



ACADEMIC
COMPETITION
FEDERATION

ACF NATIONALS 2019

PACKET 4

Packet by

Berkeley A + OSU A

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Tossups

1. At an area dedicated to performing this activity that belonged to Araunah the Jebusite, an angel who was about to destroy Jerusalem commanded David to erect an altar. In the 19th century, a “binder” prepared objects for “shocking” and this other process. Species with fragile glumes and tough rachis are described with the word “free,” followed by the name of this process. In 1830s England, this process was automated by a hated machine that was destroyed *en masse* during the Swing Riots. Modern machines perform this process using a cylinder with rasp bars which rotates against a “concave,” sending material through a grill or onto “walkers.” John Grimes’s spiritual conversion in *Go Tell It on the Mountain* occurs on a symbolic “floor” named for this process, on which pairs of oxen would be walked around dragging a board behind them. This process is performed between reaping and winnowing by a combine harvester. For 10 points, name this process of separating the straw and husks from the edible part of grain.

ANSWER: threshing [accept threshing floor; prompt on harvesting]

<Other Academic>

2. One of this author’s novels quotes the line “imagination and action have to be universal / that’s how poetic substance becomes universal” from one of his own plays. The narrator of that novel by this author favorably compares the novel *Barricades in Wedding* with Kafka’s *The Castle* while talking with his friends Heilmann and Coppi. In that novel by this author, the narrator contemplates joining the Communist Party while walking to the Louvre to see *The Raft of the Medusa*. A description of the “intertwined bodies” of stone on the Pergamon Altar opens a a three-volume novel by this author structured as discussions about the use of art to oppose the Nazi Regime. One of his plays ends with Coulmier stating “we live in far different times” as his nurses suppress the violence of Charenton Asylum. *The Aesthetics of Resistance* is a novel by this author, who wrote a play-within-a-play in which Charlotte Corday assassinates the title revolutionary. For 10 points, what German author wrote *Marat / Sade*?

ANSWER: Peter Weiss

<European Literature>

3. German officials allege that a scheme to engage in this nonviolent offense prompted the 2017 bombing of a bus carrying the Borussia Dortmund soccer team. “Don’t do it” and “Don’t text or email about it” are among ten “Laws” of this crime formulated by Matt Levine. An amendment to a class-action lawsuit against several CBS executives alleges that in addition to a cover-up, they committed this kind of crime after learning of media inquiries into then-CEO Leslie Moonves’ sexual misconduct. Following the announcement that Amazon’s HQ2 would be in Long Island City, State Senator Michael Gianaris proposed a bill that would cover real estate transactions under this area of law. This crime requires “tipping” or a breach of fiduciary duty, and it is prosecuted by the Securities and Exchange Commission. For 10 points, name this type of crime that entails misappropriating material nonpublic information to buy or sell stock.

ANSWER: insider trading [prompt on more general answers about stock fraud or securities fraud]

<Current Events>

4. During a session of this territory’s assembly, its future leader threw the Speaker’s Mace out of a window in an event called “Black Tuesday.” A private force led by Andrew Deveaux bloodlessly recaptured this territory after John Maxwell surrendered it to the Spanish. While ruling this modern-day country, a man controversially maintained a friendship with the alleged Nazi Axel Wenner-Gren and hired two American detectives to investigate the murder of the millionaire Harry Oakes. After the War of Spanish Succession, the “Flying Gang” took up residence in this modern-day country’s capital and established the Republic of Pirates, which was ruled by Blackbeard until its destruction by Woodes Rogers. Lynden Pindling served as the first post-independence leader of this country. Following his abdication, Edward VIII served as governor of the crown colony that would become this country. For 10 points, name this Caribbean island nation with capital at Nassau.

ANSWER: The Bahamas

<World History>

5. BARAC, DIBAC, and DIBO are reactants designed for a reaction which produces rings of this size, which may be used to apply fluorescent tags to biomolecules by serving as “fluoro-switches”. The strain of cyclo-octynes drives a reaction which forms rings with this many members. An azo-methine ylide adds to a fullerene to produce a ring with this many members in a reaction named for Prato. A class of reactions which forms rings with this many members is believed to undergo a concerted mechanism over Firestone’s diradical intermediate mechanism. A reaction which forms a ring with this many members reacts a compound with charge delocalized over three atoms with a dipolarophile. 1,2,3-triazoles are defined by a ring with this many atoms. The prototypical click reaction produces a ring of this many atoms by reacting an azide and an alkyne. For 10 points, name this number of atoms in a ring formed by a 1,3 dipolar cycloaddition.

