



**ACADEMIC  
COMPETITION  
FEDERATION**

# **2023 ACF NATIONALS**

## **Prelims Tiebreaker**

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## TOSSUPS

1. A 1920 book titled for this idea lists Jean Bodin (“zhahn boh-DEN”) and Roger Bacon as precursors of it and notes that “the preponderance of France’s part in developing [this idea] is an outstanding feature of its history.” Books surveying the history of this idea have been written by Robert Nisbet and J. B. Bury. Thomas Malthus’s *Essay on the Principle of Population* reacted against the utopian theories of this concept with respect to the “human mind” presented in a “sketch” by the Marquis de Condorcet (“mar-KEE duh kahn-dor-SAY”). This is the first title concept of an 1879 book that imagines an “unbounded savannah” whose land value increases with population. A motto that says that this concept is “the goal” and “order is the basis” represents the positivism of Auguste Comte and inspired the phrase on the flag of Brazil. For 10 points, the title of a Henry George book pairs “poverty” with what word for the idea that the human condition improves over time?

ANSWER: **progress** [accept **Progress and Poverty**; accept “Order and **Progress**” or “Ordem e **Progresso**”; accept *Sketch for a Historical Picture of the **Progress** of the Human Mind*; accept *Idea of **Progress**: An Inquiry into its Origins and Growth*; accept *History of the Idea of **Progress***]

<Philosophy>

2. Localization of a number of these systems is the canonical approach to solving the inverse problem from observed scalp potential measurements. Edward Purcell and Carlton Pennypacker developed an algorithm that discretizes a material into these systems to numerically simulate scattering processes. The gradient force experienced by one of these systems is used to explain how objects are trapped in optical tweezers. By computing a cosine integral, a value of 1.64 is obtained for the directivity of the “half-wave” type of these systems. When expanding a potential function in terms of spherical harmonics, the contribution from these systems is contained in the terms for which “ $L$  equals one.” For a static one of these systems, the electric field falls off as “one over  $r$ -cubed.” For 10 points, name these systems consisting of two separated point charges.

ANSWER: **dipoles** [accept **dipole** anisotropy, electric **dipole**, point **dipole**, induced **dipole**, or physical **dipole**; prompt on **dielectric** particles or **dielectric** spheres after “gradient force” is read; after “1.64” is read, prompt on **antennas** or **antennae** by asking “what physical systems are used in these antennae?”; reject “magnetic dipoles”] (The first sentence refers to dipole source localization for EEGs. The second sentence refers to the discrete dipole approximation.)

<Physics>

3. As the narrator of this short story is looking at a shop display’s portrait of Beethoven, he meets an old friend whose left eye is suffering from conjunctivitis. This story’s narrator compares himself to Tantalus while taking a green taxi. At a wedding reception, this story’s narrator offends a Chinese classics scholar by claiming that Emperors Yáo and Shùn (“shwun”) were fictional. In this story, a bookbinding error inserts the dialogue between Ivan and the Devil from *The Brothers Karamazov* into a copy of *Crime and Punishment*. This story ends with the question “Isn’t there someone kind enough to strangle me softly in my sleep?” After his brother-in-law burns down his house and kills himself while wearing a raincoat, this story’s narrator sees a fire every time he travels to Tokyo. For 10 points, the narrator’s vision is tormented by the title hallucinatory objects in what short story by Ryūnosuke Akutagawa?

ANSWER: “**Cogwheels**” [accept “**Spinning Gears**” or “**Haguruma**”]

<World Literature>

4. A painting from this country shows a bestial humanoid with black fur and a bandaged head scuttling across the ground in front of a burning city. An artist from this country names a form of large-scale hanging woven artworks with many folds, like those she completed in the 1970s. The Swiss artist H.R. Giger is often compared with a “nightmare” landscape painter from this country known for his thousands of untitled images of hellish environments. A sculptor from this country was inspired by her fear of crowds to sculpt large groups of rough-textured, headless humanoids, such as the pieces *Unrecognized* and *Agora*. An 1862 painting from this country shows a party in the right background as a seated man’s frowning expression contrasts with his silly red jester’s outfit. For 10 points, name this home country of Jan Matejko (“yahn mah-TAY-koh”), Magdalena Abakanowicz (“ah-bah-kah-NO-veech”), and Zdzisław Beksiński (“zuh-jee-SWOFF beck-SHIN-skee”).  
ANSWER: **Poland** [or Republic of **Poland**; accept Rzeczpospolita **Polska**; accept **Polish** People’s Republic or **Polska** Rzeczpospolita Ludowa] (The term for the artworks in the second sentence is abakans, named after Magdalena Abakanowicz.)

<Painting & Sculpture>

5. A book that calls these objects “evocative” because they provoke self-reflection outlines three stages in people’s relationships with these objects: metaphysics, mastery, and identity. The GOMS (“gahms”) model was introduced in a seminal 1983 book in a field partly named for these objects, co-written by Stuart K. Card. A book about these objects “and the human spirit,” titled *The Second Self*, was written by Sherry Turkle. Rosalind Picard pioneered the “affective” approach to designing these objects, which involves taking emotions into account. A viral video called “Bad Day” has become emblematic of a phenomenon in which these objects are the target of “rage.” Allen Newell helped popularize the name of a field partly named for these objects that encompasses approaches like user-centered design. For 10 points, a field abbreviated HCI studies the interaction between humans and what objects?

