

## 2023 ACF Regionals

Packet D by Berkeley A, South Carolina A, UVA B

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Tossups

1. Profits from this industry enriched the town of Pelotas after a neighboring country's Guerra Grande sharply reduced its production. The Anchorena family gained an early foothold in this industry, whose export quotas to the UK were set by the Roca–Runciman Treaty. The lack of import duties on this industry's products led Bento Gonçalves ("BAIN-too gon-SALL-vish") to lead an uprising of "ragamuffins." It's not pulp, but Justus von Liebig ("YOOST-us fawn LEE-bikh") built a test processing plant for this industry in Fray Bentos. The frigoríficos modernized this industry in Mato Grosso, where it was prepared for export by charqueadas. Lancers were recruited from men who primarily worked in this industry on the Llanos ("YAH-nohss") Plains. Wool and this industry were concentrated on the estancias ("ess-TAHNS-yahss") of the Pampas. For 10 points, gauchos were hired to work on what industry's ranches?

ANSWER: **cattle** industry [or **beef** industry or **cow** industry; accept **jerky** or dried **beef**; accept **cow**boys; accept **charque** or **charqui** until "charqueadas" is read; prompt on **meatpacking**, **food** processing, **livestock**, raising **animals**, animal **husbandry**, or animal **slaughter**; prompt on **agriculture** or **farming** or **haciendas**; prompt on **ranching**, **gauchos**, **llaneros**, or **estancias** until each is read; prompt on **vaqueros**, **huasos**, **morochucos**, or **campinos**; reject "dairy," "leather," "hides," or "skins"]

<World History>

2. Compounds like benzotriazole are used to inhibit this process due to their ability to form a polymerized surface layer. In other applications, hydrazine derivatives are used to inhibit this process thanks to their reductive ability. This process can be slowed using impressed current systems or sacrificial anodes, which allows the protected surface to act entirely as the cathode of an effective galvanic cell. Susceptibility to this process is higher in metals with a higher electrode potential. A material's susceptibility to this process is tested by spraying it with a fine mist of five percent salt water. Galvanization is commonly used to prevent this process in order to prolong the life of steel. For 10 points, name this process in which a metal is oxidized by its environment, exemplified by rusting.

ANSWER: **corrosion** [or word forms like **corrode**; accept **rusting** until read; accept **corrosion** inhibitors; prompt on **oxidation** or word forms like **oxidize** until "oxidized" is read]

<Chemistry>

3. In a novel, the narrator is told that this character "must die for us to eat at the picnic." In that novel, Sinita tells the narrator stories about this character before shooting him with a bow and arrow during a play. In another novel, a New York lawyer who went to a nuns' academy in Michigan to avoid this character reminds her father Agustín that he was nicknamed "Egghead" while working for him. The officer Imbert and a character nicknamed Turk attempt to assassinate this character in a novel that describes his attempted rape of Urania Cabral. This character is responsible for the deaths of Patria, Minerva, and María Teresa, who are found in their wrecked Jeep, in the novel *In the Time of the Butterflies* by Julia Alvarez. For 10 points, Mario Vargas Llosa's novel *The Feast of the Goat* depicts the assassination of what Dominican dictator?

ANSWER: Rafael **Trujillo** [or Rafael Leónidas **Trujillo** Molina; accept the **Chief** or El **Jefe**; accept the **Goat** or El **Chivo** until "goat" is read; prompt on **Molina**]

<World Literature>

4. A “structural” method for estimating a function that describes this activity was proposed by Olley and Pakes in a paper analyzing the telecommunications equipment industry. This activity is often modeled using netput vectors that typically satisfy a free disposal condition. Optimality in this activity requires that the MRTS is equal to the slope of the isocost curve. In neoclassical models, the first derivative of a function that describes this activity satisfies the Inada conditions. An isoquant line holds the outcome of this activity constant as input levels vary. The set of feasible allocations for an economy is visualized on this activity’s namesake “possibilities frontier.” For 10 points, name this economic activity whose “factors” typically include land, labor, and capital.

ANSWER: **production** [accept factors of **production**; accept **production** possibilities frontier; accept **production** function; accept **production** estimation]

<Social Science>

5. This culture originated the motif of winged, snake-legged giants and possibly used antefixes of a rooster-headed deity to worship the dawn goddess Thesan. This culture’s “discipline” names their scriptures, which attribute lightning divination to the prophetess Vegoia and were supposedly revealed to their Twelve Peoples after plowing exposed the progerial child Tages. This culture adopted Hellenic deities in the circa-700-to-575 BCE Orientalizing period, after which they built temples with unfluted wood columns and three cellas for their gods Uni, Tinia, and Menrva (“MEN-ur-wuh”). Claudius’s *Tyrrhenica* chronicled this culture, whose mythological art included the Mars of Todi, Chimera of Arezzo, and Apollo of Veii (“WAY-ee”). For 10 points, Gaius Mucius Scaevola legendarily defied what culture’s king of Clusium, Lars Porsena, in Tuscany?

ANSWER: **Etruscans** [or **Rasenna** or **Raśna**; or **Tuseī** or **Tuscus**; or **Etrusci**, **Etruscae**, **Etruscus**, **Etrurians**, **Etrurii**, or people of **Etruria**; accept **Villanovan** culture; accept **Etrusca Disciplina**; prompt on **Tyrrhenians**, **Turrhēnoi**, **Tyrsenians**, or **Tursēnoi** until “*Tyrrhenica*” is read; prompt on **Tuscans** until “Tuscany” is read]

<Mythology>

6. In a play by this author, two characters share a kiss after a spontaneous whistling duet on a park bench. The Coen brothers modeled Barton Fink on this playwright, who co-wrote the screenplay for the noir *Sweet Smell of Success*. A woman created by this playwright tells her husband that their daughter has never even seen a grapefruit in a fight spurred by the repossession of their furniture. This playwright’s career faltered after he and Elia Kazan named each other to HUAC (“HYOO-ack”). The protagonist breaks his hand, ruining his prospects as a violinist, in this author’s play about the boxer Joe Bonaparte. At the end of a play by this Group Theatre member, the revelation of the title character’s death spurs a union of cab drivers to demand a strike. For 10 points, name this playwright of *Golden Boy* and *Waiting for Lefty*.

