

## 2023 ACF Regionals

Packet G by Harvard B, Ottawa A, Ottawa B, Oxford B, UCLA A, Waterloo A

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Tossups

1. Two palmettes resembling these things flank a pomegranate in a common Sassanid motif. Bearded figures with these features fertilize the Tree of Life using a bucket and pine cone in many palace relief carvings depicting “genies.” As part of the “double-aspect” relief technique, a set of alabaster figures that possess large examples of these features are shown with five legs. An ancient Near Eastern symbol of a sun disk with these features evolved into the Zoroastrian Faravahar. Beards and these features adorn a pair of massive, human-headed bull sculptures that guarded the entrance to the citadel of Sargon II and are known as *lamassu*. A sculpture often named for these features that overlooks the Louvre’s Daru Staircase was found headless on an Aegean island. For 10 points, what features extend outward from the *Nike of Samothrace*?

ANSWER: **wings** [accept *Winged Victory of Samothrace*; accept **winged** sun disk; accept **winged** genies]  
<Painting/Sculpture>

2. By noting that any scalar equals this function of itself, a “trick” named for this function can be used to compute the expected value of a quadratic form. This function is applied to a product in the definition of the Frobenius inner product. For an orthogonal projection, this function equals the rank. When applied to the product “ABC,” this function is invariant under precisely the permutations “BCA” and “CAB,” provided the dimensions remain valid for multiplication, by this function’s cyclic property. Up to a sign, this function is the coefficient of the second-highest-degree term in a characteristic polynomial. This function equals the sum of the eigenvalues, whereas the product gives the determinant. For 10 points, name this function defined as the sum of the diagonal entries of a matrix.

ANSWER: **trace** [accept **trace** trick; prompt on **tr**]  
<Other Science>

3. A ruler murdered in this location supposedly resurrected Alice Newnett and told her to take a human-sized candle to his grave. William de Mandeville lost his estate in response to an event in this location involving Ranulf Flambard. An unfinished five-volume *History of the World* was written in this location by a man who legendarily introduced tobacco to Ireland. The refrain “I cry for mercy, mercy, mercy” was written from this location by a target of the Pilgrimage of Grace. *Foxe’s Book of Martyrs* venerates a queen who may or may not have had to enter this location through the Traitors’ Gate. Perkin Warbeck and Lambert Simnel claimed to be “princes” who disappeared from this location during the Wars of the Roses. For 10 points, name this fortress that employs the Yeoman Warders, or “beefeaters,” to guard the crown jewels.

ANSWER: **Tower of London** [prompt on **tower** or Princes in the **Tower**; prompt on Wakefield **Tower**] (Henry VI supposedly resurrected Newnett. Ranulf Flambard was the first to escape imprisonment in the tower. Thomas Cromwell pled that refrain to Henry VIII in an unsuccessful attempt to avoid execution.)  
<Other History>

4. In Stephanie McCarter’s translation, this “blameless” virgin’s blowing hair stops a man from mistaking her for a statue. She’s not Peloponnesian, but Herodotus claims that Xerxes I traced his lineage from this woman, who writhes against a dead tree in a painting by Piero di Cosimo. The last chapter of W. E. B. Du Bois’s *The World and Africa* is titled for this woman, whose description as “fusca” in the *Heroides* suggests she was viewed as Black. Joppa was said to be where an oracle of Ammon leads this woman to be chained to a rock. After her mother calls her more beautiful than the Nereids, this daughter of King Cepheus of Ethiopia is sacrificed to the sea monster Cetus. For 10 points, Perseus rescues what daughter of Cassiopeia, whose namesake constellation contains a nearby spiral galaxy?

ANSWER: **Andromeda** [or **Andromédē**; accept **Andromeda** Galaxy; accept *Perseus Freeing Andromeda* or *Liberation of Andromeda* or *Liberazione di Andromeda*]

<Mythology>

5. A poem by this author was parodied by another poem written under the pseudonym “H.H.C.C.” A poem by this author compares the title character’s life to the narrator’s “dingy little office” after receiving a letter “written in a thumbnail dipped in tar.” This author responded to Henry Lawson’s poem “Borderland” in the so-called “*Bulletin* Debate.” A poem by this author describes a character who says “you’ll never take me alive” and escapes from three troopers and a “squatter, mounted on his thoroughbred.” This author of “Clancy of the Overflow” is best known for a poem in which a jumbuck is captured beside a billabong by a “jolly swagman” who repeatedly sings the title phrase. For 10 points, bush ballads such as “Waltzing Matilda” were written by what Australian poet?

ANSWER: Banjo **Paterson** [or Andrew Barton **Paterson**]

<World Literature>

6. *Note to moderator: Read the answerline carefully.*

*Description acceptable.* *Crónicas* about this problem inspired a 2014 memoir by Selva Almada and the inciting event in the novel *Hurricane Season*. The anthropologist Marcela Lagarde modified a term for this problem coined by Diana E. H. Russell. The “Calm Line” is meant to mitigate this problem, which the UN dubbed the “shadow pandemic.” A specific aspect of this problem inspired a viral song by the Chilean collective LasTesis. This problem is referenced by “the part about the crimes” in Santa Teresa in Roberto Bolaño’s novel *2666*, which was based on hundreds of incidents in Ciudad Juárez. The campaign “un día sin nosotras” raised awareness of this problem, whose high rate in countries like Honduras sparked the movement “ni una menos.” For 10 points, machismo may exacerbate what harmful acts that include most domestic abuse?

