

Academic Bowl – Round 8 (MS)

First Quarter

(1) This programming language was designed by Brendan Eich and has a standard created by Ecma International. The weakly typed behavior of this programming language means that strings can be added to numbers, and this programming language has a package manager called npm [[n-p-m]]. For ten points, name this programming language for client-side web page interaction, which is often combined with HTML and CSS.

ANSWER: **JavaScript** (or **JS**; accept **ECMAScript**; do NOT accept or prompt on "Java")

(2) A group of these people from the Makassar Strait were the first to settle the Northern Mariana Islands. Wilhelm Solheim developed the Nusantara hypothesis regarding the exploration of these people, and that theory has been contrasted with a hypothesis stating that these people began their migrations out of Taiwan. For ten points, name these people unified by a language family, who undertook one of the widest maritime migrations, settling the likes of Indonesia.

ANSWER: **Austronesians** (or **Austronesian**-speaking peoples; prompt on any ethnic group like "indigenous Taiwanese", "Polynesians", or "Malagasy" by asking, "Who are part of what larger language group?")

(3) Methanogens and acetogens fix CO₂ in this process's chemosynthetic pathway. The enzyme RuBisCO catalyzes a key step in this process's light-independent reactions, while decomposers release molecules back into it through respiration. This bio-geo-chemical process has been disrupted by deforestation and fossil fuel combustion. For ten points, name this process in which matter moves between the atmosphere, oceans, and living things.

ANSWER: **carbon cycle**

(4) In one novel by this author, Moses becomes the adopted son of Jethro of the land of Midian in an African American-coded retelling of the Book of Exodus. This person's only novel about a white person, *Seraph on the Suwanee*, explores the lives of Arvey Henson and her family in rural Florida. Janie Crawford runs off with Jody Starks in, for ten points, what Harlem Renaissance author's novel *Their Eyes Were Watching God*?

ANSWER: Zora Neale **Hurston**

(5) This leader won his first term after his Liberal party defeated a disorganized Conservative Party under Charles Tupper. Alongside Thomas Greenway, this leader proposed a solution to the Manitoba Schools Question. This leader's premiership saw the integration of Alberta and Saskatchewan into a confederation. For ten points, name this politician known as the "Great Conciliator" for balancing English and French interests, the first French Canadian prime minister of Canada.

ANSWER: Wilfrid **Laurier** (or Henri Charles Wilfrid **Laurier**)

(6) A chloride of this element is a key component of green fireworks. The Ten isotope of this element is the primary nuclide in the neutron capture therapy of cancer, and this element serves as a control rod in nuclear reactors. The non-Newtonian fluid oobleck is created by mixing a solution of this element with liquid glue. For ten points, identify this second hardest element on the periodic table in its crystalline form.

ANSWER: **Boron** (or **B**)

(7) This artist's career began after winning Amateur Night at the Apollo Theater in 1934, where this artist sang Hoagy Carmichael's "Judy" instead of performing a planned dance routine. This artist rose to fame as the featured singer for Chick Webb's orchestra, scoring a massive hit with a nursery rhyme adaptation titled "A-Tisket, A-Tasket." For ten points, name this jazz singer who often engaged in improvisational scat singing and created a 1956 album with Louis Armstrong.

ANSWER: Ella **Fitzgerald** (or Ella Jane **Fitzgerald**)

(8) In the work *De Corpore*, this thinker proposed an erroneous proof to squaring a circle, which resulted in a long feud with John Wallis. While in exile in France, this thinker served as a mathematics instructor to the future Charles the Second. In a 1651 work, this thinker stated that the state of nature was "solitary, poor, nasty, brutish, and short." For ten points, name this English philosopher who penned the *Leviathan*.

ANSWER: Thomas **Hobbes**

Second Quarter

(1) One author from this country, Daniel O. Fagunwa, pioneered literature in his native Yoruba language. Another author from this country, Chimamanda Ngozi Adichie, has been recognized as a central figure in postcolonial feminist literature through novels such as *Purple Hibiscus*. For ten points, name this country, home to the first Black author to win the Nobel Prize in Literature, Wole Soyinka, and the author of the African Trilogy, Chinua Achebe.

ANSWER: Federal Republic of **Nigeria** (or Jamhuriyar Tarayyar **Najeriya**; or Ọhàńjíkọ Ọhànézè **Nàìjíríyà**; or Orílẹ̀-èdè Olómìnira Àpapọ̀ **Nàìjíríà**)

BONUS: Another Nobel Prize winner from Africa is this white South African writer who tackled apartheid in novels like *Burger's Daughter* and *July's People*.

