

## 2023 ACF Regionals

Packet P by the Editors

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Tossups

1. *Description acceptable.* This character reflects on the unhappiness of people like an aesthete who predicts that in ten thousand years suicide will become a science. Light reflects from this character's empty abalone shell, inspiring him to call for a maid who adds charcoal to a stolen brazier ("BRAY-zhur"). This character recalls meeting the spirit of E. T. A. Hoffmann's character Murr, who went to hell for eating his mother's fish. This character, who takes up mantis hunting as exercise, uses the pompous pronoun "wagahai" as he eavesdrops on Singleman Kidd, Waverhouse, Avalon Coldmoon, and other associates of his dyspeptic master. A 1906 satire of Meiji society ends with this character drowning in a barrel. For 10 points, identify this snooty animal owned by Mr. Sneaze, the narrator of a novel by Natsume Sōseki.

ANSWER: the **cat** [or the **narrator** of *I Am a Cat*; or the **protagonist** of *I Am a Cat*; or equivalents; accept **neko**, **feline**, **kitty**, **kitten**, or *Felis silvestris catus* in place of "cat"; accept *Wagahai wa Neko de Aru* in place of "*I Am a Cat*"; accept **wagahai** until read; prompt on the **narrator**, **I**, the **protagonist**, or **watashi**]

<World Literature>

2. A variant of this technique was developed by leveraging the high photo-absorptivity and low heat capacity of 30-nanometer cobalt particles in a glycerol solution, extending this technique's usefulness to study macromolecules. Analytes in this technique can be prepared by embedding them in a crystalized matrix of molecules such as sinapinic acid. Samples can be prepared for this technique using an electron impact source, though "soft" preparation techniques like the laser-based MALDI are less destructive. When studying alcohols with this technique, the "base peak" is often not present as they readily form oxonium ions. Electron multiplier detectors can be used to measure the ions produced in this technique, which are deflected and separated by magnetic fields. For 10 points, name this technique used for element analysis, which provides the mass-to-charge ratio of the atoms in a sample.

ANSWER: **mass spectrometry** [or **MS**; accept **MALDI** or **matrix-assisted laser desorption/ionization** until "MALDI" is read] (The third line refers to hard and soft ionization.)

<Chemistry>

3. This good, which a 2nd-century papyrus called the most valuable on the *Hermapollon*, named a type of warehouse used by the physician Galen before a 192 CE fire. Aside from ransoms of gold, silver, and clothes, Honorius gave three thousand pounds of this good to Alaric during the Visigothic Sack of Rome. The *Periplus of the Erythraean Sea* primarily describes the export of malabathrum and this good from Muziris. To flavor wine, Apicius recommended the use of this spice, a "long" variety of which was produced in Lampung ("lahm-poong") in the Banten Sultanate and the Sunda Kingdom in Java. According to a popular myth, Europeans covered up the smell of rotten meat with this spice sourced from the Malabar Coast of Kerala. For 10 points, name this spice that Romans called "black gold."

ANSWER: **pepper** [or *Piper*; accept black **pepper**, white **pepper**, **peppercorns**, or *Piper nigrum*; accept long **pepper** or *Piper longum*; accept Horrea **Piperateria**; prompt on **spices** or **seasonings** or **flavorings** until "spices" is read] (The *Hermapollon*'s cargo is detailed in the Muziris Papyrus.)

<Other History>

4. Marcus Garvey compared a structure without these objects to a “people without knowledge of their past.” One of these objects that is “fed” or “dressed” and pocketed for luck is named for High John the Conqueror. These objects title a book that was accused of plagiarizing both Margaret Walker’s novel *Jubilee* and a novel by the ethnographer Harold Courlander. The 1970s were dominated by an overtly Rastafari subgenre of reggae named for these objects, whose “work” provides an alternate name for conjure or hoodoo. These objects title a “saga of an American family” whose 1977 adaptation featured a young LeVar Burton as a man who is taken to colonial Maryland from The Gambia. For 10 points, what objects title a hit miniseries that adapts a novel about Kunta Kinte by Alex Haley?

ANSWER: **roots** [accept root **tubers**; accept **rootstocks** or **rhizomes**; accept **jalap**; accept **rootwork**; accept **roots** reggae; accept **Roots**: *The Saga of an American Family*; prompt on **plants** or **vines** or **herbs**; prompt on **bindweed**; prompt on ***Ipomoea***] (Courlander’s novel is *The African*.)

<Other Academic>

5. This symbol names a red *ḍākinī* of psychic heat whose blood is a term for red ochre. The organization led by the founder of Colorado’s Naropa University was originally named for this symbol’s realm. This symbol names a heruka whose phurba dagger features in Cham dances and a “garland” illustrated by Ngor thangkas. The hundred-syllable mantra of a bodhisattva named for this symbol is a preliminary Ngöndro practice for deity yoga. This symbol names a tradition whose offshoots include Kālachakra and Shingon. The Sanskrit title of the *Diamond Sūtra* evokes the sudden cutting powder of this symbol, which names the “vehicle” or “yāna” of esoteric, tantric practices in Bhutanese and Tibetan Buddhism. For 10 points, what indestructible club is wielded like a thunderbolt against Vritrá by Indra?

ANSWER: **vajrā** [or **dorje** or **rdo-rje**; accept **Vajrayāna** or **dorje** tegpa; accept ***Vajracchedikā Prajñāpāramitā Sūtra***; accept **Vajrasattva**, **Dorje** Sempa, **Vajravali**, **Vajrakīlaya**, **Vajrakumāra**, **Dorje** Phurba, **Vajradhātu**, or **Vajrayoginī**; prompt on **thunderbolt** or **diamond** until each is read by asking “that is a common translation for what symbol?”; prompt on Indra’s **club** or Indra’s **mace** or Indra’s **weapon** until “club” is read; prompt on **diamond scepter**] (The second line refers to Chögyam Trungpa.)

