ACADEMIC COMPETITION FEDERATION

ACF NATIONALS 2019

PACKET 1

Packet by

Yale A + Michigan A

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Tossups

1. According to the *Three Fragments*, a ruler of this kingdom ordered the people of a besieged city to drop scalding hot beer and hives of bees on an army led by Ingimund. A tradition of chroniclers including Roger of Wendover refer to a queen of this kingdom as Quendreda and present her as a villain who personally booby-trapped the bedroom of Saint Ethelbert and smothered him. This kingdom's namesake "Register" chronicles a woman who won the Battle of Tettenhall and fortified many of its towns while ruling as its "lady." Unusually, this kingdom's Queen Cynethryth appears on coins minted by her husband, many of which are printed with Arabic text copied from Abbasid coinage. Alfred the Great's daughter Aethelflaed ruled this kingdom from its capital at Tamworth. For 10 points, what kingdom achieved supremacy over the other states in the Anglo-Saxon Heptarchy during the reign of a ruler who built a namesake earthwork on the Welsh border, King Offa?
ANSWER: **Mercia**
<European History>

2. *Description acceptable*. In *P. parishii*, this process occurs due to a phase change from solid to liquid leading to a droplet "stepping" onto a papillate surface. This process is *prevented* by the interaction between the cysteine-rich protein SCR/SP11 and the transmembrane kinase SRK, which are both expressed in adjacent protein coding regions in the S-locus in *Brassica*. Organisms adopt "pin" and "thrum" structures as a physical barrier to this process in a form of herkogamy. Plants which only produce cleistogamous flowers must undergo this process, which can be prevented by protandry and heterostyly and cannot occur in dioecious plants. This mechanism is most commonly seen in legumes such as peanuts and fast-growing weeds. A form of "incompatibility" abbreviated SI prevents, for 10 points, what method of sexual reproduction that uses two gametes from the same plant?
ANSWER: **self-pollination** [or **self-fertilization**; or **self**ing; accept descriptive answers involving an organism **producing offspring** with two of its **own gamete**s; prompt on <u>pollination</u>; prompt on <u>fertilization</u>; prompt on <u>sexual</u> reproduction before it is mentioned; do not accept or prompt on "cross-pollination"]
<Biology>

3. This poet described the world as "soiled and overcast, / Void of all joy and full of ire and sadness" in a poem lamenting the death of the "Young English King." In a fictional appearance, this master of the *sirvente* poetic form compares himself to Achitophel and declares "In me you see the perfect *contrapasso*!" A poem by a later author that is spoken by this poet opens with stage directions that exclaim "Judge ye! / Have I dug him up again?" and identify this man as a "stirrer-up of strife." This poet declares "there's no sound like to swords swords opposing" in that poem, which opens with him exclaiming "Damn it all! all this our South stinks peace" and calling his *jongleur* Papiols a "whoreson dog." This poet appears carrying his own head as a lantern in the eighth circle of Dante's *Inferno*. For 10 points, Ezra Pound's "Sestina: Altaforte" depicts what warlike Occitan troubadour of the 12th century?
ANSWER: **Bertran** de Born [accept **Bertrans** de Born or **Bertrand** de Born]
<European Literature>

4. In a 2019 paper, the application of this theoretical framework showed significant "neighborhood effects" from non-significant "voucher effects" in the MTO program, a test case that Rodrigo Pinto used to show how economists could use this framework to derive causality from study noncompliance. Testing for consistency within this approach can be done using Warshall's algorithm to compute transitive closure, as shown by Hal Varian, who developed a "generalized" version of this approach. This framework was reformulated in terms of differential equations by M. K. Richter and made applicable to finite data sets by Sydney Afriat. This framework's "weak" axiom was generalized by Hendrik S. Houthakker into a "strong" axiom that links consumer choices to their underlying utility functions. For 10 points, name this theoretical framework developed by Paul Samuelson, which estimates utility from the actual purchasing habits of consumers.
ANSWER: **revealed preference** theory or approach [or **revealed preference**s; accept **RP** or strong axiom of **revealed preference** or weak axiom of **revealed preference** or general axiom of **revealed preference** or **SARP** or **WARP** or **GARP**; prompt on "<u>choice</u> modelling" or "consumer <u>choice</u> theory" before "choices"]
<Social Science>

5. This artist presented a painting of a flannel-wearing man with a long rifle-barrel for a nose at his first solo exhibition at the Galerie du Faubourg, for which he prepared by forging Picassos and Braques. After World War II, this artist declared that "We have neither the time nor the taste to play at Surrealist art" in his manifesto *Surrealism in Full Sunlight*, inaugurating his *vaches* or "cow" period of Fauvist-inflected gouache paintings intentionally meant to offend surrealists. The 2018 SFMOMA exhibit *The Fifth Season* highlighted many of this artist's "hypertrophy" paintings, in which everyday objects like combs and glasses fill up entire rooms, as well as his series of canvases in which cloud-filled daytime skies are pierced by dark trees dimly lit only by a single streetlight. In a self-portrait in which he wears a suit and stands in front of a low wall overlooking the sea, this artist of *The Empire of Light* obscured his face with a green apple. For 10 points, name this bowler-hat aficionado who painted *The Son of Man*.
ANSWER: René **Magritte**
<Painting and Sculpture>