ANSWER: **five**

<Chemistry>

6. A member of this family feuded with the first female professional writer in America, Hannah Adams, who accused him of plagiarizing her *Summary History of New-England*. That member of this family delivered three sermons arguing that the anti-Federalists had been infiltrated by the Bavarian Illuminati. A method of color map printing called cerography was developed by Sidney Edwards, a member of this family whose father Jedidiah is called the “father of American geography” for publishing books like *Geography Made Easy*. It’s not the Beechers, but a man from this family claimed that the Holy League was sponsoring Catholic immigrants in a plot to take over America in a book he published while running as the Nativist candidate for mayor of New York in 1836. That member of this family was a portrait painter who supported Cyrus Field’s efforts to use a technology he invented for a 2,000 mile-long piece of infrastructure. For 10 points, name this family of an inventor who used the phrase “What hath God wrought” to test his telegraph.

ANSWER: **Morse** family

<American History>

7. This is the better-known of the two artworks that, according to the biographer Filippo Baldinucci, the artist was inspired to create as a young boy to fulfill a prophecy by Annibale Carracci. A sequence of seven female faces with increasingly agonized expressions are followed by the face of a smiling baby, in an enigmatic allegory of childbirth in this artwork. The Franco-Flemish sculptor Francois Duquesnoy designed the four angels offering garlands that sit on each capital of this sculpture, surrounding smaller angels that offer a book, a sword, and a tiara with crossed keys. The artist relocated several columns supposedly brought by Constantine from the Temple of Solomon to install four of his own, helical “Solomonic” columns that support this sculpture. The high altar of St. Peter’s Basilica is covered by, for 10 points, what monumental gilt-bronze canopy designed by Gian Lorenzo Bernini?

ANSWER: St. Peter's **Baldachin** [or **Baldacchino** di San Pietro; or L'**Altare di Bernini**; accept L'Altare after “Bernini” is read]

<Painting and Sculpture>

8. A paper overseen by Avi Loeb et al. suggests that since this object may erode “sub-Neptune sized planets” into “terrestrial super-Earths” that are “habitable cores,” it is a possible driving force behind panspermia. It is theorized that an outburst of radiation from this object detected by CHANDRA in 2015 was caused by magnetic interference from the gasses of B2, a molecular cloud nearby it. In 2012, the mass of this structure was calculated to be approximately 4.1 million solar masses, which was done by studying the velocity of S0-102, which orbits it — that calculation of its mass relies on the m-sigma relation. This object was discovered in 1974 by Balick and Brown using VLBI after they examined a signal first discovered by Karl Jansky a few years earlier. That signal likely originated from the jets emitting from this largest known compact radio source. For 10 points, name this supermassive black hole at the center of the Milky Way, which is partly named for a constellation.

ANSWER: **Sagittarius A*** [A-star] [accept **Sajj A star**; or **Sag A star**; do not accept or prompt on (the constellation of) Sagittarius; prompt on the Milky Way’s **center** before “Milky Way.”]

<Astronomy>

9. In the Middle Ages, a work of “theology” thought to be a translation of this work was actually a misattributed translation of Plotinus’s *Enneads*, and helped inspire the Gnosticism found in a thinker’s work *The Book of the Philosophical Life*. This book inspired the structure of, and likely supplied the title of, a treatise discussing the “particles” of certain categories. That treatise, *The Book of Letters*, was written by an author who used this book to ask whether or not the world is eternal. This book’s discussion of an “infinite regress” is used to argue that God is “The True One” in *On the First Philosophy* by Al-Kindi. The view that there is a “unity of the intellect,” which a thinker termed “mono-psychic-ism,” is introduced in Averroes’s *Long Commentary* on this work. Formal, efficient, material, and final causes are discussed in this book. For 10 points, name this Islamic philosopher who wrote commentaries on what treatise by Aristotle concerned with “being qua being”?

ANSWER: Aristotle’s *Metaphysics* (Note: The philosophers referenced are Al-Ruzi in the first sentence, Al-Farabi in the second sentence.)

<Philosophy>

10. This novel’s protagonist is repeatedly unable to identify the impersonations of characters like the Lone Ranger and “Popeye Sailor” that his grandson does for him. This novel’s protagonist muses that “their kind do not know what it is to risk everything in the endeavor to rise above the mediocre” while reflecting on a colleague nicknamed Tortoise. The chapters of this novel, which are titled for months between 1948 and 1949, each begin by describing the so-called “Bridge of Hesitation.” As a member of the Committee of Unpatriotic Activities, the protagonist of this novel reports his student Kuroda, leading his creations to all be burned. This novel’s protagonist spends time at Mrs. Kawakami’s bar and reflects on how his support of war propaganda led to creations he titles “Complacency” and “Eyes on the Horizon.” For 10 points, name this Kazuo Ishiguro novel set in post-WW2 Japan about Masuji Ono, a retired painter.