<Religion>

6. An author who used this language was discussed in a work subtitled *A Study from Eight Aspects* by John Willett. A play in this language notes that “within the paradoxical appears reality” in one of the 21 points included as its appendix. That play in this non-French language ends with a patient telling the audience, “I am poor King Solomon” in the sanatorium “Les Cerisiers” (“lay suh-reez-YAY”). A playwright working in this language exemplified his concept of *gestus* with a title character’s “silent scream.” In a satirical play written in this language, Möbius and two spies who claim to be Newton and Einstein are the title *Physicists*. A playwright who used this language theorized the alienation effect and was a proponent of epic theater. For 10 points, what language was used by Friedrich Dürrenmatt and Bertolt Brecht?

ANSWER: **German** [or **Deutsch**; accept High **German** or Hoch**deutsch**; accept Swiss **German** or Schweizer**deutsch** or Schwiizer**dütsch**]

<European Literature>

7. By depicting this place, an artist sought to make a preceding style “solid and durable, like the art of museums” and “redo Poussin entirely from nature,” as in a painting bisected by a viaduct. Joachim Gasquet’s books on Asian art inspired paintings of this place, beginning with 1870’s *The Railway Cutting*. This is likely the place where an artist spent “entire days... reading Virgil and looking at the sky,” as recounted by his admirer Paul Gauguin. The artist’s blocky “constructive stroke” was often used for landscapes of this place “seen from” Bellevue, Bibemus Quarry, and Les Lauves (“lay LOHV”). During his final years in Aix-en-Provence (“ex on pro-VAWNS”), a Post-Impressionist artist painted this place from many angles and times of day, along with large paintings of *Bathers*. For 10 points, what mountain was a frequent subject of Paul Cézanne?

ANSWER: Mont **Sainte-Victoire** [or Montagne **Sainte-Victoire**; or **Santa Venturi**; prompt on mountain or montagne or mont until “mountain” is read; prompt on Provence or Provença until “Aix-en-Provence” is read; prompt on Bouches-du-Rhône or Bocas de Ròse]

<Painting/Sculpture>

8. King Benkos led a group of these people to settle in the Montes de María region. A priest named Bobadilla protected these people living in Le Maniel, which exemplifies their “grand” communities. Richard Price’s 1973 book on these people’s societies examined the lo- (“loh”) system of matrilineal kinship among their Djuka (“JOO-kuh”) and Saramaka groups. Montague James waged a guerrilla campaign for these people from Trelawny Town, whose alternative name comes from a leader of their Leeward group named Cudjoe. Sir Francis Drake negotiated with a Panamanian group of these people whose Spanish name starts with the letters “C-I.” These people inhabited the Palmares quilombo (“kee-LOHM-boo”), which became the target of frequent raids from nearby sugar plantations. For 10 points, Zumbi and Queen Nanny were leaders of what groups of escaped slaves?

ANSWER: **maroons** [accept **marronage**; accept **runaway slaves** or **escaped slaves** until “escaped slaves” is read; accept **cimarrones**; accept **Palenqueros**; accept **Bushinengue**; accept **Quilombolas**; prompt on enslaved people or freed slaves; prompt on convicts or outlaws or criminals or equivalents; prompt on Africans, Black people, Jamaicans, Brazilians, Panamanians, Surinamese, or Colombians by asking “of what status?”]

<World History>

9. A spintronic analog of these devices proposed by Datta and Das uses spin–orbit coupling in a narrow gap semiconductor. Using graphene for the channel of one of these devices produces a version of them that can act as a microscale chemical sensor. In a configuration for these devices, Fowler–Nordheim tunneling is used to inject a stable charge to an electrically isolated portion of them. These devices behave in either enhancement mode or depletion mode, depending on the doping of the semiconductor used for the channel. These devices require a gate charge to enter their “on” state. In a type of these devices, a thin insulating oxide layer separates the gate terminal from the source and drain terminals. For 10 points, name these three-terminal electronic devices that act as voltage-controlled switches.

ANSWER: field-effect **transistors** [or **FETs**; accept spin **transistors**; accept metal–oxide–semiconductor field-effect **transistor**s or **MOSFETs**]

<Physics>

10. A 2022 book by Leah Boustan and Ran Abramitzky estimates this phenomenon's economic consequences for the US with techniques like census linking. A book chapter co-authored by Joseph Altonji pioneered the use of shift-share instruments to address the endogenous presence of this phenomenon by leveraging place-varying demographics and time-varying aggregate flows. The economist George J. Borjas casts doubts on this phenomenon's benefits based on its skill-biased distributional consequences. The effects of this phenomenon on labor markets in Miami are explored in a 1990 paper by David Card that uses the natural experiment offered by the Mariel Boatlift. For 10 points, Everett Lee's "push-pull" theory is often used to examine what phenomenon that in the US was historically centered at Ellis Island?

ANSWER: **migration** [accept **immigration** or **emigration**; accept **migrants** or **immigrants**; accept **immigration** to the United States or equivalents]

<Social Science>

11. A conflict over this political region influenced Matt Morgan's depiction of a monarch as a "Pig-Headed Ghoul." The Caprivi Strip and an archipelago off the [emphasize] *western* coast of this region were exchanged for Zanzibar in an 1890 agreement. A duke of this region held the Swedish throne as a result of two calamitous wars waged by the Hats. The passage of the November Constitution caused conflict in this region over succession laws changed by the London Protocol. Legendarily, this region's diplomacy was understood only by an insane professor, a dead Prince Albert, and a forgetful Lord Palmerston. A dispute over the administration of this region sparked the Austro-Prussian War. For 10 points, name these two duchies vied for by the German and Danish crowns.

