

ACF Regionals 2019

Packet by Penn State B, Berkeley A, and Harvard A

Tossups

1. This poet strikingly ended a poem about the color of the sky with the line “*I am haunted. Azure! Azure! Azure! Azure!*” This poet used the image of “pure nails raised to consecrate their onyx” to open the “Sonnet in X,” six of whose lines end with the sound -yx (“eeks”). A poem by this author describes “dried leaves” that “cling in vain against the marble of” the author it commemorates. This author of “The Tomb of Charles Baudelaire” wrote a poem which asserts that “all Thought emits” one of the title events and is typeset with varying font and spacing. He wrote a poem whose mythical speaker declares “these nymphs, I would perpetuate them.” For 10 points, name this Symbolist poet of “A Throw of the Dice Will Never Abolish Chance” who inspired a symphonic poem by Claude Debussy with his “The Afternoon of a Faun.”

ANSWER: Stéphane Mallarmé [or Étienne Mallarmé]

<European Literature>

2. Bassik et al. conducted a magnetic genome-wide CRISPR (“crisper”) that identified NHLRC2 as a key regulator of this process. This process occurs to red blood cells in HLH, which can be secondary to adult-onset Still’s disease. Activation of the CR3 receptor causes this process. This process is inhibited by clumping factor A and streptococcal M protein. C3b and other opsonins can trigger this process, which also occurs to the cell fragments that remain after apoptosis. Kupffer cells and microglia both use this process, which can be used to generate peptides that are displayed on MHC class II molecules by antigen-presenting cells. For 10 points, name this cell process conducted by macrophages, in which cells engulf foreign bodies.

ANSWER: phagocytosis [prompt on endocytosis]

<Biology>

3. An account of a classics professor declaring this work to be a “sealed book” is found in *No Man Knows My History*, a critical biography of this work’s author by Fawn Brodie. B. H. Roberts wrote a seminal textual analysis that discusses several similarities between the book *View of the Hebrews* and this work, which makes repeated use of the phrase “and it came to pass.” Interpreters of this work debate a “limited geography model” which proposes that most of its events took place in Mesoamerica. A section of this work that went missing under the watch of Martin Harris is known as the “lost 116 pages” and contains the entire story of Lehi (“LEE-hye”). According to its author, this work was translated from “Reformed Egyptian” with the assistance of the angel Moroni (“moh-ROH-nye”). For 10 points, name this sacred text that was allegedly transcribed from gold plates by Joseph Smith.

ANSWER: The Book of Mormon

<Religion>

4. A 1974 paper by Leslie Lamport pioneered a method of generating this behavior by slicing an n -dimensional polytope defined by the indices of n nested loops. PRAM and work-depth models are used to analyze the efficiency of algorithms with this behavior. This behavior is enabled by “point-to-point” communication and directives like “pragma omp (“O-M-P”) for” through the Message Passing Interface library OpenMP. This behavior can be “embarrassingly” easy to implement for highly granular programs. This behavior, which is classified as SIMD or MIMD in Flynn’s taxonomy, is provided by GPUs with NVIDIA’s CUDA (“KOO-duh”) platform. This behavior, described by the fork-join model, can be implemented using pipelining. For 10 points, name this programming approach, contrasted with serial programming, in which multiple processes run simultaneously.

ANSWER: parallel computing [or parallel programming or parallel execution or other synonyms; or parallelism or parallelization; accept multithreading or multiprocessing; accept distributed computing]

<Other Science (Computer Science)>

5. This team's career interceptions leader Thom Darden failed to prevent Ahmad Rashād from catching the Hail Mary that completed the "Miracle at the Met." A player who spent 21 years with this team as both an offensive tackle and a placekicker is its all-time scoring leader, and was nicknamed "The Toe." All four AAFC championship games were won by this team, which later lost consecutive AFC Championships to the Broncos: one after Jeremiah Castille stripped Earnest Byner at the goal line, and the other after John Elway led a 98-yard game-winning drive. Before the 1996 season, this team's then-owner Art Modell suddenly moved it to Baltimore. A 2018 rookie class that includes Denzel Ward, Nick Chubb, and Baker Mayfield has reversed the fortunes of, for 10 points, what recently-awful Ohio football team?