ANSWER: **computers** [accept human-**computer** interaction; accept **computer** rage; accept affective **computing**; accept *The Second Self: **Computers** and the Human Spirit*; accept *The Psychology of Human-**Computer** Interaction*; prompt on **machines** or electronic **devices**]

<Social Science>

6. A politician from this state inspired a memo that urged candidates to use “Optimistic Positive Governing Words” about themselves and negative “Contrasting Words” like “decay” and “welfare” to describe opponents. With David Walsh, a politician from this state co-sponsored a bill that expanded the Navy’s combat fleet by 70 percent prior to World War II, earning the nickname “Father of the Two-Ocean Navy.” A far-right Democrat from this state was the second president of the John Birch Society; that politician, Larry McDonald, died in the crash of Korean Airlines Flight 007. A tall “massif” in Antarctica is named after this state’s longtime congressman Carl Vinson. A Speaker of the House from this state was selected after a 54-seat gain for Republicans in 1994 due to the success of his “Contract with America.” For 10 points, name this state where Cobb County was represented by Newt Gingrich.

ANSWER: **Georgia** [or **GA**] (GOPAC released “Language, a Key Mechanism of Control” while Gingrich was its chair, and it quotes an anonymous politician claiming, “I wish I could speak like Newt.”)

<American History>

7. Fake products in this industry are detected by True-Spec and mPedigree, which responded to deaths from “My Pikin” in Nigeria. This industry’s company Tridem set up a distribution hub in Abidjan after its acquisition by Fosun. Nana Akufo-Addo directed plans to create a “park” for this industry in Ghana, where LaGray is one of the few African companies to produce its APIs. Baby deaths in the Gambia were blamed on Maiden, an Indian firm in this industry that sold counterfeit products. In 2021, the African Union created an agency to improve access to this industry based on the Doha Declaration’s expansion of TRIPS. In South Africa, this industry commercialized kanna and P57 derived from hoodia by exploiting San traditional knowledge in an example of bioprospecting. For 10 points, the African Union has coordinated research summits with what industry’s companies Novartis and Merck? ANSWER: **pharmaceuticals** [or **drugs**; accept **prescription** drugs, **Rx**, **medications**, **medicines**, **medical** drugs, **generic** drugs, **over-the-counter** drugs, **OTCs**, **biosimilars**, **supplements**, **stimulants**, or cough **syrup**; accept **vaccines**; prompt on **treatments** or **remedy** or **remedies**; prompt on **chemicals** or **compounds** or **natural products**; prompt on **biotechnology**; prompt on **diet** or **wellness** or **weight loss** by asking “what sort of product?”] (APIs are active pharmaceutical ingredients.)

<Current Events>

8. A ruler of this dynasty suppressed the female, Thomas à Kempis-inspired Congregation of the Lovers of the Holy Cross. Bandits hid weapons in the property of Jean-Charles Cornay to frame him for trying to overthrow this dynasty; he was executed like his compatriot Joseph Marchand. This dynasty finished an internal colonization process known as the “March to the South.” This dynasty defeated a rival with the help of Pigneau (“pin-YO”) de Béhaine, who then converted them to Catholicism. This dynasty was successfully defended at the Battle of Paper Bridge by the Black Flag Army, who later failed to protect the city of Tuyên Quang (“TOO-yin kwahng”). This dynasty persecuted Catholics under rulers like Minh Mạng (“min mayng”) and Tự Đức (“tun duck”), who was forced by France to sign the treaties of Huế (“hway”) and Saigon. For 10 points, name this dynasty that, in the 19th century, ruled a unified Vietnamese state.

ANSWER: **Nguyễn** (“win”) dynasty [or Nhà **Nguyễn**; or **Nguyễn** triều]

<World History>

9. A commercial instrument measuring the kinetics of this process is named for its eight “Dip and Read” heads. This process’s very low rate constants are accurately estimated using a Cheng–Prusoff transformation to a competition assay. Rate constants for this process are calculated by fitting decaying exponentials to the response units of a sensorgram. The heat released by this process increases sigmoidally as the molar ratio is increased stepwise on a MicroCal instrument. The Adair equation improves on a two-state Michaelis–Menten equilibrium model for this process in which the concentrations are exponentiated by Hill coefficients. Surface plasmon resonance and isothermal titration calorimetry are label-free methods to measure this process’s equilibrium constant, the KD. For 10 points, name this process that often occurs cooperatively between a guest and a host or a receptor and its ligand. ANSWER: **binding** [or **unbinding**; or **association**; or **dissociation** or **disassociation**; or **complexation** or forming a **complex**; accept protein–protein **binding**; prompt on **inhibition**; prompt on protein–protein interaction or protein–ligand **interaction**] (The first sentence refers to the Octet, a biolayer interferometer.)

<Chemistry>

*Note to moderator: Read the answerline carefully.*

10. In a memoir titled for this region, a 14-year-old girl marries a loathsome gambler instead of eloping with a prince so she can get her ex-millionaire father a passport. A memoir in French titled for “Days in” this region recalls the youth of the exiled heiress Banine. The so-called “poet of” this region wrote of the “gift” of a “waltzing” and “bewailing” river near a tower housing a seductive queen. That queen from this region was praised in the poem *Abdul-Mesia* and patronized an epic in *shairi* quatrains. During his youth in this region, a leader wrote poems like “Morning” under the name Soselo. This transnational region’s folkways pepper journal entries like “Bela” in a novel by an author who was exiled here for writing “Death of the Poet”; in that novel, Princess Mary leads Grushnitsky to duel with Pechorin. For 10 points, what mountain range was romanticized in *A Hero of Our Time* by Mikhail Lermontov?