ANSWER: **violence** against **women** [or **VAW**; accept **femicide**, **feminicide**, **femicidio**, **murder of women**, or equivalents; accept **girls**, **wives**, **females**, or **mothers** in place of “women”; accept **gender-based violence**; accept **Dead Girls** or **Chicas muertas**; prompt on domestic **violence**, **murder**, **killing**, **homicide**, **rape**, sexual **assault**, sexual **violence**, domestic **abuse**, **beating**, **asesinatos**, or equivalents by asking “who are the victims?”; prompt on **misogyny** or **machismo**] (Fernanda Melchor wrote *Hurricane Season*. Bogotá’s mayor Claudia López Hernández introduced the “Calm Line.” The song is “A Rapist In Your Path.”)

<Current Events>

7. A now-lost play about the “true history” of this person was falsely attributed to Christopher Marlowe, although it possibly influenced Marlowe’s *Tamburlaine*. For accounts of this person in a 17th-century history, Robert Knolles relied on a priest who wrote an eyewitness account of the defense of Rozafa Castle. A biography of this person forms the first part of the Cetinje (“tseh-TEEN-yeh”) Chronicle, which was relocated after the Siege of Shkodër. The Rilindja period of literary flourishing drew from that biography of this “Prince of the Epirotes” by Marin Barleti. This man united the Thopia and Muzaka families into an alliance that successfully defended the 1450 Siege of Krujë (“KROO-yuh”). This man formed the League of Lezhë (“LEH-zuh”) to resist Ottoman rule in the Balkans. For 10 points, name this national hero of Albania.

ANSWER: **Skanderbeg** [or **Skënderbeu**, **Skënderbej**, **İskender Bey**, or **Prince Alexander**; or Gjergj **Kastrioti** or Georgius **Castriota**; accept *The True History of George **Scanderbeg***; accept *The History of the Life and Deeds of **Scanderbeg**, the Prince of Epirus* or *Historia de Vita et Gestis **Scanderbegi** Epirotarum Principis*; prompt on **Alexander**]

<European History>

8. This property is directed by LGL and atypical protein kinase C in MDCK cell cysts. Ectopic expression of *Nodal* or *Pitx2* reverses this property, which is established by PAR (“par”) proteins in *C. elegans*. Crumbs and Scribble complexes maintain this property, which is lost alongside adhesion and contact inhibition in the epithelial–mesenchymal (“meh-ZANK-uh-mull”) transition. In *Drosophila*, pair-rule genes activate genes named for patterning periodic segments with this property along the A–P axis. During cell migration, actin localizes at the leading edge to establish this property, which creates apical and basal ends. This property causes deviations from “radial” or “bilateral” body plans. For 10 points, the terms “dextral” and “sinistral” describe how what property results in dominant and non-dominant sides?

ANSWER: **asymmetry** [accept cell **polarity** or word forms like **polarized** or **polarization**; accept **asymmetric** cell division; accept **left**, **right**, **chirality**, or **handedness**; accept **apical** or **basal** until each is read; accept segment **polarity** genes, apical–basal **polarity**, anterior–posterior **polarity**, front–rear **polarity**, or dorsal–ventral **polarity**; prompt on **bias**, **fate**, **differentiation**, **pattern** formation, **order**, **spatial** information, or **positional** information]

<Biology>

9. An abecedarium and one of these texts by Primož Trubar (“PREE-mohsh TROO-bar”) were the first books printed in Slovene. These texts name a lay vocation established by the motu proprio *Antiquum Ministerium*. In 1736, Christian VI commissioned one of these texts from Erik Pontoppidan to enact Denmark’s Pietist “Second Reformation.” Dirck Coornhert aimed to refute one of these texts named for Heidelberg, which supplanted “large” and “small” ones written by Martin Luther. These texts, which are named for a Greek term for “oral instruction,” include one published by Pope John Paul II that includes parts about prayer, professing faith, the ten commandments, and the sacred mysteries for the unbaptized to study. For 10 points, Catholic Sunday school is nicknamed for what books of questions and answers about Christian doctrine?

ANSWER: **catechisms** [accept **catechumen** or **catechuminate**; accept **catechesis** or **catechists**; accept specific catechisms like **Catechism of the Catholic Church**, **Small Catechism**, **Large Catechism**, **Heidelberg Catechism**, or **Heidelberger Katechismus**; prompt on **primers**, confirmation **manuals**, **creeds**, **confessions** of faith, or **devotional** texts; prompt on **instructions** until read]

<Religion>

10. Olivia Laing reflects on this event while walking along the site where it occurred in a 2011 book subtitled *A Journey Beneath the Surface*. In a novel, a depressed housewife thinks about this real-life event while unhappy with a birthday cake for her husband, which she throws away. The AIDS victim Richard quotes a line written before this event, “I don’t think two people could have been happier than we have been,” in a novel whose prologue depicts this event, Michael Cunningham’s *The Hours*. This 1941 event, which preceded the publication of the novel *Between the Acts*, is often discussed in relation to its victim’s character Septimus Smith, who suffers a similar fate. For 10 points, name this event in which the author of *Mrs. Dalloway* filled her pockets with rocks and walked into the River Ouse. ANSWER: Virginia **Woolf**’s **suicide** [or **death** of Virginia **Woolf**; or **drowning** of Virginia **Woolf**; or equivalents; prompt on **death** or **drowning** or **suicide** or equivalents by asking “of whom?”] (Olivia Laing’s book is called *To the River*.)

<British Literature>

11. Charles Buddensiek’s name became a byword for these places after he was convicted over creating them with mud. The Gilder Committee investigated potential reforms to these places, which were linked to health statistics in a visual exhibition organized by Lawrence Veiller. Peter Jacobs was indicted for illegally manufacturing cigars in these places, which many Bohemian cigar makers walked out of during an 1877 strike. James Ware devised the “Old Law” style of these places with a dumbbell shape to accommodate airshafts. An 1890 photo depicted young “street Arabs” sleeping in one of these places on Mulberry Street. Two of these buildings are preserved at an immigration museum on the Lower East Side. For 10 points, name these crowded, unhygienic buildings documented in Jacob Riis’s muckraking study *How the Other Half Lives*.