ANSWER: *An Artist of the Floating World*

<British Literature>

11. *Veiled Empire*, Douglas Northrop’s book about “gender and power” in a region of this ruler’s domains, discusses a mob’s protest of one of his policies in the Chust Affair. The slogan “To the Attack!” was used for a campaign initiated by this leader’s government, whose participants staged public burnings of horsehair robes called *paranji*. The *hujum* campaign against the veiling of women occurred under this leader, whose arrest of writers such as Abdurauf Fitrat effectively ended the reformist Jadidi movement. This leader’s forces used cattle cars to transport hundreds of thousands of ethnic Koreans and Tatars to a Muslim-majority region in one of his forced population transfer programs. This leader’s policy of creating kolkhozes contributed to a famine that killed a fourth of the population of Kazakhstan. For 10 points, name this leader who had the leaders of the Uzbek Soviet Socialist Republic executed during his purges in the 1930s.

ANSWER: Joseph **Stalin**

<European History>

12. Frequent Mel Brooks collaborator Alan Johnson won an American Choreography award for restaging this choreographer’s works in a 2000 series of Gap commercials. In one work by this choreographer, the ballet ends with “The Woman” character yelling “Stop!”, a role premiered by Nora Kaye and banned for portraying a neurotic love triangle. This choreographer of *Facsimile* created a ballet in which a galop, waltz, and danzon by three solo dancers are followed by a fistfight, which was inspired by a Paul Cadmus painting of sailors called *The Fleet’s In!*. This choreographer visited Orthodox Jewish weddings to get inspiration for the Bottle Dance in *Fiddler on the Roof*. Alongside Robert Wise, he won a Best Director Oscar for a work in which he instructed some dancers to snap their thumb and index fingers to distinguish them from the Sharks. For 10 points, name this choreographer of *Fancy Free* and *West Side Story*.

ANSWER: Jerome **Robbins**

<Other Fine Arts>

13. In a novel from this country, the narrator relates how his mother, an Indian dancer, had his uncle and father undergo a “trial by cobra” whose survivor would win her hand. In that novel from this country, a creepy hearse-driver unearths an ancient vase while digging a grave for a woman whose haunting eyes the protagonist had first spotted through a ventilation hole. The image of an old man crouching beneath a cypress tree reoccurs in that nightmarish novel from this country, in which an opium-addicted painter addresses his confessions to a shadow shaped like the the title bird. The protagonist recalls her childhood conversations with God and her purchase of illegal Kim Wilde and Iron Maiden tapes in a novel from this country whose first part ends with her parents sending her to boarding school in Vienna. For 10 points, name this country home to the author of *The Blind Owl*, Sadegh Hedayat, and to Marjane Satrapi, the author of *Persepolis*.

ANSWER: Iran

<World Literature>

14. Researchers studying antidepressant binding crystallized a bacterial homologue of neurotransmitter transporters, which moves one atom of this compound along with two sodium ions. Sestrin2 is a sensor of this amino acid, which in a Rag GTP-ase dependent manner directly stimulates the mTOR complex 1 pathway. Since this compound’s metabolite beta-methylbutyric acid is converted to aceto-acetic acid and acetyl-CoA, it is one of two amino acids to be exclusively ketogenic. Susceptibility to Crohn’s disease is conferred by variants of NOD2 containing an altered horseshoe-shaped domain that is “rich” in “repeats” of this amino acid, a motif that also enables ligand binding in toll-like receptors. c-Fos dimerizes with c-Jun via residues of this nonpolar amino acid. A family of “basic” transcription factors contains a variant of the coiled coil in which this amino acid appears every seventh position. For 10 points, name this amino acid which has an isobutyl side chain, forms namesake “zippers,” and is symbolized L.

ANSWER: leucine [or Leu; accept L before the last letter of the tossup]

<Biology>

15. The connection between social relations and this concept is embodied in a passage claiming that Soviet planners did not understand that, without an “appropriate” form of this concept, exhortations to “change life!” and “change society!” were meaningless. A 1984 essay calls the 20th century the “epoch of” this concept, in contrast to the 19th century, whose “great obsession was, as we know, history.” That essay, which sets forth six principles that define “heterotopias,” is titled for a form of this concept and was written by Michel Foucault. A trialectic of this concept consists of its perceived, conceived, and lived forms, the last of which was called its “third” form by Edward Soja. A form of “justice” named for this concept is grounded in the work of David Harvey, who built on this concept’s formulation in a 1974 book by a French urban sociologist. For 10 points, name this concept whose “production” titles a book by Henri Lefebvre.