ANSWER: **Caucasus** Mountains [or **Caucasia**, **Qafqaz**, **Kovkas**, or **Kavkaz**; accept **Georgia**, **Azerbaijan**, **Chechnya**, **Dagestan**, **Ossetia**, **Circassia**, **Stavropol** Krai, **Krasnodar** Krai, **Kuban**, **Kabarda**, **Kabardia**, **Adygea**, **Ingushetia**, **Alania**, **Sakartvelo**, **Kartli**, **Kakhetia**, North **Caucasus**, South **Caucasus**, **Transcaucasia**, **Zakavkazye**, **Ciscaucasia**, or **Dariel** Pass; accept *Days in the Caucasus* or *Jours caucasiens* or *Caucasian Days*; reject “Armenia”] (The third line refers to Lermontov’s “The Gift of the Terek” and “Tamara.” Ioane Shavteli wrote *Abdul-Mesia*. The epic is Shota Rustaveli’s *The Knight in the Panther’s Skin*. Soselo was Joseph Stalin’s pseudonym.)

<European Literature>

*Note to moderator: Read the answerline carefully.*

11. *Description acceptable.* Mark Thomas, Michael Stumpf, and Heinrich Härke (“HAIR-kuh”) argued that this process succeeded due to the reproductive advantage afforded by an “apartheid-like social structure.” This process was resisted for a particularly long period by the inhabitants of Elmet. According to a myth-infused history attributed to Nennius, participants in this process set up a fake peace council called the “Treachery of the Long Knives.” A history by the cleric Gildas celebrates heroism in resisting this process by Ambrosius Aurelianus. This process was temporarily halted by the Battle of Badon Hill. According to legend, this process began when Vortigern recruited mercenaries led by Hengist and Horsa to defend his kingdom. For 10 points, identify this historical process in which a set of Germanic-speaking peoples migrated to an island across the North Sea.

ANSWER: **Anglo-Saxon** settlement of **Britain** [accept descriptions of the **Anglo-Saxons** or **Angles**, **Saxons**, and Jutes migrating to, moving to, conquering, settling, or spreading their culture in **Britain**; accept **England** in place of “Britain”; prompt on answers that specify only one of **Angles**, **Angli**, **Saxons**, **Sachsen**, **Seaxan**, **Jutes**, **Iuti**, **Jótar** by asking “what were the two main groups involved?”; prompt on **Anglo-Saxon migration** or equivalents by asking “to where?”; prompt on descriptions of the **conquest** of **Britain** or **settlement** of **Britain** by asking “by whom?”] (Gildas wrote *On the Ruin and Conquest of Britain*.)

<Other History>

12. This deity names an architectural style in which structures with gabled roofs are connected to form a building that appears to be two separate buildings when viewed from the side. Nichiren dared this deity to show a sign of divine favor as he was being taken away for execution at a beach near this deity’s Tsurugaoka shrine in Kamakura. Jinmaku Kyūgorō dedicated a stone at this deity’s shrine in the Tomioka neighborhood of Tōkyō that is inscribed with the names of all 73 *yokozuna*. This deity’s mother remained pregnant for three years until she returned from Korea and signaled this deity’s birth by flying eight banners on Tsushima Island. This deity is often grouped in a triad with Himegami and Empress Jingū, who are the wife and mother of this deity’s mortal equivalent Ōjin. For 10 points, doves are the messengers of what syncretized bodhisattva and kami whose domains include archery and war?

ANSWER: **Hachiman** [or **Yahata**; accept **Ōjin** until read; accept Tsurugaoka **Hachiman**gū; accept **Hachiman**-zukuri]

<Religion>

13. Samuel Wesley recalled how the composer of these pieces, while conducting the sixth of them, performed the virtuoso keyboard *obligato* near the end of its *Presto* finale. The trio of the third movement of the C-minor third of these pieces features a virtuosic cello solo over pizzicato in the rest of the strings. The cry of a fishmonger may have inspired the twice repeated quarter note, double dotted eighth, 32nd, half note rhythm that opens the last of these pieces. The slow movement of the eighth of these pieces uses a theme from a previous duet for two liras by its composer before being interrupted by Turkish percussion. A “Dies irae”-like theme in the low strings and bassoons is preceded by a drumroll in the penultimate piece in this set, which was written for two visits organized by Johann Peter Salomon. For 10 points, the *Military* and *Surprise* are nicknames of two pieces in what set of the 12 final symphonies by Joseph Haydn?

ANSWER: **London symphonies** [or (Franz) Joseph **Haydn**’s symphonies **93–104**; accept **Salomon symphonies** until “Salomon” is read; prompt on (Franz) Joseph **Haydn symphonies** by asking “what specific subset of those?”]  
<Classical Music>

14. Despite intervention by the pope, Anna Maria Franziska refused to live in this city with her ruling husband because he was “absolutely impotent.” One of this city’s nobles sent Robert Thornton on an expedition to scout a colony on the Oyapock (“OY-ah-pock”) River in today’s French Guiana but died before Thornton returned. A man who attracted top musicians to this city was dubbed “the Orpheus of Princes” for his own musical skill. In a bid to return to this city, a scientist dedicated the treatise *Sidereus Nuncius* (“sih-DIH-reh-us NUN-chee-us”) to a ruler of it whom he had tutored as a child. Maria Theresa’s husband Francis of Lorraine inherited a duchy centered on this city after Gian Gastone’s (“JOHN gah-STOH-nay’s”) death. Henry IV of France owed so large a debt to a noble family in this city that he paid it back by marrying one of its members named Marie. For 10 points, what city was the capital of the Grand Duchy of Tuscany in the “lost centuries” of rule by the Medici family?