ANSWER: **tenement** houses [accept Lower East Side **Tenement** Museum; accept Old Law **tenements** or dumbbell **tenements**; prompt on **apartments**, **flats**, **dwellings**, or **houses**; prompt on **slums** or **shanty towns** or **sweatshops**]

<American History>

12. A man planning to do this action visits his father while the blonde title woman walks the catacombs at Holy Land USA in Barbara Loden’s film *Wanda*. A film centered on this action opens with a montage set to Elton John’s “Amoreena” and includes a scene in which a man names “Wyoming” as a “special country” where he wants to go. At a gas station, a woman coolly tells the attendant C. W. Moss that “we [do this action]” in a film that was savaged by Bosley Crowther and praised by Pauline Kael. A surgery for his lover Leon motivates Sonny to do this action, during which he shouts “Attica!” to rile up a crowd, in Sidney Lumet’s *Dog Day Afternoon*. An Arthur Penn film about this crime co-starred Faye Dunaway and Warren Beatty. For 10 points, name this central crime of the film *Bonnie and Clyde*.

ANSWER: **bank robbery** [or equivalents like **robbing** a **bank**; prompt on **crime** until read; prompt on **robbery** or **theft** or **stealing** by asking “from what sort of place?”; prompt on **kidnapping** or **murder** or equivalents by asking “in the service of what other crime?”]

<Other Fine Arts>

13. An essay that calls this movement merely the “weak stage of a dialectical progression” is critiqued for destroying “impulsiveness” in a chapter titled for a “Lived Experience.” This movement’s Clamart salon was run by the sisters Paulette and Jane Nardal. An essay from this movement claims that “at the end of capitalism... there is Hitler” in noting how an “indefensible” Europe creates “thingification.” An essay about this movement asks what you were “hoping for” when “you removed the gag... keeping those [mouths] shut.” A founder of this movement wrote *Discourse on Colonialism*, which Jean-Paul Sartre quoted in “Black Orpheus,” a preface to a book of this movement’s poetry. For 10 points, name this philosophical and literary movement that included Aimé Césaire and Léopold Senghor.

ANSWER: **Négritude** [prompt on **postcolonialism**] (The opening critique of “Black Orpheus” is from Frantz Fanon’s *Black Skin, White Masks*.)

<Philosophy>

14. The protagonist observes the “pain of loss” of a “malaise” that afflicts this city in a novel that opens by quoting Kierkegaard’s claim that despair “is unaware of being despair.” A man from this city is labeled a “perverse Thomas Aquinas... gone to pot” in the foreword to a novel published by its author’s mother 11 years after his suicide. In this city, a Korean War veteran ends “the search” for meaning by marrying his step-cousin Kate after becoming disillusioned as a stockbroker. A man in this city who adores Boethius leads a “Crusade for Moorish Dignity” at Levy Pants. This setting of Walker Percy’s *The Moviegoer* is home to a hot dog stand run by the obese medievalist Ignatius J. Reilly. For 10 points, name this setting of John Kennedy Toole’s *A Confederacy of Dunces*.

ANSWER: **New Orleans** [or **NOLA**] (The second line quotes Walker Percy’s foreword to *The Confederacy of Dunces*.)

<American Literature>

15. The TKNN integer invariant describing this effect was introduced by Thouless et al. and later shown by Simon to be equivalent to the Chern number. This effect can be observed in gallium arsenide heterostructures, which provide the two-dimensional electron gas required for it. This effect, single-electron transport, and the Josephson effect form the three legs of the quantum metrology triangle. In this effect, portions of cyclotron orbits at the boundary form skipping motion, semi-classically explaining its chiral edge modes. The resistance in this effect increases discretely in units of a constant named for its discoverer, Klaus von Klitzing. For 10 points, name this effect, the quantized version of an effect that causes a voltage perpendicular to the current direction due to an external magnetic field.

ANSWER: **quantum Hall** effect [accept integer **quantum Hall** effect or **OHE**; accept quantum **Hall** effect after “quantized” is read; prompt on **Hall** effect or **Hall** resistance until “quantized” is read; reject “fractional quantum Hall effect”]

<Physics>

16. A novel by this author opens with a young man dreaming of a village that cries “How long? How long?” That novel by this author ends with its title character repeatedly being called a “coward, deserter, traitor” before dying with the triumphant cry “IT IS ACCOMPLISHED!” A character created by this author uses the pet name “Canavaro” and peers through a café door to watch the narrator reading Dante. In a novel by this author, Satan disguises himself as a guardian angel and persuades the protagonist to live a long life rather than be crucified. In another novel by this author, the title character seduces the hotel-owner Madame Hortense and becomes the foreman on a disused lignite mine in Crete. For 10 points, name this author of *The Last Temptation of Christ* and *Zorba the Greek*.

ANSWER: Nikos **Kazantzakis**

<European Literature>

17. This compound is combined with hydrogen cyanide in the first step of a method to produce PMMA. This compound can polymerize to form PKA around negative 96 degrees Celsius. In 1889, Abel and Dewar synthesized the smokeless propellant cordite using this compound as a solvent. This compound is produced with *n*-butanol and ethanol via starch fermentation by *Clostridium* bacteria in a process developed by Weizmann. Along with phenol, this compound is produced via a cumene intermediate in the Hock process. This compound is often combined with dry ice to create a cooling bath that maintains a temperature of negative 78 degrees Celsius. This solvent is the volatile component for many paints and is often used to clean laboratory glassware. For 10 points, nail polish remover typically contains what simplest ketone?

ANSWER: **acetone** [or **2-propanone** or **propan-2-one** or **dimethyl ketone**] (Weizmann developed acetone–butanol–ethanol fermentation.)