ANSWER: Clifford **Odets**

<American Literature>

7. A set of 17 peasant dances from this country were transcribed for piano based on fiddle sl tter passed down by a musician nicknamed “the Miller’s Boy.” A composer from this country wrote violin sonatas in F major, G major, and C minor, the last of which he claimed has “the broader horizon.” A 19th-century violin virtuoso from this country names the last Guarneri and founded a theater to develop this country’s playwrights. The tuning of the sympathetic strings of a folk instrument from this country inspired the opening flute solo of a suite of incidental music that includes “The Death of  se (“AH-suh”).” The playing of this country’s violinist Ole Bull (“OO-luh BOOL”) was inspired by the Hardanger fiddle. A composer from this country included a halling dance in the finale of an A minor piano concerto. For 10 points, name this home country of the composer of *Peer Gynt*, Edvard Grieg.

ANSWER: **Norway** [or **Norge**, Kingdom of **Norway**, Kongeriket **Norge**, Kongeriket **Noreg**, **Norgga**, **Vuona**, **N orjen**, or **Norjan**]

<Classical Music>

8. In the matrix expansion of the electromagnetic stress–energy tensor, spatial components of this quantity divided by the speed of light appear along the first row and column. For a plane wave propagating in a lossless medium, this quantity equals the electric field squared over the intrinsic impedance. When electromagnetic energy is locally conserved, the negative divergence of this quantity equals the time derivative of energy density. Integrating this quantity over a surface yields the power entering or leaving the surface. In a linear, homogenous, isotropic medium, this quantity equals the cross product of the electric and magnetic fields over mu naught. For 10 points, name this vector quantity that describes the flow of energy in an electromagnetic wave, named for an English physicist.

ANSWER: **Poynting vector** [or Umov–**Poynting vector**; accept **Poynting** vector after “vector quantity” is read; prompt on  $\Delta$ ]  
<Physics>

9. An abbot of Akner with this name authored an extant history of the Mongol conquest of the Steppe. While facing an invasion by Caliph al-Ma'mūn in the 9th century, a member of the clergy with this name established Iberian monasteries at Opiza and Khandzta as part of a “Georgian Sinai.” In 2015, Pope Francis bestowed the title of Doctor of the Church on a mystic with this name who wrote *The Book of Sadness*. Basil the Great and two theologians with this name make up the Cappadocian Fathers. By baptizing Tiridates III in 301 CE, a saint with this name converted Armenia to Christianity and earned the epithet “the Illuminator.” A pope with this name sent Saint Augustine to convert the Anglo-Saxons. For 10 points, give this name of a “great” pope who legendarily developed a namesake liturgical chant.

ANSWER: **Gregory** [accept **Gregorian** chant; accept Pope **Gregory** I or Pope **Gregory** the Great; accept **Gregory** the Illuminator or **Grigor** Lusavorich; accept **Gregory** of Nyssa or **Gregory** Nyssen; accept **Gregory** of Nazianzus or **Gregory** Nazianzen; accept **Gregory** of Narek or **Grigor** Narekatsi; accept **Gregory** of Khandzta or **Grigol** Khandzteli; accept **Gregory** of Akner or **Grigor** Aknertsii] (Gregory of Akner wrote *History of the Nation of Archers*.)

<European History>

10. The bombastic “Jane Castleton” works at one of these places in a video by Andrea Fraser titled for its “Highlights.” The death of PKK fighter Andrea Wolf inspired a 2013 video analogizing these places to battlefields, created by Hito Steyerl. Marcel Broodthaers (“bro-TAIRS”) established one of these places in his Brussels home. Two Plexiglas boxes with automatic counters were used in a 1970 work in which people in one of these places were polled on their views about Nelson Rockefeller. Hans Haacke helped pioneer an inquiry into these places called institutional critique. Nan Goldin’s PAIN group protested the Sackler family’s support of one of these places by occupying the ascending spiral ramp of its all-white rotunda. For 10 points, name these buildings that include the Tate Modern and the MoMA.

ANSWER: art **museums** [or art **gallery** or art **galleries**; prompt on art **exhibits** or art **exhibitions**] (The penultimate line refers to the Guggenheim.)

<Painting/Sculpture>

11. Steven Blush's book *Bustin' Balls* describes this athlete coaching a franchise whose game against the Pittsburgh Triangles inaugurated a "World Team" league. In the autobiographies *Pressure is a Privilege* and *All In*, this dedicatee of Elton John's song "Philadelphia Freedom" recounts the Original 9's Virginia Slims tour in protest of low prize money. This athlete names the former Fed Cup and a complex containing three stadiums in Flushing Meadows. A palimony lawsuit from the secretary Marilyn Barnett outed this athlete as gay. In a 2017 film, Emma Stone plays this founder of the Women's Sports Foundation, who is surpassed as the world's top-ranked player by Margaret Court but eclipses her loss against a rival played by Steve Carell. For 10 points, what tennis player defeated Bobby Riggs in the 1973 "Battle of the Sexes"?

ANSWER: Billie Jean **King** [or Billie Jean **Moffitt**; accept USTA Billie Jean **King** National Tennis Center; accept Billie Jean **King** Cup; prompt on **BJK** Cup by asking "what does that stand for?"] (The league is World TeamTennis. The USTA Billie Jean King National Tennis Center hosts the US Open.)

<Pop Culture>

12. An author with this surname wrote a story in which a poacher's murder of a baby is gradually revealed in a shifting engraving of a manor-house. That author with this surname wrote a story in which a Cambridge professor is terrified by a "face of crumpled linen" after acquiring a bronze object engraved with the text "FUR FLA BIS FLE." An author with this surname wrote "The Mezzotint" and "Oh, Whistle, and I'll Come to You, My Lad," among other ghost stories. Another author with this surname created a boy who blows out a woman's candle as they compose a letter and who is expelled from boarding school for unclear reasons. That story ends "his little heart, dispossessed, had stopped," as the sight of Peter Quint's ghost causes Miles to die in his governess's arms. For 10 points, give this surname of the author of *The Turn of the Screw*.

