

2021 ACF Regionals

Packet G by Caltech, Columbia A, DePaul A, Edinburgh A, Southampton A

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Tossups

1. In a novel in this language, a woman survives by eating pigeons and vegetables while staying locked in her penthouse apartment for thirty years. In another novel in this language, an old man and an amnesiac orphan seek shelter in a scorched bus, where they find Kindzu's notebooks. This language is used for the novels *A General Theory of Oblivion* and *Sleepwalking Land*, and for a novel in which a ghost returns to haunt his wife when she remarries the pharmacist Teodoro. A novel in this language is set in a thriving cacao town and depicts the relationship between the Syrian bar owner Nacib Saad and a poor migrant cook; that novel is titled *Gabriela, Clove and Cinnamon*. For 10 points, name this language used by Jorge Amado ("ZHOR-zhee ah-MAH-doo"), Machado de Assis ("muh-SHAH-doo jee uh-SEES"), and other Brazilian authors.

ANSWER: **Portuguese** [or **Português**]

<World/Other Literature>

2. Kate Manne argues that misogyny performs this specific function personally, but not particularly, to restore patriarchal order. David Garland reworked Émile Durkheim's ("ay-MEEL dur-KEM's") theory that "passion is the soul" of this practice and that its primary purpose is to strengthen group solidarity. Judith Butler calls gender performance a "humanizing" survival tactic because not performing "correctly" results in this practice. This practice reinforced authority by terrifying spectators, according to a book that opens by describing its application on Robert-François Damiens ("dahm-YEN"). It's not reinforcement, but positive kinds of this practice apply an aversive stimulus, like a shock. For 10 points, Michel Foucault titled a book for *Discipline* and what practice, which might involve inflicting pain?

ANSWER: **punishment** [or word forms like **punishing** or **punitive**; accept *Discipline and Punish*; accept capital **punishment**; accept corporal **punishment**; prompt on **torture**, **pain**, **ostracism**, **silencing**, **degradation**, **harassment**, **violence**, the **death penalty**, or word forms by asking "what broader function does that perform?"]

<Social Science>

3. An opera by Gerald Barry inspired by this work includes a poem from this work set to the tune of "It's a Long Way to Tipperary" in three languages. Ralph Steadman's drawings of this work were used in the set design of an opera with libretto by David Henry Hwang and music by Unsuk Chin, which includes this work's song "Twinkle, twinkle, little bat." In this work, a poem is formatted like a mouse's tail, and a drawing features the inscription "In this Style, 10/6" on a top hat. The original illustrations for this work conclude with a shower of cards and include a girl with a grotesquely long neck. The *Punch* illustrator John Tenniel's drawings for this work depict a girl holding a bottle that says "Drink Me" and gazing at a Cheshire Cat. For 10 points, name this novel by Lewis Carroll.

ANSWER: ***Alice's Adventures in Wonderland*** [or ***Alice in Wonderland***; or ***Through the Looking-Glass, and What Alice Found There***; or ***Alice's Adventures Under Ground***] (The operas blend clues from multiple Alice works rather loosely; "Jabberwocky" is set to "Tipperary.")

<Other Arts (Auditory)>

4. Mutations in GATA-1 cause a spectrum of defects in this process. The leading cause of mortality of dyskeratosis congenita is failure of the major tissue involved in this process. The PML/RAR alpha fusion protein causes a defect in this process that can be reversed with ATRA, whose discovery highlighted the role of retinoic acids in this process. The extramedullary form of this process causes splenomegaly. This process occurs in the spleen and liver of embryos after it occurs in "islands" in the yolk sac. Colony-stimulating factors like EPO signal common progenitor

cells to differentiate into the myeloid and lymphoid lineages during this process. For 10 points, the bone marrow is a site of what process of differentiation of a namesake kind of stem cell into blood's cellular components?

ANSWER: **hematopoiesis** [accept extramedullary **hematopoiesis**; or **hematogenesis**; or **hemopoiesis**; prompt on **leukopoiesis**, **lymphopoiesis**, **myelopoiesis**, or **erythropoiesis** by asking "what more general process is that part of?"; prompt on **blood cell maturation** or **blood cell differentiation** until read by asking "what more general process is that part of?"; prompt on **blood cell creation** by asking "what is the specific term for that process?"]

<Biology>

5. The Fianna fall asleep when Scáthach ("SKA-hakh") plays a string of this material on her harp. In an essay titled for an object of this material, Eleanor Hull analyzed it as an invitation from the Irish Otherworld. Miach's father murders him in a jealous rage after he replaces an object of this material. A non-fruit object made of this material dispels Cormac's grief at giving away his family for it. Bran embarks on his voyage after meeting a woman with a branch of this material. Dian Cécht ("DEE-un kekt") crafts an object of this material referred to by the epithet "Airgetlám" ("AR-get-lawv"). That prosthetic hand of this material belongs to Nuada. Werewolves can be killed with bullets of this substance. For 10 points, name this precious metal, which comprises a magic bough ("bao") bearing golden apples.