6. In a story from this collection, an airport official sarcastically asks "does he always travel with his condiments?" when the narrator's boss lies about him being a cook to explain the mustard packs he took from a plane. One of its stories ends with a man with a broken wrist deciding to fire his servant Luke after he tiptoes by, drunk. The protagonist of a story in this collection murders a patron of his roti-shop after learning that his brother was lying about studying for a computer programming degree. Santosh marries a *hubshi* woman in this collection's first story, "One out of Many." This collection includes "Tell Me Who to Kill" and a novella set in a newly-independent country where a gay civil servant is beaten at a checkpoint on a drive back to his compound. The expats Bobby and Linda work in an African country in the title novella of, for 10 points, what Booker-winning collection by V.S. Naipaul?
ANSWER: ***In A Free State***
<World Literature>

7. A "Memorabilia" of this period recounts how a vision prompted one of its kings to drain a pond and build a massive wooden complex dedicated to Miruk. A king during this period described his conquest of 65 walled cities on a 22-foot-tall stele named for him. Refugees from the end of this period joined with the Tungusic Malgal people to form a multi-ethnic state, thus beginning the North-South States period. During this period, a foreign invasion was decimated when a general opened up a dam on the Salsu River. City-states known for their iron-working skills formed the Gaya confederacy during this period. The heroics of Eulji Mundeok and of teenage warriors known as "Flower Boys" are recounted in this period's main history, the *Samguk sagi*. This period ended when the Tang dynasty helped one of its powers defeat the Paekche and Goguryeo states. For 10 points, the Silla emerged during what period of Korean history that shares its name with a period of Chinese history after the Han dynasty?
ANSWER: the **Three Kingdoms** of Korea [or **Samguk** Shidae or **Samguk** Era; prompt to be less specific on Goguryeo, Paekche, or Silla; do not accept or prompt on "Unified Silla"]
<World History>

8. Just after the beginning of its first movement's recapitulation, this symphony includes a quiet passage in the strange key of G major, which Brahms may have intentionally quoted for the first theme of his third symphony. In this symphony, the first movement's recapitulation begins triple *forte* over a dominant pedal, several measures after the unison horns "prematurely" blast out the main theme, in what is probably a callback to Beethoven's *Eroica* Symphony in the same key. Although it was composed in 1850, this symphony is numbered *before* an earlier D-minor symphony that its composer heavily reorchestrated for publication in 1851. Although it does not actually quote any folk songs, the second of this symphony's five movements is titled *Ländler* for a German folk dance. Its "solemn" second movement is erroneously believed to be inspired by a service for a cardinal at the Cologne Cathedral. For 10 points, name this symphony by Robert Schumann, inspired by a German river.
ANSWER: **Rhenish** Symphony [accept any answer indicating Robert **Schumann**'s **3**rd symphony, or just No. **3** after "Schumann"]
<Music>

9. The orientation of these features is analyzed by plotting "delta-g" on a Mackenzie plot. A capital sigma denotes the "degree of fit" when two of these features interact in a way described by a coincident site lattice. The character of the interaction between two of these features is known as their "complexion." The energy penalty to form these features is proportional to the shear modulus times a quantity "A minus log theta" in the low-angle limit, according to the Read–Shockley equation. Coble creep occurs via vacancy diffusion along the edges of these features, resulting in a strain rate that depends strongly on their size. These features are the defining characteristic of polycrystalline materials, whose moderate degree of long-range order makes them intermediate between monocrystalline and amorphous materials. For 10 points, name these microscopic pieces of crystal whose namesake "boundaries" form two-dimensional defects in a larger material.
ANSWER: **grain**s [or **crystallite**s; accept **grain boundaries**; prompt on crystal <u>defect</u>s]
<Physics>

10. Men from these islands ignite oil-soaked machetes while performing the "fire knife dance." Near a stream on these islands in which a woman legendarily cupped her hands to save her husband from dying of thirst, Robert Louis Stevenson built a villa where he spent the last four years of his life. This island group names an unusually monogamous species of flying fox whose populations were devastated by a magnitude 8.3 earthquake in 2009. Individuals who are assigned male at birth but present as feminine later in life belong to a third gender known as the *Fa'afafine*, who constitute upwards of 5% of the population of these islands. Men from these islands are painfully inked from the waist to below the knee with a tattoo called the *pe'a*, a custom documented in Robert Flaherty's 1926 documentary *Moana*. For 10 points, name this Polynesian archipelago split by the International Date Line, whose eastern portion is a territory of the United States with its capital at Pago Pago.
ANSWER: **Samoa**n Islands [or Motu o **Sāmoa**; prompt on <u>Polynesia</u> before "names"; accept **American Samoa** or Amerika **Sāmoa**]
<Geography>

