

ACF Regionals 2017

Edited by Andrew Hart, Stephen Liu, Benji Nguyen, Adam Silverman, Cody Voight, Nathan Weiser

Tossups by Illinois A (Bradley McLain, Mike Etzkorn, Cole Timmerwilke, Steven Vo) and UCSD A (Parikshit Chauhan, Jason Cheng, Ashok Kunda, Jonathan Luck)

1. A test used to interpret this amendment was described by Antonin Scalia as a “a ghoulish in a late-night horror movie that repeatedly sits up in its grave.” Laws accused of violating this amendment must not fail the “purpose,” “effect,” or “excessive entanglement” prong under a three-part test established in 1971. In *Zorach v. Clauson*, the Supreme Court held that school release time programs do not violate this amendment. Many opinions discussing this amendment cite Thomas Jefferson’s letter to the Danbury Baptists, which analogizes one of its provisions to a “wall of separation.” The *Lemon* test concerns the interpretation of, for 10 points, what constitutional amendment whose “establishment” and “free exercise” clauses protect freedom of religion?

ANSWER: **First** Amendment

2. This non-calcium element “sparks” in concentration during human egg fertilization. Sangamo Biosciences owns the patent on a class of chimeric proteins named for this element, which are fusions to the FokI (“FOCK” one) nuclease and were made obsolete by CRISPR (“crisper”). Binding this element turns thionin (“THIGH”-oh-nin) into metallothionein (meh-TAL-oh-“thigh”-oh-NEE-in) to regulate cellular redox state. Binding sites for this element are named based on their number of coordinated histidines and cysteines (SIS-teens). Metalloproteinases, such as carboxypeptidase, contain this metal in their active sites, as does the enzyme that forms acetaldehyde (ass-ih-TAHL-dih-hyde), alcohol dehydrogenase. Gag knuckle is an example of the DNA-binding domain named for a “finger” of, for 10 points, what metal found in supplements that treat colds?

ANSWER: **zinc** [or **Zn**; accept **zinc** finger (nucleases)]

3. A film by this director begins with a three-minute slow zoom from an establishing shot of Union Park into a tighter framing of a mime following the protagonist, who later obsesses over the phrase “he’d kill us if he got the chance,” recorded during his job as an audio surveillance expert. This frequent collaborator with sound designer Walter Murch opened another film with a mortician telling the title character “I believe in America.” In that film by this director, a character shoots Officer McCluskey and Sollozzo with a gun retrieved from a restaurant bathroom. This director of *The Conversation* adapted a Mario Puzo novel into a film in which Marlon Brando’s character says “I’m going to make him an offer he can’t refuse.” For 10 points, name this director of the *Godfather* trilogy.

ANSWER: Francis Ford **Coppola**

4. This is the first word in the title of a book whose second title concept is defined as a necessarily destructive rupture that changes an existing order and that creates a new order; that book claims this concept cannot be conceptualized as a “one” and must be understood as a “pure multiple,” and that book also uses Zermelo–Frankel theory to make the claim that mathematics is the study of this concept, and the study of this concept “is a situation.” This is the first title concept of an essay that uses the word “facticity” to describe the limits of human freedom and that laments the fact that people live inauthentically by letting social roles define their existence. The concept of “bad faith” was introduced in an existentialist essay that Jean-Paul Sartre titled after, for 10 points, what word “and nothingness”?

ANSWER: **being** [or **l’être**; accept **Being and Event** or **Being and Nothingness** or **L’Être et le néant** or **L’être et l’événement**]

5. A young woman created by this author selects “Melody Gloucester Pegasus” as the three magic words that will keep her safe as long as they are not spoken aloud; that girl, who dreams of living on the moon and has an affinity for the death cap mushroom in one of this author’s novels, lives with her older sister Constance after murdering most of their family via berries laced with arsenic. Merricat Blackwood appears in this author’s novel *We Have Always Lived in the Castle*. She wrote a story in which Bobby Martin and Dickie Delacroix build a pile of stones, which the villagers remember to use despite having “lost the original black box” from which papers are drawn in an annual ritual. For 10 points, what author created Tessie Hutchinson, who is stoned to death in this author’s story “The Lottery”?