<Chemistry>

18. *Composer and genre required.* A chronologically mislabeled early one of these pieces opens with soft strings playing the recurring melodic pattern [read slowly] “long C, up to short C, C, C.” In the *Andante con moto* slow movement of one of these pieces, *staccato* strings play dotted E minor figures that Adolf B. Marx claimed evoked Orpheus’s pleas to the Furies. After the initial statement in the tonic, strings repeat the soft chordal opening theme of one of these pieces in the mediant key of B major; that fourth one of these pieces is in G major. A tutti chord in E-flat major is immediately followed by ascending arpeggios played by the soloist in one of these pieces whose Vienna premiere was led by Carl Czerny (“CHAIR-nee”). For 10 points, name these pieces for piano soloist and orchestra by a Classical composer, the fifth and final of which is nicknamed “Emperor.”

ANSWER: **piano concertos** by Ludwig van **Beethoven** [prompt on concertos by Ludwig van **Beethoven**; prompt on **concertos**]

<Classical Music>

19. Dr. Z. H. Zaidi edited this politician’s namesake papers into 18 volumes for an academy dedicated to this “Great Leader.” This man unsuccessfully defended Bal Gangadhar Tilak in a sedition trial for supporting the Alipore bombings. This man married the Parsi noblewoman Rattanbai “Ruttie” Petit despite opposing her daughter Dina’s marriage into the Wadia family. Seven years after this leader declared a day of “deliverance” from a rival party, he sparked riots in Calcutta by calling for a day of “direct action.” This founder of the *Dawn* newspaper negotiated a unity pact with the National Congress in Lucknow. Fazlul Huq presented this politician’s demands for a partition in his Lahore Resolution. For 10 points, name this leader of the All-India Muslim League, the “father” of Pakistan.

ANSWER: Muhammad Ali **Jinnah** [or Mahomedali **Jinnahbhai**; accept the **Baba-i-Quam** or the **Quaid-i-Azam**]

<World History>

20. A 2004 paper by Miguel, Satyanath, and Sergenti estimated the relationship between this activity and economic growth using rainfall variation as an instrumental variable. A 1996 book by Geoffrey Parker develops an argument that a “revolution” in this activity contributed to “the rise of the West,” inspired by Michael Roberts’s work on early modern Sweden. The historical sociologist Charles Tilly famously claimed that this activity “made the state” and “the state made” this activity. Graham Allison claimed that this activity becomes more likely when a hegemon is threatened in the “Thucydides Trap.” Thomas Schelling’s work on the “strategy” of this activity included a defense of deterrence theory. For 10 points, the theory of “mutually assured destruction” predicts the outcome of what activity in the nuclear era?

ANSWER: **war** [accept **warfare**, **battle**, armed **conflict**, **combat**, or **war**-making; accept civil **war**; accept nuclear **war**; accept **Military** Revolution; prompt on **violence** or **killing** or **raiding** or equivalents of each]

<Social Science>

21. Precursors of these beings allow a king to breathe underwater anywhere except one monster-haunted lake. In a tale collected by a Swedish-inspired 1935 folklore commission, one of these beings yells that a castle is burning. A boy orders one of these beings not to move his red garter, so it ties identical markers on every ragweed in a field. The name of these solitary beings recalls their practice of cobbling a single shoe. A name that starts with “clur” is given to a rowdy counterpart of these beings, which originally wore red jackets, unlike “trooping” counterparts in green. In 2006, residents of Mobile, Alabama, supposedly saw one of these brogue-making beings, which vanish if you look away from them while you search for their treasure. For 10 points, what sly, tiny fairies are said to hide pots of gold in Ireland?

ANSWER: **leprechauns** [accept **clurichaun** or **clobhair-ceann**; accept **luspardan**; accept **lurikeen**; accept **lúchorpán** or **lúchorpáin**; accept Mobile **leprechaun** or Crichton **leprechaun**; prompt on **fairy**, **fairies**, the **fey**, **fair folk**, **aes sídhe**, **aos sí**, or **little people** until “fairies” is read; prompt on **cobblers** or **shoemakers** until “shoe” is read; reject “elf” or “elves”] (The first line is about Fergus mac Léti.)

<Mythology>

## Bonuses

1. In a novel set in this city, Murugan learns about a mysterious cult that tries to guide scientific research on malaria. For 10 points each:

[10h] Name this city that partially titles a genetics-based historical fiction thriller by Amitav Ghosh. Supratik mobilizes an agrarian uprising in another novel set in this city, *The Lives of Others*.

ANSWER: **Kolkata** [or **Calcutta**; accept *The Calcutta Chromosome*]

[10m] *The Lives of Others* is by an author with this surname and first name Neel. Another author with this surname and first name Bharati co-authored the memoir *Days and Nights in Calcutta*.

ANSWER: **Mukherjee** [accept Bharati **Mukherjee**; accept Neel **Mukherjee**]

[10e] Anuradha, an author with this surname, depicts three generations of a family from Kolkata in *An Atlas of Impossible Longing*. The author of *The God of Small Things* has this surname and first name Arundhati.

ANSWER: **Roy** [accept Arundhati **Roy**; accept Anuradha **Roy**]

<World Literature>

2. Gagoga storytellers like Hastings Slade formed a “liars’ club” named for this landmass, whose eastern edge is inhabited by the “people of the dawn.” For 10 points each:

[10h] Identify this landmass whose name references a widespread earth-diver myth. A book of “notes” by *ICT News* columnist Duane Champagne is titled for this landmass, onto which Sky Woman falls.

ANSWER: **Turtle Island** [accept *Cherokee Stories of the Turtle Island Liars’ Club*; accept *Notes from the Center of Turtle Island*; prompt on North **America** or the North **American** continent by asking “what name is it given by many Indigenous Americans?”; prompt on **turtle**, **terrapin**, **chelonian**, or **reptile**] (The “people of the dawn” are the Wabanaki. *ICT News* was once called *Indian Country Today*.)

