer, standing on an outcropping above a fantastic landscape, created by Caspar David Friedrich.

ANSWER: **Wanderer above the Sea of Fog** (or **Wanderer above the Mist**; or Der **Wanderer über dem Nebelmeer**)

(31) **During this conflict, the Brothers of the Sword were disbanded shortly after they lost the Battle of Saule. The legend of the origin of the Danish flag originates from this conflict's Battle of Lyndanisse, and during this conflict, the Battle on the (+) Ice resulted in Alexander Nevsky successfully resisting an invasion by the Livonian Order.** (*) For the points, name this series of 13th-century conflicts fought between Christian military orders and various Baltic, Finnic, and Slavic pagan peoples near the Baltic Sea.

ANSWER: **Northern Crusades** (accept **Baltic Crusades** before "Baltic" is mentioned; prompt on "Crusades")

(32) **This character was inspired by the alleged crimes of novelist Laura Kieler, the author of *Brand's Daughters*. This character, who is variously nicknamed "little bird" and mocked as a "wastrel," asks her husband to coach her in the (+) tarantella to avoid the discovery of a letter revealing a loan that allowed the two of them to stay in Italy.** (*) For the points, name this character who reveals her forgery of a signature to her husband, Torvald, before slamming a door in Henrik Ibsen's *A Doll's House*.

ANSWER: **Nora** Helmer (prompt on "Helmer")

(33) **The advent of electric motors allowed these devices to spin indefinitely, and the company Anschütz became the first firm to manufacture navigation instruments using them. After using a (+) pendulum, Leon Foucault employed one of these devices to demonstrate the rotation of the Earth. The "Coriolis vibratory" types of these devices use (*) vibrations as their primary reference.** For the points, name these devices that are used to measure orientation and angular velocity.

ANSWER: **gyroscope**

(34) **Forces led by William B. Ide captured Mariano Guadalupe Vallejo [[vah-YEH-hoh]] during this conflict, which was ended after Joseph Revere landed the USS *Portsmouth* at Sausalito. The (+) Sonoma Barracks were the site where the namesake object of this conflict was first raised, and this conflict concluded with the raising of the American flag by forces led by John C. (*) Fremont at Sutter's Fort.** For the points, name this 1846 revolt in which rebels declared California's independence from Mexico.

ANSWER: **Bear Flag** Revolt

(35) **In one work, this poet instructs the ignorant Perses on how to run a farm and recounts the Gold, Silver, Bronze, and Iron ages of humanity. (+)** This poet notably wrote in the Ionian dialect, despite the fact that this poet was born in Aeolia, and this poet described the first primordial deity, Chaos, in a poem that tells of the overthrow of (*) Kronos by Uranus, as well as the overthrow of Uranus by Zeus. For the points, name this ancient Greek poet, the author of *Theogony* and *Works and Days*.

ANSWER: **Hesiod** (or **Hēsíodos**)

Extra Questions

(1) **During this dynasty, officials who carried certain stamps were executed in the "pre-stamped documents case." This dynasty's first emperor defeated Chen Youliang at the Battle of Lake Poyang, though it later was embarrassed by Oirat Mongols in the (+) Tumu Crisis. This dynasty's leaders included the Yongle [[YONG-luh]] Emperor, who ordered the creation of the treasure fleet led by (*) Zheng He [[JUNG HUH]].** For the points, name this Chinese dynasty which was supplanted by the Qing [[CHING]] dynasty.

ANSWER: **Ming** dynasty (or Great **Ming**; or Da **Ming**)

(2) **As a screenwriter, this man contributed to the film *To Have and Have Not*, which was which adapted from a novel by Ernest Hemingway. Thomas Sutpen, a plantation owner, is the protagonist of this man's Civil War novel (+) *Absalom, Absalom!*. This author created the Compson and Bundren families, as well as the fictional Yoknapatawpha County. (*)** For the points, name this Mississippi-born author of modernist classics like *As I Lay Dying* and *The Sound and the Fury*.

ANSWER: William **Faulkner** (or William Cuthbert **Faulkner**)

(3) **The Lomonosov Ridge beneath this feature splits it into two basins, one closer to Europe and the other closer to North America. This ocean has the lowest salinity of any on Earth, in part due to freshwater inflows from rivers such as the (+) Lena, Yenisei, and Ob. The White Sea is a marginal sea of this body of water, and this ocean is the location of mountainous archipelagos such as Novaya Zemlya and (*) Svalbard.** For the points, name this shallowest ocean, whose boundaries approximate a namesake polar "circle."

ANSWER: **Arctic** Ocean