ANSWER: Shirley **Jackson** [or Shirley Hardie **Jackson**]

6. After revealing the true nature of a member of this group, a court magician fell dead but was revived when his lord begged for forgiveness. One of them failed to convince a watchman to stand on a floating leaf that would ferry him across a river; that member of this group had his soul depart from his body and travel to a sacred mountain, after which his body was cremated, forcing his soul to occupy a beggar’s body and use an iron crutch. Another member of this group saw himself become a powerful official, get exiled, and lose his family during a dream experienced while waiting for yellow millet to cook. Mount Penglai (pung-“LIE”) was the supposed home of this group, which included Zhang Guolao, Li Tieguai (t’yay-gwai), Lü Dongbin, and five others. For 10 points, name this legendary group from Taoist mythology.

ANSWER: **Eight Immortals** [or **Baxian**; or **Pa Hsien**; accept **Eight Genies**; prompt on “**Immortals**” or “**Xian**”]

7. Brij-35 (“bridge”-35) is often used in a form of reverse-phase H·P·L·C named for these structures. The third derivative of a linear function, such as conductivity, is zero at a concentration named for these structures, a value that is very high for CHAPS (“chaps”) and very low for Tween 20. Reverse ones are described as “hairy.” They form only below a packing parameter of one-third. Casein (KAY-sin) protein occurs naturally in one of these structures. After these structures form at their namesake critical concentration and at the Krafft temperature, detergents no longer affect surface tension since they start emulsifying. As the concentration of a phospholipid in water increases, it forms these structures, then liposomes, and then lipid bilayers. For 10 points, name these spherical aggregations of surfactant in solution.

ANSWER: **micelles** [accept critical **micelle** concentration; prompt on “**surfactants**” or “**detergents**” or “**colloids**”]

8. An oil painting of this battle displayed at the British Museum inaccurately shows an empress on horseback wielding a pistol and depicts Saint George throwing a spear at the losing army. The winning commander at this battle was accompanied in camp by his consort, Empress Taitu (“TIE-too”). The winning army at this battle was aided by an artillery detachment commanded by Russian military advisor Nikolay Leontiev. This battle occurred at the climax of a war begun as a dispute over Article 17 of the Treaty of Wuchale (woo-CHAH-lay). Many *alpini* (al-pee-nee) soldiers died at this battle under the command of losing general Oreste Baratieri (oh-REH-stay bah-rah-tee-“AIR”-ee). Prime Minister Francesco Crispi resigned in shame after, for 10 points, what 1896 battle in which Menelik II’s Ethiopian army surprisingly defeated an Italian invasion?

ANSWER: Battle of **Adwa** [or Battle of **Adowa**]

9. This composer’s supposed authorship of a serenata titled “Andromeda Liberata” caused a feud between Olivier Foures (oh-LIV-yay foo-RAY) and Michael Talbot, the latter of whom is considered the preeminent scholar of this composer. This composer’s only concerto featuring trumpets is his *Concerto for Two Trumpets in C Major*. The two surviving settings of this composer’s *Gloria* are entries 588 and 589 in the Ryom-Verzeichnis catalogue of his work. He established the norm for the *ritornello* form, and he marked the viola section of one of his violin concertos with the phrase “the barking dog.” This composer collected twelve concertos, including *Pleasure* and *The Hunt*, in a set of pieces titled *The Contest between Harmony and Invention*. For 10 points, name this “Red Priest” who composed *The Four Seasons*.

ANSWER: Antonio **Vivaldi**

10. When a man in this play claims to be experienced beyond his age, another character quips that “experience is the name everyone gives to their mistakes.” The title character of this play is told that “ideals are dangerous things” but “realities are better” after giving away a photo of herself and her son, Gerard, as a parting gift. In response to the suggestion that most men are good, a man in this play says that “we are all in the gutter, but some of us are looking at the stars.” Augustus Lorton’s friends call him “Tuppy” in this play, whose title character hides behind a curtain in the rooms of Lord Darlington but is able to slip away when another woman claims the title object as her own. Mrs. Erlynne refuses to tell Margaret that she is her long-lost mother in, for 10 points, what play by Oscar Wilde?

ANSWER: Lady Windermere’s Fan

11. The many fabricated contemporary biographies of this man include one written by Louise Goëthe (goh-ET), who claimed that he burned down a count’s château in order to live in the mountains with the count’s beautiful daughter. After he ordered his troops not to fire on their countrymen, he was shot in the foot and captured on the Day of Aspromonte. This man greeted his king with the Handshake of Teano (tay-AH-no). He sent a one-word telegram meaning “I obey!” upon being ordered to abandon Trentino after his “Hunters of the Alps” won the Battle of Bezzecca (bet-ZEK-ah). This general fought the Battle of Voltorno en route to conquering the Two Sicilies on behalf of Victor Emmanuel II. For 10 points, what general led the Redshirts in the Expedition of the Thousand, an important campaign during the unification of Italy?