[10e] Nanabozho creates Turtle Island after this bird fails to retrieve soil in an Ojibwe myth. A Klamath story uses a sister’s incestuous desire to explain the haunting call of these aquatic birds, which appear on Canadian one-dollar coins.

ANSWER: **loons** [or **divers**; or **Gavia** or **Gaviidae**; accept **loonies**; accept **Loon** Woman; accept common **loon** or great northern **diver** or **Gavia immer**] (The otter, grebe, and beaver also fail to retrieve the soil, but the muskrat succeeds.)

[10m] In a myth of these people, the loon breathes on a big stone to create Turtle Island. Bill Reid’s sculpture *The Raven and the First Men* portrays a creation myth of these people from British Columbia’s “Gwaii” archipelago.

ANSWER: **Haida** people [or **Xaayda**, **Xaadas**, **Xaad**, or **Xaat**; accept **Haida** Gwaii or **Xaaydaga** Gwaay.yaay or **Xaayda** gwaay] (The loon breathes on a small stone to create Haida Gwaii and a big stone to create North America.)

<Mythology>

3. This composition was described by its composer as a bunch of “musical wildflowers” dedicated to the “old folk singers who sang so sweetly to me.” For 10 points each:

[10h] Name this folksong-inflected composition whose six movements depict events like a sailor setting off for Lisbon and a mid-19th-century revolt of poachers in Rufford Park.

ANSWER: **Lincolnshire Posy** (by Percy Grainger)

[10e] Among the best-known English folk songs is one set at a “fair” in this northern English town, whose speaker lists “savory sage, rosemary, and thyme.”

ANSWER: **Scarborough** [accept “**Scarborough** Fair”]

[10m] This popular English folk dance performed using hard shoes became closely associated with sailors in the 18th century. Handel’s *Water Music* in D major includes a movement marked “alla” this dance.

ANSWER: **hornpipe** [accept “alla **hornpipe**”]

<Classical Music>

4. During the 1534 Affair of the Placards, posters attacking this rite were nailed across France, including on the bedchamber door of Francis I. For 10 points each:

[10e] Name this liturgical service in the Catholic Church. Upon ascending to the throne, Henry IV legendarily stated “Paris is well worth” partaking in this rite.

ANSWER: **Mass** [or **messe**; accept “Paris is well worth a **Mass**” or “Paris vaut bien une **messe**”]

[10h] The posters spread during the Affair of the Placards underlined a position on the Mass espoused by Huldrych Zwingli from this church in Zürich. Charlemagne supposedly founded this church when his horse crumpled over the tombs of Zürich’s patron saints Felix and Regula.

ANSWER: **Grossmünster**

[10m] Zwingli assumed control of the nearby Fraumünster, an abbey dedicated by Louis the German to his daughter with this name. An abbess of Eibingen with this name compiled mystical visions of God in the *Scivias*.

ANSWER: **Hildegard** [accept Saint **Hildegard** von Bingen or **Hildegard**is Bingensis]

<European History>

5. Manganese accumulation may allow *Deinococcus* to resist this phenomenon, whose therapeutic use in EBRT or brachytherapy causes azoospermia (“AY-zoh-uh-SPERM-ee-uh”). For 10 points each:

[10m] Name this phenomenon whose relative biological effectiveness depends on its fractionation and the linear energy transfer. Dosimetry (“doh-SIM-uh-tree”) quantifies this phenomenon in units like grays.

ANSWER: ionizing **radiation** [or **irradiation** or **radioactivity** or word forms; accept alpha **rays**, beta **rays**, gamma **rays**, **radiation** sickness, acute **radiation** syndrome, **radiobiology**, **radiotherapy**, or **radioresistance**; prompt on **particles**, **waves**, **ionization**, absorbed **dose**, or word forms; prompt on **oxidation**, DNA **damage**, **poisoning**, **contamination**, **pollution**, or word forms by asking “due to what phenomenon?”; reject “radio waves”]

[10h] Radioprotection may be provided by these molecules, which maintain the viability of all cells but were first observed in semen by van Leeuwenhoek. These aliphatic molecules include putrescine, spermine, and spermidine.

ANSWER: **polyamines** [or **PAs**; accept alkyl**polyamines**, **diamines**, **triamines**, or **tetramines**; prompt on biogenic **amines** or **ammonium** salts; prompt on **polycations**; reject “polyamides”]

[10e] The cleavage of abasic sites by polyamines can detect radiation-induced double-strand breaks, which are repaired via this “homologous” process that also increases genetic diversity during meiosis.

ANSWER: genetic **recombination** [or homologous **recombination** or genetic **reshuffling**; or word forms like **recombinant** chromosomes; accept chromosomal **crossover** or **crossing over** or **crossover** products] (The method is outlined in “High efficiency detection of bi-stranded abasic clusters in  $\gamma$ -irradiated DNA by putrescine.”)

<Biology>



6. A member of this group depicted class struggle in the play *The Undivine Comedy*, which Maria Janion has called a “tainted masterpiece” due to its depiction of Jews. For 10 points each:

[10h] Name this group of 19th-century writers who are often considered to be the national poets of Poland. This group included Zygmunt Krasiński and Adam Mickiewicz (“AH-dom meets-KYAY-vich”).

ANSWER: **Three Bards** [or **trzej wieszcz**; prompt on **bards** or **wieszcz**]

[10m] Mickiewicz wrote this epic poem, whose title nobleman marries the Pantler’s granddaughter Zosia. This poem opens by claiming that Lithuania’s people should value it the way they value their health.

ANSWER: **Pan Tadeusz** (“pahn tah-DAY-oosh”) [or **Mister Thaddeus** or **Master Thaddeus**; or **Sir Thaddeus**, or the *Last Foray in Lithuania: A Nobility’s Tale of the Years 1811–1812, in Twelve Books of Verse*; or **Pan Tadeusz**, czyli *ostatni zajazd na Litwie: historia szlachecka z roku 1811 i 1812 we dwunastu księgach wierszem*; prompt on **Thaddeus**]

[10e] The Three Bards are associated with this literary movement. This broad 19th-century artistic movement emphasized emotion and individualism over the rationalism of the Enlightenment.