ANSWER: **silver** (Eleanor Hull's essay is "The Silver Bough in Irish Legend.")

<Mythology>

6. The essay "Somewhere Behind" notes that one of these places provides the nickname of a Party headquarters building, which highlights modern life's resemblance to a certain author. The narrator eats some flesh in [emphasize] *a specific room* named for one of these places after failing to identify the source of a persistent whistling at the end of the story "The Burrow." A resident of one of these places solicits a woman at a celebration that is put on by a village fire brigade in a novel in which the protagonist meets two nearly-identical servants from one of these places, both of whom he calls "Arthur." In that novel, a messenger named Barnabas relays letters from Klamm, a bureaucrat who lives in one of these places. For 10 points, the land surveyor K. fails to gain access to what type of building in an unfinished Franz Kafka novel?

ANSWER: **castle** [accept **Castle** Keep; accept *The **Castle*** or *Das **Schloss***; prompt on **keep**; prompt on **burrow** or "Der **Bau**" until "The Burrow" is read by asking "what specific part of the burrow?"] ("Somewhere Behind" is an essay on Kafka from Milan Kundera's *The Art of the Novel*.)

<European Literature>

7. In a political cartoon from this war encouraging one party to drive a wedge between two allies, a snake presents a bucket of frogs to that "ally." The Count de Aranda proposed border changes after this war, during which Thomas Barclay signed a "Treaty of Friendship" in Marrakesh. A treaty ending this war, described by the Count of Vergennes ("vair-ZHEN") as "buying peace rather than making it," generously granted one side fishing rights in Newfoundland. Claims of renegeing on the Treaty of Amity and Commerce, signed during this war, led to the undeclared Quasi War. Before this war, a peace gesture was attempted by Lord North's Conciliatory Resolution. John Dickinson's Olive Branch Petition was a last-ditch attempt to stop, for 10 points, what conflict ended by the 1783 Treaty of Paris?

ANSWER: **American Revolution** [accept **Revolutionary** War or American **War of Independence** or **American War**]

<American History>

8. Linda Nochlin appears as the central figure of this painting in a Kathleen Gilje ("GIL-yuh") reimagining of it. Philip Pullman visited the Courtauld ("COR-told") to discuss how this painting's horseshoe-shaped setting could have resulted in line-of-sight discrepancies. A camera at the center of a work inspired by this painting captures a female model and staring male photographer in Jeff Wall's *Picture for Women*. In this painting's background, a woman with opera glasses sits near a gold-gloved woman and man in a top hat, while green shoes in the top left

belong to a trapeze artist. Red triangles identify bottles of Bass Pale Ale on a counter near a bowl of oranges in this painting. For 10 points, a mirror appears behind an enigmatic waitress in what Manet painting?

ANSWER: *A **Bar at the Folies-Bergère*** [or *Un **bar aux Folies-Bergère***] (The Philip Pullman talk was recorded as part of the *Picture This at Somerset House – Writers’ talks in The Courtauld Gallery.*)

<Painting/Sculpture>

9. Different types of this process require either “floury” (“flowery”) or “sandy” reactant for maximum efficiency. This process is sometimes impeded by an insulating film of perfluorocarbon (“per-floro-carbon”) gas, which can be dispersed by agitation with “green poles.” Solid waste from this process is punctured with a “crust breaker” to add more reactant. Coke is continually added in the Söderberg form of this process, whose applied current of several hundred kiloamperes (“kilo-amperes”) converts the coke to carbon dioxide. The eutectic (“yoo-TEK-tik”) mixture in this process melts at 960 degrees Celsius. In this process, an ore that was extracted from bauxite in the Bayer process is dissolved in molten cryolite and electrolyzed. For 10 points, what process for smelting aluminum is named for its American and French co-discoverers?

ANSWER: **Hall–Hérault** (“ay-ROO”) process [or **Hall** process; prompt on electrolysis or smelting or aluminum production or Alcoa process]

<Chemistry>

10. In this decade, the possible return of Giovanni Giolitti as prime minister for a sixth time sparked the “Radiant Days of May.” Antonio Salandra described Italy’s position in this decade as “sacred egoism,” leading half-Welsh ambassador Sidney Sonnino to sign the Treaty of London. Near the end of this decade, accusations of “mutilated victory” surfaced, and in this decade, 50,000 Italian propaganda leaflets were dropped over Vienna. Newspapers such as *Avanti!* and *Il Popolo d’Italia* drummed up irredentist sentiments in this decade under writers such as Benito Mussolini. Near the end of this decade, the Treaty of Saint-Germain granted Istria and South Tyrol to Italy. For 10 points, few of Italy’s demands were met following the Paris Peace Conference of what decade?