ANSWER: **Schleswig-Holstein** [or **Slesvig-Holsten**; accept Charles Frederick, Duke of **Schleswig-Holstein**-Gottorp; accept **Ducal Holstein**; accept **North Frisia** or **Nordfriesland**; prompt on **Heligoland** or **Helgoland**; prompt on **Schleswig** or **Slesvig**; prompt on **Holstein** or **Holsten**; prompt on **Sønderjylland**; reject "Frisia" or "Friesland"]

<European History>

12. Out of many requests stemming from Carl Maria von Weber's *Clarinet Concertino*, a court musician on this instrument uniquely convinced Weber to compose his F major concerto for it. This instrument is the first to introduce the slow [read slowly] "long D, C-sharp D E F" theme during the Introit ("IN-troit") of Mozart's *Requiem*. This instrument accompanies strings to play the *presto* opening phrase of the overture to *The Marriage of Figaro*. Two of these non-string instruments play a motif resembling the "Dies irae" ("DEE-ess EE-ray") after the opening drumroll in Haydn's 103rd Symphony. The best-known concerto for this instrument was written in B-flat major by Mozart. A prominent solo for this instrument appears in the aria "Una furtiva lagrima" from Donizetti's *L'elisir d'amore*. For 10 points, name this double-reed woodwind pitched lower than an English horn.

ANSWER: **bassoon** [or **Fagott** or **fagotto**; accept **Bassoon** Concerto; accept **Bassoon** Concerto in B-flat major; accept Concerto for **Bassoon** in F Major]

<Classical Music>

13. The thesis that this concept must be propositional is the starting point of Timothy Williamson's argument equating it with knowledge. This is the first title concept of a 1993 book that uses the analogy of filling out a crossword puzzle to support "foundherentism," which was written by Susan Haack. A view named for this concept is opposed by Alvin Plantinga's reformed epistemology. Belief without this concept is "wrong, always, anywhere, and for anyone" according to W. K. Clifford's essay "The Ethics of Belief," a claim refuted in William James's "The Will to Believe." In Bayesian epistemology, this concept is written capital E and conditioned on to obtain posterior probabilities. In *The God Delusion*, Richard Dawkins defines faith as "belief without" this concept. For 10 points, name this information that supports a position.

ANSWER: **evidence** [or word forms like **evident** or **evidentialism**; accept **Evidence and Inquiry**]

<Philosophy>

14. In a story by this author, a hoodlum convinces a boy to believe in Jesus so that spaceships will help him reach his dead mother, whom he sees through a telescope. This author reworked the Iowa Writers' Workshop thesis "The Geranium" into a story whose protagonist is beaten into a stroke by a Black man he condescendingly calls "Preacher." In a story by this author of "The Lame Shall Enter First" and "Judgment Day," a vision of a bridge of living fire carrying "white trash" souls to heaven is seen by Mrs. Turpin after Mary Grace calls her a "wart-hog from hell." This author of "Revelation" incorporated stories like "Enoch and the Gorilla" into her novel about the "Church without Christ" led by Hazel Motes. For 10 points, *Wise Blood* is by what Southern Gothic author of "Everything that Rises Must Converge"?

ANSWER: Flannery **O'Connor** [or Mary Flannery **O'Connor**]  
<American Literature>

15. Frank Keppler found that this molecule may be generated in all life by Fenton chemistry. Jill Banfield discovered extrachromosomal "Borgs" in organisms that oxidize this molecule with the MCR complex, "reversing" this molecule's nickel-dependent production by acetoclastic or hydrogenotrophic pathways. Bromoform in red seaweed can reduce the enteric production of this molecule by a genus partly named "sarcina" that may have driven the end-Permian extinction. Organisms from two domains syntrophically produce carbon dioxide and this molecule from long-chain substrates in the last stage of anaerobic digestion. This primary component of biogas is produced by autotrophic archaea ("ar-KEE-uh") in the rumen. For 10 points, rice paddies and cattle fuel the emissions of what greenhouse gas, the simplest alkane?

ANSWER: **methane** [or **CH<sub>4</sub>** ("C-H-four"); accept **marsh gas**; accept **methan**ogens or **methan**ogenic archaea or reverse **methan**ogenesis; accept **methan**otrophs; accept **methane** cycle; accept **Methanosarcina**; accept **Methanoperedens**] (MCR stands for methyl-coenzyme M reductase.)  
<Biology>

16. An artist with this surname described 50 refugees in his photo-essay "Boat of No Smiles." Another artist with this surname had his images of tract houses featured in the 1975 exhibition *New Topographics*. That photographer with this surname and first name Robert depicted "Landscapes Along the Colorado Front Range" in his book *The New West*. An American photographer with this surname lamented "I killed the general with my camera" after capturing the point-blank execution of Nguyễn Văn Lém during the Tet Offensive. Another artist with this surname published *Born Free and Equal* using images of Japanese internment at Manzanar and, with Fred Archer, developed the Zone System. For 10 points, give this surname of the photographer of *Monolith, the Face of Half Dome*.

ANSWER: **Adams** [accept Ansel **Adams** or Ansel Easton **Adams**; accept Eddie **Adams** or Edward Thomas **Adams**; accept Robert **Adams** or Robert Hickman **Adams**]  
<Other Fine Arts>

17. Amy Kaplan analyzed parallels between the “cult of domesticity” and this belief, whose connection with race was the subject of a 1981 book by Reginald Horsman. Robert Charles Winthrop denounced this belief during a crisis that prompted William Allen to resign his post. Robert E. May’s book about this belief’s “underworld” discussed how one of its champions funded Narcisco López’s filibusters. Thomas Hart Benton promoted an early form of this belief, whose name was coined by *The Democratic Review* editor and Young America member John O’Sullivan. Espoused to support Texas annexation, this belief inspired a quote addressed to a “young man” that was dubiously attributed to Horace Greeley. John Gast painted Columbia leading the pioneers as an allegory of this belief in *American Progress*. For 10 points, name this belief that expounded a duty to settle the entire North American continent.

ANSWER: **manifest destiny** [accept **American destiny**; accept **Manifest Destiny’s Underworld**; accept **Race and Manifest Destiny**; prompt on westward **expansion** or **expansionism**; prompt on American **exceptionalism**; prompt on American **imperialism**; prompt on **nationalism**; prompt on **continentalism**; prompt on “**54-40** or fight” by asking “that slogan is often cited as a manifestation of what belief from the period?”] (The first line refers to *Manifest Domesticity*. Allen led the “All Oregon” faction during the Oregon boundary dispute. The quote was “go west, young man.”)

