



**ACADEMIC
COMPETITION
FEDERATION**

ACF NATIONALS 2022

PACKET 12

Packet by

The Editors (3)

Editors

**Will Alston, Stephen Eltinge, John Lawrence, Stephen Liu, Eric Mukherjee,
Adam Silverman**

Authors

**Austin Brownlow, Jaimie Carlson, Ganon Evans, Zach Foster, Taylor Harvey,
Matt Jackson, Nick Jensen, Michael Kearney, Shan Kothari, James Lasker,
Jonathan Magin, Olivia Murton, Will Nediger, Jonathen Settle, Jon Suh**

TOSSUPS

1. *Description acceptable.* This government set high tariffs on cotton to protect conglomerates such as CIVSA (“SEEV-sah”) and CIDOSA (“see-DOH-sah”) founded during its tenure. This government employed the British engineer Weetman Pearson to complete a project called the *desagüe* (“day-SAH-gway”), which drained lakes to prevent flooding. Before Brazil, this government adopted the positivist motto “order and progress.” This government blatantly ignored the Constitution of 1857 by evicting thousands of peasants to make room for railroads, then sending the Rural Guards to suppress the resulting discontent; that action exemplifies this government’s slogan of “bread or the stick,” or *pan o palo*. This government included Henry Clay Creel, Manuel Rubio, and José Limantour (“lee-man-TOOR”), among other industrial and financial experts. For 10 points, the científicos (“s’yen-TEE-fee-kohss”) were part of what government, whose overthrow began the Mexican Revolution?

ANSWER: The **Porfiriato** (“POR-feer-YAH-toh”) [accept answers indicating the government/administration/regime of Porfirio **Díaz**; prompt on Mexican Republic or Mexican government]

<World History>

2. After he was ambushed at the altar of Telephus, a king of this city was buried by his grandson in a town near Argos that took his name. The forces of the region encircling this city were led at Troy by Thoas (“THOH-uss”), whose father Andraemon (“an-DRY-mon”) was placed on its throne after Agrius and his sons were removed from power. Near this city, the iron from a spear thrown by Mopsus was removed while it was airborne, causing only the wooden shaft to hit its target. Hyginus states that a king of this city, which rivaled nearby Pleuron, was taught how to make wine after letting Dionysus sleep with his wife. That wife of this city’s ruler Oeneus (“OY-nee-uss”) kept a log in a chest because her son was fated to die when the log burned. This city’s queen Althaea (“al-THEE-uh”) feuded with her son after he killed his uncles in a quarrel over the hide of a beast sent by Artemis to terrorize this city. For 10 points, Meleager (“melly-AY-gur”) led a hunt for a boar named after what Aetolian city?

ANSWER: **Calydon** [accept Calydonian boar hunt]

<Mythology/Legends>

3. The acid of this anion (“ANN-eye-on”) detects soil organic carbon in the wet combustion method. This anion reacts with chlorides in sulfuric acid to produce red fumes, and it’s also the indicator in Mohr’s method, since it back-reacts with silver to give a red precipitate. An ester of this inorganic ion on silica is the active form of the Phillips catalyst. Aluminum is passivated using conversion coatings of this ion. If one of its oxygen atoms is converted to a chlorine, this ion’s pyridinium (“PEE-rih-DIN-ium”) salt becomes a gentler oxidizing agent that converts primary alcohols to aldehydes (“AL-duh-HYDES”). This anion normally forms yellow salts, but when acidified in the Jones re-agent, it forms an orange an-hydride with seven oxygens. For 10 points, name this carcinogenic ion with a minus-two charge, which contains the hexa-valent transition metal added to stainless steel.

ANSWER: **chromate** [or CrO₂²⁻; accept dichromate or Cr₂O₇²⁻, since the ions equilibrate; reject “chrome” or “chromium”]

<Chemistry>

4. This adjective partly titles a poem whose speaker used to say, "Hold on when you can [...] / And when you can't, let go." This adjective partly titles a poem whose speaker says, "Whoever you are, no matter how lonely, / the world offers itself to your imagination." This adjective describes the title object of a poem that claims that "whatever / returns from oblivion returns / to find a voice" and that begins with the lines "At the end of my suffering / there was a door." This adjective describes the wind in the title of a Carl Phillips collection. Several poems titled "Vespers" and "Matins" appear in a Louise Glück collection titled for this kind of *Iris*. This adjective opens a poem that declares "Futile - the winds - / To a Heart in port - / Done with the Compass - / Done with the Chart!" For 10 points, an Emily Dickinson poem is titled for what sort of nights?

ANSWER: **wild** [accept "**Wild** Is the Wind"; accept "**Wild** Geese"; accept "The **Wild** Iris"; accept "**Wild** Nights – Wild Nights!"]

<American Literature>

5. Pauline Kael criticizes this film's spiritual sequel and reflects on her year trying to "persuade, goad, and even shame people into seeing" this film in her essay "The Come-Dressed-As-the-Sick-Soul-of-Europe Parties." In this film, a man spills an inkwell over a student's architectural sketch, then pretends it was an accident. In a shot from this film, the camera watches over a woman's shoulder as she opens the doors of a shack and looks at the sun rising above the sea. This film ends with that woman stroking a man's hair as he weeps on a bench, with Mount Etna looming in the distance. In this film, whose first act is set on the volcanic Aeolian Islands, Sandro and Claudia have an affair while looking for Anna after she disappears during a yacht trip. For 10 points, name this film that is followed by *La Notte* ("la NOT-tay") and *L'Eclisse* ("leck-LEESS-say") in a trilogy by Michelangelo Antonioni.