ANSWER: Giuseppe Garibaldi

12. Nondestructive thin film analysis using this process usually uses an energy of two to three mega-electron-volts, can be improved by ion channeling, and plots count against either channels or energy. An important parameter for this process is the kinematic factor. The differential cross section of this process is proportional to the “reciprocal of the fourth power of the sine of the half angle.” One can calculate the impact parameter from the hyperbolic trajectory of this process, which is created by a repulsive Coulombic force, and then use the impact parameter to calculate a nuclear radius. This type of elastic scattering occurred when alpha particles struck atomic nuclei in the Geiger–Marsden experiment. For 10 points each, what type of scattering is named for the physicist who oversaw a “gold foil experiment”?

ANSWER: Rutherford scattering [or Rutherford backscattering; accept just “Rutherford” after “scattering”; prompt on “Rutherford” before “scattering”; prompt on “scattering” or “elastic Coulomb scattering”]

13. This character is told “you’re not God” after it is revealed that Peter Hilton’s brother is on the ship *Carlisle*. He claims that the idea “humans find violence deeply satisfying, but remove the satisfaction, and the act becomes hollow” is illustrated by a scene from his childhood in which he was nailed under the floorboards of a classroom. When this character was a child, his best friend told him that “sometimes it is the people no one can imagine anything of who do the things no one can imagine.” This character, who constructs a machine he calls Christopher, uses a crossword puzzle to recruit Joan Clarke, a mathematician played by Keira Knightley. The film *The Imitation Game* starred Benedict Cumberbatch as, for 10 points, what cryptanalyst who led British efforts to break the Nazi Enigma code?

ANSWER: Alan Turing [accept either underlined portion; or Alan Mathison Turing]

14. This character is concerned about the yellow stain on his trousers after arriving to a dinner party an hour early. He obsesses over “the man of nature and truth,” a corruption of a quote from Jean-Jacques Rousseau’s *Confessions*, before claiming that “twice two makes four is an excellent thing” but “twice two makes five” is a “very charming thing too.” This character compares the Crystal Palace in Nikolay Chernyshevsky’s (chur-nih-SHEV-ski’s) *What Is to Be Done?* to a chicken coop and makes plans to bump into a villainous lieutenant on the street. He is ditched by Simonov and others, who go to a brothel without him, in the section “Apropos of the Wet Snow.” At that brothel, this man meets the prostitute Liza. For 10 points, what unnamed antisocial man’s “notes” form a novella by Fyodor Dostoyevsky?

ANSWER: Underground Man [accept answers conveying the idea of the protagonist or narrator of Notes from the Underground or Letters from the Underworld or Zapiski iz podpol’ya]

15. The last true holder of this position declared that “my father laid on you a heavy yoke; I will make it even heavier” and “my father scourged you with whips; I will scourge you with scorpions,” defying the advice of the elders who had counseled his father. After a holder of this position was killed in a battle on a mountain while leaning on his spear and three of that man’s sons were also killed in that battle, this position was held for two years by a fourth son named Ish-bosheth. Rehoboam held this position, as did a man who wrote several psalms while fleeing from a rebellion led by his son Absalom. For 10 points, name this position held by Saul and David, the biblical rulers of the united monarchy of the Jewish people prior to the monarchy’s split into a northern kingdom and Judah.

ANSWER: **king(s) of Israel** [prompt on “kings” or “kings of the Jews” or “rulers of Israel” or similar answers]

16. For a short time, this city’s most celebrated prostitute was the exiled Mary Carleton, an English con artist who inspired a play called *The German Princess*. This city served as a regional capital following its capture by Robert Venables and the elder William Penn. Near the entrance to this city’s harbor, a gibbet on Deadman’s Cay displayed the body of Calico Jack Rackham, an associate of Anne Bonny who was hanged at this city’s Gallows Point. This city was the base of a Welsh-born captain who led raids on Porto Bello and Maracaibo. Much of this so-called “wickedest city in the world” was destroyed by an earthquake in 1692, leading many residents to move to nearby Kingston. For 10 points, name this Jamaican city that was a haven for pirates, such as Captain Henry Morgan.

ANSWER: **Port Royal**, Jamaica

17. This property and persistence are possessed by the data structures in Clojure (“closure”). The *opposite* of this property in Haskell can be implemented with the State monad, ST monad, and I-O-Ref. Using an object with this property means that no defensive copies are needed. A class that has only accessor methods has this property and, thus, requires that a constructor be called to create a new object. Examples of classes with this property include Java’s primitive wrapper classes and String class, as well as Python’s tuples (TUH-pulls). Objects with this property are useful because they are intrinsically thread-safe and, in C and C++ (“c plus plus”), can be declared using the keyword “const.” For 10 points, what property is possessed by objects that cannot have their states changed after they are created, in contrast to mutable objects?