<American History>

18. One of these animals puts on a skin to “[take] a woman’s shape” in a story collected by James A. Honey, who retold many tales about their relationship with jackals. A country’s coat of arms once showed this animal’s head below a karyenda drum to symbolize the mwami, who often took this animal’s name, Ntare. The collection *Home and Exile* quotes a proverb that states that until these animals “produce their own historian, the story... will glorify only the hunter.” Alawi sultans kept some of these animals rumored to descend from an extinct population named for the Barbary Coast. Boys hunted these animals in a rite of passage for the Kalenjin and Maasai peoples. Solomonic emperors like Haile Selassie of Ethiopia were symbolized by one of these animals “of Judah.” For 10 points, what animal’s Swahili name is “simba”?

ANSWER: **lions** [or **Panthera leo**; accept specific lion subspecies, such as Barbary **lions** or Cape **lions**; accept **Lion** of Judah or **Arveh** Yehudah or Yehuda **Anbessa**; prompt on big **cats** or **Panthera**] (The second sentence refers to Burundi. Chinua Achebe wrote *Home and Exile*.)

<Mythology>

19. In an elegy, the speaker says “I taught thee” to do this action to “nature’s lay idiot.” The speaker of a poem imagines that, until doing this action, he “sucked on country pleasures, childishly” and “snorted... in the Seven Sleepers’ den.” The speaker wonders “by my troth” what he did before doing this action in the opening lines of “The Good-Morrow.” The speaker asks “who’s injured by” this action and urges “for God’s sake hold your tongue and let me” do it in John Donne’s poem “The Canonization.” “To Lucasta, Going to the Wars” ends with its speaker telling his “Dear” that he could not do this action “so much” if he did it not for “Honour” more. For 10 points, a line from Christopher Marlowe’s *Hero and Leander* asks “who ever” did what action without doing so “at first sight”?

ANSWER: **love** [or word forms such as **loving**]

<British Literature>

20. These locations include one studied by Project FAMOUS (“famous”) and one near where the RISE (“rise”) project identified thermal activity. Slab windows form where these locations intersect with subduction zones. The composition of rocks at these locations is depleted in alkali elements like potassium compared to rocks found at hotspots. In contrast to basalt found at oceanic islands, basalt formed at these locations is tholeiitic (“thoh-lee-IT-ick”). Pitman and Heirtzler measured symmetric magnetic anomalies at one of these locations, providing evidence for the Vine–Matthews–Morley hypothesis connecting the magnetic profile near these locations to the formation of oceanic crust. For 10 points, name these formations found at divergent plate boundaries, which are underwater mountain systems where seafloor spreading occurs.

ANSWER: mid-**ocean ridges** [or **MORs**; accept mid **ocean ridge** basalt; prompt on seafloor until read; prompt on oceans; prompt on divergent plate boundary or divergent plate boundaries]

<Other Science>

21. Frank Stella illustrated this artist’s “dilemma” with two colorful and greyscale “mitered” maze-like shapes. This artist’s *Corpse and Mirror II* arranges paint thickened with sand into crosshatch marks, a motif explored in the retrospective *Mind/Mirror*. After burning all his art at age 24, this artist began painting “things the mind already knows.” A quip by Willem de Kooning about this artist’s art dealer Leo Castelli inspired his sculpture of two bronze ale cans. Three progressively smaller canvases of this artist’s favorite subject are stacked in a 1958 painting. This partner of Robert Rauschenberg placed four plaster casts of faces above a painting made with encaustic over newsprint collage of a blue-and-yellow target. For 10 points, name this artist of many paintings of American flags.

ANSWER: Jasper **Johns** [or Jasper **Johns** Jr.]

<Painting/Sculpture>

## Bonuses

1. Sophie and Ian attend marriage counseling in the aftermath of this event in the final novel of Jonathan Coe's autobiographical *Rotters' Club* trilogy. For 10 points each:

[10h] Name this event whose aftermath is described in several pages of lines beginning "All across the country" in a passage from the novel *Autumn*, which many critics dubbed the first major novel about this event.

ANSWER: **Brexit** [accept descriptions such as the **withdrawal** of Great **Britain** or **England** from the **EU** or the **United Kingdom leaving the European Union**] (Coe's novel is *Middle England*.)

[10e] The "Brexit novel" *Autumn* is part of the *Seasonal Quartet* by an author with this surname. A school's tall wooden fence is lamented in a "Brexit Diary" by an author with this surname who wrote the novel *White Teeth*.

ANSWER: **Smith** [accept Zadie **Smith** or Sadie **Smith**; accept Ali **Smith**]

[10m] In this novel, Amma's friend Roland gets into a viral debate on the BBC with a Brexit campaigner, whom he accuses of racism. This novel by Bernardine Evaristo was a co-winner of the 2019 Booker Prize.

ANSWER: **Girl, Woman, Other** (Margaret Atwood's novel *The Testaments* also won the 2019 Booker Prize.)

<British Literature>

2. The neuroscientist Antonio Damasio has discovered several "modern" examples of this person, including one named Elliot who suffered turmoil in his personal life in part due to lacking conditioned emotional responses. For 10 points each:

[10m] Name this 19th-century railway worker whose personality drastically changed after an accident damaged his brain despite leaving his health largely intact otherwise.

ANSWER: Phineas **Gage**

[10e] Both Elliot and Gage suffered injuries to this largest of the four lobes of the brain, which is responsible for self-control.

ANSWER: **frontal** lobe

[10h] Damasio has been criticized for using the example of Phineas Gage to argue for his hypothesis that "markers" described by this adjective are responsible for decision-making, which he has tested using the Iowa gambling task.

ANSWER: **somatic** [accept **somatic** markers or **somatic** marker hypothesis]

<Social Science>

3. Johannes Brahms's Lied ("leed") about a "night" during this time period evokes the sounds of the nightingale and cooing dove to represent the melancholy of a night-wanderer. For 10 points each:

[10h] Name this time period that is described as "wunderschön" in the title of the first section of an 1840 song cycle.