ANSWER: **James** [accept Henry **James**; accept M. R. **James** or Montague Rhodes **James**]

<British Literature>

13. Grain offerings and statuettes of this material were placed in house foundations to reenact the legend of Tapama, who was buried in city walls to ensure that houses would remain standing. It's not iron, but Bernard Fagg studied an artifact of this material being used in a scarecrow, part of a set of human figures of this material found in the Jos Plateau and sculpted to have triangular eyes with holed pupils. A likely-ill figure of this material rests a head on its knee, has protrusions on its back, and was taken from an inland Niger Delta mound near Djenné-Djenno. This material was sculpted into the Nok heads. 46 bronze waterfowl accompany thousands of life-sized figures of this material buried near Xi'ān ("shee-AHN"). For 10 points, name this material used to sculpt soldiers to protect Qín Shǐ Huáng in the afterlife.

ANSWER: **terracotta** [accept **terracotta** army; accept Nok **terracottas**; accept Djenné **terracotta**s; prompt on **clay**, **earthenware**, **ceramics**, **pottery**, or **mud**] (Susan and Roderick McIntosh related the legend of Tapama to illustrate their findings of terracotta statuettes in Djenné-Djenno.)

<Other History>

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

This deity is honored with ordeals like knife dancing and an imported form of firewalking in Fiji. Bhutan's Dragon King grants tika as a blessing from this deity on Dashain. Southeast Asia's Nine Emperor Gods Festival coincides with a holiday when an image of this deity or a lamp in a clay pot is circled in Gujarat's garbā dance. Instead of the Rāmlīlā, Bengalis celebrate this deity's puja on Dussehra ("duh-SHAIR-uh"). The Newar ("nih-WAHR") believe Kumārīs to be incarnations of this deity, whose manifestations, like Skandamata and Chandraghanta, are honored on the nine nights of Navarātri. Shaktas read the *Devī Māhātmya*'s account of this goddess, who holds eight weapons and is mounted on a tiger or lion, slaying the buffalo demon Mahishasura. For 10 points, the forehead of what multi-armed warrior goddess turns black with rage and births Kālī?

ANSWER: **Durgā** [accept **Durgā** Pūjā or Maa **Durgā**; accept **Chandraghanta** or **Skandamata** until each is read; accept **Chandī**, **Amba**, **Ambikā**, **Bhagavatī**, Navadurgās, Navdurgās, **Katyayani**, **Siddhidatri**, **Kushmanda**, **Taleju**, **Kalaratri**, **Kaalratri**, **Mahisasuramardini**, or **Durgā Saptashatī**; prompt on **Kālī** or Mahadevī until each is read; prompt on Adi **Shakti**, **Maa**, **Mātājī**, **Pārvaṭī**, **Umā**, Mahagaurī, **Aparnā**, **Shailaputri**, **Brahmacharini**, or **Sati**] <Religion>

15. A hardcoded value of 58623 allows for one of these situations to be utilized in a technique called RET2ESP ("R-E-T-two-E-S-P"). Position independence, or PIE, can be coupled with ASLR to prevent these situations from occurring. A NOP ("nop") sled can be used for techniques relying on one of these situations, such as the "return-to-libc." Exploits that utilize these errors are named for "smashing" a certain data structure. In C, the strepy ("S-T-R-C-P-Y") command can change a function's return address in one of these errors. Without tail optimization, one of these errors results from recursion lacking a base case. In another type of these errors, addition causes an undesired wrap-around for an integer. For 10 points, programming questions are answered on a website named for what kind of error happening to a stack?

ANSWER: **overflow** [or **overrun**; accept Stack **Overflow**; prompt on **memory attacks**; prompt on **stack smashing**] <Other Science>

16. In a story by this author, the Gabbler and Blinkard become emotional while a man nicknamed "the Turk" wins a singing contest. An essay by this author contrasts an "archetype of self-sacrifice" with a "skeptic" who "cannot love anyone" while arguing that two characters form "poles of the human axis." In a story by this author, Vasily Vasilych sticks his tongue out at his reflection before comparing himself to a Shakespeare character. This author of "Hamlet and Don Quixote" depicted a party held by Alexander G. in the story "Hamlet of the Shchigrovsky District." In a novel by this author, Arkady Kirsanov stays at his father's estate Marino with his friend, the nihilist Bazarov. For 10 points, what Russian author wrote the collection *A Sportsman's Sketches* and the novel *Fathers and Sons*?

ANSWER: Ivan **Turgenev** [or Ivan Sergeyevich **Turgenev**] <European Literature>

17. This state's Supreme Court rescinded Sharon Bottoms's custody rights to her son for her homosexual relationship with April Wade. Annie Harper sued this state's Board of Elections for denying her voter registration due to state poll taxes. Segregated public busing was deemed unconstitutional in the *Morgan* and *Boynnton* cases originating from this state, which prompted CORE to organize the Freedom Rides. The Supreme Court upheld this state's Sterilization Act of 1924 after Carrie Buck was declared "feeble-minded." In a unanimous 1967 decision, the Supreme Court ruled that this state violated the Equal Protection Clause and overturned its anti-miscegenation laws. For 10 points, the Warren Court overturned what state's ruling that convicted Mildred and Richard Loving for their interracial marriage?

ANSWER: **Virginia** [or **VA**; accept *Loving v. Virginia*; accept *Boynnton v. Virginia*; accept *Morgan v. Virginia*; accept *Harper v. Virginia State Board of Elections*] (The case in the first line was *Bottoms v. Bottoms*. The fourth line refers to *Buck v. Bell*.)