ANSWER: **Florence** [or **Firenze**]  
<European History>

15. The dancing speaker of a poem by this author realizes they had “achieved flight, / that swift and serene / magnificence, / before the earth / remembered who we were / and brought us down.” This author repeats the image of “a parrot imitating spring” in a poem in which a general “will order / many, this time, to be killed / for a single, beautiful word,” which is “parsley.” A poetry collection by this author is divided into the sections “Mandolin” and “Canary in Bloom.” A collection by this author follows the life of the biracial musician George Bridgetower, who was the original dedicatee of the *Kreutzer Sonata*. This poet’s editing of the *Penguin Anthology of 20th-Century American Poetry* provoked an attack from Helen Vendler for prioritizing “multicultural inclusiveness.” For 10 points, name this former US Poet Laureate from 1993–95, the author of *Sonata Mulattica* and *Thomas and Beulah* (“byoo-luh”).

ANSWER: Rita **Dove** [or Rita Frances **Dove**] (The first poem is “American Smooth.”)  
<American Literature>

16. Disordered ALPS (“alps”) motifs fold into alpha helices upon detecting high values of this quantity by inserting into packing defects. Crescent-shaped BAR domains use electrostatic interactions to induce increases in this quantity in negatively charged substrates. The energy associated with nonzero values of this quantity contains a term proportional to the square of twice this quantity’s mean value minus its spontaneous value, per the Helfrich model. The ESCRT (“escort”) complex uniquely nucleates at sites where this quantity is negative. Nonzero values of this quantity are favored, and fluidity is increased, by high unsaturated fatty acid content. Changes in this quantity are induced by the conical shapes of ion channels. Clathrin scaffolding induces a local increase in this quantity to initiate vesicle budding. For 10 points, name this quantity that represents a membrane’s deviation from flatness.

ANSWER: membrane **curvature** [accept Gaussian **curvature**]  
<Biology>

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17. A poem about one of these things directly quotes many people, including an “abstractor,” with the poet noting that “all voices should be read as” the “mutterings” of one of these things. One of these things describes “Proteus, whoever that is ... driving my many selves from cave to cave” at the end of that long poem by Alice Oswald. The line “And that’s where your history-books begin!” ends a poem narrated by one of these things written by Rudyard Kipling. One of these things whose “tent is broken” is described in the opening of T. S. Eliot’s “The Fire Sermon,” which repeatedly quotes a line about one of these things from a 1596 poem. Alexander Pope’s “Windsor Castle” is one of many poems that personifies one of these things as a “father.” Spenser’s “Prothalamion” tells that one of these things to “run softly, till I end my song.” For 10 points, the Alph in “Kubla Khan” is what type of geographical feature?

ANSWER: **rivers** [accept **River** Dart; accept “The **River**’s Tale”; prompt on bodies of water or freshwater] (Oswald’s poem, *Dart*, is about the River Dart.)

<British Literature>

18. While this quantity appears to scale with the gas-to-dust ratio, the trend may not hold when this quantity is low. Methods to measure this quantity use line-ratios such as N2O2, O3N2, and R23. There is a well established positive correlation between this quantity for a host star and the presence of giant close-in exoplanets around the star. Stellar mass, star formation rate, and a galaxy’s value for this quantity follow a so-called “fundamental” scaling relation that describes the chemical evolution of galaxies. In a three-group classification based on the work of Walter Baade (“bah-duh”), this quantity is [emphasize] *higher* for groups with a [emphasize] *lesser* Roman numeral. Age and this quantity are used to classify stars into different stellar populations. This quantity is given by the logarithm of the ratio of iron abundance to hydrogen abundance. For 10 points, what quantity is the fraction of elements in a star that are heavier than helium?

ANSWER: **metallicity** [accept **metal content**; prompt on elemental abundance or chemical composition until “abundance” is read]

<Other Science>

19. An English horn solo opens an F minor aria from this opera whose repeating lyrics translate as “It’s time to leave” and “Hide your tears.” The 2007 Met production of this opera starred Natalie Dessay and contained a rare opening night encore from Juan Diego Flórez. This opera’s protagonist prefers songs like “Chacun le sait (“say”)” over the stuffy “romance” that she is forced to sing during a music lesson. During a 2016 production of this opera, Ruth Bader Ginsburg appeared as the Duchess of Krakenthorp. “Il faut (“foe”) partir” is an aria from this opera, which ends with the patriotic “Salut à la France” after a wedding at the Berkenfield castle is interrupted by a group led at the start by Sulpice (“sool-peese”). In this opera, the Tyrolean villager Tonio sings the aria “Ah! mes amis (“mez ah-mee”),” which requires the tenor to hit nine high Cs. For 10 points, name this comic opera by Gaetano Donizetti that is titled for Marie, a canteen-girl who lives with a group of soldiers.