ANSWER: **L'Avventura** [accept *The Adventure*]

<Other Fine Arts>

6. An essay defending this book opens with Lewis Nkosi ("ung-KO-see") approvingly quoting from it while standing near a picture of Dizzy Gillespie. Another essay criticizes this book's description of "the stillness of an implacable force brooding over an inscrutable intention" for "inducing hypnotic stupor" in the readers. The "Two Visions" in this book are analyzed in the chapter "Overlapping Territories, Intertwined Histories" in Edward Said's ("sah-EED's") *Culture and Imperialism*. The first and most-cited essay in *Hopes and Impediments* is about this book, and begins by describing a man who is surprised to learn that Africa produced literature. That essay condemns this novel for treating its setting as "the antithesis of Europe and therefore of civilization" and calls its author "a bloody racist." For 10 points, Chinua Achebe's ("CHIN-wah uh-CHAY-bay's") "An Image of Africa" criticizes what Joseph Conrad novel?

ANSWER: **Heart of Darkness** (The first essay is Cedric Watts's "'A Bloody Racist': About Achebe's View of Conrad.")

<World Literature>

7. In 1956, a photographer in this country founded a fashion magazine which offered weekly sewing tips called *Sibylle* ("ZIB-ill-uh"). During the 1970s oil crisis, companies in this country phased out the use of Dederon, a form of Nylon-6 used in mesh-net shopping bags. This country allowed only its own forum checks, as well as foreign currencies, at Intershop stores. After one of its leaders proclaimed "Ten Commandments" for a type of "New Man" in 1958, police cracked down on nudists practicing "free body culture" on its beaches. A photo of another of this country's leaders in a straw hat inspired the design of its pedestrian signals. Alex looks for this country's Coke knock-off, Vita Cola, in the film *Goodbye Lenin!*. The term *Ostalgie* ("OST-al-gee") denotes fond remembrance of, for 10 points, what Communist country which built the Trabant ("trah-BANT") and spied on citizens with the Stasi ("sh'TAH-zee")?

ANSWER: **East Germany** [or **GDR**, or **German Democratic Republic**, or **DDR**, or **Deutsche Demokratische Republik**; prompt on Germany or Deutschland]

<European History>

8. A man from this country coined the phrase “aristocratic radicalism” in some of the earliest lectures promoting his then-living friend Friedrich Nietzsche (“NEE-chuh”). After a thinker from this country outed P. L. Møller (“MYOO-lurr”) as the author of a satirical article, Møller’s editor mocked that thinker’s crooked spine. Georg Brandes (“BRAN-dess”) was from this country, as was a man whose complete works were translated into English by husband-wife team Howard and Edna Hong. A man from this country wrote of a society of Sym·para·neko·menoi and began using “Christendom” as a disparaging term after writing eighteen *Upbuilding Discourses*. That man from this country analogized avoiding boredom through changing one’s interests to “crop rotation” in a work that describes the choice between aesthetic and ethical life. For 10 points, name this home country of the author of *Either/Or*, Søren Kierkegaard (“KEER-kuh-gard”).

ANSWER: **Denmark** [or **Danmark**]

<Philosophy>

9. A popular joke holds that birds fly in circles around this city because one wing is always covering their ass. An outcrop near this city named “forty steps” or Chehel Zina (“cheh-HELL ZEE-nah”) houses a Greek and Aramaic inscription which is the first of Ashoka’s known Rock Edicts. A gift from the emir of Bukhara is found in this city’s Kirka Sharif shrine, which houses Muhammad’s cloak. This city’s name is a variant of “Alexandria in Arachosia,” the name given by its founder, Alexander the Great. Until 2018, the province named for this city was the base of Aslam Baloch (“buh-LOATCH”), who organized Balochi (“buh-LOH-chee”) refugees here to fight to liberate Balochistan, which is across the border. As of April 2022, this city is where the government of Emir Hibatullah Akhundzada (“hee-BAH-too-LAH ah-KOON-zah-DAH”) meets and sends administrative orders to Kabul. For 10 points, name this second-most-populous city in Afghanistan.

ANSWER: **Kandahar** [accept Old **Kandahar**; accept **Alexandria** in **Arachosia** before “Alexandria”] (“Alexander” was loaned into the Arabosphere as *(al-)Iskandar*.)

<Geography>

10. Robert Wood synthesized a material that has this property in the complement of its typical spectral region by adding nickel oxide to sodium silicate. Fano interference between transitions in a three-state system leads to an “electromagnetically induced” type of this property. Metals have this property when their dielectric function is real-valued and positive, which generally occurs above the plasma frequency. Indium tin oxide is widely used to make thin conducting films named for this property. In certain “smart” devices, polymer-dispersed liquid crystals gain this property when an applied electric field aligns their molecules. Upon exposure to electromagnetic radiation, a material may exhibit either absorption, reflection, or this property. For 10 points, name this property of materials like glass that allow light to pass through them.