<American History>

18. This book explains how we can be "led astray" by words by noting that, when we "see" men through a window, they could be machines in hats and coats. This book resolves the Problem of Error by claiming that the will has a "wider scope" than the intellect. Two results in this book assume each other as premises according to a critique dubbed its author's "Circle," which was appended to this book in one of several "objections." The title of Edmund Husserl's 1931 "Introduction to Phenomenology" alludes to this book, which asserts that "intellect alone" yields "clear and distinct" perceptions. This book is presented as a set of reflections over six days, during which its author aims to discard all beliefs and start from the foundation. For 10 points, name this follow-up to *Discourse on Method* by René Descartes.

ANSWER: ***Meditations on First Philosophy*** [or ***Meditationes de Prima Philosophia***; prompt on Descartes's ***Meditations***] (Husserl's book is titled *Cartesian Meditations*.)

<Philosophy>

19. The "programming" of these entities is posited by the Barker hypothesis. The Kyoto Collection preserves these entities and their precursors, which were reconstructed with serial sections by Göttingen's Erich Blechschmidt across the 23 Carnegie stages. Scleroderma risk may rise due to persistent microchimeric ("micro-kye-MAIR-ick") cells from these entities, whose acidified endosomes express FcRn to transcytose ("TRANS-site-occe") IgG ("I-G-G") and provide passive immunity. These entities name a protein with reduced affinity for 2,3-BPG due to its two gamma subunits, making it a highly oxygen-binding form of hemoglobin. The membranes around these entities form the chorionic villi ("kor-ee-ON-ick VILL-ee"), which invade the endometrium to obtain nutrients via the umbilical cord. For 10 points, at a gestational age of ten weeks, mammalian embryos develop into what unborn offspring?

ANSWER: **fetuses** [or **foeti** or **foetuses**; accept **embryos** until read; accept **fetal** membranes or **fetal** hemoglobin or **fetal** microchimeric cells; prompt on unborn **offspring**, unborn **infants**, unborn **babies**, unborn **children**, unborn **twins**, unborn **siblings**, **sons**, **daughters**, **humans**, **people**, **mammals**, or **conceptus**; prompt on **placenta** or **syncytiotrophoblast**; reject "newborns" or "neonates"]

<Biology>

20. A duo of architects from this country used transparent acrylic curtains in their 2008 Intervention of the Barcelona Pavilion. An architect from this country was inspired by a Chinese bamboo hat to use hexagonal units of laminated wood in his design for the roof of the Centre Pompidou-Metz. A self-taught architect from this country designed a building with a cross-shaped opening in a concrete wall behind an altar called the Church of the Light. This country is the home of the firm SANAA and an architect who is known for housing disaster victims with paper materials and who designed Christchurch's Cardboard Cathedral. This country's capital contains a neofuturistic "Skytree" that is currently the tallest tower in the world. For 10 points, name this home country of Tadao Andō and Shigeru Ban.

ANSWER: **Japan** [or **Nippon**-koku or **Nihon**-koku] (The penultimate line refers to the Tokyo Skytree.)  
<Other Fine Arts>

21. A woman redesigns her life around this novel's "core values" in a 2011 novel by Sara Levine. For a 2014 stage adaptation of this novel, director Polly Findlay installed a planetarium in London's National Theatre. An addled character in this novel longs for a "Christian diet" of cheese after he survives on salted goat for three years. This novel's protagonist hides in an apple barrel and exposes the treachery of a man who disguises himself as the cook "Barbecue." At the start of this novel, a haggard stranger who sings "drink and the devil had done for the rest" suffers a rum-induced stroke while keeping watch for a one-legged man at an inn, where he is struck dead by Blind Pew's black spot. For 10 points, Jim Hawkins sails with Long John Silver in what high-seas adventure by Robert Louis Stevenson?

ANSWER: ***Treasure Island*** [or ***Treasure Island*** or, ***the Mutiny of the Hispaniola***; accept ***The Sea Cook: A Story for Boys***; accept ***Treasure Island!!!***]  
<British Literature>

## Bonuses

1. Answer the following about the biochemistry of millipedes, for 10 points each.

[10e] Millipede ozopores secrete defensive compounds like benzaldehydes, cresols, and these fast-acting toxins also found in apple seeds. They inhibit cytochrome c oxidase and smell like bitter almonds.

ANSWER: **cyanides** [or **cyano** groups or **CN**; accept **nitriles**; accept hydrogen **cyanide** or **HCN** or hydro**cyanic** acid or **Prussic acid**; accept potassium **cyanide** or **KCN**; accept sodium **cyanide** or **NaCN**; accept **cyano**hydrins or hydroxy**nitriles**; accept **cyanogenic** glycosides; prompt on **amygdalin** by asking “what toxic compound does it release?”]

[10m] The Tömösváry (“TUM-ush-VAR-ee”) organs of millipedes sense environmental levels of this molecule and may also perform hygromoreception (“hy-grow-reception”). Capnophiles require this molecule, which is produced with ethanol in yeast fermentation.

ANSWER: **carbon dioxide** [or **CO<sub>2</sub>**] (Hygromoreception senses humidity.)

[10h] Many millipede lineages lost a methyltransferase that acts on these molecules to biosynthesize juvenile hormone. Three isoprene units define these molecules, which include the petrichor odorant geosmin (“jee-OZ-min”) and lactones like artemisinin.

ANSWER: **sesquiterpenoids** [accept **sesquiterpenes**; accept **sesquiterpene** lactones; accept **farnesol**, **farnesal**, **farnesoic** acid, or methyl **farnesoate**; prompt on **terpenes** or **terpenoids** or **isoprenoids**]

<Biology>

2. A novel set in this location opens with a group of white men raiding a rally organized by Reverend Deke O’Malley and robbing 87,000 dollars, which is later hidden in a bale of cotton. For 10 points each:

[10h] Name this location that provides the setting of *The Real Cool Killers* and other hardboiled crime novels in a series about the detectives Grave Digger Jones and Coffin Ed Johnson.