ANSWER: *La **fille du régiment*** (“la fee du ray-jee-MAWN”) [or *The **Daughter of the Regiment***]

<Other Fine Arts>

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20. According to legend, a man from this state named Fletcher Davis invented a dish that people at the 1904 World's Fair derisively called "hamburgers." Alsatian immigrants to this state created lemon-cured parisa. The film *Betty Blue* sparked a French craze for a cuisine from this state whose name was popularized by a 1972 book by Diana Kennedy. Kirby's Pig Stand in this state was America's first drive-in restaurant. Black-eyed peas, corn, and beans are the basis for this state's namesake "caviar" salad. The words "Shoot me" plus a city in this state were used to order a soft drink created by Charles Alderton. The Village Bakery in this state wrapped kielbasa in sweet dough to create the first klobásníky ("kloh-BASS-NEE-kee"), a food similar to "kolaches" made by this state's Czech immigrants. Dried cumin was a staple for this state's chili queens. For 10 points, hibiscus and strawberry red drinks commemorate an 1865 event in what state on Juneteenth?

ANSWER: **Texas** [or **TX**; accept **Tex-Mex**] (Diana Kennedy's book was *The Cuisines of Mexico*. "Shoot me a Waco" was how Dr. Pepper was originally ordered.)

<Other Academic>



## BONUSES

1. The protagonist of this novel writes a study of the fake historical figure Ahmet, whose sayings inspire the birth of the title organization. For 10 points each:

[10h] Name this Ahmet Hamdi Tanpınar novel about Hayri İrdal, who is employed to set clocks to Western time as part of the title bizarre bureaucracy.

ANSWER: *The **Time Regulation Institute*** [or ***Saatleri Ayarlama Enstitüsü***]

[10m] Mark-Alem works at a government bureaucracy studying people's dreams in a thinly-veiled portrait of this author's home country in his novel *The Palace of Dreams*. This author also wrote *Chronicle in Stone*.

ANSWER: Ismail **Kadare**

[10e] *The Palace of Dreams* is set during this empire, though it has many historical anachronisms. This empire is the setting of Orhan Pamuk's novel *My Name Is Red*.

ANSWER: **Ottoman** Empire [or Sublime **Ottoman** State, Devlet-i 'Alīye-i '**Osmāniye**, **Osmanlı** İmparatorluğu, or **Osmanlı** Devleti; accept **Turkish** Empire]

<World Literature>

2. This woman disputed traditional doctrines of Hell that imagine "merely human penal systems" like "liquidation and quarantine" in her book *Christ and Horrors*. For 10 points each:

[10h] Name this American philosopher and Episcopal priest who died in 2017. She wrote *Horrendous Evils and the Goodness of God*.

ANSWER: Marilyn McCord **Adams** [or Marilyn **McCord** Adams]

[10e] McCord Adams wrote a two-volume study of this medieval British philosopher. This nominalist lends his name to the idea that "entities should not be posited without necessity."

ANSWER: William of **Ockham** [or William of **Occam**; or Gulielmus **Occamus**; accept **Occam**'s razor; prompt on **William** or **Gulielmus**]

[10m] McCord Adams's husband Robert proposed a modified version of this meta-ethical theory, which states that an action is morally good if it is demanded by God.

ANSWER: **divine command** theory [or **DCT**; or **theological voluntarism**; reject "command theory"]

<Philosophy>

3. Name these pre-Classical era composers who wrote music inspired by frogs, for 10 points each.

[10m] The nickname of Elizabeth's suitor Francis, Duke of Anjou and Alençon ("ah-lahn-sahn") inspired this composer's piece "The Frog Galliard." This Renaissance composer also wrote the song "In darkness let me dwell."

ANSWER: John **Dowland**

[10e] The sixth movement of this composer's *Suite in F Major, BWV 55* is titled for "concertizing frogs and crows." This German Baroque composer published a 1733 collection of *Tafelmusik*.

ANSWER: Georg Philipp **Telemann**

[10h] A "frog ballet" is one of the 300 instrumental dances published in this German composer's 1612 collection *Terpsichore*. This prolific hymnist's treatise *Syntagma Musicum* is a major primary source for 17th-century theory.

ANSWER: Michael **Prætorius** [or Michael **Schultze**]

<Classical Music>

4. The tear-and-stack method creates these van der Waals heterostructures at defined magic angles. For 10 points each:

[10h] Name this type of quasiperiodic “superlattice” that occurs when identical monolayers of 2D nanomaterials are stacked but twisted relative to one another.

ANSWER: **moiré** (“mwah-RAY”) superlattice

[10m] Tearing-and-stacking is used to produce flakes of both graphene and this isoelectronic material, which also has a 2D hexagonal microstructure even though it doesn’t contain any carbon.

ANSWER: hexagonal **boron nitride** [or **hBN**]

[10e] The twist angle in a graphene moiré superlattice is conveniently easy to measure using this form of spectroscopy, which is otherwise mainly used alongside IR spec to probe bond vibrations. It relies on inelastic scattering of photons.

ANSWER: **Raman** spectroscopy

<Chemistry>

5. This figure wears Roman dress and lays telegraph wire while floating in the air and facing west in John Gast’s painting *American Progress*. For 10 points each:

[10e] Name this idealized woman who personified the United States during the 19th century. A popular song called this figure the “gem of the ocean.”

ANSWER: **Columbia** [or Lady **Columbia** or Miss **Columbia**; accept “**Columbia**, the Gem of the Ocean”]

[10h] *American Progress* was commissioned by George A. Crofutt, who was known for creating an “overland” example of these things. Candacy Taylor chronicled the history of one of these things in a 2020 book.