ANSWER: **May** [or **Mai**; accept month of **May** or Monat **Mai**; accept "Im wunderschönen Monat **Mai**"; accept "Die **Mainacht**" or "The **May** Night"]

[10m] "Im wunderschönen Monat Mai" opens this best-known song cycle by Robert Schumann, which sets 16 of the poems found in Heinrich Heine's *Lyrisches Intermezzo*.

ANSWER: **Dichterliebe** [or *A Poet's Love*]

[10e] Schumann's Lied "Widmung" pays homage to his wife Clara by quoting Schubert's setting of this Latin prayer. Charles Gounod's setting of this prayer to Jesus's mother is based on J. S. Bach's Prelude in C major.

ANSWER: "**Ave Maria**" [prompt on "**Hail Mary**"]

<Classical Music>



4. A leader of these people fortified a natural plateau that he named Thaba Bosiu after Nguni (“in-GOO-nee”) settlers arrived in the Drakensberg region during a period sometimes called the “Mfecane” (“m’feh-KAH-neh”). For 10 points each:

[10m] Name these people whose leader Moshoeshe I (“muh-SHWAY-shway the first”) settled them around Maseru in a namesake British protectorate. These people fought three wars over land around the Caledon River with the Orange Free State.

ANSWER: **Sotho** people [or **Basuto** people or **Basotho** people; accept Northern **Sotho** or Southern **Sotho** or West **Sotho**; accept **Sotho**-Tswana peoples; accept **Basuto**land Protectorate; prompt on **Lesotho**; prompt on **Bantu** peoples; prompt on **Tswana** by asking “they split from what other group of people?”]

[10h] Prior to its centralization under Moshoeshe I, Sotho society was organized around these units of extended clan villages. The Zulu types of these units with an Afrikaans name usually comprised iQukwane (“ee-koo-kwah-nay”) huts in a circle.

ANSWER: **kraals** [or **craal**, **kraul**, **curral**, or **corral**; accept **boma**; accept **isibaya**; accept **umsamo**; accept **mutsi** or **umuzi**; prompt on **enclosures**; prompt on **stockades**; prompt on **pens**; prompt on **homesteads**]

[10e] Sotho kraals were primarily centered on enclosures for these animals, which Sotho herders raided from the Griqua people.

ANSWER: **cattle** [or **bulls**, **cows**, **oxen**, **bullocks**, **calf**, **calves**, or *Bos taurus*; accept milk **cow** or beef **cow**; accept **bovines** or **bovids**; prompt on **livestock**]

<World History>

5. These data structures can be implemented using an array in which the parent-child relations are implicitly encoded in the indices. For 10 points each:

[10m] The value of a parent node is always greater than the value of its child nodes in the “max” type of what data structures?

ANSWER: **heaps** [accept max **heaps**]

[10e] Heaps are commonly implemented using this type of tree in which each parent node is associated with two child nodes.

ANSWER: **binary** tree

[10h] Heaps can be used to implement this type of data structure, which stores elements along with an associated value. This type of data structure can be used to efficiently store nodes in the A\* (“A-star”) pathfinding algorithm, based on the heuristic weight of the node.

ANSWER: **priority queue** [prompt on **queue**]

<Other Science>

6. This dynasty's Prince Khosrow gave a formal apology at the Winter Palace after a mob in its capital killed *Woe From Wit* author Alexander Griboyedov over the treaties of Gulistan and Turkmenchay. For 10 points each: [10m] Name this Turkic dynasty whose ruler Naser al-Din Shah granted an unpopular British tobacco concession after he toured Europe. Russia conquered Georgia and Dagestan in its 19th-century wars with this insolvent Persian dynasty.

ANSWER: **Qājār** dynasty [or **Qâjâr** Empire, **Qâjâr** Persia, **Qâjâr** Iran, Dudmân-e **Qâjâr**, or **Qacarlar**; accept Naser al-Din Shah **Qâjâr**; prompt on **Sublime State** of Persia, **Dowlat-e 'Aliyye-ye Irân**, **Guarded Domains** of Iran, or **Mamâlek-e Mahruse-ye Irân**]

[10e] Catherine the Great fought Qājār Persia over Georgia in 1796 and equated the Qājār title of mirza to Russian nobility after she annexed the Tatar khanate on this peninsula, where the Black Sea Fleet anchored at Sevastopol.

ANSWER: **Crimea** [or **Crimean** Peninsula or **Krym** khakhad aral; or **Tauris** or **Taurica** or **Tauric** Peninsula; accept **Crimean** Tatars, **Qırım**tatarlar, **Qırım**lar, or **Qırım**lular; accept **Crimean** Khanate or **Qırım** Hanlığı or **Qırım** Yurtu]

[10h] Russian functionaries worked with muftis in Crimea and this khanate, which became a protectorate northeast of Transcaspia in 1873. Peter I's forces suffered a 1717 "disaster" in this khanate, which divided Turkestan with Bukhara.

ANSWER: Khanate of **Khiva** [or **Khivâ** Khânligi, Khânât-e **Khiveh**, **Hywa** hanlygy, **Xiva** xonligi, or **Khivinskoye** khanstvo; accept Khanate of **Khwarazm** or **Chorasmia**; accept **Khivan** campaign or **Khivan** disaster] (*For Prophet and Tsar* by Robert D. Crews details the close relationship between Islamic authorities and the Russian state.)  
<European History>

7. During springtime, many North American forests contain isolated examples of these ecosystems that provide essential breeding habitats for fairy shrimp and amphibians. For 10 points each:

[10e] Name these bodies of water that include artificial ecosystems inhabited by koi, which are filtered to remove algae known as their namesake "scum."

ANSWER: **ponds** [accept vernal **ponds**; accept **pond** scum; prompt on **kettles** or **potholes** or **depressions**; reject "lakes"]

[10h] Historical shifts in vernal pool appearance illustrate how records from this field can inform climatology. Gilbert White's *Natural History of Selborne* pioneered this field, which studies how seasonal cycles impact ecology.

ANSWER: **phenology** [or word forms like **phenological**; accept **phenoclimatology** or **pheno climatic**]

[10m] The oldest known phenological records are 9th-century observations of these trees, whose average peak in the Tidal Basin has shifted several days earlier since 1912. Some of these trees produce anthocyanin-rich drupes.