ANSWER: **transparent** [or **transparency**; accept **transmission** or **transmitting** light; accept **translucent** or **translucence**; accept electromagnetically induced **transparency** or **transparent** conducting films; accept **opaque** before “electromagnetically”] (Wood’s glass is opaque to visible wavelengths but transparent in both the infrared and the UV.)

<Physics>

11. *Note to players: Composer and genre required.* In the third of these pieces, the last cello chord is a quadruple stop in which each string plays a half-step higher than open. The second movement of the second of these works opens with diminished fifth alternations of F and B, followed by the ascending sixteenth notes [read slowly] “E, F, A, B-flat.” The last two of these works, which are not by a member of the Second Viennese School, were premiered by an ensemble led by Rudolf Kolisch. The scherzo of the fifth of these works is in (4+3+2)/8 (“four-plus-three-plus-two-eight”) time, and was influenced by Bulgarian folk music. Each movement of the last of these works has an introduction marked “Mesto.” The extensive use of “snap pizzicato” in the finale of the fourth of these led that technique to be renamed for their composer. For 10 points, name these chamber works, the sixth and last of which was completed two years before their composer’s 1943 *Concerto for Orchestra*.

ANSWER: string quartets of Béla (Viktor János) Bartók [both parts required; prompt on partial answer]
<Classical Music>

12. In one of this author’s stories, an ad for the movie Cleopatra, a Dutch girl near a swarm of bees, and the swarm’s queen bee all remind the narrator of the creature he loved before he was human. In another of this author’s stories, a man and woman fall in love while the earth is still gray, but when the world develops colors, the woman retreats into the earth. This author’s story “The Other Eurydice (“yoo-RID-ih-see”)” is a rewriting of his “The Stone Sky,” which touches on the Orpheus and Eurydice theme he’d explored in “Without Colours.” The narrator meditates on when arrow A will hit lion L in a story by this author; in another, the narrator and his deaf cousin extend a ladder to the title astronomical object to collect its milk. Those stories by him are “t zero” and “The Distance of the Moon.” For 10 points, a character whose name is spelled “Q-F-W-F-Q” is the protagonist of what Italian author’s *Cosmicomics*?

ANSWER: Italo Calvino
<European Literature>

13. In a story sometimes thought to be based on the tale of Gerard Majella (“muh-YELL-luh”), this male figure adopts the crossdressing man Nibo. This figure meets people at the end of a journey of “seven nights, seven moons, and seven gates.” A wooden penis is sometimes found on altars to this figure, which usually have a cross made of black wood or silver which is adorned with X-shaped patterns. He prefers *clairin* (“kleh-RAN”) rum, which people drink while seeking to be “ridden” by him during a feast on November 2nd. Since this figure sees into two worlds, his glasses only have one lens. This head of the *guédé* (“geh-DAY”) nation and consort of Maman Brigitte (“muh-MAHN bree-ZHEET”) stops people from becoming zombies by making corpses rot after he digs their graves. For 10 points, name this figure commonly depicted as a tuxedo and top-hat-wearing skeleton, the chief *lwa* (“luh-WAH”) of death in Vodou.

ANSWER: Baron Samedi (“sam-DEE”) [or Baron Samdi, or Bawon Samedi, or Bawon Sanmd; accept Baron Cimetière, or Baron La Croix, or or Baron Kriminel; prompt on Papa Guédé before “guédé”]
<Religion>

14. *Two answers required.* A major site in one of these two regions, Buto, provides evidence of the early cultural dominance of the other of them after the northward spread of the Tasian and Badarian cultures. Consolidation of power in one of these regions, and a subsequent invasion of the other, marks the beginning of the Thinite era and the end of the Naqada III (“three”) period. They were represented by a white vulture and a snake wrapped around a stem, symbols associated with their two respective “ladies.” One of them had a name meaning “Land of the Reeds,” the other was called the “Land of the North,” and the two were collectively called *Tawy* (“tah-wee”). A crown of red and white symbolized the unification of these two regions, an event which is depicted on the Narmer Palette. For 10 points, what two regions, named for their respective positions along the Nile River, are the primary divisions of Egypt?

ANSWER: **Upper Egypt** AND **Lower Egypt** [or **Ta-Mehu** AND **Ta-Shemau**, or **Misr as-Sa‘id** AND **Misr as-Suflā**, or **Mares** AND **Tsakhet**; accept equivalents such as **Upper and Lower Egypt**; accept **Upper** and **Lower** after “Egypt”; accept **Misr** or **Kemet** for “Egypt”; prompt on synonyms for “Upper” and “Lower” such as **Southern Egypt** and **Northern Egypt**; reject any answers containing “Nubia”]

<Ancient History>

15. Though these constructs are generally not learnable-in-the-limit, Dana Angluin showed them to be learnable via membership and equivalence queries. The class of these constructs equals “DSPACE of big-O of one,” the class of decision problems that are solvable in constant space. The following set of words is *not* one of these constructs: [read slowly] “ $N A$ ’s followed by $N B$ ’s, for all positive integers N ,” [pause] since it fails the most commonly-used pumping lemma. These languages have finite index under the equivalence relation defined by the Myhill–Nerode theorem. These languages are produced by Type-3 grammars in the Chomsky hierarchy and recognized by finite automata. This subset of the context-free languages is closed under concatenation (“con-KAT-uh-nation”), union, and the Kleene (“KLAY-nee”) star. For 10 points, name these formal languages that can be defined by similarly-named “expressions” used for searching.