ANSWER: **immutable** [accept **immutable** objects or **immutable** data or **immutable** classes; accept word forms such as **immutability**; prompt on “unchangeable” or “unmodifiable” or “constant”]

18. An altarpiece by this painter, which was taken apart in the 18th century, depicts Christ eating grapes in a central panel titled *Madonna and Child with Angels*. In one of this artist’s paintings, a Latin inscription directly above a skeleton on a sarcophagus translates to “I once was what you are, and what I am you also will be”; in that painting, this artist of the *Pisa Altarpiece* depicted a coffered barrel vault above God holding Christ on the cross. The Santa Maria Novella houses this painter’s *The Holy Trinity*. This artist and his teacher, Masolino, painted a series of frescoes in the Brancacci (brahn-KAH-chee) Chapel, one of which shows Christ telling Peter to look in a fish’s mouth for the title form of payment. For 10 points, name this Early Renaissance master who painted *The Tribute Money*.

ANSWER: **Masaccio** (mah-SAH-chee-oh) [or Tommaso di Ser Giovanni di **Simone**; prompt on “Tommaso”]

19. An essay arguing that the adoption of this practice was bad notes that progressivists seem to believe that this practice led to the creation of the Parthenon and the Mass in B Minor. Two varieties of this practice that are known as “swidden” and “sawah” were analyzed in a book that describes how the title change arose out of Dutch colonization. An essay suggesting that this practice may have driven inequality between the sexes argues that, prior to its existence, people were happier and healthier. This practice’s “involution” titles an early work by Clifford Geertz. Jared Diamond argued that the “worst mistake in the history of the human race” was adopting this practice at the expense of the hunter-gatherer system. For 10 points, name this practice of cultivating land or farming.

ANSWER: **agriculture** [accept **farming** before “farming”]

20. In a novel from this country, a character suffers from “delirium” and imagines himself transforming into Thomas Aquinas’s *Summa Theologica*; that novel by an author from this country is dedicated to the “first worm” that gnawed on the narrator’s corpse. In another novel from this country, the protagonist—believing that his son, Ezekiel, resembles his deceased friend Escobar—accuses his wife, Capitú, of infidelity. One novel from this country is titled for Bento Santiago’s nickname, which means “Mr. Stubborn,” and another novel from this country is subtitled *Epitaph of a Small Winner*. An author from this country wrote *Dom Casmurro* and *The Posthumous Memoirs of Bras Cubas*. For 10 points, what South American country was the home of Machado de Assis, who wrote in Portuguese?

ANSWER: **Brazil** [or Federative Republic of **Brazil**; or República Federativa do **Brasil**]

TB. This author stated that “all who hide too well away / must speak and tell us where they are” at the end of a poem about the difficulty of honest communication. The title creature of a poem by this author “knows in singing not to sing” and proclaims the coming of “that other fall we name the fall”; that poem by this man describes an animal that “says the highway dust is over all” and asks “what to make of a diminished thing.” In another poem, this author of “Revelation” wrote that he saw “one luminary clock against the sky” that “proclaimed the time was neither wrong nor right” after he “outwalked the furthest city light.” This author of “The Oven Bird” and “Acquainted with the Night” wrote about paths that “diverged in a yellow wood” in another poem. For 10 points, name this poet of “The Road Not Taken.”

ANSWER: Robert **Frost** [or Robert Lee **Frost**]

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1. Some orders of this religious sect have ritual performances called *sama*. For 10 points each:

[10] Name this sect that meets inside lodges known as *tekke*. The Mevlevi order of this sect practices a particularly animated form of *sama*.

ANSWER: **Sufism** [or **Tasawwuf**]

[10] Mevlevi *sama* ceremonies often include this ritual action, which is performed by “dervishes” and may have been inspired by the movement of the planets around the sun.

ANSWER: **whirling** [or **spinning**; or **turning**; accept answers indicating that the dervishes are **rotating**]

[10] The Mevlevi practice of whirling, and the concept of *sama* more generally, is a component of this Islamic practice, which translates as “remembrance.” This practice also takes the form of short prayers that may be recited with prayer beads.