ANSWER: space [or social space; or l’espace; accept spatial justice or spatial triad or “Of Other Spaces” or *The Production of Space*]

<Social Science>

16. The second movement Romance of Eric Korngold’s Violin Concerto begins with an introduction by harp, a percussion instrument, and this instrument. This instrument plays a gradually descending theme opening [*pause at slashes*] “G-E-G / F-sharp / D-sharp, E” in a ballet scene depicting a character whose voice has “the sound of the sprays of a fountain.” George Gershwin was rushed in to play this instrument’s solo on the RCA Victor recording of *An American in Paris*. This instrument is featured in a piece whose first movement is tonally centered around A, in which every statement of the dissonant fugue theme enters up or down a fifth. Glockenspiel or this keyboard instrument frequently replace glass armonica in modern performances of Ruslan and Lyudmila. For 10 points, name this keyboard instrument featured in the “Dance of the Sugarplum Fairy”, which Béla Bartók used in a piece alongside strings and percussion.

ANSWER: celesta [or celeste]

<Music>

17. Apparitions that were described in the diary of Faustina Kowalska inspired the Catholic devotion to a “Divine” form of this concept. A 1980 encyclical by Pope John Paul II illustrates this concept with The Parable of the Prodigal Son and takes its title from a line from Ephesians 2:4 describing God as “rich in” this concept. It’s not love, but Psalm 136, known as the Great Hallel, ends each verse by stating this concept “endures forever.” “Lovingkindness” is an alternate translation of the Hebrew word *chesed*, which is most commonly translated as this concept. Pope Francis declared 2016 to be an Extraordinary Jubilee dedicated to this concept. Seven spiritual and seven corporal services comprise a set of charitable “Works” of this concept. The Kyrie prayer is a request for this concept, which translates to *miser cordia* in Latin and *eleison* in Greek. For 10 points, many entries in Psalms ask the Lord to “have” what concept “on me?”

ANSWER: **mercy** [or **Divine Mercy**]

<Religion>

18. István Gyarmati developed a variational principle which governs this general type of process. Quantum systems which undergo this process are discussed in a textbook by Ulrich Weiss. The steady Stokes flow for a given set of boundary conditions will minimize the amount of this process according to a theorem sometimes named for Helmholtz. The strength of this process is proportional to one over kT times the autocorrelation of a random forcing function. Lord Kelvin predicted that the Earth would one day be uninhabitable in an article titled “On a Universal Tendency in Nature to the *this*.” Linear response theory predicts that the strength of this process in response to a shift from equilibrium is directly tied to the amplitude of fluctuations about equilibrium. Damped non-conservative systems undergo this process by definition. For 10 points, give this term for the loss of useful energy as in irreversible processes, typically in the form of waste heat.

ANSWER: energy **dissipation** [prompt on “damping” before mention; prompt on “entropy production”; prompt on “energy loss” before the last sentence; prompt on “friction”]

<Physics>

19. At the climactic scene in this play, “the music crashes down in a frenzy of sound, which becomes the soft pulsation of a single cello string.” The author of this play defended his choice to write it in the essay “Tragedy and the Common Man.” This play’s author originally planned to call it *The Inside of His Head* and set it inside a literal giant head, but Jo Mielziner designed the much more sensible set used for its premiere. The opening stage directions describe a “word-sigh” that “escapes” the protagonist’s lips and “might be ‘Oh boy, oh, boy.’” The “grass and trees and the horizon” are evoked at this play’s opening by a “melody... played upon the flute.” The protagonist’s wife sobs “We’re free... We’re free...” at the end of this play’s final scene, titled “Requiem.” This play’s protagonist shouts “You can’t eat the orange and throw the peel away — a man is not a piece of fruit!” during an argument with his boss Howard. For 10 points, name this play that depicts the downfall of Willy Loman, by Arthur Miller.

ANSWER: **Death of a Salesman**

<American Literature>

20. A chronicler who took the name of this king sketched a map of the cosmos depicting binary opposites like man and woman and the dry season and rain season. This king made his father wear women’s clothing and drink beer from a dirty pot after seizing the royal tassel in a power struggle with his brother Urco. The title character stages a rebellion after being forbidden from marrying this king’s daughter Cusi Coyllur in the play *Ollantay*. This king commissioned life-sized gold statues of animals and plant for the central garden of his Coricancha temple. This king, who supposedly introduced the *hanan* and *hurin* social classes, is also credited with forcibly moving populations between the four *suyus* of his realm in the first instance of the *mitma* policy and with rebuilding his capital in the shape of a puma. Much of the land of the Chimú people was conquered by, for 10 points, what king who built Machu Picchu and transformed the Kingdom of Cuzco into the Inca Empire?

