



**ACADEMIC
COMPETITION
FEDERATION**

2023 ACF NATIONALS

Emergency 2

Packet By

Toronto A, Berkeley B, Yale A

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TOSSUPS

1. At a large enough incidence angle, the reflection of these phenomena involves three of them, with the third being a so-called “stem” that is depicted as a small curve touching the vertical axis on the theta- p plane. The impact of these phenomena is lessened by Küchemann carrots. The rule that these phenomena are lessened when cross-sectional area changes smoothly was put forth by Richard T. Whitcomb. The tangent of the deflection angle caused by these phenomena equals a complicated expression of beta, M , and the heat capacity ratio. Across one of these phenomena, the product of density and flow velocity is constant, as specified by one of the Rankine–Hugoniot (“RANG-keen-OO-gohn-yoh”) conditions. These phenomena cause discontinuities in density, pressure, and flow velocity. When a flow hits a concave corner, the oblique type of these phenomena occur. For 10 points, name these propagations that travel faster than the speed of sound.

ANSWER: **shock** waves [or **shocks**; accept oblique **shocks** or bow **shocks** or normal **shocks**; accept anti-**shock** body or anti-**shock** bodies] (The first sentence refers to Mach reflection and Mach stems.)

<Physics>

2. These beings title a 1982 paper by Lou Marano that argues that anthropologists need to interpret stories about them in terms of group sociodynamics to avoid “emic-etic confusion.” An 1897 court case in which the defendant cited the existence of these beings to justify killing his foster father set the precedent that common law applies to Indigenous people regardless of their own traditions. The book *Braiding Sweetgrass* likens multinational corporations to these beings, which may be overcome by heroes like Nanabozho using the symbolic power of abundance. These beings’ feet contain spots of blood and burn through the snow, though their hearts are made of ice. These beings never stop growing larger or more emaciated every time they feed on their prey. For 10 points, a fictitious “psychosis” unique to Algonquian cultures is named for what evil woodland spirits that practice cannibalism?

ANSWER: **wendigos** [or **windigos**, **wheetigos**, **windikouks**, **wi’ntsigos**, **wi’tigos**, or **wittikkas**] (The first line refers to “Windigo Psychosis: The Anatomy of an Emic-Etic Confusion.” The court case is *R v Machekequonabe*. *Braiding Sweetgrass* is by Robin Wall Kimmerer.)

<Mythology>

3. In the 16th century, philosophical dialogues on this concept were written by Judah Leon Abravanel and Tullia d’Aragona, the latter of whom was the first Western philosopher to write a dialogue on this concept with a woman as the main disputant. A set of seven *orationes* (“oh-rah-T’YOH-nace”) on this concept was dedicated to the author’s best friend Giovanni Cavalcanti, and was written by a proponent of *prisca theologia* (“PRISS-kuh tay-oh-LOH-jee-ah”) who coined the name for a specific form of this concept. Three men argue about this concept in *The People of Asolo* by Pietro Bembo, who delivers a discourse in *The Book of the Courtier* favoring this concept’s “rational” form. Marsilio Ficino (“fee-CHEE-noh”) named a form of this concept after a philosopher who wrote a passage in which Diotima compares forms of this concept to rungs on a ladder. For 10 points, Renaissance philosophers often wrote about what concept’s “Platonic” form?

ANSWER: **love** [accept **Eros**; accept Platonic **love**; accept *De amore*; accept rational **love**; accept *Dialogues of Love* or *Dialoghi d’amore*; accept *Dialogues on the Infinity of Love* or *Dialogo dell’Infinità d’Amore*]

<Philosophy>

4. It's not music or philosophy, but this activity is the focus of the sole extant work by the Greek writer Aeneas, whose nickname is often misspelled "Tacitus." This activity is the subject of a work with three-dimensional sketches by Hero of Byzantium, who suggests using *chelonai* ("kuh-LOH-nigh"). Heraclides ("heh-rah-KLAI-deez") of Tarentum invented the *sambuca* for this activity. Abandoned equipment that was originally used for this activity was sold to finance a monumental statue designed by Chares ("CARE-eez") of Lindos. A huge device called a *helepolis* ("heh-LEH-poh-lis") was used for this activity by Demetrius I of Macedon, whose innovations in this activity inspired his nickname *Poliorketes* ("poh-lee-or-kay-TAYS"). When traditional methods of this activity failed, Alexander the Great built a kilometer-long causeway to reach the city of Tyre. For 10 points, machines like the *ballista* and the battering ram were used to take fortified cities in what sort of military activity?

ANSWER: **siegecraft** [or **sieges** or **besieging** or **siege** engineering; accept **siege** of Tyre; accept **Siege** of Rhodes; accept **siege** tower; accept *How to Survive under Siege*; accept **poliorcetics** or **Poliorketes** or *Parangelmata Poliorcetica* until "*Poliorketes*" is read; prompt on **warfare**, **conflict**, **battle**, **tactics**, military **strategy**, **artillery** firing, military **engineering**, or similar answers by asking "for what specific type of engagement?"] (It should be "Aeneas Tacticus," meaning "Aeneas the Tactician." The *sambuca* was used in the Roman siege of Syracuse. The equipment from Demetrius I's failed siege was sold to finance the Colossus of Rhodes.)