ANSWER: **dhikr** (DEE-kur or d'HEE-kur) [or **zikr**; or **zeker**; or **dikr**; or **adkar**]

2. This artist depicted a light falling onto a kneeling Moses, pleading to the pharaoh, in his painting *Let My People Go*. For 10 points each:

[10] Name this artist of a dynamic mural whose central figure is seen holding a candle and pointing forward with his left hand; that piece, *From Slavery to Reconstruction*, is part of this man's series Aspects of Negro Life.

ANSWER: Aaron **Douglas**

[10] Douglas was part of this broad African American artistic movement, named after a New York neighborhood, that also included the artist of the Migration series, Jacob Lawrence.

ANSWER: **Harlem Renaissance**

[10] Lawrence painted a series titled for the “legend” of this historical figure. John Stewart Curry painted this man with his arms extended out in front of a landscape featuring a tornado on the left.

ANSWER: John **Brown** [accept *The Legend of John Brown*]

3. This poem closes with the image of “the fragrant pines and the cedars dusk and dim” after describing the title flower “and star and bird twined with the chant of” the speaker's soul.” For 10 points each:

[10] Name this 16-part elegy for Abraham Lincoln that describes a time when “the great star early droop'd in the western sky.” It was written by Walt Whitman.

ANSWER: **“When Lilacs Last in the Dooryard Bloom'd”**

[10] The poem repeatedly mentions the song of this “gray-brown” creature, which is described as the “hermit withdrawn to himself.” The song of this creature is included in part 14 and begins with the line “come lovely and soothing death.”

ANSWER: hermit **thrush**

[10] The poem describes the “floods of the yellow gold of the gorgeous, indolent, sinking sun” during this calendar month. In another poem, this month is described as “breeding / lilacs out of the dead land.”

ANSWER: **April**

4. The half-life of radioactive elements is the natural log of two over the decay constant, which is approximately 0.00012 for this isotope. For 10 points each:

[10] Name this isotope whose half-life of approximately 5,730 years is the basis of a common dating technique.

ANSWER: **carbon-14** [prompt on **carbon**; do not accept or prompt on other isotopes of carbon]

[10] These straight lines are plotted on graphs with axes that are ratios of isotopes for many different samples in a rock suite, such as “87-strontium over 86-strontium” versus “87-rubidium over 86-strontium.”

ANSWER: **isochrons**

[10] Instead of isochron dating, the concordia technique is used for radiometric dating with this three-element system. The decay chains of the 232, 235, and 238 isotopes in this system decay into isotopes of weight 206, 207, and 208, which are also in this system.

ANSWER: **uranium–thorium–lead** dating [or **U–Th–Pb** dating; accept elements listed in any order]

5. Two factions of this family fought each other in the Liberal Wars, which ended with Miguel I renouncing his claims to the throne under the Concession of Evoramonte (eh-vor-ah-MON-tay). For 10 points each:

[10] Name this Portuguese royal house that came to power in 1640 after the Forty Conspirators removed the Spanish from control and John IV was acclaimed as king.

ANSWER: house of **Braganza** [or Casa de **Bragança**; accept **Brigantine** dynasty or Dinastia **Brigantina**]

[10] In a treaty named for this city, Charles II of Spain recognized Braganza rule over Portugal. The Lines of Torres Vedras (TOH-"race" VAY-drahs) defended this Portuguese capital during the Peninsular War.

ANSWER: **Lisbon** [or **Lisboa**]

[10] In a namesake 1759 political scandal, this Portuguese noble family was blamed for a failed assassination attempt on Joseph I. Joseph's prime minister saw to it that this family was effectively wiped out in a set of public executions.

ANSWER: **Távora** family [accept **Távora** affair]

6. In *A Preface to Democratic Theory*, this thinker used the term "polyarchy" to describe a government in which power is held by multiple people. For 10 points each:

[10] Name this political theorist who examined power structures in New Haven, Connecticut, in the book *Who Governs?*

ANSWER: Robert A. **Dahl** [or Robert Alan **Dahl**]

[10] This sociologist examined how a small group of people controlled a large amount of American society in *The Power Elite*.

ANSWER: C. Wright **Mills** [or Charles Wright **Mills**]

[10] This neoliberal political scientist coined the term "soft power" to describe methods of shaping preferences that don't involve directly coercive tactics.

ANSWER: Joseph **Nye** [or Joseph Samuel **Nye** Jr.]

7. A sculpture of this fairy-tale character sat above the moat of a dilapidated Sleeping Beauty castle and was distorted in a horizontal wave pattern to suggest television interference. For 10 points each:

[10] Name this red-haired Disney princess whose aforementioned depiction was part of Banksy's Dismaland project. A statue of the original Hans Christian Anderson version of her has been a target of vandalism in Copenhagen.