ANSWER: **Cleveland Browns** [accept either underlined portion] ("The Toe" is Lou Groza.)

<Trash>

6. Alcaeus of Messene ("meh-SEE-nee") wrote a series of epigrams about a ruler from this kingdom who supposedly stole 15,000 shields during his sacking of Thermum. During a siege of Rhodes, a future ruler of this kingdom built a 130-by-65-foot movable tower called the Helepolis, or "Taker of Cities." Titus Quinctius Flamininus "granted" Greece its freedom from the domination of this kingdom at the Isthmian Games. A ruler of this kingdom allied with Hannibal during the Second Punic War and was defeated by Rome at the Battle of Cynoscephalae. This kingdom was founded by the Argead ("ar-JEE-id") dynasty but was ruled by the Antigonid dynasty until its downfall. This kingdom's *sarissa*-armed phalanxes allowed it to unite Greece. For 10 points, name this kingdom that was ruled by Philip II and Alexander the Great.

ANSWER: **Macedonia**

<Ancient History>

7. This leader completely abandoned the economic policies he had campaigned on in the so-called "austerity turn." A 1994 book by Pierre Péan ("pay-AWN") revealed this man's involvement with the right-wing Cross of Fire party during World War II. This man's namesake doctrine refers to his refusal to extradite suspected members of the Red Brigades to Italy. He abolished capital punishment in his country by signing the Badinter ("bah-dan-TAIR") Act. This politician described a "southern wind" of democratization blowing across Africa in the 1990 La Baule ("la bowl") speech and controversially ordered the sinking of the *Rainbow Warrior*. After his party lost in the 1986 elections, he was forced to share power in an arrangement known as "cohabitation" with his eventual successor Jacques Chirac. For 10 points, name this socialist President of France who served from 1981 to 1995.

ANSWER: François **Mitterand** [or François Maurice Adrien Marie **Mitterand**]

<European History>

8. A composer from this country wrote a piece inspired by electroencephalograms of people listening to one of his earlier works. A composer from this country wrote a string quartet in which the musicians play entire sections independently from each other, a technique he called "controlled aleatoricism." A piece from this country scored for 48 string instruments, *Polymorphia*, uses its composer's system of graphic notation in which note length is determined by the physical length of horizontal lines. That non-Bach composer from this country included a B-A-C-H motif in several tone rows in his atonal *St. Luke's Passion*. A composer from this country included Silesian folk songs and a prayer written on the wall of a Gestapo jail in his *Symphony of Sorrowful Songs*. For 10 points, name this home country of Witold Lutosławski ("VEE-told loo-toh-SWAFF-skee"), Krzysztof Penderecki ("k'SHISH-toff pen-duh-RETS-kee"), and Henryk Górecki ("HEN-rick goo-RETS-kee").

ANSWER: **Poland** [or Republic of **Poland**; or Rzeczpospolita **Polska**]

<Music>

9. In one play, a character notes “intemperate agues (“AY-gyooz”) make physicians cruel” after claiming that this concept “ne’er will slack till it hath spent his fuel.” In a play named for this concept, a character whose name references this concept disguises himself as Pisto to trick Lussurioso, the Duke’s heir. Paraphrasing *The True Tragedy of Richard III*, a character claims that “the croaking raven doth bellow for” this concept. This concept titles a play that was once attributed to Cyril Tourneur (“turner”) but now attributed to Thomas Middleton. The ghost of Don Andrea and a personification of this concept make up the chorus of a play about the mad Hieronimo. Tamora disguises herself as the spirit of this concept to trick Titus Andronicus after he feigns madness. For 10 points, a form of Jacobean and Elizabethan tragedy named after what concept is exemplified by plays like *The Duchess of Malfi* and *Hamlet*?