<Other History>

5. A visit to this author's childhood bedroom inspires the speaker of a poem by him to recall a "red, satyr-thighed Irish setter" named Michael. In a poem by this author, a man whose speech is stylized in all caps claims to have "LOVED THE MONSTERS NEPHEW CALIGULA" and says Tiberius is in "STAGE THREE." In the last of several parentheticals in a poem by this author, the speaker wanders "through the ruin of S ... wondering at the peacefulness." The "French hopes" and "German fears" of a woman who had been "a widow since Verdun" are relayed to the speaker of a poem by this author about the completion of a jigsaw puzzle. This author and his partner David Jackson collaborated on a long poem that includes "The Book of Ephraim" and is based on their ouija board sessions. For 10 points, name this American poet of "Lost in Translation" and *The Changing Light at Sandover*.

ANSWER: James **Merrill** [or James Ingram **Merrill**] (The first poem is "Broken at Home.")

<American Literature>

6. This compound was reacted with buckminsterfullerene to produce the first crystal structure of a buckyball. To dispose of extremely hazardous two-percent solutions of this compound, SDSs recommend neutralizing it with twice the volume of corn oil until it stops turning black. Aqueous sulfurous acid knocks this catalyst off a five-membered ring in a *syn* addition in which it is regenerated by a sacrificial oxide of morpholine. This inorganic reagent is supplied to reactions by AD-mix. An imidazole ("ih-MID-ah-zahl") buffer of this compound acts as both a negative lipid stain [emphasize] and a fixative in transmission electron microscopy. This compound would convert propylene ("PRO-pill-eeen") into *syn*-propylene glycol. Barry Sharpless won his first Nobel Prize for an asymmetric dihydroxylation catalyzed by the +8 ("plus eight") oxidation state of this compound's metal. For 10 points, name this square planar compound that contains the densest element.

ANSWER: **osmium tetroxide** [or **OsO4**] (The third sentence refers to the Upjohn dihydroxylation.)

<Chemistry>

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7. He is not from Canada, but in a short piece, a composer from this country preceded a cacophonous orchestral fugue with a celebratory, multilingual praise of Canada. Cecil Hopkinson cataloged the works of a composer from this country who used a *Moderato innocente* rondo to conclude a piano concerto in the unusual key of A-flat major. A carriage ride in the wind and rain inspired the first movement of a youthful symphony titled for this country by Arthur Sullivan. A composer from this country taught Mikhail Glinka while living in Moscow, and sold pianos for the firm of Muzio Clementi. A blind harpist from this country wrote the piece “Carolan’s Farewell to Music.” Franz Liszt praised how a composer from this country “dreamt the music” of his eighteen nocturnes, which later inspired Chopin. For 10 points, name this home country of John Field.

ANSWER: **Ireland** [or Republic of **Ireland** or **Éire** or Poblacht na h**Éireann**] (The Arthur Sullivan symphony is his *Symphony in E*. The blind harpist was Turlough O’Carolan.)

<Classical Music>

8. This country’s SEC removed a company’s mass media license in 2018 due to foreign funding from the Omidyar Network. A 2012 article accusing this country’s Supreme Court of using the SUVs of a Chinese magnate was the basis for a 2019 cyberlibel case here. During a 2007 summit on extrajudicial killings in this country, its Chief Justice introduced writs of *habeas data* and *amparo* to protect against “salvaging.” In 2020, this country’s media conglomerate ABS-CBN was shut down. The human rights group FLAG opposed a 2020 antiterrorism bill that expanded this country’s tradition of “red-tagging” activists. In January 2023, tax evasion charges were dropped against a media outlet in this country run by Nobel Peace Prize winner Maria Ressa. For 10 points, name this country where Rappler media reported on the “war on drugs” carried out under Rodrigo Duterte.

ANSWER: the **Philippines** [or **Pilipinas** or Republic of the **Philippines** or Republika ng **Pilipinas**]

<Current Events>

9. In this novel, stopping passersby use their vehicles to illuminate a dance circle during a “festival to nothingness.” This novel’s narrator repeatedly cites water wheels being replaced by pumps as a sign of his hometown’s modernization. A stranger in this novel pleads for his sons to be spared “the pangs of wanderlust” in a letter making the narrator their guardian. A man in this novel is asked to “forget your intellect” by Mrs. Robinson, who attends his murder trial at the Old Bailey. After drinking with the narrator and Mahjoub, a man in this novel begins to recite poetry with an “impeccable” English accent. Hosna’s murder of the womanizer Wad Rayyes in this novel resembles the earlier stabbing of Jean Morris in bed. This novel ends with the narrator crying for help while floating in the Nile. For 10 points, what “reverse colonization” novel about Mustafa Sa’eed was written by Tayeb Salih?

ANSWER: ***Season of Migration to the North*** [or ***Mawsim al-Hijrah ilā al-Shamāl***]

<World Literature>

10. A chronicler says he won’t discuss “the awful things” that participants in this event “did to ladies” and then immediately says they killed a woman’s husband, roasted him on a spit, raped her, and tried to feed her his flesh. After coming from a crusade in Prussia, Gaston Phoebus and the Captal de Buch (“BOOSH”) helped end this event by saving a besieged market-town. In the reprisals after this event, the protagonist of Barbara Tuchman’s (“TUCK-minz”) *A Distant Mirror* held his first military command. This event, which occurred in the Oise (“WAHZ”) Valley, got its name from a padded surplice (“SUR-pliss”) used by participants as armor. This event ended after a failed assault on Meaux (“MOH”) and a battle at Mello. This event, in which Charles the Bad betrayed a promise of safe passage to Guillaume Cale (“gee-YOHN KAHL”), began with popular resentment after John II’s capture at Poitiers (“PWAH-tee-ay”). For 10 points, what peasant uprising arose during the Hundred Years’ War in northern France?