ANSWER: **cherry** trees [accept **cherry** blossoms; accept **sakura** or **higan**; accept specific types of cherry; accept *Prunus cerasus*, *Prunus serrulata*, *Prunus speciosa*, *Prunus* × *yedoensis*, or *Cerasus* × *yedoensis*; prompt on *Prunus* or **Rosaceae**] (The 9th-century records are from Kyōto hanami.)

<Biology>

8. Book V of Roger Bacon's *Opus Majus* ("MY-us") is an oft-excerpted discussion of this discipline, influenced by Ibn al-Haytham's treatise titled for it. For 10 points each:

[10h] Name this discipline that medieval universities added to their quadrivium due in part to Bacon's influence. Bacon drew especially on al-Kindī and Robert Grosseteste's geometrical studies in this discipline.

ANSWER: **optics** [or **perspective**; or **perspectiva**; or **perception**; accept the *Kitāb al-Manāẓir*; accept *De Aspectibus*; prompt on **vision** or **eyesight**; prompt on **physics**; prompt on **color** or **light**]

[10e] Al-Kindī argued, contra this man, that the eye emits a continuous cone of light rather than separate rays. This ancient Greek mathematician's *Optics* uses the same structure of postulates and theorems as his *Elements*.

ANSWER: **Euclid** [or **Euclid** of Alexandria; or **Eukleídēs**]

[10m] Grosseteste's view of light as *forma prima* drew on emanationist theories of creation within this tradition. Al-Kindī borrowed from thinkers like Proclus in this tradition in conceiving of God as the "true One."

ANSWER: **Neoplatonism** [or **Neoplatonic** thinkers; prompt on **Platonism**]

<Philosophy>

9. Answer the following about deliberately misquoted Latin in Caribbean literature, for 10 points each.

[10h] Mr. Belfeels toasts "the fucking Classics" despite knowing no Latin in Austin Clarke's novel *The Polished Hoe*, a book from this country. The author of *In the Castle of My Skin* was born in this country.

ANSWER: **Barbados** (George Lamming wrote *In the Castle of My Skin*.)

[10m] A misquotation from Virgil recurs in this novel, whose title location is ruled by "the Big Man." This novel narrated by Salim has been criticized by Imraan Coovadia for its depiction of postcolonial societies.

ANSWER: *A **Bend in the River*** (by V. S. Naipaul)

[10e] The narrator mockingly declares "sic transit taxi, sport" in *Omeros*, a reworking of Homeric epic by this poet from Saint Lucia ("LOO-sha").

ANSWER: Derek **Walcott** [or Derek Alton **Walcott**]

<World Literature>

10. Chris Marker's film *Sans Soleil* juxtaposes shots of a woman from one of these countries with wartime footage of the Balanta people in the other, which mainly exports cashews and was labeled a "narco-state" in 2008. For 10 points each:

[10h] Basil Davidson's *No Fist Is Big Enough to Hide the Sky* recounts Amílcar Cabral's liberation of what two countries? They respectively contain the Cidade Velha ("see-DAH-jee VELL-yuh") and Bijagós ("bee-zhah-GOHSS") Islands.

ANSWER: **Cape Verde** AND **Guinea-Bissau** [accept answers in either order; accept Republic of **Cabo Verde** or República de **Cabo Verde** or República di **Kabu Verdi** in place of "Cape Verde"; accept Republic of **Guinea-Bissau** or República da **Guiné-Bissau** in place of "Guinea-Bissau"; reject "Guinea" or "Equatorial Guinea" or "New Guinea"]

[10e] Benjamin's Breen's *The Age of Intoxication* traces the "origins of the global drug trade" to this empire, which colonized both Guinea-Bissau and Cape Verde in addition to Timor-Leste ("TEE-mor LESS-chee").

ANSWER: **Portugal** [or **Portuguese** Empire, Império **Português**, **Portuguese** Overseas Empire, Ultramar **Português**, **Portuguese** Colonial Empire, or Império Colonial **Português**]

[10m] From Kerala ("CARE-uh-luh"), the Portuguese traded this masala chai spice, which names a Cambodian mountain range and is popular in Sweden. Guatemala exports green pods of this "queen of spices," the world's third-most expensive.

ANSWER: **cardamom** [accept green **cardamom** or true **cardamom** or *Elettaria cardamomum*; accept black **cardamom**, Indian **cardamom**, large **cardamom**, Nepal **cardamom**, greater **cardamom**, hill **cardamom**, winged **cardamom**, or *Amomum subulatum*; accept **Cardamom** Mountains or **Krâvanh** Mountains or Chuõr Phnum **Krâvanh**]

<Geography>

11. Ceramics described by this adjective from Costa Rica's Greater Nicoya archaeological region display Mesoamerican gods like Ehēcatl and have been found in a "Toltec" cache in Tula. For 10 points each:

[10h] Give this term that describes pottery from the Hohokam culture around the Gila River, as well as Nazca ceramics decorated with slip paints. A German exhibit named for "gods" showcased art described by this term from antiquity.

ANSWER: **polychrome** [or **polychromy**; or **policromada**; accept *Gods in Color: Polychromy in Antiquity* or *Gods in Color: Polychromy in the Ancient World*; accept **polychrome** ware or Gila **polychrome** or Nicoya **Polychrome** Ware; prompt on multicolored, in color, colorful, colored, or bunte]

[10e] A San Jose museum exhibits Nicoya Polychrome Ware alongside the world's largest collection of Pre-Columbian art made with varieties of this non-turquoise precious stone, like "Olmec blue" and Maya greenstone.

ANSWER: **jade** [accept **jadeite**; accept **nephrite**; accept **Jade** Museum or Museo del **Jade** y de la Cultura Precolombina]

[10m] Gold may have replaced jade as a status symbol at sites like Guayabo de Turrialba in an area of this name defined by Gordon Willey from Honduras to Colombia. This term also names periods after Egypt's Old, Middle, and New Kingdoms.