11. In a novel titled for one of these places, a woman wards off her abusive boyfriend by hanging a cross over their bed after meeting with the "root doctor" David the Prophet. In that novel titled for one of these places, the protagonist obsesses over Benjamin Franklin's adages about working hard, but ends up beating the attempted rapist Boots to death and abandoning her son Bub. Lutie Johnson's struggles as a single mother are recounted in a novel titled for one of these places, which was the first novel by a black woman to sell over a million copies and was written by Ann Petry. In "Zion," the brief second part of a novel titled for one of these places, Sharon arrives with news that a trial will be postponed because the star witness, Mrs. Rogers, had a miscarriage in Puerto Rico. That novel titled for one of these places opens with the pregnant protagonist Tish visiting her boyfriend Lonzo, who is in prison due to a false rape accusation. For 10 points, the title of a James Baldwin novel references a blues song about what sort of place named Beale?
ANSWER: **street**s [accept *The **Street*** or *If **Beale Street Could Talk***]
<American Literature>

12. This place was the site of a eleven-week deportation hearing for the founder of the International Longshore and Warehouse Union, Australian communist Harry Bridges. In 1970, the park ranger Alexander Weiss discovered nearly two hundred poems carved into the walls of a building in this place. People expecting to be interrogated at this place would prepare by memorizing pages of family history called "crib papers." While working at this place's quarantine station, Joseph Kinyoun identified a 1900 bubonic plague outbreak. Many "paper sons" were detained in cramped barracks for weeks at this place while their claims to be the children of U.S. Citizens were investigated. This island's Fort McDowell supplied troops to restore order following a 1906 earthquake. For 10 points, name this location of an Immigration Station that processed hundreds of thousands of Asian immigrants, an "Ellis Island of the West" in San Francisco Bay.
ANSWER: **Angel** Island [prompt on <u>S</u>an <u>F</u>rancisco Bay or the <u>Bay</u>]
<American History>

13. Two variants of this algorithm, which operate on EREW ["E-R-E-W"] and CREW ["C-R-E-W"] forms of PRAM ["pee-ram"] models, were devised by Richard Cole. A version of this algorithm that runs on networks of size "*n* times log *n* squared," features a phase in which the recursive step is applied to the odd and even numbered indices; that version of this algorithm is often favored on GPUs and was developed for bitonic networks by Ken Batcher. This algorithm is often preferred over its unstable, but empirically faster counterpart in the language Lisp, since this algorithm performs better in cases where values can only be accessed sequentially. This algorithm begins by recursively dividing a list until it is a collection of sublists each with one element. This algorithm developed by John von Neumann has an average case run time of "*n* log *n*," like quicksort. For 10 points, name this algorithm which sorts a list by performing the namesake joining operation on two sublists.
ANSWER: **mergesort** [prompt on <u>sort</u>ing]
<Other Science>

14. An innovation in this field was kept as a secret among a family of Huguenot refugees in England, the Chamberlens. A 2001 development in this field was the invention of the Veda-scope, which uses air inflation instead of force applied via two opposing arms. It's not veterinary science, but techniques in this specific field were first described in the Kahun Papyrus, which like the later Ebers Papyrus recommends fumigation with oil and incense. This field uses fistula repair techniques that were first performed on a patient named Anarcha Westcott. Until its 2018 removal, a statue in Central Park honored a pioneer of this field named J. Marion Sims, who operated upon black slaves without anesthesia. Georgios Papanicolaou battled the medical community to popularize a cheap, noninvasive staining technique in this field to screen for a form of cancer. For 10 points, name this field of medicine that uses the Pap smear and focuses on the health of organs like the cervix and vagina.
ANSWER: **gynecology** [accept **obstetrics**; accept **ob/gyn**; prompt on <u>medicine</u> or its synonyms before "medical"; prompt on <u>women's health</u> or similar answers]
<Other Academic>