ANSWER: The **Jacquerie** [prompt on Guillaume **Cale’s rebellion** or William **Kale’s rebellion** or Guillaume **Caillet’s rebellion** until “Guillaume Cale” is read; prompt on synonyms such as **uprising** or **revolt** in place of “rebellion”]

(The chronicler was Jean Le Bel.)

<European History>

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11. An artist who made works in this genre was painted sleeping in a chair and standing while resting his hand on a bust in two portraits by Peter Lely, and was known to his contemporaries as “Dwarf Gibson.” Rubies surround a work in this genre made for Martha Swett by John Singleton Copley. Peter Adolf Hall, a Swedish master of this genre, became popular in France in part due to the delicate skin tones achieved from the use of ivory bases. This standalone genre evolved from Jean Clouet’s (“zhawn kloh-ay’s”) portraits on vellum of seven commanders at the Battle of Agincourt (“AHZH-in-kor”) made for an illuminated manuscript. This form was the specialty of Lucas Horenbout and the goldsmith Nicholas Hilliard. European artworks in this form evolved in parallel to those produced by artists like Mir Sayyid Ali under the Mughals. For 10 points, what paintings often stored in handheld cases are named for their diminutive size?

ANSWER: **miniature** portraits [or **miniatures**; accept **limning**; prompt on **painting in little**; prompt on **illumination**; prompt on **portrait** painting until “portraits” is read; prompt on **painting** until read] (The first line refers to Richard Gibson.)

<Painting & Sculpture>

12. Cells expressing mutants of the A and C types of these proteins, which are resistant to caspase-6-mediated degradation, do not fully undergo pyknosis (“pick-noh-siss”). ZMPSTE24 normally removes the C-terminal section of one of these proteins with a farnesylated (“far-NEH-sill-ay-ted”) CAAX (“cax”) box, which is retained in dominant-negative G608G splice-site mutants. The amateur geneticist Jill Viles linked mutations in one of these proteins to both the Olympic athlete Priscilla Lopes-Schliep’s enhanced musculature and her own family’s Emery–Dreifuss muscular dystrophy. MPF phosphorylates these proteins to promote disassembly of the organelle they support before mitosis. These proteins may globally regulate heterochromatin organization. A mutant one of these proteins called progerin causes Hutchinson–Gilford progeria. For 10 points, name these intermediate filaments that form a meshwork beneath the nuclear membrane.

ANSWER: nuclear **lamins** [accept **laminopathies** or **laminopathy**; accept **lamin** A or **lamin** A/C; prompt on nuclear **lamina**; prompt on nuclear **matrix**; prompt on intermediate **filaments** until read; prompt on **progerin** until read by asking “progerin is a mutant form of what normal type of protein?”]

<Biology>

13. Women from this state’s capital gave an engraved sword to James Totten for peacefully evacuating an arsenal during a crisis that nearly began the Civil War. A disagreement over railroad bonds issued by this state culminated in a “war” between two Republican faction leaders that engulfed Senators Stephen W. Dorsey and Powell Clayton. Frederick Steele recaptured much of this state, from which he launched the 1864 Camden Expedition. Politics in this state were dominated by “the Family” before the Civil War and by factions called “Brindletails” and “Minstrels” afterwards. The resolution of the Brooks–Baxter War in this state coincided with the end of Reconstruction. Confederate forces abandoned this state following Earl Van Dorn’s retreat after the Battle of Pea Ridge. For 10 points, name this state that formed the fourth military district during Reconstruction with its southeastern neighbor, Mississippi.

ANSWER: **Arkansas** [or **AR**]

<American History>

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14. This photographer depicted 13 politicians having conversations under a clock superimposed from an Ed Ruscha (“roo-SHAY”) painting. The terrain of Bahrain’s Sakhir Grand Prix is shown in one of this man’s many photographs related to Formula One. A wall of gold orbs features in this artist’s photograph of the Super-Kamiokande observatory. Paneled depictions of flowers and doves appear in the background of thousands of cheerleaders in this artist’s *Pyongyang* series. Two series of claustrophobic aerial photographs by this artist depict stock exchanges in Tokyo and Chicago. A photograph by this student of Bernd and Hilla Becher depicts two horizontal strips of grass under a gray sky next to the title natural feature. This photographer showed aisles of products at a California superstore in his *99 Cent* series. For 10 points, name this German photographer of the most expensive photograph ever sold, *Rhein II*.

ANSWER: Andreas **Gursky** (The first line refers to *Politik II*.)