ANSWER: **1910s** [prompt on ’10s]

<European History>

11. At the ending of this novel, a man prays for “one red cherry ere we die!” before a hawk is entangled in a flag. In this novel, one character berates two men as “opposite poles” of humanity for laughing at a disaster and calling it an omen. That man calls his body the “craven mate” of his “centipede” soul, finds a “hearse” of American wood, and breaks an ivory object in this work. This book’s epilogue quotes Job’s (“jobe’s”) line “And I only am escaped alone to tell thee” and describes the narrator being found by “the Rachel” in her “search after her missing children” while clinging to his friend’s coffin. During this novel’s three-day “Chase,” a man yells “from hell’s heart I stab at thee” and throws a harpoon. For 10 points, name this novel that ends with Captain Ahab dying in battle with the title white whale.

ANSWER: ***Moby Dick*** [or ***Moby Dick***; or *The Whale*]

<American Literature>

12. A Kiel device is used to prepare samples containing this anion (“ANN-ion”) for further analysis. A compound containing this anion is formed in the “hard tissue” component of the biological pump. The volcano Ol Doinyo Lengai produces lava dominated by this anion. The concentration of this chemical species [emphasize] *monotonically* increases towards the right-hand side of the most common type of Bjerrum (“BYAIR-um”) plot. This ion is the most negatively charged component of DIC. Magnesium replaces a cation (“CAT-ion”) bonded to this anion in the process of dolomitization. A recent decrease in this anion’s concentration in the ocean has affected the depth below which all plankton shells dissolve; that is this anion’s namesake “compensation depth.” For 10 points, what anion is bonded with calcium in limestone?

ANSWER: **carbonate** [or **CO3 two-minus**; do not accept or prompt on “bicarbonate” or “HCO3 two-minus”]

<Other Science (Earth Science)>

13. An exceptionally gory one of these events, in which Hippolito is shot with poisoned arrows and Bianca drinks poison, concludes Thomas Middleton's tragedy *Women Beware Women*. Mr. Dangle and Mr. Sneer attend one of these events organized by Mr. Puff in a comedy by Richard Brinsley Sheridan. In another work, Philostrate advises a man not to attend one of these events during which a man says "die, die, die, die, die." A man holds up fingers to represent a crack in a wall during a "tedious and brief" one of these events organized by "rude mechanicals" like Snout and Quince, in which two lovers in Babylon commit suicide. For 10 points, Act 5 Scene 1 of *A Midsummer Night's Dream* features Nick Bottom's performance in an example of what sort of work, titled *Pyramus and Thisbe*? ANSWER: a **play** performance [or a **drama** performance; or a **masque** performance; accept **play-within-a-play**; prompt on **performance** by asking "of what sort of work?"] (The Sheridan comedy is *The Critic*.) <British Literature>

14. This ruler ordered the construction of the world's oldest harbor at Wadi al-Jarf, which was used to transport Tura limestone inland. In 1954, Kamal el-Mallakh discovered a full-size ship made from cedarwood buried with this ruler. A magician refuses this ruler's demand to magically decapitate a prisoner in a story from the Westcar Papyrus. Flinders Petrie uncovered an ivory statue of this ruler from the Temple of Osiris in Abydos ("uh-BY-doss") that is the only known three-dimensional depiction of this ruler. According to Herodotus, this ruler forced his daughter into prostitution to finance a building project that was likely meant to surpass those of his father, Sneferu. For 10 points, name this pharaoh who ordered the construction of the Great Pyramid at Giza. ANSWER: **Khufu** [or Khnum **Khufu**; or **Cheops**; or **Suphis**] <Other History>

15. According to Abu Sa'id Al-Khudri, one of these locations contains seven stations, and each station contains 70,000 angels. In one religion, depending on the form taken by the female spirit Daena ("da-AY-nah"), one of these locations leads adherents to either the House of Songs or the House of Lies. According to another religion, one of these locations is found directly atop Jahannam, and adherents pass through that location at speeds relative to how many good deeds they have done. In Islam, one of these locations must be crossed in order to enter Jannah, and is called As-Sirat. In another religion, one of these locations is guarded by two four-eyed dogs, and is named Chinvat. For 10 points, adherents of Zoroastrianism must cross what type of location to enter heaven? ANSWER: **bridge** [accept Chinvat **Bridge** until "Chinvat" is read; accept **Bridge** of Sirat until "Sirat" is read] <Religion>

16. One type of these devices excites resonant vibrations in a silicon ring and measures the production of coupled out-of-plane modes. In addition to that "vibrating structure" MEMS ("mems") type, these devices include an interferometric ("IN-ter-FAIR-oh-metric") type that fires two light beams in opposite directions around a fiber-optic loop and measures the phase shift due to the Sagnac ("sahn-YAHK") effect. Gravity Probe B used four of these devices surrounded by SQUIDS ("squids") to measure the geodetic effect. These devices are paired with accelerometers in IMUs ("I-M-U's"). Due to conservation of angular momentum, these devices appear to defy gravity while precessing, as their gimbals re-orient to keep a fixed axis of rotation. For 10 points, name these devices that measure rotation, which often consist of a heavy spinning wheel surrounded by rings. ANSWER: **gyroscopes** [or **gyros**; accept vibrating structure **gyroscopes** or ring laser **gyroscopes** or fiber-optic **gyroscopes**; prompt on **tops**] <Physics>