ANSWER: **regular** languages [or **rational** languages; prompt on **languages**; accept the set **accepted** or **recognized** by a (deterministic or nondeterministic) **finite automaton** or **DFA** or **NFA** before “recognized”]

<Misc. Science>

16. A Swiss artist born in this region stacked its traditional red robes into a square surrounding nine plaster cones in her work *My Father’s Death*. Another artist from this region created a collage that is scattered with speech bubbles and shows jet planes flying from the halo of the title religious figure, whose body is made up of a mass of stickers. In an 18th-century painting from this region, flames envelop a giant blue-skinned demon wearing a crown of skulls as he stomps on a god of death. That work exemplifies cloth paintings called *thangka* (“TAHNG-kah”) associated with a religious tradition named for this region. Members of that tradition named for this region ritualistically create and destroy colorful sand mandalas. A *dzong* fortress in this region’s capital includes a central Red Palace that rises above a sprawling White Palace with sloping, cliff-like walls. For 10 points, name this Asian region that contains the Potala Palace.

ANSWER: **Tibet** [or **bod** or **bhō** or **bö** or **poi**; or **xīzàng**; accept **Tibet** Autonomous Region or **Tibetan Plateau**; prompt on **Himalayas**]

<Painting/Sculpture>

17. A planned eight-mile journey during this event takes only “two minutes, thirteen seconds, and three-fifths,” because a servant knocks an obese man off his horse and into the mud while dashing out of a stable. During this event, that servant is the target of an elaborate curse from Ernulphus, after the tight knots that he tied on a bag cause a man to cut his thumb while trying to undo them. One character starts the line, “I think it would not be amiss, brother, if we rung the bell,” during this event, but is interrupted for ten chapters by the narrator. Directly after this event, the chambermaid Susannah incorrectly delivers the name Trismegistus (“trizz-MEG-iss-tuss”) to a curate. This event causes the protagonist to have a flat nose, because it is broken by the forceps of Dr. Slop, when he is called in after the midwife is injured. For 10 points, due to digressions, what event takes up the first three volumes of a long novel by Laurence Sterne?

ANSWER: the **birth of Tristram** Shandy [accept synonyms for birth, such as **delivery**; prompt on birth of **Shandy**] <British Literature>

18. A study on this island asked participants, “When we speak of the right to life, liberty, and the pursuit of happiness, what does right mean?” Only two members of this island’s elderly population declined to participate in an oral history as part of the only solo-authored monograph by Nora Ellen Groce, who claimed that its unique linguistic practices derive from Old Kentish. The theory that diphthong centralization on this island correlates with a sense of ownership over it was presented in “The Social Motivation of a Sound Change” by William Labov (“luh-BOHV”). Until the mid twentieth century, most inhabitants of this island were fluent in a now-extinct language that was supplanted by one taught at a school founded by Thomas Hopkins Gallaudet (“gal-uh-DET”). For 10 points, a high incidence of congenital deafness led to the development of a local sign language in what New England island?

ANSWER: **Martha’s Vineyard**

<Social Science>

19. A fake community organization created by this person was exposed by extra letter R’s uncovered by protesters, who compared this person to the “most far-out inmate” running an asylum. This person often quipped that “Nothing I have ever done has been tinged with legality.” This person never learned to drive, instead relying on a limousine fleet to carry this person to an office on Randall’s Island. This chief champion of the LOMEX project planned the campus for the 1964 World’s Fair, but lost credibility with John Lindsay when the fair was a financial disaster. He was accused of lowering bridge heights to prevent buses from poor neighborhoods from reaching Long Island beaches in Robert Caro’s biography *The Power Broker*. For 10 points, what urban planner fought with Jane Jacobs over building highways through New York?

ANSWER: Robert **Moses**

<American History>

20. In humans, a protein used in this process has an interferon (“interfere-on”)-inducible p150 isoform and a constitutively (“CON-stih-TOO-tiv-lee”)-expressed p110 form. In an organism, this process requires the 20S RECC (“R-E-C-C”) complex. This process occurs at the Q/R (“Q-R”) site of the A1 subunit of the AMPA (“AM-puh”) receptor. A form of this process requires maxi-circle-encoded guide RNA and occurs in the kinetoplast (“kih-NET-oh-plast”) of trypanosomes (“trih-PAN-oh-soams”). A protein subject to this process has a “48” intestinal form and a “100” hepatic form (“huh-PAT-ic”). In 2017, Rosenthal showed that this process occurs extensively in the brains of coleoid (“KOH-lee-oyd”) cephalopods (“SEFF-uh-loh-PODS”), slowing their genome evolution. This process allows the expression of two ApoB (“AY-poh-B”) isoforms. This process is distinct from capping, polyadenylation (“poly-uh-DEN-ill-AY-shun”), and splicing, and can involve insertion of U’s, or de-amination (“dee-AM-ih-nation”) of A’s to I’s, or C’s to U’s. For 10 points, name this process of making specific nucleotide changes to RNA after transcription.