15. Either archbishop Stephen Langton or Pope Innocent III wrote a sequence that begins with this word and addresses the holy Spirit as "father of the poor," "giver of gifts," and "light of the heart." After the Council of Trent, the *Lauda Sion*, the *Victimae paschali laudes*, the *Dies Irae*, and a chant beginning with *this* word were the only sequences not to be banned. A hymn beginning with this word is sung by the Cardinals as they enter the Sistine Chapel during a papal conclave, and is traditionally recited to open church councils. This is the first word of a hymn that paraphrases a set of Advent antiphons all beginning with the word "O," and which has a refrain beginning "Gaude! Gaude!" or "Rejoice! Rejoice!" This is the opening word of a hymn for Pentecost in which it is followed by an invocation of the Holy Ghost, or "Creator Spiritus." This word follows "O" to open a hymn that asks "and ransom captive Israel." For 10 points, name this opening request of "Emmanuel" in a Christmas hymn.
ANSWER: **Veni** [accept O **Come**; accept *Veni, **Sancte Spiritus*** or "**Come Holy Spirit**"; accept ***Veni Creator Spiritus*** or "**Come Creator Spirit**"; accept *Veni, **veni Emmanuel*** or "**O Come, O Come Emmanuel**"; prompt on just <u>O</u> by asking "What's the next word?"]
<Religion>

16. The Queremist movement took its name from a slogan demanding this person's election. This leader's development programs included the "March to the West," which was partly intended to "pacify" the Xavante people, as well as the renovation of four major cities under the French architect Alfred Agache. After a conference with the U.S. president aboard the *USS Humboldt*, this leader put together an expeditionary force that used a pipe-smoking snake as its insignia. This leader deported Olga Benario and imprisoned her husband Luis Prestes, the leader of a reformist movement among low-ranking army officers. After seizing emergency powers, this leader banned all political parties, including a movement of green shirt-wearing fascists led by Plinio Salgado, the Integralists. This leader's reputation as the "father of the poor" grew after he wrote "I leave life to enter history" and shot himself in the Catete Palace. For 10 points, name this Brazilian dictator who ruled in the Estado Novo period.
ANSWER: Getúlio **Vargas** [or Getúlio Dornelles **Vargas**]
<World History>

17. A Robert Fink article titled for this opera "in Brooklyn Heights" mentions this opera's use of a "mournful half-diminished cluster over a sustained bass C" that fades out under the line "I should have worn a hat" to counter Richard Taruskin's accusation that this opera misuses "Bach-ian aureoles." Its original second scene, a conversation between Harry, Jonathan, and Alma, was replaced by a counterpart to its opening chorus, which begins "My father's house was razed / In nineteen forty-eight." This opera's title character points out a gull circling a pool after a rant delivered by "Rambo" in a scene that follows the Hagar Chorus. The "Aria of the Falling Body" is sung by the corpse of a man who is shot off-stage by Molqi in this opera, which is the second of two by its composer to feature choreography by Mark Morris, production by Peter Sellars, and an Alice Goodman libretto. For 10 points, name this John Adams opera based on the 1985 hijacking of the *Achille Lauro*.
ANSWER: The *__Death of Klinghoffer__*
<Other Fine Arts>

18. Marc-André Légaré successfully reductively coupled this molecule using organoboron ligands under surprisingly mild conditions; in the coupled molecule, this molecule forms an end-on bridging complex with borylene ligands. This compound was first reported as a ligand by Allen and Senoff in a complex in which it and five amine ligands are bound to ruthenium. Lowe and Thorneley used stopped-flow kinetics experiments to analyze the reduction of this molecule. Due to orbital mixing, this molecule's highest energy MO is a sigma orbital as opposed to a pi orbital. Complexes of this molecule are commonly characterized by a strong band in between 1900 and 2200 inverse centimeters. The FeMoCo cofactor is found in an enzyme which reduces this molecule. For 10 points, name this compound which is biologically "fixed" to form ammonia.
ANSWER: di__nitrogen__ [accept $\underline{N_2}$]
<Chemistry>

19. This philosopher proposed and then abandoned a definition of volition as "actual preferring," pointing out that while one might prefer to fly than walk, one could not *will* to fly. This philosopher defined a person as a "thinking intelligent being" and claimed "person" was a "forensic" term, arguing people should not be punished for acts done in a past life for which they had no consciousness. An argument *against* this thinker imagines a brave officer who sometimes remembers being flogged for robbing an orchard; that argument *against* this thinker was leveled by Thomas Reid, who opposed this thinker's theory of memory. This philosopher refuted the idea that identity is tied to the physical body by imagining a prince and a cobbler that switch minds. For 10 points, name this philosopher who claimed the mind was a "blank slate," or *tabula rasa*, in *An Essay Concerning Human Understanding.*
ANSWER: John __Locke__
<Philosophy>

20. In a play whose title ends with this word, a water-bearer is beaten with a cudgel for complaining about a man's smoking, then almost thrown in jail for insulting tobacco when he reports the crime. That play ends with a judge sentencing a bad poet and a braggart captain to wear sackcloth and sing songs of penance at a crossroads. A play titled for this concept parodies the wordy style of John Marston's *Histriomastix* and depicts Marston himself as the character Fastidious Brisk. David Garrick rewrote a play titled for this concept to focus on a merchant named Kitely, whose sister falls in love with the protagonist's son Edward. Aptly-named characters defined by a single overriding trait are the focus of a genre of comedy named for this concept, which is exemplified by a 1598 play titled for this concept in which Kno'well sends Brainworm to spy on his son. For 10 points, Ben Jonson wrote plays titled for "Every Man in" and "out" of what pseudoscientific trait?
ANSWER: __humor__ [accept *Every Man in His __Humour__* or *Every Man out of His __Humour__*; accept any answers about bodily __humor__s, __humorism__, or __humoralism__]
<British Literature>