ANSWER: **travel guide** [or **travel book**, **guide book**, or **tourist guide**; accept **Green Book**; accept *Overground Railroad: The **Green Book** and the Roots of Black Travel in America*; accept *New Overland **Tourist** and Pacific Coast **Guide***; prompt on **book**; prompt on **guide**]

[10m] During World War I, this artist created many recruiting posters depicting Columbia. At the turn of the century, this artist popularized a feminine ideal of tall, athletic American women with S-shaped torsos and high pompadours.

ANSWER: Charles Dana **Gibson** [accept **Gibson** Girls]

<American History>

6. A university in this state contains the Amistad Research Center, which is one of the first institutions dedicated to collecting Black records and artifacts. For 10 points each:

[10m] Name this American state where Sharon LeVigne has raised awareness of environmental racism in its petrochemical-heavy region of “Cancer Alley.”

ANSWER: **Louisiana** [or **LA**] (The university is Tulane.)

[10e] Since 2013, a single, narrow House district in Louisiana has gerrymandered together Black residents of New Orleans, Baton Rouge, and seven more of these subdivisions. They are analogous to other states’ counties.

ANSWER: **parishes**

[10h] Clint Smith’s book *How The Word Is Passed* discusses this plantation near Edgard, Louisiana, which reopened in 2014 as the country’s first museum dedicated fully to the Black experience of slavery.

ANSWER: **Whitney** Plantation [or **Whitney** Plantation Historic District; or **Haydel** family estate or Habitation **Haydel**]

<Geography>

7. Polyploidy resulting from incomplete cytokinesis is common in this population of normal epithelial cells and increases with age. For 10 points each:

[10h] Name these asymmetrical cells whose multiple microtubule organizing centers help segregate traffic directed towards their canalicular (“can-uh-LICK-yoo-lar”) and sinusoidal domains.

ANSWER: **hepatocytes** [prompt on **liver** cells]

[10e] The canalicular surfaces of hepatocytes secrete the salts, bilirubin, and ions that make up this digestive fluid into its namesake ducts in the liver. This substance emulsifies fat in the duodenum.

ANSWER: **bile** [or **gall**; accept **bile** ducts]

[10m] Hepatocytes use this group of C-type ABC transporters to excrete drugs into bile. Like cytochrome p450, failing to account for drugs that induce or inhibit one of these proteins can result in unwanted drug interactions.

ANSWER: **multidrug resistant proteins** [or **MRPs**; accept **MDRs**; accept **p-glycoprotein** or **Pgp**; prompt on **efflux pumps**]

<Biology>

8. This village hosted a shadow government with its own *prikazy* and its own patriarch, Filaret. For 10 points each:

[10h] Name this village that a pretender used as a capital for two years after he won the Battle of Bolkhov. That pretender, who was known as the “rebel of” this village, married Marina Mniszech (“MEE-sheck”), the widow of another pretender.

ANSWER: **Tushino** [accept the “rebel of **Tushino**”; accept the “thief of **Tushino**”]

[10e] The pretender was one of the three “False Dmitrys” who claimed the Tsardom of Russia during this chaotic period that ended with the accession of Michael Romanov.

ANSWER: **Time of Troubles** [or **Smutnoye vremya**]

[10m] The last tsar before the Time of Troubles was Fyodor I, who got his nickname from his obsession with these objects. Catherine the Great had one of these objects mutilated over its alleged role in sparking the 1771 plague riot.

ANSWER: **bells** [accept church **bells**; accept Fyodor I the **Bellringer**; accept the “naughty **bell**”] (Catherine the Great had the clapper removed from the bell that caused the mob to form during the riot.)

<European History>

9. A 1972 Harold Fisch book titled for a “revolution” discusses a “divine mandate” for the creation of these places. For 10 points each:

[10m] Name these places established by the Yesha Council. Yitzhar is one of these places, whose boosters often cite a definition of a larger place given in Genesis Chapter 15.

ANSWER: Israeli **settlements** in Palestine [or Jewish **settlements**; accept Jewish **colonies**; accept **hityashvut**, **hityashvuyot**, **hitnachlut**, or **hitnachluyot**]

[10h] This ultranationalist Orthodox group, which was founded in the aftermath of the Yom Kippur War by students of Rabbi Zvi Kook, grounded their messianic interpretation of Israeli settlements in the Torah’s definition of the Land of Israel.

ANSWER: Gush **Emunim**

[10e] Kook’s Zionist deployment of “practical messianism” draws on this tradition of mysticism that derives meaning from the study of the Zohar and the 10 sefirot.

ANSWER: **Kabbalah** [or **Qabbalā**; or **Mekubbal**]

<Religion>

10. The protagonist of this novel witnesses Herodotus being tortured for telling lies after Rhadamanthus tells him he must sail past the Isles of the Wicked to reach home. For 10 points each:

[10m] Name this novel whose protagonist helps defeat an army of fish people inside the belly of a giant whale, an early work of science fiction by Lucian of Samosata.

ANSWER: A **True Story** [or **True History** or **Vera Historia**]

[10h] Lucian's style was heavily influenced by the iambs of Herodas, who wrote in this comedic genre. Publilius Syrus beat his rival Decimus Laberius in a Roman contest for works in this comedic genre that Julius Caesar judged.