ANSWER: RNA **editing** [or RNA **modification**; prompt on **deamination** or **A-to-I** change or **C-to-U** change or **insertion** by asking “What more general process is that transformation a part of?”; reject “splicing” or “capping” or “polyadenylation” or “tailing”]

<Biology>

BONUSES

1. Along with her husband, Nikolay Gumilev, this poet was one of the leading figures in the Acmeist (“ACK-mee-ist”) movement. For 10 points each:

[10e] Name this Russian poet who depicted women standing in line outside Leningrad prison to see their loved ones in her poem, *Requiem*.

ANSWER: Anna **Akhmatova** (“ack-MAH-tuh-vuh”) [or Anna Andreyevna **Gorenko**]

[10h] For ten years of her life, Akhmatova lived in a palace named for one of these objects, which is now the site of her literary museum. A Pushkin poem titled for one of these objects tells of Khan Giray’s (“gee-RYE’s”) love for an abducted Polish princess.

ANSWER: **fountain** [or **fontan**; accept **Fontanka** House; accept *The **Fountain** of Bakhchisaray*; accept *Bakhchisaraiskiy **fontan***]

[10m] This book-length poem by Akhmatova, her longest, is partly set at Fountain House, during the siege of Leningrad. It opens, “I have lit my treasured candles, one by one, to hallow this night.”

ANSWER: ***Poem without a Hero*** [or ***Poema bez geroya***]

<European Literature>

2. The French word *chair* (“share”), meaning flesh, became a philosophical term of art when it was used to translate the word *Leib* (“lype”) from this philosopher’s *Ideas II* (“two”). For 10 points each:

[10e] Name this German phenomenologist, who introduced his process of “eidetic (“eye-DET-ic”) reduction” in *Cartesian Meditations*.

ANSWER: Edmund (Gustav Albrecht) **Husserl** (“HOOSS-erl”) (French *chair* is the reflex of Latin *carō, carnem*.)

[10h] That use of *chair* in the translation of *Ideas II* may have inspired this work’s ontological monism, in which the “flesh of the body” and “flesh of the world” are dual aspects of one substance. This unfinished work was published posthumously in 1962.

ANSWER: *The **Visible and the Invisible*** (by Maurice Merleau-Ponty) [or ***Le Visible et l’invisible***]

[10m] This French author of *Time and Narrative* and *The Rule of Metaphor* built on Husserl to define flesh as “the mediator between self and a world which is taken in accordance with its various degrees of foreignness” in *Oneself as Another*.

ANSWER: Paul **Ricœur** (“ree-KURR”) [or Jean Paul Gustave **Ricœur**]

<Philosophy>

3. Answer the following about the so-called “Orpheus of Amsterdam,” the composer and organist Jan Pieterszoon Sweelinck (“YAHN peterson SWAY-link”). For 10 points each:

[10e] Sweelinck is often considered the first composer to include fugal subjects in this organ part, which is typically notated on the third stave, below the treble and bass parts.

ANSWER: **pedals**

[10m] Sweelinck is the only non-English composer included in a 17th-century collection of keyboard music that is titled for this instrument and for the Fitzwilliam museum in Cambridge, where the manuscript is housed.

ANSWER: **virginal** [prompt on **harpsichord**]

[10h] Although Sweelinck was Dutch, he is usually classified as the founder of this regional style of composition, whose exponents, such as Heinrich Scheidemann (“SHY-duh-man”) and Jacob Praetorius, pioneered the genre of the “chorale fantasia.”

ANSWER: **North German** organ school [or **norddeutsche Orgelschule**]

<Classical Music>

4. This woman's critics often dismissed her as "Mary Yellin'," spreading the misconception that her middle name was Ellen. For 10 points each:

[10h] Name this Irish-American itinerant orator and staunch supporter of presidential candidate James Weaver. She apocryphally told farmers to "raise less corn and more hell."

ANSWER: Mary Elizabeth Lease [or Mary Elizabeth Clyens; accept Mary Yellin' Lease]

[10e] Lease campaigned for this political party, which grew out of the Farmers' Alliance and waned after it backed the Democratic candidate William Jennings Bryan in 1896.

ANSWER: Populist Party [or People's Party]

[10m] Lease strongly opposed the Populists taking this action, and left politics in Kansas after they did so. The Minnesota Farmer-Labor party took this action in 1944. A description is fine.

ANSWER: fusion with the Democratic Party [accept reasonable synonyms for "fusion" such as merging with or joining with; accept Democrats for "Democratic Party"; prompt on fusion or fusionism]

<American History>

5. Answer the following about directed transport in far-from-equilibrium thermodynamic systems, for 10 points each.

[10e] Richard Feynman ("FYNE-man") popularized the thought experiment of a "ratchet" that extracts net rotation from this type of motion, the random fluctuations of particles in a fluid.

ANSWER: Brownian motion [accept Brownian ratchet]

[10m] This Polish physicist showed in 1912 that the second law of thermodynamics forbids a Brownian ratchet running in thermal equilibrium. He co-names a relation between the diffusion coefficient, temperature and mobility.

ANSWER: Marian Smoluchowski ("smoh-loo-KOFF-skee") [accept Smoluchowski coagulation equation]

[10h] This principle suggests that an *out-of-equilibrium* ratchet *will* move if inversion symmetry is broken.

Sometimes framed as a restriction on symmetry groups, this generic principle states that "the symmetries of the causes are to be found in the effects."