ANSWER: **Little Mermaid** [or Den **lille havfrue**; accept **Ariel**]

[10] Dismaland also featured employees who handed out these objects emblazoned "I am an imbecile." Many stainless steel Jeff Koons sculptures resemble these objects that have been shaped into animal form.

ANSWER: **balloons** [accept **balloon** animals]

[10] Princess Diana's death may have inspired Dismaland's sculpture of Cinderella's carriage, which has presumably been overturned in a crash, and is illuminated by these objects.

ANSWER: **cameras** (of the paparazzi) [accept camera **flashes** or **flash bulbs** or similar answers]

8. In the novel titled for this substance, George voyages to Mordet Island in West Africa to steal a canadium-containing ore called quap, but the ore causes his ship to sink. For 10 points each:

[10] Name this product whose purported rejuvenating properties are, in actuality, bogus. Its inventor, Edward Ponderevo, manages to bankrupt the lucrative business that George builds around it.

ANSWER: **Tono-Bungay**

[10] The author of *Tono-Bungay* also wrote this novel in which Edward Prendick shoots the Leopard-Man to spare him from torture. This novel's title scientist creates Beast Folk by vivisectioning animals to give them human traits.

ANSWER: *The **Island of Doctor Moreau***

[10] *Tono-Bungay* and *The Island of Doctor Moreau* are novels by this British author, who wrote about Martians attacking Earth in *The War of the Worlds*.

ANSWER: H. G. **Wells** [or Herbert George **Wells**]

9. Under premier Jean Lesage (zhahn le-SAHJ), this province entered into a period of sociopolitical change called the Quiet Revolution, which was marked by secularization. For 10 points each:

[10] Name this French-speaking Canadian province, where a separatist organization kidnapped James Cross and Pierre Laporte during the October Crisis.

ANSWER: **Quebec**

[10] This body of water names a 1987 “accord” under which Brian Mulroney’s government tried and failed to persuade Quebec to adopt the Constitution Act of 1982. Five years later, the Charlottetown Accord similarly failed.

ANSWER: **Meech Lake** [accept **Meech Lake Accord**; prompt on “Meech”]

[10] This premier of Quebec negotiated both the Meech Lake Accord and the Charlottetown Accord. This politician requested that Pierre Trudeau invoke the War Measures Act to deal with the October Crisis.

ANSWER: Robert **Bourassa** (roh-BAIR boo-RAH-sah)

10. For 10 points each, answer the following about improvements to lithium-ion batteries.

[10] Much recent work has been done to replace this element, which is currently used as the anode, with silicon because they’re in the same group on the periodic table. This element was used in light bulb filaments before tungsten.

ANSWER: **carbon** [or **C**; accept **graphite**]

[10] The lithium cathode is increasingly being replaced by this cheap gaseous substance instead. This substance is a mixture of about 78 percent nitrogen, 21 percent oxygen, and 1 percent argon.

ANSWER: **air** [accept obvious equivalents such as **atmospheric gas** or **atmosphere**]

[10] A 2016 *Nature* paper suggested replacing lithium electrolytes with these pure compounds, such as a derivative of E·M·I·M. One of these compounds called 1-butyl-3-methyl-imidazolium chloride is used to dissolve cellulose, although they most commonly are salts of hexa·fluoro·phosphate or tetra·fluoro·borate.

ANSWER: **ionic liquids** [or **ILs**; prompt on partial answers]

11. Name these 20th-century composers, for 10 points each.

[10] This composer used hyperbolic paraboloids of sound mass in his *Metastasis* (meh-TA-stah-sis). His mathematical background influenced his application of a stochastic process to music, as seen in his *Pithoprakta*.

ANSWER: Iannis **Xenakis** (YAH-niss zeh-"KNOCK"-iss)

[10] This Estonian minimalist composer pioneered the technique of “tintinnabulism” and wrote the pieces *Tabula Rasa* and *Spiegel im Spiegel*.

ANSWER: Arvo **Pärt** (PAIRT or "part")

[10] This American composer used several kitchen appliances and a bathtub to perform his *Water Walk* on the TV show *I’ve Got a Secret*. He also wrote 4’33” (“four thirty three”), in which the pianist sits at the piano without playing for the title length of time.

ANSWER: John **Cage** [or John Milton **Cage** Jr.]