ANSWER: **Harlem** [accept **Harlem** Detective Series; prompt on **New York** City or **NYC** or **Manhattan**]

[10e] Chester Himes published the Harlem Detective Series while living in this European capital city alongside self-exiled Black writers like James Baldwin and Richard Wright on its Left Bank.

ANSWER: **Paris**

[10m] The furniture salesman Ray Carney begins fencing goods in this author’s 2021 crime novel *Harlem Shuffle*. In another novel by this author, the driven student Elwood Curtis is abused while attending a Florida reform school.

ANSWER: Colson **Whitehead** [or Arch Colson Chipp **Whitehead**] (The second novel is *The Nickel Boys*.)

<American Literature>



3. Donaldina Cameron rescued immigrant girls trafficked by these organizations, whose influence was supposed to be curtailed by the Six Companies. For 10 points each:

[10h] Name these secret societies formed to protect Chinese Americans. Later members of these organizations like Little Pete moved into organized crime and hired mercenaries known as *boo how doys* during their namesake “wars.”

ANSWER: **tongs** [or **táng**; accept **Tong Wars**; prompt on **halls**; prompt on **hujis** or **triads**; prompt on **brotherhoods** or **gangs**]

[10e] The Tong Wars of the early 20th century were mainly centered in this city, which contains North America’s oldest Chinatown. This city’s 1906 earthquake destroyed many tong hideouts and permanently shattered their power.

ANSWER: **San Francisco** [or **SE**; accept **San Fran**; accept 1906 **San Francisco** earthquake]

[10m] This location near San Francisco processed Chinese and other Asian immigrants who traveled across the Pacific. Thousands of “paper sons” falsified their family history to pass lengthy oral interrogations given at this location.

ANSWER: **Angel Island** [or **Angel Island Immigration Station**]

<American History>

4. Answer the following about flags, [pause] which are ascending sequences of subspaces of a vector space, for 10 points each.

[10e] The signature of a flag is the sequence giving this quantity for each of its subspaces. The size of a basis set equals this quantity, which is  $n$  for the Euclidean space  $\mathbb{R}^n$  (“R-n”).

ANSWER: **dimension** [accept **dim**]

[10h] Complete flags are parametrized by Borel subgroups of one of these groups. A representation maps from a group  $G$  to one of these groups, which consist of the set of invertible matrices equipped with matrix multiplication.

ANSWER: **general linear** group [or **GL<sub>n</sub>** (“GL-n”)]

[10m] A theorem named for this mathematician provides conditions under which a representation has a complete flag of invariant subspaces. This mathematician names groups with the structure of a smooth manifold, as well as algebras with a namesake bracket that satisfies the Jacobi identity.

ANSWER: Sophus **Lie** (“lee”) [accept **Lie’s theorem**; accept **Lie group** or **Lie algebra** or **Lie bracket**]

<Other Science>

5. Answer the following about the Great Spa Towns of Europe, a transnational UNESCO World Heritage Site that spans seven countries, for 10 points each.

[10e] The most notorious of the Great Spa Towns is almost certainly this vacation destination near the Massif Central. This town names the collaborationist French regime headed by Philippe Pétain during World War II.

ANSWER: **Vichy** [accept **Vichy France** or Régime de **Vichy**]

[10m] The eponym for the word “spa” is a spa town in this country that was the site of the world’s first beauty pageant. This country’s capital contains the Atomium and a bronze statue of a boy urinating, the *Manneken Pis* (“MON-uh-kuh piss”).

ANSWER: **Belgium** [or Kingdom of **Belgium** or Koninkrijk **België** or Royaume de **Belgique**] (Brussels is the capital.)

[10h] This largest of the trio of Czech Great Spa Towns hosts the most prominent film festival in Central Europe, parts of which take place in its historic Grandhotel Pupp. It is named after a 14th-century Bohemian Holy Roman Emperor.

ANSWER: **Karlovy Vary** [or **Karlsbad** or **Carlsbad**; accept **Karlovy Vary International Film Festival** or Mezinárodní filmový festival **Karlovy Vary**] (It is named for Charles IV.)

<Geography>

6. This condition's name was coined in 2015 by neurologist Adam Zeman, after he first learned of it from a patient who was suddenly unable to visualize events from his life after a minor stroke. For 10 points each:

[10h] Name this rare condition that results in an inability to produce mental imagery. It has also been found to impact autobiographical memory and future event prospection.

ANSWER: **aphantasia** [reject "aphasia"]

[10m] Zeman estimates that aphantasia affects two percent of the population, which is approximately in line with this scientist's early descriptions of the condition. This 19th-century advocate of eugenics and cousin of Charles Darwin coined the phrase "regression toward the mean."

ANSWER: Francis **Galton**

[10e] Aphantasic people report experiencing fewer and qualitatively poorer instances of these events compared to the general population. The "interpretation" of these events titles a classic text by Sigmund Freud.

ANSWER: **dreams** [or **Traum** or **Träume**; accept *The Interpretation of Dreams* or *Die Traumdeutung*]

<Social Science>

7. A sequel to this novella depicts its protagonist transforming into a tuna and living among fish, which prompted a rival sequel claiming to debunk that story. For 10 points each:

[10m] Name this 16th-century novella about a poor boy from Salamanca. This anonymously published novella is often credited with establishing picaresque literature.

ANSWER: **Lazarillo de Tormes** [or **Lazarillo of Tormes** or *The Life of Lazarillo of Tormes and of His Fortunes and Adversities* or *La vida de Lazarillo de Tormes y de sus fortunas y adversidades*]

[10h] After being apprenticed to a blind beggar, Lázaro works for a miserly member of this profession in chapter two. In a different book, a character with this profession considers Joanot Martorell's ("zhoo-ah-NOT mar-toh-RAIL's") book *Tirant lo Blanch* ("tee-RAHN lo BLAHNK") the best book in the world.

ANSWER: **priests** [or **sacerdotes**, **curas**, **párrocos**, **preshbíteros**, or **eclesiásticos**; accept **clerics** or **clérigos**; accept **fathers** or **padres**; accept **chaplains** or **capellanes**; prompt on **pastors**]

[10e] Along with the barber Nicolás, the priest Pedro Perez burns most of the protagonist's books to cure his chivalric delusions in this Miguel de Cervantes novel.