ANSWER: **intermediate** [accept **intermediate** periods; accept **Intermediate** Area]

<Other History>

12. A track on this album was inspired by a painting of a “very rich white woman” that the composer saw while on a lunch break from his job at a department store. For 10 points each:

[10m] Name this 1959 album that includes the track “Lonely Woman.” This album’s composer later developed an atonal musical theory that he called “Harmolodics” on the album *Free Jazz: A Collective Improvisation*.

ANSWER: *The **Shape of Jazz to Come***

[10e] Ornette Coleman, the composer of *The Shape of Jazz to Come*, played this instrument. Albert Ayler, who composed the free jazz piece “Truth Is Marching In,” played the alto and soprano versions of this instrument.

ANSWER: **saxophone** [accept tenor **saxophone** or alto **saxophone** or soprano **saxophone**]

[10h] *The Shape of Jazz to Come* featured this musician on cornet. This artist made his debut as a bandleader with *Complete Communion*, which includes the track “Elephantasy.”

ANSWER: Don **Cherry** [or Donald Eugene **Cherry**]

<Other Fine Arts>

13. Poisson’s equation reduces to this equation when the charge density goes to zero. For 10 points each:

[10m] Name this equation from electrostatics that sets the squared of the electric potential equal to zero.

ANSWER: **Laplace’s** equation

[10h] This method is a trick for solving electrostatics problems that works thanks to the uniqueness theorem for solutions to Laplace’s equation. This solution uses a fictitious charge to match the boundary conditions in the original problem.

ANSWER: method of **images** [or method of **image** charges; or method of **mirror** charges]

[10e] The method of image charges is often applied to situations with one of these things, which have constant potential in electrostatics, because they allow charge to flow. Metals are real-world examples of these things.

ANSWER: **conductors** [or electrical **conductors**; accept perfect **conductors**]

<Physics>

14. Answer the following about modern health fads and their Amazonian antecedents, for 10 points each.

[10e] Secretions from these animals are applied to burnt skin in the “kambo cleanse” derived from Matis practices. Species of these animals produce the psychoactive “God molecule” 5-MeO-DMT and alkaloids used in poison darts.

ANSWER: **frogs** [or **anurans**; or **ranas** or **rās**; accept **toads** or **sapos**; accept poison dart **frogs** or poison arrow **frogs** or **dendrobatids**; accept tree **frogs** or leaf **frogs** or monkey **frogs**; accept Sonoran desert **toad** or Colorado river **toad**; prompt on **amphibians**] (The National Park Service has asked visitors to stop licking Sonoran desert toads.)

[10m] Brazil’s syncretic vegetalismo and Santo Daime (“SAHN-too DAI-mee”) movements reinvented the shamanic ingestion of this DMT-rich entheogen made from lianas and angel’s trumpets. This drug induces vomiting on “retreats.”

ANSWER: **ayahuasca** [or **ayahuasca** brew; accept **ayahuasca** retreats or **ayahuasca** ceremonies; accept **pharmahuasca**]

[10h] Machiguenga vaporadoras exemplify these healers, who also include chiropractor-like hueseros and sobadores. These Latin American faith healers may invoke folk saints like San La Muerte and Gaucho Gil to combat brujería.

ANSWER: **curanderos** [or **curanderas**, **curandeiros**, **curandeiras**, or **kurantirus**; accept **componedores**; accept **yerberos**; accept **yatiris** or **quilliris**; prompt on **oracionistas**, **tabaqueros**, **ayahuasqueros**, or **peyoteros** by asking “that approach belongs to what broader healing tradition?”]

<Religion>

15. Like Dr. Frankenstein watching an oak tree struck by lightning, many American playwrights have been inspired by electricity. For 10 points each:

[10e] In a “post-electric play” by Anne Washburn, survivors of an apocalypse perform retellings of a story in this medium. Washburn also adapted a science-fiction anthology series that Rod Serling presented in this medium.

ANSWER: **television** [or **TV**; prompt on small **screen**] (The play is *Mr. Burns, a Post-Electric Play*. The series is *The Twilight Zone*.)

[10h] Mrs. Daldry imagines electrical fireflies in this play set during “the dawn of the age of electricity,” which powers the “operation theater” where Dr. Givings uses a newly-invented device to treat patients with “hysteria.”

ANSWER: ***In the Next Room*** [or ***The Vibrator Play***] (by Sarah Ruhl)

[10m] Reuben shouts, “There is no God... but Electricity!” in this author’s play about the Light family, *Dynamo*.

Nina Leeds says, “Our lives are merely strange dark interludes in the electrical display of God the Father” near the end of another of his plays.

ANSWER: Eugene **O’Neill** [or Eugene Gladstone **O’Neill**] (The latter play is *Strange Interlude*.)

<American Literature>

16. Kalevipoeg locates a renowned Finnish smith by using this ability, which inspires an Estonian youth to crash the serpent-king’s feast so his eyes will be opened to the dances of wood-nymphs. For 10 points each:

[10m] Identify this ability that allows news to reach the Swedish king Dag the Wise. Rígr’s son Kon is instructed to become a conqueror via this ability, which Sigurd acquires by tasting Fafnir’s blood in the *Völsunga saga*.

ANSWER: language of the **birds** [or speech of **birds** or understanding **birds** or equivalents; accept language of **ravens** or language of **eagle** or other specific birds; prompt on understanding **animals** or language of the **beasts** or equivalents; prompt on **language** or **speech** or equivalents; prompt on **wisdom** or **knowledge** or equivalents] (The Finnish smith may be Ilmarinen from the *Kalevala*.)

[10e] Sigurd tastes blood to learn the language of birds on the Ramsund carving, which is grouped with several stones marked with these Germanic symbols that Kon masters alongside the speech of birds.

ANSWER: **runes** [accept **runic** alphabets; accept **runic** inscriptions or **runestones**; accept Elder **Futhark** or Younger **Futhark**; prompt on **alphabets** or **writing** systems or **characters**]

[10h] The antihero of this text, who smears runes with blood, is captured by Latvian Kurs with his brother Thorolf.

The title Icelandic skald sings of the “bird of carrion” in this text, which may share authorship with the *Heimskringla*.