12. After being insulted with a story about a gluttonous cow that ate until it burst, this figure threw a dagger at his eventual killer before being hurled into a wall by the servant Maryshko (mah-RISH-koh). For 10 points each:

[10] Name this giantlike creature who was killed by the bogatyr Alyosha Popovich. To bring him down from the sky, Alyosha prayed to the Virgin Mary to send a black rain cloud that would destroy this figure’s paper wings.

ANSWER: **Tugarin** Zmeyerovich [or **Tugarin**, Son of the Dragon; accept Zmey **Tugarin**]

[10] In Book V of the *Aeneid*, the Trojan women carry out this action, forcing Aeneas to pray to Jupiter for a rainstorm. In the *Iliad*, Achilles allows Patroclus to fight in his armor when the Trojans succeed in doing this action to the Greeks.

ANSWER: **setting ships** on **fire** [accept any answers indicating **arson** or **naval vessels**]

[10] Various ways of magically invoking or controlling rain are described in the fifth chapter of this comparative study of mythology and religion by James Frazer. Its title comes from a branch Aeneas used to enter the underworld.

ANSWER: *The **Golden Bough***

13. According to a 1986 text, this language creates “wastelands of nonachievement” and citizens who desire only to “distance themselves from that wasteland.” For 10 points each:

[10] Name this language that, according to the essay collection *Decolonizing the Mind*, amounts to a “cultural bomb” that annihilates “a people’s belief in their names, in their languages, in their environments . . . and ultimately in themselves.”

ANSWER: **English**

[10] Ngugi wa Thiong’o (n'goo-gi WA thee-ong-oh), an author from this country, wrote about his choice to write in its native Gikuyu language in *Decolonizing the Mind*. Isak Dinesen’s novel *Out of Africa* is set in this modern-day East African country.

ANSWER: **Kenya** [or Republic of **Kenya**]

[10] In *Decolonizing the Mind*, Ngugi paraphrased a line about people “who did not sleep to dream, but dreamed to change” from this author’s poem “Something Read.” He is considered the foremost Guyanese poet.

ANSWER: Martin **Carter** [or Martin Wylde **Carter**]

14. Adolf Hitler arranged for a submarine to transport this man to Sumatra, where he went to work enlisting Indian prisoners of war into an anti-British army. For 10 points each:

[10] Name this former president of the Indian National Congress who led the pro-Nazi Indian Legion during World War II.

ANSWER: Subhas Chandra **Bose** [accept **Netaji**]

[10] The majority of Indian soldiers during World War II were members of the British Army who were commonly referred to by this word. It names an 1857 mutiny of Indian troops angered by the use of pork grease on their cartridges.

ANSWER: **sepoys** [accept **Sepoy** Mutiny or Rebellion]

[10] During World War I, this group of Sikh exiles living in North America conspired with Germany to incite a mutiny among the sepoys. The so-called “Hindu-German Conspiracy Trial” occurred after this group was caught trafficking guns from the IRA on the *Annie Larsen*.

ANSWER: **Ghadar** Party

15. The CTX-psi (c-t-x-"sigh") phage encodes the gene for this disease’s namesake toxin, which forms as an AB₅ (a-b-"five") hexamer. For 10 points each:

[10] Name this waterborne disease that broke out in several 18th- and 19th-century pandemics. It is caused by a namesake *Vibrio* bacterium, and its symptoms include vomiting and diarrhea that lead to death by dehydration.

ANSWER: **cholera** [accept *Vibrio* **cholerae** or *V. cholerae*]

[10] The virulence of cholera is due to irreversible stimulation of adenylyl cyclase, causing overproduction of this compound, a derivative of ATP in which the 3-prime and 5-prime oxygens are linked by a single phosphate.

ANSWER: **cyclic AMP** [or **cAMP**; or **cyclic adenosine monophosphate**]

[10] Watery diarrhea is caused by cAMP’s activation of this protein, leading to the mass export of ions and water. As a result, deleting phenyl-alanine-508 in this ABC-family ion transporter may grant cholera resistance.

ANSWER: **CFTR** [or **cystic fibrosis transmembrane conductance regulator**; prompt on “**cystic fibrosis**” or “**CF**”]

16. This state is home to the largest community of Hmong (MUNG) people in the U.S. For 10 points each:
[10] Name this state whose major urban area is also home to America's largest Somali community. In September 2016, a Somali man named Dahir Adan (da-HEER ah-DAHN) committed a mass stabbing at this state's Crossroads Center mall.

ANSWER: Minnesota

[10] A Hmong community in this state's town of Mercer is the subject of Anne Fadiman's *The Spirit Catches You and You Fall Down*. There is also a sizable Hmong community in its city of Fresno.