Bonuses

1. An essay by this author claims that a novelist who is expected to be the "handmaid of his age" is "going to set the public's luggage down in puddle after puddle." For 10 points each:
[10] Name this author who compared herself to Dr. Johnson's blind housekeeper in an essay that responds to an "old lady in California" who wrote this author to complain about not being uplifted by her work.
ANSWER: Flannery **O'Connor**
[10] O'Connor's "Some Aspects of the Grotesque in Southern Fiction" notes that she is often told that Bible salesmen do not actually "prowl about looking for girls with wooden legs" in Georgia, a reference to Manley Pointer's encounter with this grouchy protagonist of her story "Good Country People."
ANSWER: **Hulga** [or **Joy**]
[10] The collection *Mystery and Manners* also contains a lecture by O'Connor that describes the "moment of grace" experienced by the Grandmother as she encounters the Misfit in this short story.
ANSWER: "A **Good Man is Hard to Find**"
<American Literature>

2. This quantity equals the von Neumann entropy of subsystem A minus the entropy of the system plus the conditional entropy of subsystem B. For 10 points each:
[10] Name this quantity measuring the difference between two forms of mutual information that is zero in classical physics. The fact that this quantity, in general, is non-zero implies that quantum correlations exist in mixed states.
ANSWER: **quantum discord**
[10] The von Neumann entropy used to calculate the discord is left invariant under these transformations, which preserve the inner product. A matrix whose conjugate transpose is its inverse has this property.
ANSWER: **unitarity** [accept word forms][do not accept or prompt on <u>orthogonal</u> or equivalents, as the matrix in question is clearly complex]
[10] Discord implies that nonclassical behavior can be present even without this other property, in which the states of two particles cannot be described independently. Einstein ridiculed this property as "spooky action at a distance."
ANSWER: **entanglement** [accept word forms]
<Physics>

3. Differences in the strength of this phenomenon have been linked by Kathryn Hall et al. to the rs4680 polymorphism in the neurotransmitter-processing enzyme COMT. For 10 points each:
[10] Name this phenomenon that has been studied extensively by Ted Kaptchuk, the lead author of a 2010 paper published in *PLoS* that found significant results for this phenomenon despite "open label" practices that called for no concealment or deception.
ANSWER: **placebo** effect [accept **placebo** response]
[10] In this kind of experimental setup, first used in studies of caffeine by W. H. R. Rivers, neither the participants of the study nor the researchers know who has received a placebo. The "randomized" form of this setup is the "gold standard" in research.
ANSWER: randomized **double-blind** trials [or randomized **double-blinded** trials; prompt on "<u>controlled trial</u>s"]
[10] Jon Levine used this drug in the first studies demonstrating a physiological component of the placebo effect. In the U.S., most states have passed laws allowing people to receive this drug on "standing order."
ANSWER: **naloxone** [accept **Narcan**]
<Social Science>

4. This man converted his family to Catholicism in an attempt to pass his highest position on to his son and overcome the competing claim of Stanislaw Lezczynski [STA-nee-swaff lesh-CHEN-skee] . For 10 points each:
[10] Name this ruler from the House of Wettin who sought to augment his power as Elector of Saxony by securing another throne to the east in 1697.
ANSWER: **Augustus the Strong** [or **Augustus II**; or **Frederick Augustus I**; prompt on Augustus; do not accept or prompt on just "Frederick"]
[10] Augustus rose to the throne of this country after the death of John III Sobieski. The crown of this elective monarchy was unified with that of a neighboring Grand Duchy in a 1569 agreement in Lublin.
ANSWER: **Poland** [prompt on Polish–Lithuanian Commonwealth or Poland–Lithuania; prompt on Lithuania until "Grand Duchy" is read]
[10] Augustus locked this German alchemist up in hope that he'd reveal the secret of gold-making, then instead forced him to work with Ehrenfried von Tschirnhaus to figure out the recipe for hard-paste porcelain. The Meissen factory produced this man's namesake red stoneware.
ANSWER: Johann Friedrich **Böttger**
<European History>

