

## Round 10

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### Tossups

(1) **Both citrate and this molecule inhibit phospho-fructo-kinase. A motor enzyme with a rotating “F one” [F<sub>1</sub>] subunit generates this molecule, whose production requires a proton gradient. Membrane pumps move three (\*) sodiums and two potassiums for each of these molecules consumed, about thirty-eight of which are made per glucose by mitochondrial respiration. For ten points, name this molecule that stores energy in the bonds between phosphate groups, the “energy currency” molecule of the cell.**

ANSWER: ATP (accept adenosine triphosphate)

(2) **In this novel, a blind beggar named Pew gets run over by a carriage while trying to rob the Admiral Benbow Inn. David Livesy returns to Bristol with the rest of Captain Smollett’s crew at the end of this novel. (\*) Billy Bones receives a “black spot” at the start of this novel, which focuses on a mutiny on the *Hispaniola* led by the one-legged ship’s cook, Long John Silver. For ten points, name this Robert Louis Stevenson novel in which Jim Hawkins discovers pirate gold.**

ANSWER: Treasure Island or the Mutiny of the Hispaniola

(3) **In his “The Ballot or the Bullet” speech, this man urged African Americans to vote, but to be prepared to fight if the government would not grant them equality. In 1965, this man was assassinated at the Audubon Ballroom, possibly on the orders of (\*) Elijah Muhammad, the leader of the Nation of Islam. After completing the hajj in 1964, this man converted to Sunni Islam. For ten points, name this civil rights leader who changed his surname to a single letter to reflect his lost African heritage.**

ANSWER: Malcolm X (accept Malcolm Little; accept El-Hajj Malik El-Shabazz)

(4) **Notes in the sheet music for these works describe a “languor caused by heat” and note that “the drunkards have fallen asleep.” Sonnets that accompany this section of *The* (\*) *Contest Between Harmony and Invention* describe “leafy branches” and “icy snow.” In these works, a string soloist imitates nature imagery like birdsong and rain. For ten points, name this set of violin concertos by Antonio Vivaldi that depict Spring, Summer, Fall, and Winter.**

ANSWER: The Four Seasons (accept Le quattro stagioni; prompt on “The Contest Between Harmony and Invention” or “Il cimento dell’ armonia e dell’ inventione” before “Contest” is read; do not accept or prompt on “The Seasons” alone)

(5) A ritual based on this work uses the rules of tajweed, and can be performed without aid by a hafiz, someone who has memorized this text. This work's opening section, commonly used in salah, is nicknamed "the (\*) Key" and praises the "Sustainer of all worlds." Uthman standardized this text, including its "Cow" surah, which was received after the exile to Mecca by the prophet Muhammad. For ten points, name this holy book of Islam.

ANSWER: Quran

(6) Objects in this classification, such as Luhman 16, may be sustained by the fusion of deuterium or lithium. Sirius B is a "degenerate" or "white" one of these objects, which can undergo carbon detonation to form a type "one A" [Ia] (\*) supernova. These objects occupy the main sequence on the Hertzsprung-Russell diagram, and were originally classified by their their low luminosity. For ten points, name this classification that describes stars smaller than "giants."

ANSWER: dwarf star (accept main sequence stars until "main sequence" is read)

(7) This play's protagonist is accompanied by Xanthias on a quest to judge a competition between Aeschylus and Euripides to determine which will be returned to life to help Athens. As Dionysus crosses a (\*) lake to reach the underworld while dressed as Heracles, this play's title chorus angers him by tauntingly croaking "bre-ke-ke-kax koax koax." For ten points, name this comedic play by Aristophanes named for a group of cheeky amphibians.

ANSWER: The Frogs (accept Batrachoi)

(8) This leader was advised by Tso-hsin Cheng to discontinue the Four Pests Campaign, in which he had encouraged farmers to kill sparrows. After this man had his previous deputy, Lin Biao, killed, he filled the power vacuum with his wife, Jiang Qing, and the rest of the (\*) Gang of Four. This leader of the Red Army promoted the Great Leap Forward and the Cultural Revolution with the publication of his "Quotations" in a *Little Red Book*. For ten points, name this first chairman of the People's Republic of China.

ANSWER: Mao Zedong (accept Mao Tse-Tung; accept Chairman Mao)

(9) This artist's appearances on Anuel AA's "No Me Ame" and G Herbo's "PTSD" were released posthumously. This artist declares, "she told me put my heart in the bag / and nobody gets hurt" in his song (\*) "Robbery." A song by this artist says "I still see your shadows in my room" and has accrued almost one and a half billion plays on Spotify since it re-charted after this artist's death. For ten points, "Lucid Dreams" is by what Chicago-based rapper who passed away in December of 2019?

ANSWER: Juice WRLD ["Juice World"] (accept Jarad Anthony Higgins)

(10) Appel and Haken's proof about a required number of these things was the first major proof completed by computer. In graph theory, the number of these things necessary to label a graph is the (\*) "chromatic" number. A namesake theorem for certain graphs, like maps of countries, dictates that you can always use four of these without having bordering countries share this quality. Six-digit hexadecimal strings can describe, for ten points, what artistic qualities whose primary types are red, blue, and yellow?