ANSWER: ***Egil’s saga*** [or ***Egils saga***; or ***Egla***] (Snorri Sturluson is typically held to be the author of the entirety of the *Heimskringla*, and many scholars also believe that he wrote *Egil’s saga*.)

<Mythology>

17. Answer the following about portraits of pious donors in Northern Renaissance masterpieces, for 10 points each.

[10e] An anonymous Netherlandish master known for this museum's *Adoration* likely painted donor portraits with Saint Anne to commemorate a birth in his *Presentation in the Temple*. This Madrid museum displays *Las Meninas*.

ANSWER: **Prado** Museum [or Museo del **Prado** or Museo Nacional del **Prado**; accept Master of the **Prado** "Adoration of the Magi"] (He was possibly a student of Rogier van der Weyden and contemporary of Hans Memling.)

[10m] The enclosed garden in this triptych's left panel contains the praying donors Peter Ingelbrecht and Margarete Scrynmakers, whose surnames influenced its annunciation and workshop scenes. This altarpiece is attributed to Robert Campin.

ANSWER: **Mérode** Altarpiece [or **Mérode** Triptych; prompt on *Annunciation Triptych*] (Ingelbrecht means "angel bringer" and Srynmakers means "cabinet-maker" or "shrine-maker.")

[10h] In the left panel of this artist's *Melun Diptych*, the donor Étienne Chevalier prays next to his own patron saint, Stephen. This miniaturist illuminated a book of hours for Chevalier at the court of Charles VII of France.

ANSWER: Jean **Fouquet** [or Jehan **Fouquet**]

<Painting/Sculpture>

18. The Oppenheimer–Phillips process is one of these reactions in which the mass number changes by one. For 10 points each:

[10m] Name this type of reaction in which the nucleus absorbs or emits particles to change its isotope or atomic number.

ANSWER: nuclear **transmutation** reactions [prompt on **nuclear** reactions]

[10h] A possible application of the Oppenheimer–Phillips process is the production of this specific isotope from boric acid for use in a medical imaging technique in which it is incorporated into choline.

ANSWER: **carbon-11** [or  **$^{11}\text{C}$** ] (The imaging technique is a PET scan.)

[10e] Decay by emission of these particles is a natural form of transmutation. The first artificial transmutation was achieved by bombarding nitrogen-14 with these particles, which are equivalent to helium-4 nuclei.

ANSWER: **alpha** particles [or **alpha** rays; or **alpha** radiation]

<Chemistry>

19. Agnes Dillon Randolph helped found the Piedmont Nursing School in Burkeville, Virginia to train Black nurses to treat this disease, which required them to diagnose sputum samples from patients. For 10 points each:

[10e] Name this disease that, prior to the advent of streptomycin, was treated in segregated facilities such as the Piedmont Sanatorium for Black patients and Edward Trudeau's "cure cottages" at Saranac Lake for white patients.

ANSWER: **tuberculosis** [or **TB**; accept **consumption**]

[10m] While affiliated with the Henry Phipps Institute, Dr. H. M. Landis hired Black nurses during his landmark studies on tuberculosis among this city's Black population. W. E. B. Du Bois reported on poor healthcare access for African-Americans living in this city in his 1899 work on this city's "Negro."

ANSWER: **Philadelphia** [or **Philly**; accept *The Philadelphia Negro* or *The Philadelphia Negro: A Social Study*]

[10h] This island's Seaview Hospital employed the Black Angel nurses to care for tuberculosis patients. Robert F. Kennedy deplored hepatitis studies on intellectually disabled children at this island's Willowbrook State School.

ANSWER: **Staten** Island [prompt on **Richmond** County or Borough of **Richmond**]

<American History>

20. Recent scholarship argues that this author's epic poem *Franciade*, of which only the first four books were published, was well-received in its time. For 10 points each:

[10h] Name this author who was often described as a "prince of poets." This poet celebrated France alongside his contemporary Joachim du Bellay, who championed French as an artistic language.

ANSWER: Pierre de **Ronsard**

[10m] The obscurity of Ronsard's *Franciade* is sometimes linked to the fact that it was written in decasyllables, rather than this metrical form. Jean Racine ("zhawn rah-SEEN") is renowned for his use of this twelve-syllable metrical form.

ANSWER: **alexandrines** [prompt on dodecasyllables or dodecasyllabic verse]

[10e] This author used a reformed version of alexandrines for the epic poem *Henriade*, which was written several decades before this author's satirical novella *Candide* ("can-DEED").

ANSWER: **Voltaire** [or François-Marie **Arouet**]

<European Literature>

21. In 2021, countries like Palau threatened to withdraw from a "forum" named for this region due to Henry Puna's election as secretary-general breaking a "gentlemen's agreement" to rotate power. For 10 points each:

[10e] What physical region names a "reset" launched by New Zealand, a "step-up" announced by Malcolm Turnbull, and a trade "partnership" that the US withdrew from in 2017?

ANSWER: **Pacific** Ocean [accept **Pacific** Rim; accept Trans-**Pacific** Partnership; accept **Pacific** Reset; accept **Pacific** Step-Up; accept **Pacific** Islands Forum or South **Pacific** Forum; prompt on TPP, CPTPP, PIF, or SPF by asking "what does that stand for?"]

[10m] Since 2018, these items have been banned by Pacific Islands Forum members like Micronesia and the Marshall Islands. Bangladesh and Rwanda pioneered the restriction of these items, which has been unsuccessful in Uganda.

ANSWER: **plastic bags** [or single-use **plastic bags** or **polyethylene bags**; prompt on single-use plastics or shopping bags]

[10h] This Pacific country with a strict plastic bag ban was also the world's first to ban plastic straws. Father Walter Lini promoted Anglican socialism in this former Anglo-French condominium, which has no corporate tax.

ANSWER: **Vanuatu** [or Ripablik blong **Vanuatu**; or République de **Vanuatu**; prompt on New Hebrides Condominium or Condominium des Nouvelles-Hébrides] (Lini's ideology, influenced by Julius Nyerere's African socialism, was called "Melanesian socialism.")

<Current Events>