<Other Fine Arts>

15. Glenda Jackson portrayed this poet in a Hugh Whitmore play after being entranced by this poet’s partly sung, off-key recitations of her work. Sylvia Plath called herself an “addict” of this author’s poetry in a fan letter professing jealousy of the title of this author’s *Novel on Yellow Paper*. “The Galloping Cat” is one of many cat-related poems by this author, who repeated a line about “a cat named Flo” in a poem that states “I think he was already stuck / with Kubla Khan” and “It was not right of Coleridge in fact it was wrong.” This author of “Thoughts About the Person from Porlock” wrote “Poor chap, he always loved larking” in a poem that begins “Nobody heard him, the dead man” in reference to a man whose thrashing is mistaken for a commonplace gesture. For 10 points, name this English poet of “Not Waving But Drowning.”

ANSWER: Stevie **Smith** [or Florence Margaret **Smith**] (The lead-in refers to Whitmore’s 1977 play *Stevie*.)

<British Literature>

16. *Note to players: Original language word required.*

This is the first word in the title of a *zimrah* about a girl “so pure and ruddy” with “cheeks of pomegranate;” in that song, this word proceeds “leven dodi.” In an afternoon blessing, this word precedes the opening line “rav al Yisrael amcha.” In Jewish law, this word and the word for “home” denotes a type of marital reconciliation process. Chickpeas and beer are consumed during a gathering named for this word and the word for “male” that is held the Friday after a birth. The nineteenth and final blessing of the weekday Amidah asks to “grant,” or “sim” this word. This word is used twice in the final line of the Kaddish, where it occurs between the words “Oseh” (“AH-say”) and “bi-m’romav” (“BIM-row-mahv”). This is the first word in the title of a song sung on the way home from Shabbat services that welcomes angels; that song is called “[this word] Aleichem” (“ah-LAY-khem”). For 10 points, give this Hebrew word for “peace” that is also used as a greeting.

ANSWER: **shalom** [accept **sholom**, **sholem**, **sholoim**, or **shulem**; accept “**Shalom** Aleichem”; accept Oseh **shalom** bi-m’romav; accept sim **shalom**; accept **Shalom** Zachar; accept **Shalom** bayit; accept **Shalom** rav; accept “**Shalom** Leben Dodi”]

<Religion>

17. This practice is based on a set of three axioms called IAA, combined with the meta-mechanism of “re-perceiving,” according to a paper by Shauna Shapiro et al. Acceptance is one of the seven foundational elements of this practice, according to the book *Full Catastrophe Living*. In dialectical behavior therapy, there are six core skills for this practice, including three “what” skills and three “how” skills. Jon Kabat-Zinn, who created an oft-quoted definition of this practice, developed a form of stress reduction based on it. A book by Ronald Purser that criticizes the commodification of this practice notes that there are over 100,000 books on Amazon with this term in the title. This practice’s name is a translation of the Buddhist term *sati*. For 10 points, meditation often involves what practice of non-judgmentally paying attention to the present moment?

ANSWER: **mindfulness** [accept **mindfulness** meditation; prompt on **meditation** until read; prompt on **sati** until read] (The first sentence refers to the 2005 article “Mechanisms of mindfulness.” The Ronald Purser book is *McMindfulness*.)

<Social Science>

18. A company named for “JE” followed by these components offers some of them with asymmetric skirts that have less mass on the minor side. The asymmetry of these components due to thermal expansion is called ovality. Cross scavenging requires these components to have a deflector, but modern Schnürle (“sh’newr-leh”)-type designs with loop scavenging obviate the deflector. Based on the relative amount that these components move, designs are classified as square, oversquare, or undersquare. Each of these components has three rings, where the bottommost scraper ring moves oil into drain holes. These components’ dwell time refers to how long they stay at top dead center. A wrist pin links these components to a connecting rod, which attaches these components to the crankshaft. The distance traveled by one of these components is the stroke length. For 10 points, name these components of internal combustion engines that move inside cylinders.

ANSWER: **pistons** [reject “cylinder,” “engines,” or “internal combustion engines”]

<Other Science>

19. A commander fought so recklessly against one of these groups that, when he retired and removed his armor, two bullets fell out of his shirt. Campaigns against these groups were designated as “mountain hunts” and involved cutting off noses as trophies. The formation of these groups was inspired by letters from their leader called *ofumi*. One of these groups ran a century-long feudal state after wresting control from Togashi Masachika in Kaga Province. Rennyō eventually tried to distance himself from these groups, who had organized to defend him against aggression from Enryaku-ji. The central temple of True Pure Land Buddhism trained these “single-minded leagues” from ranks of peasants. These groups operated out of the fortress of Ishiyama Hongan-ji until 1580. For 10 points, name these loosely organized religious leagues that were subdued in a decade-long campaign by Oda Nobunaga.

ANSWER: **ikkō-ikki** [prompt on **farmers** or **peasants** until “peasants” is read; prompt on **Buddhists** or **monks** or **priests** until “Buddhism” is read; prompt on **warriors** or similar answers; prompt on **jizamurai**] (Two bullets fell out of the shirt of Tokugawa Ieyasu after the Battle of Azukizaka.)

<World History>

20. After kicking his son’s friend to death, a character created by this author visits his hunchbacked brother at a monastery while away from his job at a linen factory. An essay by this author that describes his first impression of the Lumière brothers’ cinematograph opens “last night I was in the Kingdom of Shadows.” A character created by this author declares “Man! It has a proud ring to it!” in a monologue on dignity from a play that ends with him complaining “He spoiled the song!” as their singing is interrupted by news from the Baron. At the end of a story by this author, the chamber-maid Tanya has sex with a bread baker, leading to abuse from a group of pretzel-makers. In a play by this author, the cardsharp Satin, the lying Luka, and the alcoholic Actor all live in an old boarding house. For 10 points, name this socialist realist author of “Twenty-Six Men and a Girl” and *The Lower Depths*.