ANSWER: Nadine **Gordimer**

(2) The argument of one of these numbers is defined to be the angle between a positive axis and the line between the origin and that number. The conjugate of these numbers acts distributively over operations like addition and is denoted with a bar on top of the number. Plotted as points on an Argand diagram, these numbers form a set denoted with a blackboard bold capital letter C. For ten points, name these numbers that contain a real part and an imaginary part.

ANSWER: **complex** numbers (accept **complex** conjugate)

BONUS: This theorem states that any non-constant polynomial of one variable with coefficients that are complex numbers has at least one root that is a complex number.

ANSWER: **fundamental theorem** of **algebra** (both portions required; or **d'Alembert's** theorem; or **d'Alembert-Gauss** theorem)

(3) One song by this group plays as the Ninth Infantry Division lands to participate in Operation Palm Beach in the movie *Forrest Gump*. This band, whose members included Stu Clifford, were associated with "Swamp Rock" despite their origins in the California Bay Area, and a hit song by this band repeats the line "It Ain't Me" in protest of the Vietnam War. For ten points, identify this rock band that was led by John Fogerty and known for "Fortunate Son" and "Have You Ever Seen The Rain".

ANSWER: **Creedence** Clearwater Revival (accept **CCR**; prompt on "The Blue Velvets;" prompt on "The Golliwogs;" do not accept "Creedence Clearwater Revisited")

BONUS: Operation Palm Beach was part of an American effort to wrest this river's delta in Southern Vietnam and Cambodia from Viet Cong control. This river was vital to operations along the Ho Chi Minh Trail.

ANSWER: **Mekong** River (accept **Mekong** Delta)

(4) The corpse of Mercy Brown was exhumed as panic of a scare involving these mythical beings in New England, triggered by an outbreak of tuberculosis. John William Polidori published the first modern novel based on these beings, written during a competition with Mary Shelley. *Carmilla* and the film *Nosferatu* were also created based on these beings, on which Bram Stoker also based his best-known novel. For ten points, name these mythical monsters that inspired the novel *Dracula*.

ANSWER: vampires

BONUS: *Dracula* was inspired by this prince of Wallachia, who ruled during the 15th century and was infamous for his cruelty.

ANSWER: Vlad the Impaler; (or Vlad the Third; or Vlad Tepesh; prompt on "Vlad" or "Vlad Dracula")

(5) The quantile function for this distribution's standard form is the probit function, which can be described via the inverse error function. The tail distribution function associated with this distribution is called the Q-function. The three sigma rule states that for this distribution, around 68 percent of values are within one standard deviation of the mean. Allowing for the derivation of z-scores, for ten points, which distribution is sometimes called a bell curve?

ANSWER: normal distribution (or Gaussian distribution; accept standard normal distribution; accept unit normal distribution; prompt on "bell curve")

BONUS: The probability density function of the normal distribution features a term with "one over the square root of two times [this number] times the variance." Euler's e^{ix} identity says "e to the quantity i times this number all plus one is zero."

ANSWER: pi (prompt on "3.14(159)")

(6) This man authored a six-hundred-page essay titled *Reflections of a Nonpolitical Man*, defending the German war effort in 1918. This man also chronicled an outbreak of cholera in his novella, *Death in Venice*, and he drew from the history of his own family, which hailed from Lübeck as part of the Hanseatic elite, for his debut novel, *Buddenbrooks*. For ten points, name this German novelist, who authored *The Magic Mountain*.

ANSWER: Thomas Mann (or Paul Thomas Mann)

BONUS: Mann also authored *Doctor Faustus*, which references a character that was the subject of a play by this seminal German writer and polymath, the author of *The Sorrows of Young Werther*.

ANSWER: Johann Wolfgang von Goethe $[[GUHR-tuh]]$

(7) During this meeting, it was decided that kneeling during Sundays and Pentecost season was prohibited, and that clergy were not allowed to perform usury or self-castration. During this meeting, the date for Easter was made independent from the Jewish Passover. This meeting formally denounced Arius's theology that Jesus was a distinct being from God. For ten points, name this 325 CE ecumenical council that established a namesake creed.

ANSWER: First Council of **Nicaea** (accept **Nicene** Creed; do NOT accept "Second Council of Nicaea")

BONUS: Another notable ecumenical council was this 1414 to 1418 council, the first in the Holy Roman Empire, which ended the Western Schism through the election of Martin the Fifth and denounced Jan Hus [[YAHN HOOS]] as a heretic.