ANSWER: **Pachacuti** [accept **Pachacuti** Inca Yupanqui or Juan de Santa Cruz **Pachacuti** Yamqui Salcamayhua]

<World History>

Bonuses

1. The “Four Musketeers” led the Promoters faction of the People’s Party in a 1932 coup in this country. For 10 points each:
[10] Name this country whose seemingly-endless list of modern military coups includes the 1981 April Fool’s Day coup, the 1951 Manhattan Rebellion, and a 2006 coup against an ethnically Hakka businessman who is supported by the Red Shirts.

ANSWER: **Thailand** [accept **Siam**]

[10] This Thai dictator was in power when the helpfully-named Coup Group solidified military control of the country in the Silent Coup. He changed the country’s name from “Siam” via a series of “cultural mandates” and fought the 1940 Franco-Thai War.

ANSWER: **Phibun** [or Plaek **Phibunsongkhram**; or **Chomphon** Por]

[10] This king of Thailand backed the 1976 coup against Thanom Kittikachorn after the Thammasat University Massacre. His 70-year reign also saw the 2006 and 2014 coups against the Shinawatra siblings.

ANSWER: **Rama IX** [or **Bhumibol** Adulyadej; prompt on **Rama**]

<World History>

2. An eight-day “inspection tour” from Zhenlan Temple to Chaotin Temple and back is part of the largest festival for this deity. For 10 points each:

[10] Identify this Taiwanese sea goddess who protects sailors. She is considered a deified version of the shamaness Lin Moniang.

ANSWER: **Mazu**

[10] Mazu was engaging in this activity when she fell into a sailor-saving trance. On the seventh day of the seventh lunar month, a flock of magpies forms a bridge to reunite a girl who performs this activity with her lover, a cowherd.

ANSWER: silk **weaving**

[10] The *Daozang* reports that the Jade Woman was incarnated as Mazu by this figure, the best-known incarnation of the Grand Pure One. The *Dao de jing* is sometimes named for this figure, its author.

ANSWER: **Laozi** [or **Lao Tzu**]

<Religion>

3. In many implementations of this technique the steps of fetch, decode, register fetch, execute, memory access, and register write back are precalculated, though there may be some “stalls” during branches. For 10 points each:

[10] Name this technique in which a CPU processes many instructions concurrently to increase throughput. This form of instruction processing is often said to be a parallel operation.

ANSWER: instruction **pipelining**

[10] This kind of architecture or microarchitecture uses multiple execution units within the same core to increase the number of computer instructions in a clock cycle. Architectures that use this technique and pipelining correspond to MIMD devices in Flynn’s Taxonomy.

ANSWER: **superscalar** architecture

[10] This other processing unit makes use of pipelining and parallelism to handle image data. Programs called shaders are typically optimized for these units.

ANSWER: **GPUs** [or **graphics** processing unit]

<Computer Science>

4. The courtyard of one of these buildings in Blois includes a balustrade adorned with thirteen terracotta medallions of Roman emperors surrounded by wreaths. For 10 points each:

[10] Name these private French townhouses or luxury apartments, whose *particulier* variety was typically flanked by an elaborate *cour d'honneur*, or "entrance court," up front and a garden in the back.

ANSWER: hôtels

[10] The more familiar usage of the term *hôtel* derives from nobles and other wealthy men temporarily living in them whenever they wanted closer access to the court of Henry IV, who himself added the "Grand Galerie" to this former royal palace in Paris which is now an art museum.

ANSWER: Louvre

[10] As the term *hôtel* also means "hospital," it sometimes appears in the name of this structure in Paris built by Louis XIV for wounded, sick, or old soldiers. Jules Hardouin-Mansart designed a domed chapel for this complex of buildings dedicated to France's military history.

ANSWER: Les Invalides [or Hôtel national des Invalides; or Hôtel des Invalides]

<Other Fine Arts>

5. A Sylvia Plath poem titled for one of these devices describes a "god of shades" who "dribbles ... his words" and "[writes] aureate poetry." For 10 points each:

[10] Name this sort of device, one of which was used by James Merrill and David Jackson to write much of *The Changing Light at Sandover*, which depicts their interactions with the spirit Ephraim.

ANSWER: Ouija board

[10] Sylvia Plath took the name of this collection from the "family god" of a spirit named Pan whom she and Ted Hughes talked to via their Ouija board. This collection's title poem begins "I shall never get you put together entirely" and describes a broken statue.

ANSWER: *The Colossus and Other Poems*

[10] The occult also influenced a poem by Plath titled "On the Decline of Oracles," which was inspired by this artist. This artist also inspired a Plath poem that repeatedly expresses distaste for her mother and describes "three ladies ... with stitched bald head."

ANSWER: Giorgio de Chirico (That poem is "The Disquieting Muses.")