ANSWER: Curie's principle [accept Curie-Prigogine principle or Neumann's principle or Neumann-Minnigerode-Curie principle] (Named for Pierre Curie.)

<Physics>

6. This essay describes the "lightning-quick, sneering, out-of-doors manner" of ancient drama, using examples like a cry of anguish in Sophocles's *Electra*. For 10 points each:

[10h] Name this 1925 essay. Though it rejects English translations of authors like Plato as "useless," it warns that we lose a lot when reading the originals since "we cannot tell how they sounded" or where we "ought to laugh."

ANSWER: "On Not Knowing Greek"

[10e] This author of "On Not Knowing Greek" likened the sound of sparrow song to "piercing Greek words" heard by Septimus Smith in her novel *Mrs. Dalloway*.

ANSWER: Virginia Woolf [or Adeline Virginia Stephen]

[10m] This title character of a Woolf novel studies classics at Cambridge and takes a long trip to Greece. The reader learns that this title character died in World War I while his mother and a friend clear out his belongings.

ANSWER: Jacob Flanders [accept either underlined name; accept Jacob's Room]

<British Literature>

7. Despite belonging to the nearest group to our own Local Group, the galaxy Dwingeloo 1 (“DWING-uh-low one”) was not discovered until 1994, partly because it lies in this region. For 10 points each:

[10m] Name this region of the night sky, whose galaxies cannot be observed at visible wavelengths because the dust of the Milky Way obscures them.

ANSWER: **Zone of Avoidance** [or **ZOA**; or **Zone of Galactic Obscuration**; or **ZGO**]

[10e] Data from the Zone of Avoidance that *can* be imaged include the 21-centimeter line, which belongs to this spectral region. The word “quasar” (“KWAY-zar”) was coined as a contraction of “quasi-stellar [this radiation] source.”

ANSWER: **radio** waves [accept **radio** frequency or **radio** spectrum; accept quasi-stellar **radio** sources]

[10h] The Great Attractor was discovered within the Zone of Avoidance by the Seven Samurai, a team led by this astronomer. She co-names an empirical result obtained by projecting out one term from a three-parameter galactic “fundamental plane.”

ANSWER: Sandra (Moore) **Faber** (The second sentence refers to the Faber–Jackson relation for elliptical galaxies.)
<Misc. Science>

8. The demand curve for these luxury goods is positively sloped, which means that people buy more of them as their price increases. For 10 points each:

[10e] Name these goods which are named for the author of *Theory of the Leisure Class*, since they are a classic example of “conspicuous consumption.”

ANSWER: **Veblen** goods [accept Thorstein **Veblen**]

[10h] These goods, whose value cannot be properly ascertained by consumers after purchase, often exhibit similar price behavior to Veblen goods. They are contrasted with “search” and “experience” goods.

ANSWER: **credence** goods

[10m] Markets in credence goods may exhibit this problem if trust in the quality of goods is low. This consequence of information asymmetry is exemplified by markets in health insurance and used cars, as discussed in George Akerlof’s paper “The Market for Lemons.”

ANSWER: **adverse selection** [or **antiselection**; prompt on **Gresham’s law**; reject “selection”]

<Social Science>

9. In *The City of God*, Augustine remarks on the audacity of this idea by noting that “others suppose” its central figure “is not even dead,” as the man it concerns had several imposters after his death. For 10 points each:

[10h] Identify this religious interpretation of a specific figure. It’s promoted by the *Ascension of Isaiah*, which suggests that a certain dead ruler will reappear as Belial (“belly-AL”). A description is fine.

ANSWER: **Nero** is the **Antichrist** [or **Neronian Antichrist**, or the **Nero-Antichrist** interpretation, or **Nero** is the precursor to the **Antichrist**, or **Nero** is the **man of sin**, or any answer containing **Nero** and **Antichrist**]

[10m] When the phrase “Nero Caesar” is translated into Hebrew and its letters are given numeric values according to this system of numerology, the letters add up to the value 666.

ANSWER: **gematria** (“guh-MAH-tria”) [or **gimatriot**]

[10e] This word names a set of Greek, Gnostic, and Hebrew prophecies which promotes the Nero–Antichrist interpretation. A priestess known by this word served as the oracle of Apollo in Cumae (“KOO-mye”).

ANSWER: **sibyl** (“SIB-ill”) [or **sybilla**; accept **Sibyl** of Cumae, or **Sibylline Oracles**, or pseudo-**Sibylline Oracles**, or **pseudo-Sibyllines**, or **pseudo-Sibyls**, or Oracula **Sibyllina**]

<Religion>

10. These people were heavily romanticized in Romanian literature, which lionized examples of them such as Pinte (‘‘PIN-tay-uh’’) the Brave and the former tax collector Iancu Jianu (‘‘YAHN-koo zhee-AH-noo’’). For 10 points each:

[10h] Give this term that variously designated petty brigands, mercenaries, and anti-Ottoman guerilla fighters. In the Polish-Lithuanian army, it referred primarily to irregular troops who fought as musketeers.

ANSWER: **hajduks** (‘‘HIGH-dooks’’) [or **haiduci**]

[10m] Eric Hobsbawm (‘‘HOBZ-bawm’’) used this two-word term to denote the *hajduks* and *armatoloi* (‘‘ar-MAH-toh-loy’’) of the Balkans, as well as figures like Robin Hood, and argued that their behavior was mainly a form of resistance.