ANSWER: Maxim **Gorky** [or Alexei Maximovich **Peshkov**] (The novel in the first sentence is *The Artamonov Business*.)

<European Literature>

BONUSES

1. Two separate mass mortality events of saiga antelope raised concerns about this site, although officials attributed the events to pasteurellosis (“pasture-ell-oh-sis”). For 10 points each:

[10h] Name this site where unsafe open-air testing of biological weapons led to a 1971 outbreak of weaponized smallpox that originated on the *Lev Berg* research vessel.

ANSWER: **Vozrozhdeniya** Island [or **Rebirth** Island or **Renaissance** Island; accept **Aralsk-7**; prompt on, BUT DO NOT REVEAL, **Aral** Sea or **Orol** dengizi or **Aral** teñizi]

[10e] Vozrozhdeniya is located in this body of water whose current desertified state has caused toxic dust storms. This body of water was drained by extensive cotton irrigation during the Soviet period.

ANSWER: **Aral** Sea [or **Orol** dengizi or **Aral** teñizi]

[10m] Scientists continue to monitor Vozrozhdeniya for outbreaks of this disease. In 1988, vats containing the causative agent of this disease were removed from Sverdlovsk’s Compound 19.

ANSWER: **anthrax** [accept *Bacillus anthracis* or **anthrax** spores]

<World History>

2. Answer the following about database design, for 10 points each.

[10e] Relational databases organize data in these spreadsheet-like collections. To avoid redundancy, rows in one of these collections use foreign keys to refer to data in another of them.

ANSWER: **tables**

[10m] A distributed database faces a tradeoff between this property, availability, and partition tolerance. To ensure data validity, transactions should satisfy atomicity, this property, isolation, and durability.

ANSWER: **consistency** [or **consistent**; accept **correctness**] (Those are the CAP theorem and ACID properties, respectively.)

[10h] Public databases with sensitive information can implement this property by adding noise, as shown by Cynthia Dwork, Frank McSherry, Kobbi Nissim, and Adam Smith. This property, which is often confused with *k*-anonymity, ensures that a query response is nearly the same whether or not an individual is in a database.

ANSWER: **differential privacy** [accept epsilon-**differential privacy**; prompt on **privacy**]

<Other Science>

3. While looking at a scratch that this character had given her, the protagonist of a novel thinks “I shall keep that. And it is not the mark of Cain.” For 10 points each:

[10h] Identify this character owned by Colonel Cary. In a Marian Engel novel, the archivist Lou meets this character, who becomes her eventual lover as she documents the colonel’s library on Cary’s Island.

ANSWER: the **bear** [accept the title character of **Bear**; accept black **bear** or **ursid**]

[10e] Fiona forgets her marriage to Grant in this author’s story “The Bear Came Over The Mountain.” This Canadian Nobel Laureate wrote “The Moons of Jupiter.”

ANSWER: Alice **Munro** [or Alice Ann **Munro**; or Alice Ann **Laidlaw**]

[10m] In this author’s poem “Bearhug,” the speaker wonders why “I give my emotion an animal’s name ... a dark squeeze of death.” Patrick Lewis plots to blow up a water filtration plant in this author’s novel *In the Skin of a Lion*.

ANSWER: Michael **Ondaatje** (“on-DAH-chee”) [or Philip Michael **Ondaatje**]

<World Literature>

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4. Famous examples of these songs include “Back to Before” from *Ragtime*, “Lot’s Wife” from *Caroline, or Change*, and the title song from *Cabaret*. For 10 points each:

[10m] Give this term for a showstopping musical number that gets its name from its placement near the end of the musical’s second act, just before the finale.

ANSWER: **11 o’clock** numbers

[10e] In this musical’s 11 o’clock number “Memory,” Grizabella sings “I can smile at the old days.”

ANSWER: **Cats**

[10h] In this classic 11 o’clock number, a stage mother sings “Mama’s talkin’ loud / Mama’s doin’ fine,” breaking down as she comes to the realization that she sacrificed her ambitions for her ungrateful daughters.

ANSWER: “**Rose’s Turn**” (from *Gypsy*)

<Other Fine Arts>

5. Answer the following about fog and mist in British fantasy fiction, for 10 points each.

[10m] An amnesia-inducing mist settles over post-Arthurian Britain in this novel about the elderly couple Axl and Beatrice.

ANSWER: *The **Buried Giant*** (by Kazuo Ishiguro)

[10h] In a novel by this author, residents of the town of Lud-in-the-Mist deal with an influx of fairy fruit. The line “I want a holophrase” opens a typographically striking long poem by this author whose speaker strolls through a postwar city.

ANSWER: Hope **Mirrlees** [or Helen Hope **Mirrlees**] (The long poem is *Paris: A Poem*.)

[10e] Shasta senses a mysterious presence in the fog in this author’s novel *The Horse and His Boy*, part of a series of seven novels by this author that also includes *Prince Caspian* and *The Magician’s Nephew*.

ANSWER: C. S. **Lewis** [or Clive Staples **Lewis**] (The series is *The Chronicles of Narnia*.)