17. This attitude is compared to a Protestant's liking for being angered by women's bathing suits in an essay that discusses the "feeble" opposition of "the democrat" to this attitude. Holders of this belief amuse themselves with "frivolous" remarks, since "it is their adversary who is obliged to use words responsibly," according to a passage of a 1945 essay repopularized after the 2016 US election. The dichotomy of "parvenu" and "pariah" is explored in a section titled for this attitude that is followed by "Imperialism" as the first part of *The Origins of Totalitarianism*. A

Jean-Paul Sartre essay examines this prejudice, which is justified with the accusation of “worldlessness” in the *Black Notebooks* of Martin Heidegger. For 10 points, name this hatred of a religious group that includes Hannah Arendt.  
ANSWER: **antisemitism** [or anything indicating **anti-Jewish** prejudice; accept “**Anti-Semite** and Jew”; prompt on Nazism, fascism, racism, or prejudice]  
<Philosophy>

18. The first European account of this site is from Diogo da Couto (“dee-OH-goo da KOH-too”), who writes of the priest António da Madalena’s plan to rebuild it before dying in a shipwreck. An earlier account of this site, which claims that its actual ruler is a nine-headed snake woman who lives in a tower, was written for Temür Khan. Henri Mouhot (“moo-OH”) is often wrongly cited as the first European to see this site, which was also visited by the Yuan dynasty ambassador Zhou Daguan (“joe da-GWEN”). Fed by a network of *baray* (“ba-RYE”) reservoirs, this site was likely the center of the world’s most populous city in the 13th century. This site’s great reliefs depicting Hindu legends were built by Suryavarman II. For 10 points, name this huge temple complex and city built by the Khmer empire in Cambodia.  
ANSWER: **Angkor Wat** [or **Yasodharapura**]  
<World History>

19. The woodcrafting knowledge of this country’s Zafimaniry people is a UNESCO Intangible Cultural Heritage. The missionary James Cameron constructed a heart-shaped artificial lake for hydraulic power in this country’s capital named Lake Anosy. Anamalanga is one of this country’s twelve sacred hills, where a 1995 fire destroyed the *rova* palace complex of this country’s former monarchs. This country’s Île Sainte-Marie (“eel sant-ma-REE”) is supposedly the site of the legendary republic of Libertia and hosts a cemetery where several pirates are buried. This country is the world’s largest producer of Bourbon vanilla beans. For 10 points, name this country dominated by the Merina people, which is also home to lemurs and most species of the baobab (“BAY-oh-bob”) tree.  
ANSWER: **Madagascar** [or Republic of **Madagascar**; or Repoblikan’i **Madagasikara**; or République de **Madagascar**]  
<CE/Geo/Other/Pop Culture>

20. This composer wrote a piece inspired by the invention of nitrocellulose that musically depicts explosions. The six chimes of a bell in an early transition in an overture by this composer recur when a clock strikes 6 a.m. at the end of that work’s Act 2. In a one-movement piece by this composer set in the woods, a birdsong-like flute cadenza introduces a solo by an uncommon plucked instrument harmonized in thirds. In a piece by this man, cellos and horns play the slow rising triadic melody “D, D, F-sharp, A, long A”; that piece by this man precedes the *Radetzky March* as the second of three encores at the New Year’s Concerts in his home city. This man called for a zither in “Tales from the Vienna Woods.” For 10 points, name this “Waltz King” who wrote “On the Beautiful Blue Danube.”  
ANSWER: Johann **Strauss II** [or Johann **Strauss Jr.**; or Johann **Strauss the Younger**; prompt on Johann **Strauss** or J. **Strauss**] (The first clue is about the “Explosions-Polka” and the second is about *Die Fledermaus*.)  
<Classical Music>

## Bonuses

1. This city is home to a dwindling Sephardic Jewish community known as the *Paradesis*, or “foreigners.” For 10 points each:

[10h] Name this city in Kerala (“CARE-uh-luh”) whose rulers resided in the Portuguese-built Mattancherry Palace. This city, visited by Arabs, Portuguese, and Dutch traders, was rivals with the nearby Kingdom of Calicut.

ANSWER: **Kochi** [or **Cochin**]

[10e] One of the earliest accounts of Kochi was made by Ma Huan, who travelled with this admiral. This Ming dynasty admiral commanded several “treasure ships” on his voyages across the Indian Ocean.

ANSWER: **Zheng He** (“jung huh”) [or **Ma He**]

[10m] Kochi was one of the centers for trade of this resource, whose Malabar variety was prized by the Portuguese. The Tellicherry variety of this resource was also traded heavily in Kerala.

ANSWER: black **pepper** [or Malabar **pepper**corns; or Tellicherry **pepper**corns; prompt on **spices**; do not accept or prompt on “chili peppers” or “chillies”]

<World History>

2. Setup and teardown methods are often run before and after this process, and in “[this process]-driven development,” methods for this process should always be written before writing code. For 10 points each:

[10e] Name this process, whose “unit” type can be done on small pieces of code, and whose “integration” type is done to larger systems. The “beta” variety of this process is done before a production release.