<Other Literature>

6. This branch of logic adds operators shaped like a square and a rhombus to signify necessity and possibility. For 10 points each:

[10] Name this branch of logic used in possible world semantics. Saul Kripke introduced a namesake semantics for this type of logic when he was just nineteen.

ANSWER: modal logic

[10] In possible world semantics, the possibility and necessity operators perform this process over worlds. In predicate logic, this process binds free variables.

ANSWER: quantification [accept quantifiers]

[10] David Lewis argues that the actual world is not modally privileged but that the word "actual" functions as this kind of expression. Donald Kaplan distinguished between the "content" and "character" of these expressions.

ANSWER: indexicals

<Philosophy>

7. During this decade, a doctor named Anton Dilger conceived a plan to spread an anthrax outbreak by painting bacteria on the nostrils of horses. For 10 points each:

[10] Name this decade during which saboteurs set fire to a munitions depot on an artificial island in New York Harbor, setting off the massive Black Tom explosion.

ANSWER: **1910s** [prompt on 10s]

[10] The Black Tom explosion damaged this landmark, which was not reopened until repairs were completed in 1986. This landmark was designed in France by Frédéric Bartholdi.

ANSWER: **Statue of Liberty**

[10] German spies also orchestrated an arms smuggling affair named for this ship, which was to be used to transport arms to the pro-independence Indian Ghadar Party from the United States. The plot failed, leading to the 1917 Hindu-German Conspiracy Trial.

ANSWER: **Annie Larsen**

<American History>

8. This character sardonically observes that while craftsmen are forced to pay for material they destroy, those in his new profession can pretty much butcher whomever they want. For 10 points each:

[10] Name this character whose wife Martine gets revenge on him by claiming he is an amazing doctor, leading G ronte's servants to attack him while he is drinking and chopping wood in a forest.

ANSWER: **Sganarelle** [prompt on the doctor in spite of himself]

[10] Sganarelle, the titular *Doctor in Spite of Himself*, was created by this French dramatist. He died hours after playing the hypochondriac Argan from one of his plays.

ANSWER: **Moli re** [or Jean-Baptiste **Poquelin**]

[10] An essay dictated to this person discusses the "abstract musical energy" the author experienced while rehearsing *The Doctor In Spite Of Himself*. This dramatist translated several Moli re plays and Hermann Suderman's *Teja* into her local dialect, eschewing standard English.

ANSWER: **Lady Gregory** [accept Isabella **Augusta Gregory**; accept Isabella Augusta **Persse**; prompt on Gregory]

<European Literature>

9. This effort was launched in 1971 by UIUC student Michael S. Hart, who was given access to a \$100 million account on a Xerox Sigma V mainframe that was one of the fifteen nodes of ARPANET. For 10 points each:

[10] Name this world's oldest digital library, which includes over 58,000 entries, mostly full texts of public domain books. It has prompted spinoff efforts that include books that are in the public domain in Canada and Australia, but not the United States.

ANSWER: **Project Gutenberg**

[10] This company's digital library service, known simply as "Books," offers a "snippet view" of a few lines of text whenever it lacks sufficient permission from copyright owners.

ANSWER: **Google** [or **Alphabet**]

[10] This psychologist and computer scientist ambitiously imagined digital library patrons having access to "procognitive systems" guiding their searches in his 1965 book *Libraries of the Future*. As head of the IPTO at ARPA, this man laid out a vision of the precursor to today's Internet.

ANSWER: J. C. R. **Licklider** [or Joseph Carl Robnett **Licklider**; or **J.C.R.**; accept **Lick** from his surviving friends]

<Other Academic>

10. A CFP-YFP pair is commonly used for techniques relying on this process which has an “efficiency” inversely proportional to the sixth power of distance. For 10 points each:

[10] Name this energy transfer mechanism between two chromophores through nonradiative dipole-dipole coupling.

ANSWER: **FRET** [accept **Förster resonance energy transfer**]

[10] This parameter for characterizing FRET is often assumed to be $\frac{2}{3}$. It is typically approximated in a formula relating the transition dipole moments of the donor and acceptor fluorophores and the distance between them.

ANSWER: dipole **orientation factor** [accept **kappa squared**]

[10] FRET efficiency can be calculated by observing photobleaching rates by plotting fluorescence against this quantity. The plot of fluorescence against this quantity results in a decaying exponential in which this quantity is divided by a namesake constant.

ANSWER: **time**

<Chemistry>

11. This ethnic group introduced a genre of percussion-heavy celebratory music called the *marfa*, which is annually performed during Independence Day festivities at the Red Fort in Delhi. For 10 points each:

[10] Name this Indian ethnic group largely descended from East African slaves brought by the Arabs and Portuguese. One of their names, the Habshi, is derived from the Arabic word for Abyssinia.