<British Literature>

6. Victor Vescovo recounted eating a tuna sandwich and observing candy wrappers in this location in a 2019 solo dive as part of the Five Deeps Expedition. For 10 points each:

[10e] Name this Pacific Ocean trench whose Challenger Deep has the lowest known seafloor depth.

ANSWER: **Mariana** Trench [or **Marianas** Trench]

[10h] An oceanographer from this family and Don Walsh crewed the *Trieste* in the first manned trip to reach Challenger Deep. This family of Swiss balloonists includes Bertrand, who achieved the first balloon circumnavigation in 1999 with Brian Jones.

ANSWER: **Piccard** family [accept Jacques **Piccard**, Jean **Piccard**, Auguste **Piccard**, or Bertrand **Piccard**] (The *Star Trek* character Jean-Luc Picard was named for them.)

[10m] This living fossil has a long snout called a rostrum that senses electrical currents from fish in the Mariana Trench. Japanese fishermen assigned a mythical name to this pinkish shark with an extendable jaw.

ANSWER: **goblin** shark [or **vampire** shark; or *Mitsukurina **owstoni***; accept *Mitsukurina*]

<Geography>

7. This island's colonial depiction in Jean-Gabriel Charvet's ("shar-vay's") wallpaper *Les Sauvages de la Mer Pacifique* ("leh soh-vazh deh lah mer pah-see-feek") inspired Lisa Reihana's scrolling video *in Pursuit of Venus [infected]*. For 10 points each:

[10e] Name this island where women create tifaifai quilts. Paul Gauguin ("goh-gawn") painted *When Will You Marry?* on his second trip to this island.

ANSWER: **Tahiti** [or **Otaheite**; accept Kingdom of **Tahiti** or Royaume de **Tahiti**]

[10h] Gauguin recounted his first trip to Tahiti in this woodcut album named for the fragrant gardenias of Tahitian women. King Pōmare V is the only man in this book, which features an "ethnographic" photo of a Tongan woman.

ANSWER: **Noa Noa** [or **Noa Noa: The Tahitian Journal**]

[10m] Gauguin created this painting of his teenage "wife" Teha'amana on his first trip to Tahiti. Griselda Pollock has read this painting as a response to Manet's *Olympia* for its nude, prone subject and enigmatic figure in the background.

ANSWER: ***Spirit of the Dead Watching*** [or ***Manao tupapau***; or ***Watching the Spirit of the Dead*** or ***Spirit of the Dead Watching Over*** or ***Spirit of the Dead Watches***]

<Painting & Sculpture>

8. Answer the following about Byzantine coinage, for 10 points each.

[10h] The dominant standard of the Byzantine Empire was this gold coin, which was known as a *solidus* in Latin. In the 11th century, Alexios I Komnenos issued the electrum *hyperpyron* as a replacement for this coin.

ANSWER: **nomisma** [accept **nomisma hyperpyron**]

[10m] This early Byzantine emperor was the first to put his sons, including Constantine III, on the *nomisma*. This son of the Exarch of Africa seized Constantinople from the usurper Phocas.

ANSWER: **Heraclius I** [or **Hērākleios**]

[10e] Justinian II's use of the haloed Christ on the *nomisma* was banned under this policy. Leo III began this policy by removing a religious image from Constantinople's Chalke ("chall-KAY") Gate.

ANSWER: **iconoclasm** [or word forms like **iconoclastic**; accept First Byzantine **iconoclasm**]

<European History>

9. Michael Harner has popularized the "repetitive" use of these objects to achieve Shamanic states of consciousness. For 10 points each:

[10e] Name these musical instruments that include the *atabaque* used in Candomblé possession ceremonies. Mapuche shamans use a flat "kettle" one of these instruments called the *kultrun*.

ANSWER: **drums** [accept kettle **drums**; accept **percussion** instruments]

[10h] Drumming is a component of medium ceremonies in the Brazilian Spiritist tradition named for this French author. Though his movement died out in Europe, about two percent of Brazilians consider themselves followers of this author of *The Spirits' Book*.

ANSWER: Allan **Kardec** [or Hippolyte Léon Denizard **Rivail** ("rih-vay"); accept **Kardecism**]

[10m] Kardec's book *Heaven and Hell* echoes the title of a text by this other mystic. The New Church movement was inspired by this man, who taught that demons were underdeveloped souls worthy of redemption.

ANSWER: Emanuel **Swedenborg** [or Emanuel **Swedberg**]

<Religion>

10. A version of this process uses FACS (“fax”) to sort propidium iodide-labeled cells by DNA content. For 10 points each:

[10h] Name this process that can be chemically induced by nocodazole, colchicine, and other microtubule polymerization inhibitors. This process can also be induced via serum deprivation.

ANSWER: **cell synchronization** [or **cell cycle synchronization**; prompt on **synchronization**; prompt on **cell cycle arrest** or **mitotic arrest** by asking “for what purpose?”]

[10e] Other methods of cell synchronization rely on inhibitors of kinases dependent on these proteins, like RO-3306. The fluctuation of these proteins’ concentrations in the cell regulates progression through the cell cycle.

ANSWER: **cyclins**

[10m] *Description acceptable.* Cell synchronization can also exploit this mechanism, which arrests cells growing at high density at G1. That method fails for cancer cell lines because cells lose this mechanism during the epithelial-to-mesenchymal transition.