ANSWER: software **testing** [accept unit **testing** or integration **testing** or **test**-driven development or beta **testing**; accept writing **tests**]

[10m] This keyword, which is stronger than “expect,” is used for statements to ensure that a test condition passes. JUnit test methods include “[this word] Equals,” and “[this word] True.”

ANSWER: **assert** [accept **assert**Equals or **assert**True]

[10h] To prevent side effects like modifying a real database during a test, programmers often use these sorts of test objects for behavior verification. A programmer can avoid having to stub out a fixture’s methods by using these objects.

ANSWER: **mocks** [or **mock** objects; or word forms like **mocking**; accept test **doubles**, **dummies**, **fakes**, or **spies**] (According to Martin Fowler, test doubles, dummies, fakes, spies, and mocks are all slightly different, but terminology is inconsistent enough that we accept all of them.)

<Other Science (Computer Science)>

3. Answer the following about atypical instructions in piano music, for 10 points each.

[10h] This composer instructed musicians to bring a bale of hay for the piano to eat in his *Piano Piece for David Tudor #1*. His work *The Well-Tuned Piano* uses his idiosyncratic system of just intonation.

ANSWER: La Monte **Young**

[10m] In his *In a Nutshell* suite, this composer asked the pianist to use a marimba mallet. This Australian composer also arranged folk songs in works such as *Lincolnshire Posy*.

ANSWER: Percy **Grainger**

[10e] The unusual directions to this composer’s piece “Vexations” address the possibility of performing it 840 times. This composer also wrote *Gnossiennes* (“g’no-see-EN”), *Three Pieces in the Shape of a Pear*, and three *Gymnopédies*.

ANSWER: Erik **Satie**

<Classical Music>

4. This author included the line “shy traffickers, the dark Iberians come” in a poem that opens “go, for they call you, shepherd, from the hill.” For 10 points each:

[10m] Name this poet whose elegy for Arthur Hugh Clough is titled for a shepherd from the *Eclogues*. This author included the poem “To Marguerite: Continued” within the dramatic poem “Empedocles on Etna.”

ANSWER: Matthew **Arnold**

[10e] This poem by Matthew Arnold describes waves that “bring the eternal note of sadness in.” It ends with the image of “a darkling plain / swept with confused alarms of struggle and flight.”

ANSWER: “**Dover Beach**”

[10h] Matthew Arnold’s poem “Thyrsis” describes Oxford as a “sweet city” with these structures. Give the two-word phrase from the poem.

ANSWER: “**dreaming spires**” [prompt on spires]

<British Literature>

5. Answer the following about perfectly reasonable ways to deal with a cheating husband, for 10 points each.

[10h] If you’re this amoral character, then you might write five years’ worth of fake, backdated diary entries and steal a neighbor’s urine to fake a pregnancy, all in order to frame your husband for your own murder.

ANSWER: **Amy Dunne** [accept **Amazing Amy**; prompt on Dunne or *Gone Girl*]

[10m] Alternatively, if the cheating husband kills his wife, as a good friend, you might choose to kill the cheater. Or at least that’s what this popstar singer of “mad woman” suggests with HAIM (“HI-yim”) in the song “no body, no crime.”

ANSWER: Taylor **Swift**

[10e] “The merry murderesses of Cook County Jail” each explain why “He had it coming” as they, too, suggest many forms of violence in the “Cell Block Tango,” a number from this Kander and Ebb musical set in the title city.

ANSWER: **Chicago**

<CE/Geo/Other/Pop Culture>

6. This group has refused to accept a monetary reward from a 1981 lawsuit against the United States, in which the Supreme Court ruled that they were entitled to compensation for the Black Hills. For 10 points each:

[10e] Name this Native American nation that won the Battle of Little Bighorn under Sitting Bull.

ANSWER: Great **Sioux** Nation [accept **Lakota** or **Dakota** or **Santee** or **Minneconjou** or **Oglala** or **Hunkpapa** or **Nakota**; or **Oceti Sakowin**; or **Seven Council Fires**]

[10m] The Sioux’s claims stem from the Treaty of Fort Laramie, which ended the US war with Sioux peoples led by this chief. This Oglala Lakota chief spoke out against the Bozeman Trail.

ANSWER: **Red Cloud** [or **Mahpiya Lúta**; accept **Red Cloud**’s War]

[10h] In this battle, which was spurred by the United States breaking the Treaty of Fort Laramie, Red Cloud called for Crazy Horse to lead the US Army into an ambush and lure this battle’s title captain away from Fort Kearney.

ANSWER: **Fetterman** Fight [or **Fetterman** Massacre; or Battle of the **Hundred-in-the-Hands** or Battle of a **Hundred Slain**]

<American History>

7. Authors of graduate textbooks on this subject include John David Jackson and Melba Phillips, the first female president of the American Association of Physics Teachers. For 10 points each:

[10m] Name this specific branch of physics concerned with rapidly changing electric and magnetic fields. Albert Einstein's first paper on special relativity is titled for this field and "moving bodies."