ANSWER: Council of **Constance**

(8) Three galaxies in this constellation, Messier 65, Messier 66, and the Hamburger Galaxy, form its namesake "Triplet." This constellation's "beta star" of Denebola was given its name to symbolize its tail, and several bright stars located in this constellation include Chertan and Regulus. For ten points, name this constellation named after a mythical animal killed by Heracles and the namesake of a meteor shower in November.

ANSWER: **Leo** (accept **Leo** Triplet; accept **Leonids**; prompt on "Nemean lion")

BONUS: Another notable annual meteor shower is this one, which takes place from mid-July to late-August, is associated with the Swift-Tuttle comet, and is usually the brightest annual shower.

ANSWER: **Perseids**

Third Quarter

The categories are:

1. Russian Composers
2. The Nile
3. Kidneys

Russian Composers

Concerning Russian composers, name the...

- (1) Buzzing insect Rimsky-Korsakov described the "Flight of."

ANSWER: Bumblebee (accept *Flight of the Bumblebee*)

- (2) Shakespeare tragedy about doomed lovers in Verona, for which Sergei Prokofiev wrote Dance of the Knights.

ANSWER: **Romeo and Juliet**

- (3) Tchaikovsky overture known for its cannon fire, named for the year it commemorates.

ANSWER: **1812** Overture (or The Year **1812**, Solemn Overture)

- (4) Composer who depicted the "Great Gate of Kyiv" in his *Pictures at an Exhibition*.

ANSWER: Modest **Mussorgsky** (or Modest Petrovich **Mussorgsky**)

- (5) Igor Stravinsky ballet whose 1913 premiere caused widespread riots.

ANSWER: *The* **Rite of Spring**

- (6) Violinist whose *Caprice No. 24* inspired Rachmaninoff to write a namesake concertante.

ANSWER: Niccolò **Paganini** (accept *Rhapsody on a Theme of Paganini*)

The Nile

Concerning the Nile River, name the...

- (1) North African country where it flows through Cairo.

ANSWER: **Egypt** (or Arab Republic of **Egypt**)

- (2) Sea separating Europe and Africa, into which it flows.

ANSWER: **Mediterranean** Sea

- (3) City known for its "Library" and "Lighthouse," along the Nile river delta.

ANSWER: **Alexandria** (accept Library of **Alexandria**; accept Lighthouse of **Alexandria**)

- (4) Capital of Sudan, where the Nile proper forms.

ANSWER: **Khartoum** (or **Khartum**)

- (5) Lake named for a British queen, the origin of the White Nile.

ANSWER: Lake **Victoria**

- (6) Country whose border with Tanzania is defined by the Kagera River, the most distant source of the Nile.

ANSWER: **Rwanda** (or Republic of **Rwanda**)

Kidneys

Concerning the kidneys, name the...

- (1) Substance filtered by organs such as the kidneys and spleen, which comes in A, B, AB, and O types.

ANSWER: **blood**

- (2) Substance that travels from the kidney to the ureter and is expelled from the bladder.

ANSWER: **urine** (accept equivalents)

- (3) Term for the hard blockages that can crystallize in the kidneys, causing intense pain.

ANSWER: kidney **stones**

- (4) Hormone produced by the glands atop the kidney, associated with the fight-or-flight response.

ANSWER: **adrenaline** (or **epinephrine**)

- (5) Medical procedure which uses a machine to remove toxins and other substances from a patient with non-functioning kidneys.

ANSWER: kidney **dialysis** (accept hemo**dialysis**; accept peritoneal **dialysis**)

- (6) Functional unit of the kidney, which consists of a corpuscle and tubule.

ANSWER: **nephron**

Fourth Quarter

(1) This vehicle is currently exploring the Jezero crater, and this vehicle is the second to use a landing system called the "sky crane." This rover discovered Cheyava Falls, which may have signs of microbial life, and a small (+) helicopter called *Ingenuity* was attached to the bottom of this rover, which followed (*) *Curiosity*. For ten points, name this most recent rover to be launched on Mars, which was made by NASA and landed in 2020.

ANSWER: Perseverance

(2) During this battle, one commander's decision to take the TF 34 north in pursuit of Iisaburō Ozawa earned him the name "Bull's Run". During this battle, the first kamikaze attacks were launched, (+) hitting the *Santee* and *Suwanee* during the Battle of Surigao Strait. The last aircraft carrier that participated in the Pearl Harbor attack, the *Zuikaku*, was sunk during this battle in the Battle of Cape Engaño. (*) For ten points, name this largest naval battle of World War Two.