ANSWER: **contact inhibition** [accept descriptions of cells **stopping growth** upon **touching** or cells **stopping growth** upon **contacting** other **cells**]

<Biology>

11. This book argues that the true poem is “a simulacrum of reality” in a chapter criticizing the “heresy of paraphrase.” For 10 points each:

[10m] Name this book of literary criticism that takes its title from John Donne’s “The Canonization.” This Cleanth (“KLEE-anth”) Brooks book opposes historicist literary criticism.

ANSWER: *The **Well Wrought Urn*** [or *The **Well Wrought Urn: Studies in the Structure of Poetry***]

[10e] Brooks’s analysis of “The Canonization” quotes this author’s idea about poets submitting “to the fires of irony.” This author created the politician Willie Stark in *All the King’s Men*.

ANSWER: Robert Penn **Warren**

[10h] *The Well Wrought Urn* revisits several ideas from Brooks’s book titled for “Modern Poetry” and this concept. The poet’s mind is compared to platinum in a chemical reaction in an essay that relates this title concept to the artist’s “continual surrender of himself.”

ANSWER: **tradition** [“**Tradition** and the Individual Talent”; accept *Modern Poetry and the **Tradition***] (T.S. Eliot wrote “Tradition and the Individual Talent.”)

<American Literature>

12. This function applied to x and y evaluates to 5 if either x or y is at least 57. For 10 points each:

[10m] Identify this function similar to the “plus” function, which is used to illustrate an example of Wittgenstein’s rule-following paradox in the book *Wittgenstein on Rules and Private Language*.

ANSWER: **quus** (“kwoose”) [or **quaddition**]

[10e] The quus function was proposed by this philosopher, who analyzed names as rigid designators in *Naming and Necessity*.

ANSWER: Saul **Kripke** (“krip-kee”) [or Saul Aaron **Kripke**]

[10h] Kripke rejects a response to the rule-following paradox based on these concepts because it fails to account for the possibility of mistakes and ignores the fact that the totality of these things is necessarily finite. Beliefs that are not “occurrent” are named for these concepts.

ANSWER: **dispositions** [accept **dispositional** beliefs]

<Philosophy>

13. *The Tale of the Shipwrecked Sailor* features a talking snake that says he is the ruler of this land. For 10 points each:

[10m] Name this ancient kingdom that is traditionally thought to have occupied a region around the Horn of Africa. This land exported luxury goods to Egypt, including ivory and ebony.

ANSWER: Land of **Punt** [or Kingdom of **Punt**; reject “Puntland”]

[10e] This pharaoh commemorated an expedition to Punt in a relief at Deir el-Bahari. This female pharaoh, who first ruled as regent for her son Thutmose III, is sometimes depicted with a false beard.

ANSWER: **Hatshepsut** [or **Hatchepsut**; or **Hatasu**]

[10h] Ancient Egyptians sometimes referred to Punt as *Ta netjer*, meaning “the land of [this figure].” The hieroglyph that represented this figure resembles a left-facing flag on a flagpole.

ANSWER: the **God** [or the **Gods** or the **Divine** or the **Holy**; accept “Land of the **Gods**”; accept the sun **god**; reject specific Egyptian gods]

<Other History>

14. The author of this book wrote “ask yourself in the most silent hour of your night: must I write?” in response to receiving some poems. For 10 points each:

[10m] Name this book that advises a cadet training at a military academy “Nobody can advise you and help you, nobody. There is only one way. Go into yourself.”

ANSWER: ***Letters to a Young Poet*** [or ***Briefe an Einen Jungen Dichter***]

[10e] Modern audiences often view this author’s *Letters to a Young Poet* as a self-help book. This author wrote “You must change your life” to close his poem “Archaic Torso of Apollo.”

ANSWER: Rainer Maria **Rilke** [or René Karl Wilhelm Johann Josef Maria **Rilke**]

[10h] Rilke addresses the reader with the lines “practice on this: letting each other go. For holding on comes easily” from this poem dedicated to his friend, the artist Paula Modersohn-Becker. You may give the full title or just the first word.

ANSWER: “**Requiem** for a Friend” [or “**Requiem** for a Woman”; or “**Requiem**: Für Eine Freundin”]

<European Literature>

15. Answer the following about GameCube controller circuitry, for 10 points each.

[10m] These circuit components’ degradation can reduce stick snapback, which is beneficial because it reduces the chance of an incorrect input in *Smash Bros. Melee*. One of these circuit components with a log taper is usually marked with an ‘A,’ while ‘B’ indicates a linear taper.

ANSWER: **potentiometers** (“poh-TEN-shee-AH-meh-turz”) [or **pots**; accept **variable resistors**, **rheostats**, **trim pots**, **turn pots**, **slide pots**, or **thumb pots**; reject “resistors”]

[10e] When the potentiometer is working, soldering on one of these circuit components reduces snapback. A type of these components is made out of parallel conducting plates.

ANSWER: **capacitors** [prompt on **C**]

[10h] Non-contact sensors based on this effect are used as tachometers and also replace potentiometers in the PhobGCC (“fob-G-C-C”) controller. In other devices named for this effect, electrons moving around a magnet ionize inert gas propellant at the anode.