ANSWER: **electrodynamics** [or **Elektrodynamik**; accept *Classical **Electrodynamics*** or "On the **Electrodynamics** of Moving Bodies" or "Zur **Elektrodynamik** bewegter Körper"; prompt on electromagnetism]

[10h] This theory of electrodynamics, developed by a Princeton professor and his graduate student, carefully matches advanced and delayed waves by setting the total free field to zero, thus respecting causality.

ANSWER: **Wheeler–Feynman** absorber theory [accept in either order; accept, but DO NOT REVEAL, **Wheeler–Feynman** time-symmetric theory; prompt on partial answer]

[10e] Wheeler–Feynman absorber theory is invariant under the reversal of this physical quantity, whose "arrow" always points forward. It is unified with space in relativity.

ANSWER: **time** [accept **time**-reversal invariance or **time**-reversal symmetry; accept arrow of **time**; prompt on T]  
<Physics>

8. In relevance logic, the star operator introduced by Richard and Val Routley performs this operation on possible worlds. For 10 points each:

[10e] Name this operation represented in logic by a tilde ("TIL-duh"), or by a dash with a "tail" on its right side. For a proposition  $p$ , this operation results in "not  $p$ ."

ANSWER: **negation** [or word forms like **negate**; or logical **complement**; accept **NOT** until "not" is read]

[10m] These rules imply that universal quantifiers and existential quantifiers can be expressed in terms of each other using negation. Similarly, in set theory, these rules allow the same for complements and intersections of sets.

ANSWER: **De Morgan's** laws [accept **De Morgan** negation]

[10h] Relevance logic seeks to address unintuitive uses of the "material" type of this operator. C. I. Lewis had earlier attempted to address those paradoxes with his "strict" type of this operator.

ANSWER: material **conditional** [or **implication**; or **consequence**; or word forms like **implies**; prompt on if-then; accept  $P$  **implies**  $Q$ ; prompt on if  $P$  then  $Q$ ; prompt on  $P$  right arrow  $Q$ ; accept strict **conditional**; do not accept or prompt on "implicature"]

<Philosophy>

9. During a ceremony for putting these objects to bed and feeding them, worshippers sing funeral songs and place them on banana leaves near a vèvè. For 10 points each:

[10h] Give these objects. The *manman*, *ségondo*, and *boula* variants of them are always grouped together in honor of the *Rada nanchon*, and they are responsible for introducing a *kasé* during ceremonies.

ANSWER: **drums** [accept *coucher* or *bay manger* **tambour**; accept **battery**]

[10m] *Description acceptable*. A *kasé* interrupts the rhythm, facilitating this state. Maya Deren's *Divine Horsemen* documents Haiti's *Living Gods* through dancers experiencing this state, during which the *gros bon ange* ("gro bon awnj") is displaced.

ANSWER: **possession** [or word forms; accept anything involving a loa or spirit **mounting** or **possessing** a person; prompt on trance; do not accept or prompt on "demonic possession"]

[10e] Adherents of this religion dance the hip-thrusting *banda* for the Gede ("geh-day") spirits of death and the sinuous *yanvalou* for Damballah, accompanied by drums. This religion worships loa ("lwah") like the fierce Erzulie Dantò.

ANSWER: **Vodou** [or **Voodoo**; or **Vodun**]

<Religion>

10. An essay partly titled for this concept claims that "all human life is pervaded by" a dialectic that treats this concept as "both a sentence and an expiation." For 10 points each:

[10h] Name this concept. An earlier essay in the same collection compares a nation's first realization of its history to an adolescent being forced to confront this concept by staring into the "river of his consciousness."

ANSWER: **solitude** [or word forms like **solitary**; accept "The Dialectic of **Solitude**" or *The Labyrinth of Solitude* or *El laberinto de la soledad*; prompt on synonyms like loneliness or isolation or remoteness]

[10e] An essay in Octavio Paz's *The Labyrinth of Solitude* claims that this country's love of festivals stems from an attempt to "leap over the wall of solitude that confines" its people. Paz himself was from this country.

ANSWER: **Mexico** [or **United Mexican States**; or **Estados Unidos Mexicanos**]

[10m] In an essay that praises this author, Paz notes that her "double solitude" as both a woman and an intellectual elevates her *Reply to Sister Filotea*. Paz's book *The Traps of Faith* analyzes this poet of "First Dream."

ANSWER: Sor **Juana** Inés de la Cruz [or Juana Inés de **Asbaje** y Ramírez de Santillana; prompt on **Inés**; prompt on de la **Cruz**]

<World/Other Literature>

11. Name some things related to photography in the Western United States, for 10 points each.

[10m] In 1930, Ansel Adams and Mary Hunter Austin published a book of photographs of a Native American village near this town. An artists' colony in this New Mexico town was home to many painters.