ANSWER: **mimes** [or **mimi**; accept **mimiamb**s; accept *fabula planipedia*; accept *fabula riciniata*; reject "pantomimes"]

[10e] Lucian's parable about this "misanthropic" character, whose friends abandon him after he loses his wealth, inspired a Shakespeare play set in Athens.

ANSWER: **Timon** [accept **Timon of Athens**; accept **Timon, or the Misanthrope** or **Timon the Misanthrope**]  
<European Literature>

11. A "corner conflict" about buildings in this order concerns how to place triglyphs while maintaining symmetry and stability. For 10 points each:

[10e] Name this oldest of the three canonical Ancient Greek architectural orders. Buildings in this order, such as the Parthenon, have plain columns.

ANSWER: **Doric** order

[10m] The Parthenon originally had 92 of these architectural elements that depicted scenes like the Gigantomachy. These rectangular elements are placed in between triglyphs on the outside of Doric temples.

ANSWER: **metopes** ("MEH-tuh-pees")

[10h] Metopes and triglyphs are found in this part of a Doric temple that rests on a capital's columns. Pediments are located above this feature, which is divided into the architrave, the frieze, and the cornice.

ANSWER: **entablature** [or **intavolatura**]

<Other Fine Arts>

12. Sargent's rule is derived by evaluating a nasty integral named for this physicist. For 10 points each:

[10h] Identify this physicist who names a function that is proportional to a ratio of squared gamma functions. The square root of "the number of particles, over the product of momentum-squared and that function named for this physicist" is graphed on the  $y$ -axis of plots developed by Franz N. D. Kurie.

ANSWER: Enrico **Fermi** [accept **Fermi** function]

[10e] This force's distortion of beta decay spectra is accounted for by the Fermi function. This inverse-square force is the force between two charged particles.

ANSWER: **Coulomb** ("KOO-lahm") force [or **electrostatic** force]

[10m] Fermi's theory of beta decay begins with his "golden rule," which states that this quantity equals "two pi over  $\hbar$ , all times the square of the potential, times the density of states."

ANSWER: **transition rate** [accept **transition probability** or **decay rate**; prompt on rate or probability]

<Physics>

13. In the play *Seven Guitars*, this man's adoptive father of the same surname sleeps with the pregnant Ruby and kills a promising blues musician named Floyd Barton. For 10 points each:

[10m] Name this character who titles a different play set in the 1980s. This ex-convict, who hustles stolen refrigerators, mourns the death of the extremely old Aunt Ester and interacts with a prophetic man called Stool Pigeon.

ANSWER: King **Hedley** II [or **King** Hedley II]

[10e] *King Hedley II* and *Seven Guitars* are part of this Black playwright's 10-play *Pittsburgh Cycle*.

ANSWER: August **Wilson** [or Frederick August **Kittel** Jr.]

[10h] Among his influences, Wilson has cited the blues, Baraka, and this author of the 20-play *Twentieth Century Cycle* and *The Fabulous Miss Marie*. This ex-Black Panther depicted the Black rapist Monty in the play *The Taking of Miss Janie*.

ANSWER: Ed **Bullins** [or Edward Artie **Bullins**; or Kingsley B. **Bass** Jr]

<American Literature>

*Note to moderator: Read the answerline to the first part carefully.*

14. The historian who coined the name for this period dated the "breadwinner-homemaker household" to it. For 10 points each:

[10h] Name this period of Europe's history first proposed in a 1994 paper by Jan de Vries ("YAHN DUH VREESH"). According to de Vries, this period's changing views of work precede, and partly explain, a similarly named period that occurred after it.

ANSWER: the **Industrious Revolution** [accept "The Industrial Revolution and the **Industrious Revolution**"; reject "the Industrial Revolution"]

[10e] De Vries surmised that the Industrious Revolution began in this country, a republic led by a *stadtholder* ("SHTAHT-how-dur") when its economy was warped by the "tulip mania" of the 1630s.

ANSWER: **Dutch** Republic [or the Republic of the Seven United **Netherlands**; or United Provinces of the **Netherlands**; or Republiek der Zeven Verenigde **Nederlanden**; accept **Holland**]

[10m] De Vries's book *The First Modern Economy* says that this substance, which was abundant as fuel in the pre-industrial Netherlands, helped drive the Dutch economic boom. The Lindow Man was basically mummified by this substance.

ANSWER: **peat** moss [or **sphagnum** moss or **sphagnum** peat; accept **peat** bogs; accept **Pete** Marsh; prompt on **bog** body or **bog** bodies; prompt on **moss** or **plant** matter]

<Other History>

15. This author wrote about a man who learns a mathematical technique for making a piece of paper disappear and uses that technique to kill his wife Maisie in the story "Solid Geometry." For 10 points each:

[10h] Name this author who wrote about a man who kills a rat, only to discover that it was pregnant, in the title story of his collection *First Love, Last Rites*.

ANSWER: Ian **McEwan** [or Ian Russell **McEwan**]

[10m] *First Love, Last Rites* received an award named for this English author, who wrote a story in which the missionary Davidson attempts to convert Sadie Thompson.

ANSWER: W. Somerset **Maugham** ("mahm") [or William Somerset **Maugham**] (The story is "Rain.")

[10e] Maugham's short story collection *Ashenden* belongs to this genre. *Smiley's People* is one of many John le Carré ("luh KAR-ay") books in this genre.