ANSWER: **Don Quixote** [or *The Ingenious Gentleman Don Quixote of La Mancha*; or *El ingenioso hidalgo don Quijote de la Mancha*]

<European Literature>

8. *Two answers required.* Joseph Duveen ended his partnership with Bernard Berenson after a feud over which of these two artists painted the *Allendale Nativity*. For 10 points each:

[10m] Name these two pupils of Giovanni Bellini who painted the façade of the Fondaco dei Tedeschi. X-ray analysis revealed that one of these artists, who painted *Bacchus and Ariadne*, completed the landscape of the other's *Sleeping Venus*.

ANSWER: **Titian** AND **Giorgione** [accept answers in either order; accept **Tiziano** Vecellio or Tiziano **Vecellio** in place of "Titian"; accept Giorgio **Barbarelli** da Castelfranco in place of "Giorgione"]

[10e] With Bellini, Titian and Giorgione pioneered the *colorito* style that characterized this Italian city's school of painting.

ANSWER: **Venice** [or **Venezia**]

[10h] The lyricism of paintings like *Pastoral Concert*, whose attribution has also been disputed, inspired this term. Titian used this label for a set of six works painted for Philip II and based on the *Metamorphoses*, featured in the 2021 Gardner exhibit *Women, Myth, and Power*.

ANSWER: **poesie** ("po-ay-ZEE-ay") [or **poesia**]

<Painting/Sculpture>

9. A 1776 yellow fever epidemic inspired a Caracas brotherhood that gathers these objects, which are collected to build a dabuyaba in the Garifuna dugu ceremony. For 10 points each:

[10m] What objects are frayed to call on Ayizan (“ah-yee-ZONG”) in Vodou initiation? Medieval pilgrims to Jerusalem were nicknamed for carrying these symbols of victory, which name a procession in which they are waved while shouting “hosanna!”

ANSWER: **palm** fronds [or **palm** leaves or **palm** branches or **palm** boughs; accept **Palm** Sunday; accept **lulavim**, date **palms**, **Phoenix**, **raffia**, **Areca**, **cohune**, or other specific palms; accept **palmer**s or **palmeros** or **palmeritos**; prompt on **plants** or **trees**; prompt on **fronds**, **leaf**, **leaves**, **branches**, **boughs**, or **ramos** by asking “typically from what plants?”]

[10h] Palm brooms beat celebrants in Guyanese comfa, whose simbi water spirits derive from this African people’s religion. This people’s cross, cosmogram, and Nkisi spirits likely influenced myal and nganga in palo monte.

ANSWER: **Kongo** people [or Bisi **Kongo**, Esi**Kongo**, Mwisi**Kongo**, **Bakongo**, or **Mukongo**; accept Ki**Kongo** or Bu**Kongo**; accept Kingdom of **Kongo**, **Kongo** dia Ntotila, Wene wa **Kongo**, or Reino do **Congo**; accept Ba**Vili**, **Loango**, **Yombe**, **Manianga**, **Ntandu**, **Ndibu**, **Mazinga**, or **Bwende**; prompt on **Bantu**; reject “Congolese”]

[10e] This Caribbean territory’s Espiritismo movement syncretized Kongo rituals with Taino healing. On Palm Sunday, 1937, American colonizers of this majority-Catholic unincorporated territory perpetrated the Ponce Massacre.

ANSWER: **Puerto Rico** [or **Boriken** or **Borinquen**; accept Commonwealth of **Puerto Rico** or Free Associated State of **Puerto Rico** or Estado Libre Asociado de **Puerto Rico**]

<Religion>

10. Namdeo Dhasal and Raja Dhale founded an organization named after these people as a splinter group from the Ambedkarite RPI party. For 10 points each:

[10m] Identify these people whose namesake “Panthers” advocated violent reprisals against their discrimination. Decades earlier, thousands of these people took the 22 Vows of Neo-Buddhism during a mass conversion in Nagpur.

ANSWER: **Dalits** [or **dalita**; accept **untouchables**; accept **Scheduled Castes** or **Scheduled Tribes**; accept **harijans**; accept **Dalit** Panthers; prompt on **Mahars**; prompt on **outcastes**]

[10h] Dhasal wrote many columns in this language for the *Saamana* newspaper. Bal Thackeray’s Shiv Sena promoted articles in this language attacking the Panther-led Namantar Andolan movement to rename a university after Babasaheb Ambedkar.

ANSWER: **Mārathi** [or Standard **Marathi**; accept **Varhādi** dialect or **Vaidarbhi** dialect; accept **Zaadi Boli** dialect; accept **Thanjavur** Mārathī or **Tanjore** Mārathī]

[10e] This Mārathī-speaking city was the site of the Worli riots between the Panthers and Shiv Sena during Namantar Andolan. Dalit leather workers were concentrated in the Dharavi slums of this capital of Maharashtra.

ANSWER: **Mumbai** [or **Bombay**]

<World History>

11. A short story in Xuan (“shwen”) Juliana Wang’s collection *Home Remedies* begins by quoting an aphorism that “when you’re young you shouldn’t read” this work. For 10 points each:

[10e] Name this major work of classical Chinese literature in which the Monkey King and Tripitaka travel to Vulture Peak to receive Buddhist scriptures. Arthur Waley translated this text under the title *Monkey*.

ANSWER: **Journey to the West** [or **Xī Yóu Jī** or **Hsi-yu Chi**]

[10h] In Wang’s short story, the grandmaster Tutu claims to have killed one of these animals as a boy. In *Romance of the Three Kingdoms*, Dǒng Xī (“dong shee”) kills a character whose name references these animals and sends that character’s head to Sūn Cè (“swun tsuh”).