5. The book *Essays Before a Sonata* says that, if this author were a composer, he would not have Debussy's "fondness for trying to blow a sensuous atmosphere from his own voluptuous cheeks." For 10 points each:
[10] Name this author who inspired an unfinished concerto completed by David G. Porter. A movement inspired by this author's writings includes sections which the composer marked "verse" and "prose."
ANSWER: Ralph Waldo **Emerson**
[10] Ralph Waldo Emerson and his fellow Transcendentalist writers inspired this composer's *Concord Sonata*.
ANSWER: Charles (Edward) **Ives**
[10] The first major study to explore the influence of Transcendentalism on Ives was written by this composer and his wife Sidney. This composer experimented with tone clusters in pieces like *The Tides of Manaunaun*.
ANSWER: Henry (Dixon) **Cowell**
<Music>

6. A German scholar who became interested in Négritude because of his friendship with Léopold Senghor concluded that this syllable describes the "universal force as such" in African philosophy. For 10 points each:
[10] Name these three letters that end words for philosophical concepts like "person" and "modality," according to a book by Janheinz Jahn whose title follows "mu-" with these three letters.
ANSWER: **ntu**
[10] Jahn's book discusses philosophical terms in this language family. The philosophy of ubuntu, whose name comes from this language family, was popularized by Desmond Tutu.
ANSWER: **Bantu** languages [prompt on Niger-Congo or Benue-Congo or Southern Bantoid]
[10] This philosopher's book *The Lies That Bind* mocks Jahn by imagining an African philosopher discovering that the syllable "ing" is the key to Western thought because so many important words end with it. He also wrote *Cosmopolitanism*.
ANSWER: Kwame (Akroma-Ampim Kusi) Anthony **Appiah**
<Philosophy>

7. The dome of the Pantheon is one of the many structures made of this material during the Roman architectural revolution. For 10 points each:
[10] Name this building material. Aggregate set in a volcanic ash cement was used to make the Roman variety of this material, which was actually more durable than the type used in modern construction.
ANSWER: **concrete**
[10] Herod the Great used Roman hydraulic concrete technology to build the Sebastos harbor of this city. This capital of Roman Judea was later the home of the historians Eusebius and Procopius.
ANSWER: **Caesarea** Maritima
[10] One of the odder Roman concrete structures still standing is the tomb of a member of this profession named Eurysaces, who is historian Mary Beard's self-proclaimed favorite ancient Roman. That tomb has an unusual grid of roundels on its facade in reference to equipment used by this profession
ANSWER: **baker**s [accept word forms such as **baking**; or **pistor**is; prompt on chef or cook]
<European History>

8. In the devastating final scene of the film in which he appears, this mortally wounded character comes to die on a hilltop amidst a flock of sheep that barely pay attention to him. For 10 points each:
[10] Name this donkey who, in a 1966 film named for him, is separated from the farm girl Marie and is subjected to unremitting cruelty by a series of human owners.
ANSWER: **Balthazar** [accept *Au hasard Balthazar*]
[10] In that film by Robert Bresson, Balthazar's human tormentors each represent one of these concepts, which motivate the murders of a serial killer in a 1995 film directed by David Fincher.
ANSWER: seven **deadly sin**s [or **capital vice**s; or **cardinal sin**s; prompt on vices or sins]
[10] In a segment of a collaborative 1952 film about the seven deadly sins, this director pampers the cat Saha, arousing the envy of his wife Camilla. This Italian director showed animals tormenting the title woman of his allegorical film *Joan of Arc at the Stake*, who is played by his wife Ingrid Bergman.
ANSWER: Roberto (Gastone Zeffiro) **Rossellini**
<Other Fine Arts>

9. This phenomenon was first observed when tungsten oxide was seen turning blue when contacting a platinum catalyst. For 10 points each:
[10] Name this process in which hydrogen atoms migrate from a metal catalyst to the catalyst's support.
ANSWER: hydrogen **spillover**
[10] The hydrogen atoms in spillover are initially produced after a hydrogen molecule undergoes this process in which it adheres to the metal catalyst surface. The Langmuir isotherm models this process
ANSWER: **adsorption**
[10] A method of deactivating catalysts is through this mechanism. This process decreases the surface area of the catalyst by fusing its individual particles without melting it. Fritted glass is produced through this process.
ANSWER: **sinter**ing
<Chemistry>

10. This author described a poster of Cain and Abel hanging in a schoolroom where children chant arithmetic lessons in his short poem "A Memory of Childhood." For 10 points each:
[10] Name this author who wrote "peasant folk have much of the blood of Cain in them" in a poem about Alvargonzález, a farmer who ax-murders his sons. He also referenced Cain in his poem "Through Spanish Lands."
ANSWER: Antonio **Machado**
[10] Like Miguel de Unamuno, who retold the Cain myth in his novel Abel Sanchez, Machado was part of this group of Spanish writers and thinkers. It preceded the similarly-named Generation of '27.
ANSWER: 18**98**
[10] "Alvargonzález's Land" is dedicated to another member of the Generation of '98 who himself described a "drunken Cain" in the "Windmill" chapter of this book about his friendship with the title donkey.
ANSWER: *Platero y Yo* [or *Platero and I*] (by Juan Ramon Jimenez)
<European Literature>