ANSWER: **Hall** effect [or ordinary **Hall** effect; accept **Hall** effect sensors or **Hall** sensors; accept **Hall** thrusters or **Hall** effect thrusters; reject “quantum Hall effect” or “integer quantum Hall effect” or “fractional quantum Hall effect”]

<Physics>

2023 ACF Nationals | Emergency 2. Toronto A, Berkeley B, Yale A

Editors: Harvey, Apte, Evans, Golden, Karim, Kearney, Mao, Nediger, Peet, Settle, Silverman

16. Kali Rubaii's article "Concrete Soldiers" describes the deployment of blast-proof t-walls in Afghanistan and Iraq as a "coercive" example of this art form. For 10 points each:

[10e] Name this art form that involves human design of a physical environment. André Le Nôtre practiced this art form by designing the gardens of Versailles ("vair-SYE").

ANSWER: **landscaping** [or **landscape** architecture or **landscape** design; accept "'Concrete Soldiers': T-walls and Coercive **Landscaping** in Iraq"]

[10h] According to Rubaii, this system "made Iraq's landscape in the image of a warscape." This U.S. Army program that taught soldiers about local populations evolved from Montgomery McFate's view of anthropology as a "warfighting discipline."

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

[10m] Rubaii highlighted the "visionably actionable" violence of t-walls of Baghdad and this city. In 2004, four Blackwater contractors were hung over a bridge in this city.

ANSWER: **Fallujah** [or al-**Fallūjah**]

<Other Academic>

17. These structures allow strains of *Geobacter* and *Shewanella* to grow thick biofilms on the anodes of microbial fuel cells. For 10 points each:

[10h] Name these structures composed of cytochromes like OmcA. They facilitate long-range electron transport from respiring bacteria into inorganic acceptors.

ANSWER: bacterial **nanowires** [or microbial **nanowires**; prompt on Type VI **pili**]

[10m] The Malvankar lab has shown that nanowire cytochromes conduct electrons because their adjacent heme groups align in a T-shape and interact through this intermolecular force. This attraction is the main reason that G:C ("G-C") base pairs in DNA are more stable than A:T ("A-T") ones.

ANSWER: pi-pi **stacking** [or pi **stacking**; prompt on **pi** interactions]

[10e] Although pi stacking makes DNA a decent nanowire on its own, its conductivity is greatly increased when it performs this process on nickel or silver atoms, coordinating the metals at multiple sites, like a claw.

ANSWER: **chelation** [or **chelate** effect or **chelating**]

<Chemistry>

18. The editor of this newspaper managed to convince Mayor James M. Curley to shut down productions of *The Clansman*, but was unable to halt the premiere of *Birth of a Nation* at the Tremont Theatre a decade later. For 10 points each:

[10h] Name this militant Black newspaper that operated out of the former home of *The Liberator*. An editor of this newspaper was arrested after verbally sparring with Booker T. Washington during a chaotic 1903 speech.

ANSWER: *The Boston* **Guardian** [accept *The* **Guardian**] (Washington's 1903 speech to the Boston branch of the National Negro Business League devolved into the chaotic, but peaceful, "Boston Riot.")

[10e] *The Boston Guardian* editor William Monroe Trotter attempted to ban *Birth of a Nation* along with this civil rights group co-founded by W. E. B. Du Bois ("dew BOYS").

ANSWER: **NAACP** [or **National Association for the Advancement of Colored People**]

[10m] A Black member of this family co-founded *The Guardian*. Two sisters from this family became well-known abolitionists and embarked on speaking tours in the Northeast.

ANSWER: **Grimké** family [accept **Grimké** sisters, Sarah Moore **Grimké**, Angelina Emily **Grimké**, or Archibald **Grimké**]

<American History>

19. The book *Pedagogy of the Oppressed* argues that this model's apparent "humanism" disguises its effort to turn people into automatons. For 10 points each:

[10m] Paulo Freire ("FRAIR-ee") criticized what model of education that views students as "depositories" and teachers as "depositors"?

ANSWER: **banking** model [or modelo **bancário**]

[10e] In opposition to the banking model, Freire proposed a type of pedagogy named for this adjective. A liberatory form of "theory" named for this adjective was practiced by the Frankfurt School.

ANSWER: **critical** [accept **critical** theory; accept **critical** pedagogy or pedagogia **crítica**]

[10h] Similarly, Alison King has argued that the "sage on the stage" approach, which follows the banking model, should be replaced with this other approach with a rhyming name. In this approach, the teacher's role is simply to facilitate learning.

ANSWER: "**guide on the side**"

<Social Science>

20. The fourth volume of this set of pieces, which contains four pieces titled after stars, is titled *Celestial Mechanics*. For 10 points each:

[10h] Name this set of pieces for amplified piano. Its third volume, which adds a second piano and percussion, is titled *Music for a Summer Evening*.

ANSWER: ***Makrokosmos***

[10m] This chamber piece by the composer of *Makrokosmos*, George Crumb, begins with a section titled "Threnody I: Night of the Electric Insects." The Vietnam War inspired this piece that is written for "electric string quartet."

ANSWER: ***Black Angels*** [or ***Black Angels*** (*Thirteen Images from the Dark Land*)]

[10e] Crumb's *Makrokosmos* was inspired by the *Mikrokosmos* of this Hungarian composer and ethnomusicologist.

ANSWER: Béla **Bartók** [or Béla Viktor János **Bartók** or **Bartók** Béla Viktor János]

<Classical Music>