ANSWER: **revenge** [accept *The Revenger’s Tragedy*; do not accept or prompt on similar answers, such as “vengeance”]

<British Literature>

10. A film named after this state includes a recurring image of a halibut flying through the air. A poor rancher in this state played by Van Heflin accepts the dangerous job of delivering the outlaw Ben Wade to the authorities in a western directed by Delmer Daves. This state’s “dream” titles Emir Kusturica’s only film set in America. A valley on this state’s *northern* border was used as the backdrop for *Stagecoach* and many other John Ford westerns. A furniture salesman who shares his name with this state is the father of quintuplets, one of whom is kidnapped by Hi and Ed in a Coen brothers comedy starring Holly Hunter and Nicolas Cage. In a film that ends in this state, Susan Sarandon’s character shoots a man who is attempting to rape her Geena Davis-portrayed friend. For 10 points, *Thelma & Louise* ends with the title characters driving off the edge of the Grand Canyon in what state?

ANSWER: **Arizona** [accept Arizona Territory] (The Delmer Daves western is *3:10 to Yuma*.)

<Other Arts>

11. Three World War II veterans from this country were killed outside Christianborg Castle while agitating for their unpaid war benefits. The findings of the Coussey Committee were rejected by a leader of this country who used slogans like “Self-government now!” and “Forward ever, backwards never.” Charles Arden-Clarke was the last colonial governor of this country, which was the first sub-Saharan colony to gain independence. This country’s first president, who was given the honorary title of *Osagyefo* (“AW-sah-jay-foh”), or “redeemer,” said “Seek ye first the political kingdom and all things shall be added unto you.” This country created Lake Volta by building the Akosombo Dam. Kwame Nkrumah (“KWAH-may in-KROO-mah”) was the first Prime Minister of, for 10 points, what African country formerly known as the Gold Coast whose capital is Accra?

ANSWER: **Ghana** [or Republic of Ghana]

<World History>

12. In one story, the skin of one of these deities turns black after an encounter with a frenzied Shiva, who had just been shot by one of Kama’s magic arrows. A female one of these deities is honored along with her brother in the festival of Bhai-Dooj. That god, a daughter of the sun god Surya, is a twin of Yama. One of these deities was called to earth after the sixty thousand sons of Sagar were killed by the sage Kapila. After drowning the first seven of her children with Shantanu, that deity gave birth to a personification of Dyaus named Bhishma. One of these gods was held within the hair of Shiva after threatening to destroy the world and was created from the sweat of Vishnu’s feet. One of these gods is often depicted riding her mount Makara, who is half mammal and half fish. For 10 points, name these gods, who embody features like the Yamuna and the Ganges.

ANSWER: **river** gods [or **water** gods; accept equivalents for “river” or “water”; prompt on Hindu gods]

<Mythology>

13. The day before his death, this author started writing an essay reminiscing about the time he met a woman in a snowstorm who turned out to be his literary idol, Willa Cather. One of this author’s books grew out of a trip he took

to the Soviet Union with an opera company that was putting on a touring production of *Porgy and Bess*. This author of *The Muses Are Heard* honored the publisher Katharine Graham with a masquerade party held at the Plaza Hotel called the Black and White Ball. This partner of Jack Dunphy compiled 8,000 pages of research for a book that began as a series of *New Yorker* articles, for which he traveled to Holcomb, Kansas, with his childhood friend Harper Lee. That “nonfiction novel” by this author is about the brutal murder of the Clutter family. For 10 points, name this author of *In Cold Blood* and *Breakfast at Tiffany’s*.

ANSWER: Truman **Capote** [or Truman Garcia **Capote**; or Truman Streckfus **Persons**]
<American Literature>

14. This artist depicted a long-haired man in a corset stabbing a nude figure in a reimagining of Delacroix’s *The Death of Sardanapalus* titled *The Pool Party of Sardanapalus*. A number of white swans whose heads are replaced with human heads sit at the center of one of the many works by this artist inspired by the form of the cyclorama. A young child strangles a duck at the edge of a river in this artist’s first major mural. This artist’s installation piece at the Domino factory, *A Subtlety*, featured an enormous, sugar-coated sculpture of a stereotypical “mammy” in the form of a sphinx. This artist’s mural *The End of Uncle Tom and the Grand Allegorical Tableau of Eva in Heaven* employs her trademark style of cut-paper figures against a white background. For 10 points, name this contemporary American artist whose works often depict black silhouettes of masters and slaves.