ANSWER: **Taos** ("touse") [accept "**Taos** Pueblo" or "Pueblo de **Taos**"]

[10e] Arnold Rothstein took a photo of a cow skull in South Dakota during this event. Dorothea Lange took the photo "Migrant Mother" during this multi-year natural disaster that affected the Great Plains.

ANSWER: **Dust Bowl** [prompt on drought or crop failure or equivalents; prompt on Great Depression]

[10h] Julius Shulman is best known for photos of these things. A Shulman photo titled for one of these things includes two women in dresses, high above the nighttime Los Angeles street grid in the background.

ANSWER: **houses** [or **buildings**; accept **architecture**] (The photo is *Case Study House #22*.)

<Other Arts (Visual)>

12. The sniper Dennis O'Neill is widely believed to have killed this man. For 10 points each:

[10m] Name this revolutionary. This man's funeral was attended by 500,000 people, which was nearly one-fifth of Ireland's population at the time, when he was assassinated in 1922 while journeying to his native Cork.

ANSWER: Michael **Collins**

[10e] Members of an organization of this name killed Collins because they opposed his signing of the Anglo-Irish Treaty. This name was later used by various anti-Unionist militant and terrorist groups during The Troubles.

ANSWER: **Irish Republican Army** [or **IRA**; accept Old **IRA** or Provisional **IRA** or Official **IRA** or Continuity **IRA** or Real **IRA**]

[10h] IRA forces opposing the Anglo-Irish Treaty also occupied this building, home to most of Ireland's judiciary. Two months before his death, Michael Collins ordered this building's bombardment, starting the Irish Civil War.

ANSWER: The **Four Courts** [or **Na Ceithre Cúirteanna**]

<Other History>

13. These ecosystems have been called "hot tubs of despair" because their surroundings are strewn with the embalmed remains of fish and crabs that died upon diving into them. For 10 points each:

[10h] Name these anoxic deep-sea ecosystems that are formed via the rejection of their namesake substance from ice's crystal lattice or via a component of that substance's tectonics.

ANSWER: **brine pools** [or **brine lakes**; prompt on underwater lake or deepwater lake] (The processes are "brine exclusion" and "salt tectonics.")

[10m] The only animals known to be able to enter brine pools without experiencing toxic shock are these incredibly slimy creatures. The only extant jawless fish are lampreys and this species, which is nearly 300 million years old.

ANSWER: **hagfish** [accept Gulf **hagfish**; accept **Myxini** or **Myxiniiformes**]

[10e] Brine pools are ringed by beds of the seep variety of these bivalves, whose symbionts thrive on methane and hydrogen sulfide. The zebra variety of these often black-shelled molluscs is an invasive species in the Great Lakes.

ANSWER: **mussels** [accept seep **mussels** or zebra **mussels**; accept **Bathomodiolus**, **Mytilidae**, or **Dreissenidae**]  
<Biology>

14. In a passage from Jenny Offill’s novel *Dept. of Speculation*, the narrator claims that women rarely become “art monsters” and that, instead, this woman licked stamps and folded umbrellas. For 10 points each:

[10h] Name this woman who spent 17 years with her husband at the Montreux Palace Hotel in Switzerland after leaving the United States. A Pulitzer-winning biography of her by Stacy Schiff draws on research by Brian Boyd.

ANSWER: **Véra Nabokov** [or **Véra Nabokova**; or Véra **Slonim**; prompt on **Véra** or **Nabokov**; prompt on Vladimir Nabokov’s wife]

[10e] Schiff’s biography recounts how, on several occasions, Véra Nabokov stopped her husband from burning this novel, which is about Humbert Humbert’s obsession with the title “nymphet.”

ANSWER: **Lolita**

[10m] The last chapter of this memoir by Vladimir Nabokov is presented as a second-person address to Véra. This memoir includes chapters on Nabokov’s mother and on his passion for butterflies.

ANSWER: **Speak, Memory** [or **Speak, Memory: An Autobiography Revisited**]

<American Literature>

15. Answer the following about the early 19th-century Russian polymath Nikolay Karamzin, for 10 points each.

[10m] Karamzin’s epic *History of the Russian State* credits this 15th-century Muscovite prince as the most important creator of Russian imperial power. He is credited with breaking the “Tatar Yoke” with his Great Stand on the Ugra.

ANSWER: **Ivan III** [or **Ivan the Great**; prompt on **Ivan** or **Ivan Vasilevich**]

[10e] Karamzin is credited with introducing an alternative to the letter *yo* of this alphabet used to write Russian.

ANSWER: **Cyrillic** alphabet

[10h] Alexander I gave Karamzin a house in a “village” named for this country that was built by Catherine the Great in Tsarskoye Selo (“tsar-SKO-yeh SAY-lo”). In 1727, Russia signed the Treaty of Kyakhta with this country.

ANSWER: **China** [or **Zhongguo**; accept **Chinese** Village]

<European History>

16. In a quote apocryphally attributed to Margaret Mead, the first sign of civilization is a healed femur. Answer the following about old bone injuries, for 10 points each.

[10m] Holes in prehistoric skulls found from China to Mesoamerica are indicative of this “first surgical procedure.”