11. This kind of art is exemplified by the hundreds of drawings of fleshless women, with bodies composed of cross-hatched lines, that Charles Steffen drew while undergoing electroshock therapy for schizophrenia. For 10 points each:
[10] Art critic Roger Cardinal coined the term for what type of art created beyond the boundaries of mainstream artistic culture, often by patients in psychiatric hospitals?
ANSWER: **outsider** art [or art *brut*]
[10] Paul Klee adopted features of the art of schizophrenic patients to create the large eyes and ornamented wreaths and wings of the title figure of this 1920 print, who is swept by a storm "blowing from Paradise" according to Walter Benjamin's "Theses on the Philosophy of History."
ANSWER: *Angelus Novus*
[10] Critic G. Roger Denson has suggested that this Canadian-born abstract expressionist obsessively drew her signature subtly-colored grids on large square canvases as a means of therapy for her schizophrenia.
ANSWER: Agnes (Bernice) **Martin**
<Painting and Sculpture>

12. David Hawkes's first publications were a study and translation of this collection. For 10 points each:
[10] Name this poetry collection, many of whose texts describe spirit journeys and shamanic rituals. It begins with the long and complex poem "Encountering Sorrow."
ANSWER: *Chǔcí* [choo-TZUH] [or *Songs of Chu*; or The *Songs of the South*; or *Verses of Chu*]
[10] The *Chǔcí* is one of two surviving collections of pre-Qin dynasty Chinese poetry along with this book, which contains "Airs of the States," hyms, and eulogies.
ANSWER: *Classic of Poetry* [or *Shijing*; or *Book of Songs*; or *Book of Odes*]
[10] This Táng dynasty poet repeatedly refers to both the *Chǔcí* and the poetry of Xie Lingyun in his poem "In a Dream I Roamed to Heaven's Crone Mountain." This lover of wine described mistaking the moonlight at the foot of his bed for snow in "Quiet Night Thought."
ANSWER: **Li Bai** [or **Li Bo**; accept mispronunciations that sound like "**Li Pai**" or "**Li Po**"; prompt on Li]
<World Literature>

13. The occurrence of "black hole bombs" may indicate that this theorem is false. For 10 points each:
[10] Name this theorem, stating that black holes can be described entirely by their mass, charge and angular momentum, since any other information characterizing them is only knowable beyond the event horizon.
ANSWER: **no-hair** theorem [or **no-hair** theorems]
[10] Black hole bombs occur due to a form of this phenomenon being reflected, which leads to the bosonic field around a the black hole rapidly increasing in strength. This process, which is driven by a collection of coherent light emitters, imparts energy to particles that are scattered by the bomb.
ANSWER: **superradiance** [accept **superradiant** scattering or **superradiant** instability; do not accept or prompt on radiance]
[10] The most common form of superradiance in astrophysics is named for this physicist. Large-scale structure formation during the early universe is thought to be driven by the coalescing of flat collections of gas named for this physicist.
ANSWER: Yakov **Zeldovich** [accept **Zeldovich** pancakes]
<Other Science>

14. Members of this party, whose flag featured a red star and a marijuana leaf, staged stunts such as an attempted levitation of the Pentagon. For 10 points each:
[10] Name this party founded by Jerry Rubin and Abbie Hoffman, which once nominated a candidate nicknamed "the Immortal" for president.
ANSWER: the **Yippie**s [or **Youth International Party**]
[10] In addition to their 1968 nomination of Pigasus the Immortal, the Yippies ran the campaign "Nobody For President" during the election of this year, in which the loser was hurt by his pardon of Richard Nixon.
ANSWER: **1976** [prompt on **76**]
[10] One of the victims of the Yippie-invented tactic of pie-throwing was this activist, whose Save the Children campaign prompted a nationwide boycott of Florida orange juice.
ANSWER: Anita **Bryant**
<American History>

15. In Slavic folklore, treasure hunters are said to trick hedgehogs and tortoises into revealing the location of the magical *raskovnik* herb by making them use it to perform this task. For 10 points each:
[10] Name this task that, in the folklore motif of the "Hand of Glory," can be performed by anyone carrying the dried hand of a hanged man. In addition to performing this task, the Hand of Glory was said to emit light only for its user and paralyze passersby.
ANSWER: **unlock**ing anything [accept obvious equivalents of **unlock**ing or **open**ing any **door** or **barrier**]
[10] The Hand of Glory recipe in the *Petit Albert* grimoire uses the "Lapland" type of this plant. Coincidentally, the name of this plant is used to open the thieves' cave in Antoine Galland's popular version of the Ali Baba story.
ANSWER: **sesame**
[10] This villain from Slavic myth used a magically-locked chest containing a needle inside of a duck inside of a rabbit to hide his soul.
ANSWER: **Koschei** the Deathless
<Mythology>