ANSWER: Battle of Leyte Gulf

(3) This 1987 work's libretto was written by Alice Goodman, and its opening scene depicts the arrival of an aircraft on a tarmac. Act Two of this work features an extended, surreal ballet performance of *The Red Detachment of Women*, (+) which ends with a prominent diplomat intervening to save a peasant girl. This opera features Henry Kissinger as a primary baritone character. (*) For ten points, name this 1987 minimalist opera by John Coolidge Adams depicting a historic 1972 presidential visit to Beijing.

ANSWER: Nixon in China

(4) A "knife-edge test" named for this scientist is used to measure the shape of concave mirrors. This scientist used a rotating mirror to estimate the speed of light. This scientist used a gyroscope to follow-up on an experiment he conducted on (+) diurnal motion, where he used the change of the plane of oscillation in a device within the Panthéon. (*) For ten points, name this French physicist, who used a pendulum to demonstrate the Earth's rotation.

ANSWER: Léon Foucault [[FOO-koh]] (or Jean Bernard Léon Foucault; accept Foucault knife-edge test)

(5) During this historical period, Gordian the Third became emperor after Maximinus Thrax was assassinated during the Year of the Six Emperors. Following the Battle of Edessa during this period, Valerian became the first emperor of his state to be captured, (+) following which the Gallic Empire formally seceded, though it would be recaptured by Aurelian. (*) For ten points, name this tumultuous period in Roman history, which almost saw the empire's collapse.

ANSWER: Crisis of the Third Century (both portions required)

(6) This man first gained acclaim with the Knoll company for created the modernist Tulip chair. This man, who designed the moat-surrounded MIT Chapel, also designed the main terminal of (+) Dulles Airport and TWA Flight Center, which has since been converted into a hotel. This man's most famous work is the tallest man-made monument in the Americas, situated on the banks of the (*) Mississippi River. For ten points, name this Finnish-American architect who designed the Gateway Arch.

ANSWER: Eero Saarinen

(7) Albert Sabin called this man "a mere kitchen chemist" and denigrated his inactivated-virus vaccines as dangerous. Among the early faculty members at this man's namesake Institute for Biological Studies in La Jolla, California, was Dr. Francis (+) Crick, and the first inactivated influenza vaccine was developed at the University of Michigan by Thomas Francis Jr. and this man. "The people" owned the patent for the (*) polio vaccine according to, for ten points, what scientist?

ANSWER: Jonas Salk (or Jonas Edward Salk; accept Salk Institute for Biological Studies)

(8) The Jingtai Emperor ascended to rule this dynasty after his brother, Emperor Yingzong, was captured during the Tumu Crisis. The final stronghold of loyalists to this dynasty was ruled by Koxinga and was the Kingdom of Tungning. (+) which was collapsed by the forces of the Kangxi Emperor. This dynasty was established following the Red Turban Rebellions, overthrowing the (*) Yuan dynasty. For ten points, name this Chinese dynasty ruled by the Yongle Emperor, who funded Zheng He's explorations.

ANSWER: Ming Dynasty (or Great Ming)

Extra Questions

(1) The creator of this vehicle later won a gold medal at the 1900 Olympics in mail-coach driving. Georges Nagelmackers proposed this vehicle after travelling on Pullman Sleeper cars in America. (+) and a 1934 mystery novel taking place on this vehicle ends with twelve passengers admitting to killing Samuel Ratchett. (*) For ten points, name this historical luxury train which traveled from Paris to Istanbul for over a century.

ANSWER: Orient Express (accept *Murder on the Orient Express*; prompt on "Paris-Istanbul Line")

BONUS: This element, the lightest member of Group 15, forms approximately 78 percent of the Earth's atmosphere.

ANSWER: Nitrogen

(2) **One financial journalist of this surname wrote novels such as *Moneyball* and *The Big Short*. One chemist of this name discovered covalent bonding and also lends his name to a type of (+) dot diagram. This surname was borne by the first American author to earn the Nobel Prize in Literature, for his works such as (*) *Main Street*.** For ten points, provide this name, borne by Michael, Gilbert, and Sinclair, as well as an explorer who led the Corps of Discovery with William Clark, Meriwether.

ANSWER: **Lewis** (accept Michael **Lewis**, Gilbert **Lewis**, Sinclair **Lewis**, or Meriwether **Lewis**)

BONUS: This Roman province was the site of a rebellion led by Queen Boudica, and had its northern extent marked by Hadrian's Wall.

ANSWER: Provincia **Britannia** (or Great **Britain**; do NOT accept or prompt on "England")