ANSWER: **trepanation** [or word forms like **trepanning** or **trephination**]

[10h] Enthesopathies (“en-thess-OP-uh-theez”) in the medial condyle of the humerus are commonly used as a proxy for this kind of behavior in Paleolithic peoples. A curved *woomera*, or some implements found at Schöningen, might aid in this behavior.

ANSWER: **throwing weapons** [accept **javelin-throwing** or **spear throwing**; or equivalents like **ranged weapons**; accept Schöningen **throwing spears**; prompt on answers like **hunting with spears** or **using spears** or **using weapons** by asking “how were they used?”; prompt on **throwing** by asking “throwing what type of objects?”; prompt on **hunting** or **warfare** or **combat** by asking “by what means?”]

[10e] Skeletons from Mehrgarh and Harappa bear evidence of bead-making skills being adapted to smooth these body parts. Flint drill heads used to remove rotting enamel from these structures have also been unearthed.

ANSWER: **teeth**

<Social Science>

17. Atropisomers (“AY-trope-isomers”) such as BINAP (“BY-nap”) have this property, which is also common in spiro compounds. For 10 points each:

[10h] Name this property in which a molecule's non-superimposability on its mirror image can be revealed by examining them both from a particular direction, rather than finding a stereocenter.

ANSWER: **axial chirality** ("kye-RAL-ih-tee") [or **helicity**; prompt on **chirality**]

[10m] The axial chirality of atropisomers arises from a high energetic barrier to this process. As a molecule undergoes this process, its Newman projection will change.

ANSWER: **rotation** around a bond [or word forms such as **rotating**; or bond **rotation**; prompt on conformational **isomerism** by asking "by which mechanism would that isomerism occur?"]

[10e] A set of coupled rotations called a "ring flip" interchanges the axial and equatorial positions of this compound's "chair" conformation. This compound can be produced by fully hydrogenating benzene.

ANSWER: **cyclohexane** [prompt on **C6H12**]

<Chemistry>

18. Seventeen pendants, including a fish and a container for acupuncture needles, appear on a girdle made in this kingdom. For 10 points each:

[10h] Name this kingdom. Five crowns with rising prongs resembling antlers and branches, perhaps influenced by Scythian designs, were recovered from the Golden Bell, Heavenly Horse, and other tombs of this kingdom.

ANSWER: **Silla** [or **Shilla**]

[10e] Many of the Silla crowns are adorned with comma-shaped *gogok* made of this material. China imported a bright variant of this green stone named for kingfisher feathers from Myanmar.

ANSWER: **jade** [accept **jadeite** or **nephrite**; accept **ok**, **bichwi**, **yù**, or **fěicuì**]

[10m] The Golden Bell tomb also housed two gray ceramic ewers ("YOO-urs") of this type depicting a servant and master. Étienne Falconet created a bronze sculpture of this type that stands atop the Thunder Stone.

ANSWER: **equestrian** [or **horse** and **rider**; or equivalents describing a **horseman** or a person **riding a horse**; accept the *Bronze Horseman*]

<Painting/Sculpture>

19. Before dying, this novel's title character swallows a scroll, which predicts the fate of the Elector of Saxony. For 10 points each:

[10h] Name this novel whose title horse-dealer learns that his lawsuit against the Junker ("YOON-kur") Wenzel von Tronka over a fraudulent toll has succeeded, shortly before he is beheaded for leading a criminal army.

ANSWER: **Michael Kohlhaas** (by Heinrich von Kleist)

[10m] This novel's protagonist, Coalhouse Walker, is named in homage to Kohlhaas. *Kohlhaas*'s carriage scene is mirrored by a Model T scene in this novel, which includes cameos from Booker T. Washington and Harry Houdini.

ANSWER: **Ragtime** (by E. L. Doctorow)

[10e] This South African author of *Disgrace* was also inspired by *Michael Kohlhaas* to write the novel *The Life and Times of Michael K*.

ANSWER: J. M. **Coetzee**

<European Literature>

20. Astrology websites erroneously claim that this creature appeared in Greek mythology with the ability to manipulate time like its creator Chronos. For 10 points each:

[10h] Name this hybrid type of creature that is featured on either side of a sacred palm tree in a motif found on an *abzu*-shaped Mesopotamian basin at the Louvre. This creature serves as a symbol of Enki.

ANSWER: **sea-goat** [or **goat-fish**; accept **suhur mash** or **Pricus**; prompt on, but DO NOT REVEAL, **Capricorn**; do not accept or prompt on partial answers]

[10e] This constellation of the zodiac, which the Mesopotamians called *suhur mash*, is often depicted as a sea-goat. The astrological sign corresponding to this constellation governs December 21 through January 20.

ANSWER: **Capricorn** [or **Capricornus**]

[10m] Some Greek traditions hold that a figure associated with this deity was placed in the sky as Capricorn after helping Zeus recover his sinews from Typhon. This deity pursued the nymph Syrinx.

ANSWER: **Pan** [accept **Aegipan**]

<Mythology>