ANSWER: **Romanticism** [or **Romantic** era; or **Romantyzm**]

<European Literature>

7. Answer the following about ethical thought experiments that involve organ transplants, for 10 points each.

[10h] John Harris imagined a world with perfect organ donation in a thought experiment named for one of these systems. John Rawls’s discussion of a “natural” one of these systems in *A Theory of Justice* inspired Warren Buffett’s thought experiment about an “ovarian” one.

ANSWER: **lottery** [accept Survival **Lottery**; accept natural **lottery**; accept ovarian **lottery**]

[10e] Judith Jarvis Thomson tweaked this thought experiment by imagining a surgeon who can harvest one patient’s organs to save five others. Philippa Foot introduced this problem in which diverting a vehicle causes fewer deaths.

ANSWER: **trolley** problem

[10m] James Rachels noted how we don’t feel complicit in murder when we fail to sign an organ card as an example of this action. Thomson’s writing on the trolley problem distinguishes killing from this passive two-word action.

ANSWER: **letting die** [or word forms such as **let die**; accept **letting** someone **die** or other answers that include a victim; accept “Killing and **Letting Die**” or “Killing and **Letting Die** and the Trolley Problem”]

<Philosophy>

8. A citharode from this city composed the *nomos* piece *Persians*, which was preserved on the oldest known Greek papyrus, a document excavated from the “Musician’s Tomb” in 1981. For 10 points each:

[10h] Name this city that was home to the lyre player Timotheus. Phrynichus was fined for writing a traumatizing play about the Persian sack of this city during a revolt led by Histiaeus’s son-in-law.

ANSWER: **Miletus** [accept Timotheus of **Miletus**; accept *Capture of **Miletus*** or *Sack of **Miletus***]

[10e] The generic naval battle described by Timotheus of Miletus was likely a dramatized version of this 480 BCE battle at which Themistocles halted an invasion by the Persian king Xerxes I.

ANSWER: Battle of **Salamis**

[10m] Themistocles was later ostracized and entered the service of Artaxerxes I, an act of Persian collaboration described by a Greek term derived from the name of these Iranian people. They were unified by Deioces at Ecbatana.

ANSWER: **Medes** [or **Māda**; accept **Median** Empire; accept **Medism** or **Medizing** or **Medismos**]

<Other History>

9. This equation can be derived by considering concentric annular lamina moving at different rates depending on their radial position. For 10 points each:

[10h] Name this equation that describes the pressure drop through a pipe in terms of dynamic viscosity, length, cross-sectional area, and flow rate.

ANSWER: Hagen–**Poiseuille** (“HAH-gun pwah-ZUH-ee”) equation [or **Poiseuille**’s law]

[10e] The Hagen–Poiseuille equation is only valid for low values of this dimensionless number, which is the ratio of inertial to viscous forces. This number characterizes the transition to turbulent flow.

ANSWER: **Reynolds** number [or **Re**]

[10m] When two fluid layers move at different velocity, they experience a force described by this term proportional to the viscosity. For a Newtonian fluid, the ratio of this type of stress to the strain rate described by this term is the viscosity.

ANSWER: **shear** [accept **shear** stress; accept **shear** strain rate]

<Physics>

10. Answer the following about weightlifting in Central and Eastern Europe, for 10 points each.

[10m] Coach Ivan Abadjiev (“ee-VAHN ah-bah-JEE-ev”) created this country’s namesake heavy, high-frequency training method. The Turkish “Pocket Hercules” Naim Süleymanoğlu (“nah-EEM sue-lay-mah-NOH-loo”) was born in this country, which names an infamous split squat with one leg elevated.

ANSWER: **Bulgaria** [or Republic of **Bulgaria** or Republika **Bălgariya**; accept People’s Republic of **Bulgaria** or **PRB** or Narodna Republika **Bălgariya** or **NRB**; accept **Bulgarian** split squats or **Bulgarians**; accept **Bulgarian** training]

[10e] On a visit to San Francisco, Olympic weightlifter Nicu Vlad supposedly popularized the “Romanian” variant of this lift. Powerlifters perform the squat, bench press, and this lift, which may be pulled conventional or sumo.

ANSWER: **deadlift** [or **DLs** or **deads**; accept Romanian **deadlifts** or **RDLs**]

[10h] This Lithuanian lifter has won four golds and six silvers at the World’s Strongest Man. This eight-time Arnold Strongman Classic winner has broken several log lift records and may be the strongest human in history.

ANSWER: Žydrūnas **Savickas** (“zhee-DROO-nahss sah-VIT-skahss”) [accept “**Big Z**”; prompt on **Z** or **Žydrūnas**; reject “Žydrūnas Ilgauskas”]

<Pop Culture>

11. An article by Lilian Randall argues that drawings of knights fighting giant snails in these portions of texts were used to characterize the Lombards as lazy and greedy. For 10 points each:

[10m] Drolleries refer to the often whimsical and vulgar drawings, such as of trumpets lodged into men’s butts, found in what portions of medieval texts?

ANSWER: **margins** [or **marginalia**; or **borders**; accept “The Snail in Gothic **Marginal** Warfare”; prompt on descriptive answers such as the **edge** or **periphery** or **bottom** of the page]

[10e] Michael Camille’s study of peripheral art, *Image on the Edge*, relates the marginalia found in illuminated manuscripts to these stone sculptures of fantastical beasts that decorated Gothic cathedrals.