ANSWER: **Siddi** [or **Sidi**; or **Siddhi**; or **Sheedi**]

[10] The Siddi served as cavalry guards for the Nizam of a princely state centered on this capital of Telangana and Andhra Pradesh. Like Bangalore, this fourth most populous city in India is a hub of the country’s IT industries.

ANSWER: **Hyderabad**

[10] The Siddi are among the tribes described by this English adjective in the Indian constitution, which means that they have low socioeconomic status and can benefit from affirmative action. The lower house of the Indian Parliament reserves 131 seats for members of castes and tribes described by this term.

ANSWER: **scheduled**

<Geography>

12. This piece’s most famous orchestration was done because the Opera de Paris required a ballet in the second act of any opera it produced. For 10 points each:

[10] Name this piece originally a D-flat major piece for piano, which programmatically begins with a slow introduction to an *allegro vivace* waltz between two characters. Leopold Godowsky wrote a “Contrapuntal Paraphrase” on this piece.

ANSWER: **Invitation to the Dance** [accept **Aufforderung zum Tanze**]

[10] That piece was orchestrated to be the ballet for this opera by Carl Maria von Weber, which has an often-excerpted “Huntsman’s Chorus.”

ANSWER: **Der Freischütz** [accept **The Sharpshooter**]

[10] Along with concerti for clarinets, bassoon, and horns, Weber also wrote this single-movement piece for piano and orchestra, with a program that imagines a woman who longs for her Crusader lover.

ANSWER: **Konzertstück** [accept **Concert Piece**]

<Music>

13. The derivation of this effect is usually carried out in the electron's rest frame, so that the relative motion of the nucleus generates an obvious magnetic field. For 10 points each:

[10] Name this interaction which breaks the degeneracy of energy levels of hydrogen with different total angular momentum numbers.

ANSWER: **spin-orbit** interaction [or **spin-orbit** coupling]

[10] The spin-orbit coupling and the Darwin term are two mechanisms behind this splitting of atomic spectral lines. This feature names a dimensionless constant symbolized alpha, with an approximate value of 1 over 137.

ANSWER: **fine structure** (constant) [do not accept "hyperfine splitting"]

[10] The Darwin term correction arises due to this motion which "smears" the position of the electron over a volume proportional to the Compton wavelength.

ANSWER: **zitterbewegung** [TZIT-ur-be-veh-gung, but be lenient]

<Physics>

14. This author created a character who declares: "But art is so much more real than life," after getting so caught up in a book that she forgets to get mad at her husband for having an affair. For 10 points each:

[10] Name this author who took her pen name from the daring heroine of Henrik Ibsen's *Rosmersholm*. She dedicated an 1,100 page travelogue to those "who are now all dead or enslaved."

ANSWER: Dame Rebecca **West** [or Dame Cicily Isabel **Fairfield**]

[10] The matriarch Clare appears in this novel by West. In it, Cordelia attempts suicide after being told she is not good enough to be a musician, and Piers abandons his wife and children due to a nervous breakdown.

ANSWER: *The **Fountain Overflows***

[10] Richard Quin Aubrey fights in this war in *This Dark Night*, the sequel to *The Fountain Overflows*. This war is also the backdrop for West's *The Return of the Soldier*, in which Chris Baldry loses his memory from shell shock.

ANSWER: **World War I** [or the **First World War**; accept the **Great War**]

<British Literature>

15. This physical action was committed by Sciarra Colonna after its subject stated he would "sooner die" than resign. For 10 points each:

[10] Name this action known as the "Outrage at Anagni," which occurred during a confrontation between its subject and Guillaume de Nogaret after the latter's mercenaries seized his palace.

ANSWER: **slapping** Pope **Boniface VIII** [accept synonyms in place of "slapping", including answers about Pope **Boniface VIII** being **beat** up; accept Benedetto **Caetani** in place of "Boniface VIII"; prompt on **slapping**, **slapping the pope** or **slapping Boniface**]

[10] Boniface VIII allegedly died by gnawing himself to death a month after being slapped and imprisoned by representatives of this French king known as "the Fair."

ANSWER: **Philip IV** [prompt on **Philip**]

[10] Another pope with a supposedly unique means of death was the second of this name, who is said to have gorged himself to death on melons or died while being sodomized by a page. A Farnese pope who was the third to take this name assembled the forces that won the Battle of Preveza.

ANSWER: **Paul** [or **Paulus**]

<European History>

16. A pagan statue breaks and falls off its pedestal as the Christ child approaches in the background to a version of the Flight into Egypt commissioned for this building. For 10 points each:

[10] Name this monastery on the outskirts of Dijon for which much late 14th century French and Burgundian art was commissioned, including the surviving panel paintings by Melchior Broederlam and Claus Sluter's Well of Moses.