ANSWER: **social bandits** [or **social banditry**; prompt on **bandits**]

[10e] Armies during this war included many *klephts* (‘‘clefts’’), bandits who were analogous to the *hajduks* of the northern Balkans. Lord Byron died fighting in this war.

ANSWER: War of **Greek Independence** [or **Greek Revolution**, or **Greek Rebellion**, or **Elliniki Epanastasi**, or **Yunan İsyani**, or **Agonas**; accept answers referring to the **independence** of **Greece** and / or **Hellas**]

<European History>

11. Mary Beth Edelson’s collage *Some Living American Women Artists* replaces the faces of people in this painting with those of people like Alma Thomas and Helen Frankenthaler. For 10 points each:

[10m] Name this painting on which Marisol based a sculpture group that shows her looking at its scene. Renee Cox replaced many of this work’s figures with black men in a photographic montage.

ANSWER: *The Last Supper* (by Leonardo da Vinci)

[10e] Edelson’s *Last Supper* replaces Christ with this artist, whose paintings of animal skulls like *Ram’s Head*, *White Hollyhock-Hills* were inspired by the New Mexico landscape.

ANSWER: Georgia **O’Keeffe** [or Georgia Totto **O’Keeffe**]

[10h] One of the few color photographs in Edelson’s collage is of this photorealist, whose *vanitas* paintings include *Wheel of Fortune* and *Marilyn*.

ANSWER: Audrey **Flack**

<Painting/Sculpture>

12. Control of this territory was temporarily transferred to the U.S. during World War II since its controlling country, ruled by Christian X (‘‘the-tenth’’), had been occupied by Germany. For 10 points each:

[10e] Name this territory whose capital’s original name of Godthaab (‘‘GUT-hawp’’) was phased out for an indigenous one after it gained home rule in 1979.

ANSWER: **Greenland** [or **Grønland** or **Kalaallit Nunaat**] (*Godthaab* ‘‘good hope’’ was renamed to *Nuuk* ‘‘cape’’.)

[10m] While Greenland was under U.S. control during World War II, the U.S. built this base, which was the site of an ugly B-52 crash some twenty-five years later. It is the northernmost U.S. military base.

ANSWER: **Thule** (‘‘THOO-lee’’) Air Base

[10h] In the 1960s, this secret U.S. Army project sought to install nuclear launch sites under the Greenland ice sheet to help the U.S. gain first-strike advantage. It was conducted using the cover of a geological survey at Camp Century.

ANSWER: Project **Iceworm**

<Other History>

13. Answer the following about the influence of the literature of the K'iche' ("kee-CHAY") Maya on modern Guatemalan culture, for 10 points each.

[10e] Interest in K'iche' literature surged in 1947, when Adrián Recinos translated this mythological text, which tells the story of the Hero Twins, Hunahpú ("hoon-ah-POO") and Xbalanqué ("sh'bah-lang-KAY").

ANSWER: Popol Vuh [or Pop Wuj ("pope WOOK")]

[10m] The *Popol Vuh* was the chief inspiration for this Miguel Asturias novel in which Gaspar Ilóm ("ee-LOAM") fights on behalf of indigenous Indians against invading commercial planters of the title crop.

ANSWER: Men of Maize [or Hombres de maíz]

[10h] A 15th-century K'iche' song-dance-drama originally named for the Tun drum, but more commonly named for this Guatemalan city, is performed in this city every January 25th. In the play, the prince of this city puts the prince of the K'iche' on trial and sentences him to be sacrificed.

ANSWER: Rabinal [accept Rabinal Achi]

<World Literature>

14. Richard Phillips and colleagues proposed that the predominant form of these symbioses in a forest determines whether it has an organic or inorganic nutrient economy. For 10 points each:

[10e] Name this symbiotic association between roots and fungi that most often comes in ecto- or arbuscular forms.

ANSWER: mycorrhizas ("MY-koh-RYE-zuzz") [or mycorrhizae]

[10h] Mycorrhizal forests have increased productivity from the "fertilization effect" caused by CO2 increase. In this kind of experiment, the CO2 level in an area is artificially increased to assess impact on plant growth.

ANSWER: FACE ("face") [or Free Air CO2 Enrichment]

[10m] Under elevated CO2, ecto-mycorrhizae ("ECK-toh-MY-koh-RYE-zay") stimulate this process in order to "mine" limiting nutrients like nitrogen or phosphorus. This process is the transformation of soil nutrients from organic to inorganic forms.

ANSWER: mineralization

<Biology>

15. In one of their acts as a Senate "odd couple," Ted Kennedy and Orrin Hatch pushed for the creation of this program as part of the Balanced Budget Act of 1997, which financed it through tobacco taxes. For 10 points each:

[10m] Name this program created to assist families whose incomes are above the threshold to qualify for Medicaid.

ANSWER: CHIP ("chip") [or Children's Health Insurance Program; accept SCHIP or State Children's Health Insurance Program]

[10e] CHIP is administered by this U.S. federal department, which also administers Medicare and Medicaid. It is currently headed by Xavier Becerra ("hah-vee-AIR buh-SAIR-uh").