ANSWER: **white tiger** [or **báihǔ**; accept Yán **Báihǔ**; prompt on **tiger**, **lǎohǔ**, big **cats**, or **felines**]

[10m] Wǔ Sōng (“oo song”), a member of a group of this many characters, kills a tiger with his fists in *Water Margin*. He is a member of the Stars of Destiny, who meet at Mount Liáng (“l’yahng”) and contain this many characters.

ANSWER: **108** [or **yībǎilíngbā**; accept answers that include a noun, such as **108** Stars of Destiny or **108** Heroes; accept **36** Heavenly Spirits]

<World Literature>

12. A hit honky-tonk song about a “mama” with these objects indirectly influenced a Doris Day film that was adapted into a musical starring Carol Burnett. For 10 points each:

[10m] Name these objects that make a woman from rural Ohio “sparkle like crystal.” That character originated by Ethel Merman sings that “you can’t get a man” with one of these title objects in an Irving Berlin musical.

ANSWER: **guns** [or **firearms**; accept **shotguns**, **handguns**, **rifles**, **revolvers**, **Remingtons**, six **shooters** or other specific types of gun; accept **bullets** or **slugs**; accept “You Can’t Get a Man with a **Gun**”; accept “**Pistol** Packin’ Mama”; prompt on **weapons** or **arms** or equivalents] (The derivative film and musical was *Calamity Jane*.)

[10h] *Specific term required.* In *Annie Get Your Gun*, Annie Oakley sings a “lullaby” about her father bringing this stuff from “behind the hill.” Grandpa Jones recorded a folk song with possible Irish roots about this stuff, which claims “them that refuse it are few.”

ANSWER: **moonshine** [or **white lightning** or **white whiskey**; accept **mountain rye**, **mountain dew**, “Good Old **Mountain Dew**,” or “Real Old **Mountain Dew**”; accept **poitin** or **potteen** or **potcheen**; accept “**Moonshine** Lullaby”; prompt on **jug** by asking “containing what?”]

[10e] *Moonshine Hollow* artist Jimmy Martin pioneered this genre, which inflects the scores of *Bright Star* and *The Robber Bridegroom*. This Appalachian genre is named for a plant from northern Kentucky.

ANSWER: **bluegrass** music [accept Kentucky **bluegrass** or **Bluegrass** region; prompt on meadow-**grass** or **Poa**]

<Other Fine Arts>

13. The narrator of *The Memory Chalet* recalls how he proselytized a socialist variation of this ideology, but stopped working at a kibbutz after learning that it wasn’t compatible with his admission to Cambridge. For 10 points each:

[10e] Name this ideology envisioned by Theodor Herzl as a way for Jews to escape antisemitism in Europe.

ANSWER: **Zionism** [or word forms like **Zionist** movement; accept Labor **Zionism**]

[10h] *The Memory Chalet* is framed as this author’s life reflections in relation to history while suffering from ALS. This historian wrote *Postwar*, a survey text on European history since 1945.

ANSWER: Tony **Judt** [or Tony Robert **Judt**]

[10m] In *Postwar*, Judt notes how this leader was an “enthusiastic supporter” of Zionism as a foil to British colonial ambitions. This leader, who ordered the death of theater director Solomon Mikhoels, later implicated medical professionals in the Doctors’ Plot.

ANSWER: Joseph **Stalin** [or Joseph Vissarionovich **Stalin**; or Ioseb Besarionis dze **Jughashvili**]

<European History>

14. The one-dimensional version of this equation supports dark soliton excited-state solutions for certain parameters. For 10 points each:

[10h] Name this nonlinear wave equation that can be derived variationally using an energy functional that includes a delta function interaction term derived from hard sphere scattering between ultracold bosons.

ANSWER: **Gross–Pitaevskii** Equation [or **GPE**]

[10e] The Gross–Pitaevskii equation describes these systems, which are sometimes called the “fifth state of matter.” These systems are formed by ultracold bosons and have a macroscopic number of particles in the same quantum state.

ANSWER: **Bose–Einstein condensates** [or **BECs**; prompt on condensates]

[10m] The Gross–Pitaevskii equation uses this type of approximation, corresponding to the Hartree–Fock approximation. In this type of approximation, each particle is subject to an interaction potential based on the average state of all other particles.

ANSWER: **mean-field** approximation

<Physics>

15. *Two answers required.* Queen Matilda helped resolve a primacy dispute between archdioceses based in these two cities through the Accord of Winchester. For 10 points each:

[10m] Name these two cities that are home to the only two archdioceses in England. One contains the highest clerical position in the Church of England and the other was the largest city destroyed during the “Harrying of the North.”

ANSWER: **Canterbury** AND **York** [accept answers in either order]

[10h] Among the many archbishops translated from York to Canterbury was this cleric, who sanctioned William Sawtre’s burning at the stake as part of an intense bout of persecution against the Lollards.

ANSWER: Thomas **Arundel**

[10e] The only archbishop moved in the opposite direction, Roger de Pont L’Evêque, was briefly suspended for his role in the death of this “troublesome priest” who was murdered after a coronation dispute with Henry II.

ANSWER: Thomas **Becket** [or Thomas à **Becket**; prompt on Saint Thomas of Canterbury or Thomas of London]

<Other History>

16. This effect has primary and secondary forms depending on whether the affected atom is part of a bond that is formed or broken. For 10 points each:

[10m] Name this phenomenon in which the rate of a reaction depends on the mass of chemically identical atoms.

ANSWER: **kinetic isotope** effect [or **KIE**; accept primary **kinetic isotope** effect or secondary **kinetic isotope** effect]

[10e] The strongest kinetic isotope effects can be seen in reactions involving hydrogen, because this second most abundant isotope of hydrogen has mass number two compared to one for the most common form of hydrogen.

ANSWER: **deuterium** [or **D**; prompt on hydrogen-2 or heavy hydrogen]

[10h] *Description acceptable.* Whether or not a geological sample had this property can be determined by whether the sample has a higher ratio of C-12 to C-13 than a meteorite control based on the kinetic isotope effect.