16. The antitumor antibiotic geldanamycin acts upon the unusual N-terminal ATP/ADP binding pocket of this protein, which forces incoming nucleotides to bend into a C-shape. For 10 points each:
[10] Identify this abundant cytosolic protein, which like its lower molecular weight counterparts is capable of recognizing partly folded client proteins in its open conformation, but unlike those counterparts, forms a dimer before doing so.
ANSWER: **Hsp90** [or **heat shock protein 90**; prompt on Hsp or heat shock protein]
[10] Hsp90 recruits unfolded proteins by exposing amino acids with this property, such as glycine or valine. The "core" of a folded protein is filled with amino acids that have this property.
ANSWER: **hydrophobic**
[10] Hsp90 is of interest to cancer biologists due to its role in stabilizing numerous oncoproteins, such as the BCR-Abl fusion protein, which is expressed as a result of this genetic abnormality seen in nearly all cases of chronic myeloid leukemia.
ANSWER: **Philadelphia chromosome** [or **Philadelphia translocation**; or **t(9;22)(q34;q11)**; accept the **translocation** between **chromosome**s **9** and **22**]
<Biology>

17. Samuel James Supalla catalogued these identifiers, whose "arbitrary" type is more popular than the "descriptive" type in the United States. For 10 points each:
[10] Name these identifiers, which are generally *not* self-chosen and are instead are assigned by others based on a single letter, a description of someone's appearance or personality, or a combination of the two.
ANSWER: **sign name**s [or **name sign**s; accept **names** for people in **sign language**; prompt on names]
[10] The practice of assigning arbitrary sign names was introduced to American Sign Language by deaf educators from this European country, whose sign language is the closest relative to ASL. Mixing between ASL and this country's sign language produced Quebec Sign Language.
ANSWER: **France** [or **Française**; or **French Republic**; or République **française**]
[10] To distinguish themselves from people who describe their hearing loss solely in medical terms, active participants in deaf culture often self-identify using this orthographical feature.
ANSWER: spelling Deaf with a **capital D** [accept **capital D** Deaf or **big D** Deaf]
<Other Academic>

18. This essay laments Charles Reade's novels about the "abuses of contemporary life," calling them "a sight for the angels to weep over." For 10 points each:
[10] Name this Oscar Wilde essay that, like "The Critic as Artist," is written as a Socratic dialogue. In it, Cyril discusses the loss of the title art, which he defines as "the telling of beautiful untrue things."
ANSWER: "The **Decay of Lying**"
[10] "The Decay of Lying" lampoons this author's novel *Robert Elsmere* as "simply [Matthew] Arnold's *Literature and Dogma* with the literature left out." This bestselling author headed the Women's National Anti-Suffrage League and used her married name as a *nom de plume*.
ANSWER: Mrs Humphry **Ward** [or Mary Augusta **Ward** or Mary Augusta **Arnold**]
[10] "The Decay of Lying" also claims this writer has "mastered everything except language" and "can do everything except tell a story." He wrote the novel *Diana of the Crossways* and the "Modern Love" poems.
ANSWER: George **Meredith**
<British Literature>

19. Thomas Friedman named a set of "rules" that describes the ethos of the Middle East after this city. For 10 points each:
[10] Name this Syrian city where 300 people were killed in 1981 by government security forces. A year later, thousands of citizens were brutally murdered in this city as part of the repression of an uprising by the Muslim Brotherhood.
ANSWER: **Hama**
[10] The Hama massacre was ordered by this dictator, who came to power in Syria in a 1972 coup by the Ba'ath Party. He was succeeded in 2000 by his son Bashar.
ANSWER: **H**afez **al-Assad** [prompt on al-<u>Assad</u>]
[10] The Hama massacre was the end of a series of killings that began with the massacre at this prison by Rifat al-Assad. ISIS destroyed this notoriously harsh prison in 2015.
ANSWER: **Tadmor** prison massacre
<World History>

20. In 1905, Rabindranath Tagore called upon Muslims and Hindus to express brotherhood and togetherness towards each other on this holiday. For 10 points each:
[10] Name this Hindu holiday on which sisters traditionally visit their brothers and exchange bracelets.
ANSWER: **Raksha Bandhan** [or **Rakhi**; or **Saluno**; or **Silono**; or **Rakri**]
[10] Although they may be more elaborate, the traditional *rakhi* exchanged on Raksha Bandhan are made of this material. One of these objects is tied from over the left shoulder and under the right arm of a boy or girl starting school, in a common rite of passage in Hinduism.
ANSWER: **thread** [or **string**; or **twine**; or **cord**; or **cotton** strands]
[10] Both Raksha Bandhan and Holi occur on Purnima, the days of the Hindu calendar coinciding with this occurrence.
ANSWER: **full moon**
<Religion>