ANSWER: Department of Health and Human Services [or HHS or DHHS]

[10h] Using money from the Provider Relief Fund, this agency under HHS has paid for more CHIP and Medicaid services to encourage health equity. This agency, known by a four-letter acronym, supports health care access for the uninsured and people in rural areas.

ANSWER: Health Resources and Services Administration [or HRSA]

<Current Events>

16. For 10 points each, answer the following about the word palin-genesis, which means re-creation or rebirth:

[10e] In biology, “palingenesis” is sometimes used as a synonym for “recapitulation,” as in Ernst

Haeckel’s (“heckel’s”) statement that “ontogeny” recapitulates this concept.

ANSWER: **phylogeny** [accept **phylogenetics**]

[10m] Historian Frank Griffin uses the word to denote fascist ideas of national rebirth. His approach draws on this Frank Kermode book, which discusses how “fictions” cope with mortality and titles a novel by Julian Barnes.

ANSWER: *The **Sense of an Ending***

[10h] This scholar used the word to refer to the rebuilding of humanity by Noah and his sons after the Flood. He led a mission to Caligula asking the emperor to protect his people from the strife he described in his work *Flaccum*.

ANSWER: **Philo** of Alexandria [or **Philo** the Jew or Judaeus **Philo**]

<Other Academic>

17. Answer the following about the jazz standard “In a Mellow Tone,” for 10 points each.

[10e] The song was composed by this pianist and bandleader, whose other songs include “Sophisticated Lady” and “It Don’t Mean a Thing (If It Ain’t Got That Swing).”

ANSWER: Duke **Ellington** [or Edward Kennedy **Ellington**]

[10h] Although the melody to “In a Mellow Tone” is Ellington’s, the song is a contrafact of this early jazz standard by Art Hickman and Harry Williams. An unprecedented forty-minute performance of this standard cemented Charlie Christian’s place in Benny Goodman’s band.

ANSWER: “**Rose Room**”

[10m] Eddie “Lockjaw” Davis joined with this other tenor saxophonist on a 1960 two-tenor recording of “In a Mellow Tone.” This man’s freewheeling improvisation on a 1939 performance of “Body and Soul” presaged the bebop style.

ANSWER: Coleman (Randolph) **Hawkins**

<Other Fine Arts>

18. An 8% solution of this chemical is applied through a trans-dermal patch in the drug Qutenza. For 10 points each:

[10e] Name this chemical that is *both* an analgesic drug, *and* the active irritant in bear spray and chili peppers.

ANSWER: **capsaicin** (“kap-SAY-sin”) [or **8-methyl-N-vanillyl-6-non-enamide**]

[10h] The transdermal delivery technology that led to Qutenza was developed in this scientist’s lab at MIT. The father of controlled drug delivery, this man is the most highly cited engineer of all time. He also founded Moderna.

ANSWER: Robert “Bob” Samuel **Langer**, Jr.

[10m] On the other hand, irritation by capsaicin can be treated with these phospho-proteins, which form micelles (“my-SELLZ”) if calcium is present. Like albumins (“al-b’YOO-minz”), this class of food proteins are used in a dry powder to block Western blots.

ANSWER: **caseins** (“KAY-seenz”) [prompt on **milk** proteins]

<Chemistry>

19. Name the following authors who have lived in Hawaii, for 10 points each.

[10m] This author of *The People in the Trees* has a Hawaiian father and went to high school in Hawaii. She wrote about the self-harming lawyer Jude, who reveals that he was sexually traumatized as a child, in her 2015 novel *A Little Life*.

ANSWER: Hanya Yanagihara

[10e] This author's time in Hawaii is reflected in his collections *The House of Pride and Other Stories* and *Tales of Hawaii*. He's better known for works set in the Yukon Territory, such as "To Build a Fire" and *White Fang*.

ANSWER: Jack London [or John Griffith London]

[10h] A widely-celebrated 20th-century novel written by a native Hawaiian is this author's *All I Asking for Is My Body*, in which Kiyo struggles with his family's Japanese values while growing up on a sugar plantation in 1930s Hawaii.

ANSWER: Milton Atsushi Murayama

<American Literature>

20. For 10 points each, name these African leaders who assembled impressive Rolls Royce collections:

[10e] In 2019, a Rolls Royce Phantom used by this leader was returned to its rightful owners, the royal family of the kingdom of Buganda. A decree by this leader gave Asian citizens of his country ninety days to leave.

ANSWER: Idi Amin Dada [or His Excellency, President for Life, Field Marshal Al Hajj Doctor Idi Amin Dada, VC, DSO, MC, Lord of all the Beasts of the Earth and Fishes of the Sea and Conqueror of the British Empire in Africa in General and Uganda in Particular]

[10m] This leader customarily greeted crowds in his red Rolls Royce, which he used to pick up Elizabeth II ("the-second") from an airport. He took the title *mwazi* or "savior" and banned hippies from entering Malawi during his long tenure.

ANSWER: Hastings Banda [or Hastings Kamuzu Banda]

[10h] A year after his ouster in 2017, this leader's country began auctioning off his fleet of Rolls Royces to help pay down its debt. This leader's government massacred student protesters in the capital city, Banjul, in 2000.

ANSWER: Yahya Jammeh (He is the former president of the Gambia.)

<World History>