ANSWER: the sample was once incorporated into **living** matter [accept acted on by **enzymes** or **enzymatic** activity; accept descriptions that the sample was once part of an **organism** or that it is a **fossil**]

<Chemistry>

17. *Two answers required.* The first meeting between these two poets is fictionalized in Pat Barker's novel *Regeneration*, in which one of them convinces the other to publish his poetry in the magazine *The Hydra*. For 10 points each:

[10h] Name these two poets who discuss the poem "Disabled" in a scene from Terence Davies's biopic *Benediction*. One of them edited a poem by the other that describes flowers that are "the tenderness of patient minds."

ANSWER: Wilfred **Owen** AND Siegfried **Sassoon** [accept answers in either order; accept Wilfred Edward Salter **Owen** in place of "Wilfred Owen"; accept Siegfried Loraine **Sassoon** in place of "Siegfried Sassoon"]

[10e] Owen and Sassoon met in a hospital while serving in this war, which Owen wrote about in poems like "Anthem for Doomed Youth" and "Dulce et Decorum Est."

ANSWER: **World War I** [or **WWI** or **WW1**; or the **First World War**; or the **Great War**]

[10m] This author described Owen's early poetry as "Sassoon-ish." He wrote about meeting Owen and Sassoon during World War I in his memoir *Goodbye to All That*.

ANSWER: Robert **Graves** [or Robert von Ranke **Graves**]

<British Literature>

18. In an ancient Greek fable, one of these people bites off his mother's ear just before his execution to punish her for praising his actions since childhood. For 10 points each:

[10h] Name these people who were condemned on most of the Bath curse tablets offered to Sulis Minerva. The word "ferret" comes from Greek and Latin terms for these people, who recruit Haemus the Thracian in *The Golden Ass*.

ANSWER: **thieves** [or word forms like **thief** or **theft**; accept **robbers** or **stealing** or **larceny** or other types of theft; or **fūrēs** or **phôres**; prompt on **bandits**, **criminals**, **outlaws**, **rogues**, **brigands**, **cheats**, **tramps**, **vagrants**, **tricksters**, **knaves**, or similar answers]

[10e] Thieves nicknamed stolen items for this patron god of theirs, who is praised for stealing Apollo's cattle as an infant in his Homeric hymn.

ANSWER: **Hermes** [or **Mercury**; accept *Homeric Hymn to **Hermes*** or "To **Hermes**"; accept **hermaion**]

[10m] This renowned thief inherits the guile of his father Hermes and passes it on in turn to his grandson Odysseus. Shakespeare took his name for a peddler character "littered under Mercury," who robs Bohemian shepherds in *The Winter's Tale*.

ANSWER: **Autolycus** [or **Autolykos**]

<Mythology>

19. The instruments of Aristide Cavallé-Coll ("KAH-vah-yay-CULL") inspired a French composer to begin writing works with this title. For 10 points each:

[10h] Name this title given to each of a set of ten solo works, the fifth of which closes with an F major toccata that is often performed as a wedding recessional. Charles-Valentin Alkan's earlier piece with this title includes a "funeral march on the death of a good man."

ANSWER: **symphony** [or **symphonie**; accept **symphonies**; accept *Symphony for Solo Piano* or *Symphonie pour piano seul*; accept, but DO NOT REVEAL, organ **symphony** or **symphonie** pour orgue]

[10e] Charles-Marie Widor ("VEE-dor") wrote his ten symphonies for this primary instrument of his. This instrument includes multiple keyboard manuals and pedals that are played with the feet.

ANSWER: pipe **organ**

[10m] This other organist was widely employed to demonstrate the orchestral effects of Cavallé-Coll's instruments with works like his *Grande Pièce Symphonique*. This composer wrote an A major violin sonata for his compatriot Eugène Ysaÿe ("oo-ZHEN ee-ZYE").

ANSWER: César **Franck** [or César-Auguste Jean-Guillaume Hubert **Franck**]

<Classical Music>

20. A passage lists several articles developed by Léon Faucher (“fo-SHAY”) to contrast one of these events with a regimented “timetable” used in Mettray less than a century later. For 10 points each:

[10m] Name these events that became rarer and more impersonal over time, according to a 1975 book that begins with an account of one of these events involving Robert-François Damiens.

ANSWER: public **executions** [or **capital punishment**; prompt on **discipline** or **punishment**; prompt on **torture**; prompt on **death** or **killing** or **murder**]

[10e] The shift from public executions toward the modern prison system is examined in this French philosopher’s book *Discipline and Punish*.

ANSWER: Michel **Foucault** [or Paul-Michel **Foucault**]

[10h] In *Discipline and Punish*, Foucault argues that the carceral shift coincided with a push to make people into “bodies” described by this specific adjective, which are those that “may be subjected, used, transformed and improved.”

ANSWER: **docile** bodies [or **docility**; accept **docile** bodies or corps **dociles**]

<Philosophy>

21. Paul Hindemith, a virtuoso of this instrument, wrote *Der Schwanendreher* (“dair SHVAH-nin-DRAY-ur”), a concerto for it based on medieval German folk songs. For 10 points each:

[10e] Name this instrument whose other major works include a concerto by William Walton dedicated “To Christabel.” This is the only standard orchestral string instrument that is notated in the alto clef.

ANSWER: **viola**

[10m] Other major contributions to the viola repertoire include *Suite Hébraïque* (“ay-brah-EEK”) by Ernest Bloch, a composer born in this country. Along with France, this country was home to the composer of *Pacific 231*, Arthur Honegger (“ar-TOOR oh-neh-GAIR”).

ANSWER: **Switzerland** [or **Swiss** Confederation, Confédération **Suisse**, Confoederatio **Helvetica**, der **Schweiz**, **Svizzera**, **Svizra**, or **Helvetia**]

[10h] Due to the success of this British-American female composer’s viola sonata in F major in a 1919 competition, rumors swirled that her name was actually a pseudonym for Ernest Bloch. This composer also wrote a proto-expressionist setting of *The Tyger*.

ANSWER: Rebecca **Clarke** [or Rebecca Helferich **Clarke**]

<Classical Music>