ANSWER: **spy** fiction [or **espionage** fiction]

<British Literature>

16. Answer the following about Franz Xaver Winterhalter, a 19th-century painter of many opulently dressed princesses and queens, for 10 points each.

[10e] Winterhalter made an oval “secret painting” of this queen looking disheveled for her husband’s twenty-fourth birthday. She and that husband co-name a decorative arts museum in London’s Kensington area.

ANSWER: Queen **Victoria** [or Alexandrina **Victoria**; accept **Victoria** and Albert Museum]

[10h] In a Winterhalter painting, Leonilla of Sayn-Wittgenstein-Sayn touches one of these objects and holds a fan as she reclines. A broken one of these objects is under a brunette’s arm in Courbet’s (“cor-BAY’s”) *The Sleepers*.

ANSWER: **pearl necklace** [or string of **pearls**; prompt on a singular **pearl**; prompt on **necklace** or **jewelry**]

[10m] Winterhalter painted an outdoor group portrait of this ruler’s wife and her ladies-in-waiting. This ruler, who sometimes names the architectural style of Charles Garnier, gave the decree resulting in the Salon des Refusés (“sah-LOAN duh ruh-foo-ZAY”).

ANSWER: **Napoleon III** [or **Louis-Napoleon** Bonaparte or Charles **Louis Napoléon** Bonaparte; accept **Napoleon III** style; prompt on **Bonaparte**; reject “Napoleon”] (Napoleon III style is also called Second Empire style.)

<Painting & Sculpture>

17. This statistical technique is equivalent to taking an independent Laplace prior on each regression coefficient, and then computing the MAP (“map”) estimator. For 10 points each:

[10h] Name this technique introduced by Robert Tibshirani. Like the horseshoe estimator, this technique is used for sparse parameter estimation.

ANSWER: **LASSO** (“lasso”) [or **least absolute shrinkage and selection operator**]

[10m] LASSO belongs to this class of statistical techniques because it introduces an L1 penalty. This class of techniques adjusts the loss function to prevent the model from becoming too complex and overfitting to sample data.

ANSWER: **regularization** methods [or **regularizes** or **regularizing**]

[10e] The L1 regularization term in LASSO forces many coefficients to take on this value, thereby promoting sparsity. This number is the mean of the standard normal distribution.

ANSWER: **zero** [or **0**]

<Other Science>

18. Many social scientists study how big institutions try to comprehend the world they’re in. For 10 points each:

[10e] Chris Argyris has studied an “organizational” form of this process, which for individual humans can occur via classical or operant conditioning, or by a “social” form theorized by Albert Bandura.

ANSWER: **learning** [accept social **learning** theory; accept organizational **learning**; prompt on **reward** or **reinforcement** or **punishment** by asking “what process does that facilitate?”]

[10m] This author’s book *Seeing Like a State* argues that “high modernist” regimes impose systems like square grids to render the world more legible.

ANSWER: James C. **Scott**

[10h] This Michigan organizational theorist discussed how organizations come to understand unexpected phenomena in his 1995 book *Sensemaking in Organizations*. He popularized the term “loosely coupled systems.”

ANSWER: Karl **Weick** (“vike”) [or Karl Edward **Weick**]

<Social Science>

19. Protective winged chimeras called bixié (“bee-shyeh”) that first appeared on vessels of this material may derive from Mesopotamian art. For 10 points each:

[10e] Name this material that was used to carve zoomorphic ritual vessels during the Shāng dynasty, which ruled during its namesake historical age.

ANSWER: **bronze** [accept **Bronze** Age; accept ritual **bronzes** or **qīngtóng qì** or **ch’ing t’ong** ch’i; prompt on metal or alloys]

[10h] A common motif on Chinese ritual bronzes depicts a member of this group called the tāotiè (“tau-tyeh”). This menacing group, which also includes the faceless Hündùn (“hwin-dwun”), corresponds to clans banished by Emperor Shùn (“shwun”).

ANSWER: **four perils** [or **sì xiōng**; or **four evil** spirits; or **four evil** creatures of the world; or **four fiends**; accept similar translations such as **four terrors** or **four inauspicious** creatures or **four malevolent** beings]

[10m] The four perils are evil counterparts of the four guardians of the cardinal directions, which include the vermilion bird often conflated with this “Chinese phoenix.” When paired with the dragon, this bird represents the empress.

ANSWER: **fènghuáng** [or **fungwong**; accept **Hō-ō**]

<Mythology>

20. One of the first non-European colonial administrators, Félix Éboué (“FAY-leeks AY-bway”), led the only African colony to remain loyal to this government during World War II. For 10 points each:

[10e] Name this government-in-exile led by Charles de Gaulle.

ANSWER: **Free France** [or **France Libre**]

[10m] During the war, Éboué published *New Indigenous Policy*, which formed the basis for a 1944 conference held in this city outlining potential colonial reforms. This capital city is located across the river from a [emphasize] *different* country’s capital where the decolonizing policy of *authenticité* (“oh-ten-tih-see-TAY”) was promoted.

ANSWER: **Brazzaville** [accept **Brazzaville** Conference or Conférence de **Brazzaville**; accept **Brazzaville** Declaration or Discours de **Brazzaville**]

[10h] Éboué pushed for the creation of a special legal category of “notable” examples of people described by this French-language term, which was applied to colonial subjects who were educated and assimilated into the European system.

ANSWER: **évolué** (“AY-vo-LWAY”) (The term translates as “evolved.”)

<World History>