ANSWER: Chartreuse de **Champmol** [or Chartreuse de la Sainte-Trinité de **Champmol**; prompt on **Chartreuse**]

[10] Sluter's Well of Moses and Broederlam's paintings represent the high water mark of this style of Gothic art, so-named because it spread widely across Europe in the late 14th and early 15th centuries.

ANSWER: **International** Gothic

[10] Broederlam's use of oil painting influenced this artist, who painted an Annunciation as part of a now-lost triptych for the Chartreuse of Champmol. A surviving polyptych by this artist and his brother Hubert depicts the *Adoration of the Mystic Lamb* in the bottom center.

ANSWER: Jan **van Eyck** (that's the Ghent altarpiece)

<Painting and Sculpture>

17. A 1983 book uses the word "allochronism" to describe the "schizogenic use of time" that researchers use to deny "coevalness" in this field of study. For 10 points each:

[10] Name this field of study whose abuse of "time" titles that book by the Dutch scholar Johannes Fabian, which examines how this discipline "makes its object."

ANSWER: cultural **anthropology** [accept **ethnography** or **ethnographic** work; prompt on "**fieldwork**"]

[10] The second chapter of Fabian's *Time and the Other* discusses the use of time in the two dominant anthropological frameworks, one of which is the structuralist paradigm of this writer of *The Savage Mind*.

ANSWER: Claude **Lévi-Strauss**

[10] Fabian's critique has been extended to this discontinued anthropological program of the U.S. Army, overseen by Montgomery McFate, which was part of the military's counterinsurgency strategy in Afghanistan and Iraq. When Fabian was asked about this program, he noted that the word "statistic" comes from a word meaning "agent of the state" but declined further comment.

ANSWER: **Human Terrain** System [or **HTS**]

<Social Science>

18. Reagents developed by the company Miltenyi use this phenomenon to separate populations of cells. For 10 points each:

[10] The DynaBeads produced by ThermoFisher isolate cells based on what unusual property?

ANSWER: **magnetism** [or **paramagnetism**; or **superparamagnetism**]

[10] Streptavidin magnetic beads can be used to capture interactions between these molecules using biotinylated "bait" examples of them in two hybrid screening. A "tag" of six to eight histidines is often added to the carboxy or amino terminus of these molecules to purify them.

ANSWER: **proteins** [or **polypeptides**]

[10] Either agarose or magnetic beads can be employed in this general technique, which uses an antibody to bring a protein out of solution. Binding sites of DNA-associated protein can be identified by performing sequencing after a type of this technique.

ANSWER: **immunoprecipitation** [or co-**immunoprecipitation**; or chromatin **immunoprecipitation**; or **IP**; or Co-**IP**; or **ChIP**; prompt on **precipitation**]

<Biology>

19. Gunpowder is made by mixing sulfur, saltpeter, and charcoal. Answer the following about the history of each ingredient, for 10 points each.

[10] This island was the primary source of sulfur in the 19th century, where it was mined by boys called *carisi* in conditions described by Booker T. Washington as “the nearest thing to hell.” The 1840 Sulfur Crisis was a trade dispute between Britain and this island’s government.

ANSWER: **Sicily** [or **Sicilia**]

[10] In 1907, two thousand striking saltpeter miners were killed in the Santa María School in this northern Chilean port city. The Peruvian *Huáscar* sank the Chilean *Esmeralda* in an earlier battle in this city’s harbor, but Chile ended up winning the War of the Pacific and annexing this city.

ANSWER: **Iquique**

[10] Charcoal from willow trees is recommended in a recipe for gunpowder in this monk’s *Opus Maius*. He shares his surname with a later thinker who developed a scientific method in his *Novum Organum*.

ANSWER: Roger **Bacon** [or Francis **Bacon**]

<European/World History>

20. Answer the following about rediscovered works of American literature, for 10 points each:

[10] This author’s 1965 novel about a English professor that feuds with Hollis Lomax, titled *Stoner*, saw a dramatic rise in popularity in 2013 after it was reissued by NYRB Classics.

ANSWER: John **Williams**

[10] In the 1970s, the Feminist Press rediscovered several works by 19th-century women authors, most notably Rebecca Harding Davis’s *Life in the Iron Mills* and this short story about the “rest cure” by Charlotte Perkins Gilman.

ANSWER: “The **Yellow Wallpaper**”

[10] This novel, which was rediscovered in 1976 by writers in Los Angeles., examines the impacts of Japanese internment through the experiences of Ichiro Yamada. This John Okada novel concerns Yamada’s decision to abstain from fighting in World War II or pledging loyalty to the U.S.

ANSWER: **No-No Boy**

<American Literature>