ANSWER: **gargoyles** [accept **grotesques** or **chimeræ**]

[10h] An iconic drawing from the margins of a copy of *Roman de la Rose* illustrated by the atelier (“ATTLE-yay”) of Jeanne and Richard de Montbaston shows a nun harvesting these items from a tree.

ANSWER: **penises** [or **phalluses**; or equivalents]

<Painting/Sculpture>

12. The growing polymer chain combines with an additional monomer in the coordination sphere of the metal atom in these compounds according to the Cossee–Arlman mechanism. For 10 points each:

[10m] Name this class of catalysts used to polymerize alpha-olefins. These titanium compounds are often used with organoaluminum cocatalysts.

ANSWER: **Ziegler–Natta** catalysts

[10h] Ziegler–Natta catalysts are notable for their ability to create polymers with this property. The alkyl groups of poly-alkenes with this property are all either on the same side or regularly alternate between opposite sides of the chain.

ANSWER: **stereoregularity** [accept **tacticity** or word forms; accept **isotactic** or **syndiotactic**]

[10e] The chloride salt of this metal greatly enhances the activity of Ziegler–Natta catalysts. Epsom salts contain hydrates of the sulfate salt of this alkaline-earth metal, which bonds to halogens and an aryl or alkyl group in Grignard reagents.

ANSWER: **magnesium** [or **Mg**]

<Chemistry>

13. In Robert Lowell’s sonnet “Words for Hart Crane,” Crane calls himself a “*Catullus redivivus*” who “knew [this poet] “like a book.” For 10 points each:

[10e] Hart Crane’s *The Bridge* responds to “Crossing Brooklyn Ferry” and the “Calamus” poems by what 19th-century American poet?

ANSWER: Walt **Whitman** [or Walter **Whitman**]

[10h] Crane hears the “syllables of faith” of Whitman’s poem “Recorders ages hence” and recalls him “[walking] the beach / Near Paumanok” in this ninth and longest section of *The Bridge*, which ends as the speaker walks hand in hand with Whitman at the title location.

ANSWER: “**Cape Hatteras**”

[10m] *Exact word required.* In Crane’s “To Brooklyn Bridge,” “cinemas [and] panoramic sleights” evoke the image of these things, “bent toward some flashing scene.” The speaker of “Song of Myself” parenthetically states “I am large, I contain [these things].”

ANSWER: **multitudes**

<American Literature>

14. The use of these accessories declined after the adoption of *jokduri* coronets and the *chignon* (“sheen-YON”) style of hair bun, which can be secured using ornately decorated *binyeo* (“bee-nyuh”) pins. For 10 points each:

[10e] Name these fashion accessories whose non-powdered *gache* (“gah-cheh”) type of the late Joseon period was banned by King Jeongjo (“jung-jo”) after many of them were made from human hair.

ANSWER: **wigs** [prompt on **headpieces** or **headdresses**; prompt on **false hair** or **fake hair**]

[10h] Despite the ban, women in this class continued to wear *gache* wigs as official entertainers for court banquets. Young girls who entered this class, like the charming Hwang Jini, were often trained in state-sponsored *gyobang*.

ANSWER: **kisaeng** (“geese-sang”) [or **gisaeng** or **ginyeo**]

[10m] While many *kisaeng* women mastered music, dance, and poetry, they were still barred from participating in this system. Men who progressed through this system’s triennial *jeonsi* (“jun-shee”) stage were allowed to don a black *gat* (“gaht”) hat.

ANSWER: civil service **examination** system [or **gwageo** or **kwago**; accept literary **exams** or **jinsa**; accept military **exams** or **mugwa**; accept miscellaneous **exams** or **japgwa**; accept **singnyeonsi** or **alseongi** or **byeolsi**; prompt on **civil service** or state **bureaucracy** by asking “such positions were allocated based on participation in what system?”; prompt on **education** or **learning** or equivalents]

<World History>

15. The *Padma Purana* describes the purifying properties of this plant, whose worship during the month of Kārtik includes its ritual marriage to Nepalese ammonite fossils called shāligrām in the “Vivah” ceremony. For 10 points each:

[10h] Name this plant that represents an avatar of Lakshmi. The courtyards of many Hindu homes contain this plant, whose groves name a Vaishnava pilgrimage center in Braj near Kṛishṇa’s Govardhan Hill.

ANSWER: **tulsi** [or **holy basil**, **sacred basil**, **hairy basil**, **tulasī**, **thulasī**, **kaphrao**, **gaprow**, **haripriya**, or **bhutagni**; or **vrinda**, **vrndā**, **Vrinda**van, **Vrndā**vana, **Brinda**ban, or **Nidhi**van; or *Ocimum tenuiflorum* or *Ocimum sanctum*; accept **Tulsi** Vivah, **Tulasī** Vivāh, **Tulasi** Kalyāṇam, or **Tulasi** Maduve; prompt on **basil** or **basilicum** or *Ocimum*; reject “Thai basil,” “sweet basil,” “anise basil,” “lemon basil,” “Lao basil,” “hoary basil,” or “hōraphā”]

[10e] An acharya named Tulsi founded the Anuvrat movement to universalize this religion’s lesser vows after he led a peace campaign during World War II, in keeping with this religion’s emphasis on nonviolence, or ahimsā.

ANSWER: **Jainism** [or **Jains** or **Jaina** or **Jain** Dharma]

[10m] Jains group plants among the ekendriya, an embodied, one-sensed class of these beings. This term refers to a soul similar to the ātman possessed by conscious beings, including forms of water and air.

ANSWER: **jīva** [accept sansari **jīva** or siddha **jīva**]

<Religion>

16. A man with this profession named David Hosack was struck in the head during their namesake 1788 riot, which targeted the “Resurrectionists” of a New York institution. For 10 points each:

[10m] Name this profession of a Philadelphia Patriot who won a libel suit against William Cobbett over a controversial practice. Samuel Prescott had this profession when Paul Revere recruited him for the midnight ride.