ANSWER: California

[10] Minnesota's Somali community is centered on the Minneapolis neighborhood of Cedar-Riverside, which sometimes goes by this two-word name. Another region of this name contains the city of Jenin in its far north.

ANSWER: West Bank

17. This tribe was conned out of its land by the Penn family in the Walking Purchase. For 10 points each:

[10] Name this tribe that agreed to a 1682 treaty with William Penn. Peter Minuit (MIN-yoo-it) convinced members of this tribe to sell him Manhattan Island for some cheap glass beads.

ANSWER: Lenni Lenape [or Delaware Indians]

[10] Peter Minuit bought Manhattan on behalf of this European country, which controlled modern-day New York State before ceding it to England in the 1670s.

ANSWER: The Netherlands [or the Dutch Republic; or Republic of the Seven United Netherlands; or the Republic of the Seven United Provinces; or Holland; accept New Netherlands]

[10] While New Amsterdam was dominated by merchants, the areas to the north on the Hudson River were dominated by aristocratic Dutch *patroon* families like this one. The death of a member of this family in 1839 sparked the Anti-Rent War in upstate New York.

ANSWER: van Rensselaer family [accept van Rensselaers]

18. In this dialogue, Socrates recalls a dream in which a woman told him that he would die in three days. For 10 points each:

[10] Identify this dialogue named after a character who attempts to persuade Socrates to escape from prison.

ANSWER: Crito [or Kriton]

[10] In *Crito*, Socrates anthropomorphizes these entities when discussing his social contract with the city of Athens. These entities also title Plato's longest and final dialogue.

ANSWER: laws of Athens [or nomoi; accept *De Legibus*]

[10] In *Timaeus*, Plato concludes by anthropomorphizing this entity that caused the universe to exist. This entity is typically given an English name derived from the Greek word for "craftsman."

ANSWER: demiurge [or demiurgus; or demiourgos]

19. After leaving her farm, this character is accepted as a lay member of the Rein (RYNE) Abbey, where she becomes a nurse treating the Black Death before catching the plague herself. For 10 points each:

[10] Name this female protagonist and namesake of a trilogy comprising *The Wreath*, *The Wife*, and *The Cross*.

ANSWER: Kristin Lavransdatter [accept either underlined portion; accept Kristin Lavransdatter trilogy]

[10] The Kristin Lavransdatter trilogy is by Nobel laureate Sigrid Undset, a novelist from this Scandinavian country, which was also the birthplace of Henrik Ibsen.

ANSWER: Norway [or Kingdom of Norway; or Norge]

[10] The first English translation of the Kristin Lavransdatter novel *The Wife* was titled for Kristin's position as the "mistress" of this estate, where she moves after marrying a flouter of social conventions named Erlend Nikulausson.

ANSWER: Husaby [accept *The Mistress of Husaby*]

20. Quantum chromodynamics demonstrates that this force exhibits asymptotic freedom and confinement.

For 10 points each:

[10] Name this fundamental force that governs particles with color charge, such as quarks, and becomes weaker as distance decreases.

ANSWER: **strong** force

[10] Say you have a J/psi ("jay-sigh") meson containing a charm quark with a red color charge. What color charge must the other component of the J/psi meson have?

ANSWER: **anti-red** [do not accept or prompt on other answers]

[10] The adjoint representation of this group is 8-dimensional, corresponding to the representation of gluons and, thus, describing the strong force. This group consists of certain unitary matrices with determinant one.

ANSWER: **SU(3)** (s-u-"three") [or **special unitary** group of degree **3**; do not accept or prompt on partial answers]

Extra. This compound is useful because it converts nitriles to aldehydes, whereas lithium aluminum hydride goes all the way to an amine. For 10 points each:

[10] Name this medium-strength reducing agent that contains two aluminum atoms, each of which is bonded to two alkyl chains and two hydrides.

ANSWER: **DIBAL-H** ("die-ball"-H) [or **diisobutylaluminum hydride**; or **DIBAH**]

[10] Unfortunately, just like LAH, DIBAL has this attribute when it's used as a neat liquid, which makes it rather unpleasant to work with. This term refers to a compound that will ignite spontaneously in air.

ANSWER: **pyrophoric** [or **pyrophoricity**]

[10] Ionic compounds of aluminum are fine, though; for instance, aluminum trichloride is a particularly useful example of one of these compounds, which serve as electron pair acceptors in organic reactions.

ANSWER: Lewis **acids**