ANSWER: colors

(11) **After this ruler’s death, he was succeeded by Galba, Otho, Vitellius, and Vespasian, all in the year 69 CE. This ruler married a young man named Sporus, who resembled a wife he supposedly kicked to death while pregnant, Poppea. This ruler committed suicide, ending the (\*)** Julio-Claudian dynasty, when public opinion turned against him over rumors that he had violently cleared land to construct the Domus Aurea palace. For ten points, name this emperor who legendarily played music during the Great Fire of Rome.

ANSWER: Nero (accept Nero Claudius Caesar Augustus Germanicus)

(12) **The existence of these particles was proposed by Zweig and Gell-Mann, and was confirmed by deep inelastic scattering. The weak force emits a W boson and one of these particles formerly called (\*)** “beauty” from the decay of another of these particles formerly called “truth.” QCD describes the color charge of these particles, whose strong interaction is mediated by gluons. “Strange” and “charm” are two of the six flavors of, for ten points, what elementary particles that make up protons and neutrons?

ANSWER: quarks

(13) **A character in this novel discusses the political fallout of the Nine Years War while arranging to send Helmholtz Watson to an island. In this novel, Linda imagines that her son is Popé while she dies in a hospital where children are being “death-conditioned.” (\*)** Lenina Crowne and Bernard Marx bring John the Savage from a reservation to a world ruled by Mustapha Mond in this novel. The drug soma is used to placate a society made of genetically-modified alphas and betas in, for ten points, what novel by Aldous Huxley?

ANSWER: Brave New World

(14) **This religious ritual was called thysia in Greece, and a large-scale form of this ritual was the hecatomb. Tantalus was punished in Hades for performing this ritual on his son. This ritual was performed on (\*)** Iphigenia and Pelops. Prometheus tricked Zeus into accepting a lesser form of this ritual by wrapping the thighbone of an ox in fat to make it look better than its meat. For ten points, name this Greek ritual in which an animal was killed to honor the gods.

ANSWER: sacrifices (accept animal sacrifice; accept human sacrifice; accept descriptions of killing an animal for the gods before “animal” is read; prompt on “killing” or “slaughtering” before “killed” is read)

(15) **In 2017, this country allowed Otto Warmbier to return to the United States, where he died a week later; Warmbier had fallen into a coma while imprisoned for trying to steal a propaganda poster in this country. In April 2020, (\*)** TMZ mistakenly reported that this country’s Supreme Leader had died and would be replaced by his sister, Yo-Jong. Three nuclear tests since 2016 have been carried out by, for ten points, what country, led by dictator Kim Jong-un from Pyongyang?

ANSWER: North Korea (accept Democratic People’s Republic of Korea; accept DPRK; prompt on “Korea;” do not accept or prompt on “Republic of Korea” or “People’s Republic of Korea”)

(16) **This artist depicted a nun, a nude woman, and a “dreamer” in white in *Woman in Three Stages*, part of a group of paintings that also includes a depiction of a nude, red-haired *Vampire*. This artist illustrated his sister’s illness in (\*) *Death in the Sickroom*, and painted two figures walking along the railing on a hill overlooking Oslo Harbor in another work. For ten points, name this artist who painted an orange sky swirling over an open-mouthed, bald figure in *The Scream*.**

ANSWER: Edvard Munch

(17) **This city contains the unfinished Palm Jebel Ali archipelago. In the late 2010s, this city was embroiled in a copyright claim over a “Frame” in Zabeel Park. This city’s Logo Islands form the shape of a palm, and its World Islands replicate a world map near the (\*) Palm Jumeirah, an artificial archipelago. This city contains the Burj Al Arab and the world’s tallest building, the Burj Khalifa. For ten points, name this most-populated city in the United Arab Emirates.**

ANSWER: Dubai

(18) **Abner Doubleday, the alleged inventor of baseball, fired the first shots at a battle at this location. During a battle at this location, Robert Anderson was forced to evacuate after being besieged by the forces of (\*) P.G.T. Beauregard, after which Abraham Lincoln called for seventy-five thousand volunteers to suppress a rebellion against the United States. For ten points, name this fort in South Carolina that was attacked in 1861 to spark the Civil War.**

ANSWER: Fort Sumter (accept Charleston before “fort” is read)

(19) **This author wrote that “every atom belonging to me as good belongs to you” in a poem whose speaker sounds his “barbaric yawp over the roofs of the world.” This poet dedicated “When (\*) Lilacs Last in the Dooryard Bloom’d” to a man who has “fallen cold and dead” in another of this man’s poems, “O Captain! My Captain!” For ten points, name this American poet who repeatedly eulogized Abraham Lincoln and included “Song of Myself” in his collection *Leaves of Grass*.**

ANSWER: Walt Whitman (accept Walter Whitman)

(20) **The structure of these objects is described by Miller indices, and was categorized into fourteen three-dimensional arrangements by Bravais. These objects form in supersaturated solutions through precipitation. These solids can be (\*) “grown” when nucleation around a “seed” provides a scaffold for free ions to combine, giving off lattice energy. For ten points, name these highly-ordered solids with a regular and repeating structure, such as diamond and quartz.**

ANSWER: crystals (accept crystalline solids; prompt on “lattice” until it is read)