ANSWER: **physician** [or **doctor** or **surgeon**; accept **surgeon** general; accept **medicine** or **medical** student; accept **psychiatrist**; accept **health officer** or **health inspector**; accept **Doctors’** Riot; prompt on **student**; reject “nurse”] (The institution was New York Hospital, now called Weill Cornell Medical Center. The Patriot was Benjamin Rush. The controversial practice was bloodletting.)

[10e] Prescott carried the warning of approaching British regulars to this town, whose minutemen fought a skirmish at the North Bridge against British troops who had just arrived from Lexington.

ANSWER: **Concord**, Massachusetts

[10h] A physician with this last name and the first name Joseph sent Revere to deliver the warning to Concord. His brother with this last name helped found Harvard Medical School a few years after Joseph died fighting at Bunker Hill.

ANSWER: **Warren** [accept Joseph **Warren**; accept John **Warren**]

<American History>

17. The first chapter of Edward Said’s (“sah-EED’s”) *Culture and Imperialism* discusses a novel’s “aesthetic silence” about this island, which represents the “outer limits” of “domestic improvements.” For 10 points each:

[10h] Name this island where a baronet travels for a year with his son in that novel, before his return abruptly halts rehearsals for a performance of the play *Lover’s Vows*.

ANSWER: **Antigua** (“ann-TEE-guh”)

[10m] Said reads Thomas Bertram’s Antigua estate in *Mansfield Park* as “pointing forward” to Charles Gould’s San Tomé silver mine in this later novel. This novel’s title seaman travels to the South American nation of Costaguana.

ANSWER: **Nostramo** [or *Nostramo: A Tale of the Seaboard*] (by Joseph Conrad)

[10e] Said also compares *Mansfield Park*’s colonialist underpinning to the Wilcox family’s little-mentioned West African Rubber Company in this author’s novel *Howards End*.

ANSWER: E. M. **Forster** [or Edward Morgan **Forster**]

<British Literature>

18. Answer the following about ways to mitigate experimenter demand effects, in which subjects alter their behavior based on social desirability bias, for 10 points each.

[10h] This method of eliciting private opinions relies on asking subjects how many of a given number of claims they agree with, with the treatment group being provided with an extra claim that's personal or controversial.

ANSWER: **list** experiment [or **item count** technique]

[10e] In this type of study, neither the participants nor those administering treatment know what intervention is being tested. This type of study is considered the gold standard in medical research.

ANSWER: **double-blind** study [or **double-blind** trial; prompt on **blinding**]

[10m] In reference to a 1920s-era productivity study, this Illinois factory names a type of experimenter demand effect when the mere fact of observation affects responses, motivating research designs with little direct observation.

ANSWER: **Hawthorne** Works [accept **Hawthorne** effect]

<Social Science>

19. During the COVID-19 pandemic, Carlos Acosta directed an at-home production of a piece titled for this animal with a more optimistic ending. For 10 points each:

[10e] Identify this animal that names a solo ballet piece inspired by a Tennyson poem and made popular by Anna Pavlova. In another ballet, the sorcerer Rothbart turns Odette into one of these animals.

ANSWER: **swan** [or **Cygnus**; or **lebed**; accept **Swan Lake** or **Lebedinoye ózero**; accept *The Dying Swan*; prompt on **birds** or **avians**]

[10m] Michel Fokine choreographed *The Dying Swan* for Pavlova after she became a ballerina for this theatre in Saint Petersburg, which began as an Imperial Theatre like the Bolshoi. *Boris Gudonov* and *The Queen of Spades* premiered at this theatre, which has been led by Valery Gergiev (“vuh-LAIR-ee GAIRG-yiff”) since 1988.

ANSWER: **Mariinsky** Theatre [or **Mariinskiy** teatr; accept **Kirov** Theatre]

[10h] According to Balanchine, Fokine was playing *The Swan* by Saint-Saëns on this non-cello instrument when Pavlova approached him. Stravinsky's *Agon* includes a prominent part for this instrument, which Giuseppe Anedda played at its premiere.

ANSWER: **mandolin** [or **mandolino**]

<Other Fine Arts>

20. This process often makes use of multi-patterning in order to achieve lower nanometer nodes. For 10 points each:

[10m] Name this process whose extreme ultraviolet variety can create smaller features than the deep ultraviolet variety. This process uses light to print a design onto a wafer to fabricate an integrated circuit.

ANSWER: photolithography [or optical lithography; accept extreme ultraviolet lithography or **EUVL**; accept deep ultraviolet lithography or **DUVL**]

[10h] These light-sensitive materials are applied to the substrate before the lithography. After exposure to patterned light, these materials are chemically changed so that they can be selectively removed by a developer solution.

ANSWER: **photoresists**

[10e] The substrate in photolithography is often a wafer composed of the crystalline form of this element. This element is widely used as a semiconductor in integrated circuits and photovoltaic cells.

ANSWER: **silicon** [or **Si**]

<Other Science>

21. Both George Eliot and Virginia Woolf opined that this novel was a better work than its author's most famous one. For 10 points each:

[10m] Name this novel that is markedly similar to its author's earlier novel *The Professor*. In this novel, the governess Lucy Snowe is employed by Madame Beck and visits a Catholic confessor despite being a devout Protestant.

ANSWER: *Villette*

[10h] *Villette* is set in a fictional land based on this real-life country, which is also the setting of *The Professor*. The author of those novels, Charlotte Brontë, had earlier worked in this country as a governess herself.

ANSWER: **Belgium** [or Kingdom of **Belgium**; or Koninkrijk **België**; or Royaume de **Belgique**; or Königreich **Belgien**]

[10e] This protagonist of Brontë's most famous novel works as a governess at Thornfield Hall, where she falls in love with her employer, Mr. Rochester.

ANSWER: **Jane** Eyre [or Jane **Eyre**]

<British Literature>