ANSWER: Kara **Walker** [or Kara Elizabeth **Walker**]
<Painting>

15. A shell balance can be used to measure velocity while this condition holds. Simple solutions to Prandtl’s boundary layer equations developed by Falkner, Skan, and Blasius require this condition. This condition gives rise to a parabolic velocity profile, allowing reaction rate to be analyzed in the cross sections of a tubular reactor where this condition holds. In addition to requiring incompressibility, the Hagen–Poiseuille (“pwah-ZUH-ee”) equations require this condition to be met. This condition is named for a set of imaginary layers, which are typically annular and move past each other independently, with the fastest layer at the center. This condition applies to fluids that have a low Reynolds number. For 10 points, name this type of smooth flow, which is contrasted with turbulent flow.

ANSWER: **laminar** flow [accept **laminar** regime, or **laminar** boundary layer flow, or **laminar** flow reactor; prompt on continuous **flow**, or anything including fluid **flowing** through a (circular) pipe]
<Physics>

16. Over 4 percent of the population of Alaska belongs to this ethnic group, including many people who are descended from migrant workers in the salmon canning industry. The Rescission Act of 1946 stripped veterans of this ethnicity of promised benefits, leading to them being called “second-class veterans.” Members of this ethnic group [emphasize] *initiated* the Delano grape strike that Cesar Chavez later joined. Members of this ethnic group were the first Asians to set foot in the New World, having reached California in 1587 aboard a galleon destined for Acapulco. Members of this ethnic group were reclassified from being US nationals to foreign aliens with the Tydings–McDuffie Act. For 10 points, name this ethnic group whose members are called Pinoys and who often settled in Little Manilas.

ANSWER: **Filipino**-Americans [or **Fil-Ams**; accept **Pinoys** until read]
<American History>

17. Anthony Giddens argues that performing this practice in the afternoon declined due to an acknowledgment that it was distinct from the “progressive deprivation of rights.” A recent book by David Garland analyzes the persistence of this practice after a series of Supreme Court cases in the 1970s that assessed “weighing” and “non-weighing” approaches to it. A book opens with a description of how this practice was applied to Robert-François Damiens (“dahm-YEN”), and argues that disorder of its public form led to a push to privatize the use of “sovereign power.” *Gregg v. Georgia* outlined the procedures that state courts must follow in order for this

practice not to violate the Eighth Amendment, ending a moratorium on it established by *Furman v. Georgia*. For 10 points, name this punishment normally carried out in the United States through lethal injection.

ANSWER: **capital punishment** [or the **death penalty**; or **execution**; accept more specific answers, such as **hanging**, **being put to death**, public **execution**, etc.] (The book is Foucault's *Discipline and Punish*.)

<Social Science>

18. A woman kills a corrupt mayor near this geographical feature in a novel entitled *God Dies by* [this feature]. In a novel named for this feature, a nail polish bottle contains the red ink that Linnet Doyle's husband Simon uses to fake an injury. An Anthony Sattin book named after this geographical feature is about how both Florence Nightingale and Gustave Flaubert ("flow-BAIR") participated in the same trip along this river in 1849. Felicia Hemans's ("HEM-inz's") poem "Casabianca" commemorates a battle that took place near this river. The protagonist of the novel *Season of Migration to the North* drowns in this river, though it is left ambiguous whether the narrator does so as well. An Agatha Christie novel is titled for a death on this river. The novels *Palace Walk*, *Palace of Desire*, and *Sugar Street* take place near this river. For 10 points, name this river, a city on which is the setting for Naguib Mahfouz's *Cairo Trilogy*.

ANSWER: **Nile** River

<Other Literature>

19. *Note to moderator: Read the answerline carefully.* This functional group serves as the linkage between the linear form of fructose-1,6-bisphosphate and the active site of aldolase. Two of these functional groups are formed by the sigmatropic rearrangement step in the Fischer indole synthesis. One of these functional groups is protonated and attacked by a cyanide group in the Strecker synthesis. This functional group is selectively reduced by sodium cyanoborohydride. Oximes ("OX-eems") and hydrazones are hydroxyl and amine derivatives of this functional group, respectively. When these functional groups are alkyl or aryl substituted, they are called Schiff bases. They can be formed by a reaction between an aldehyde and primary amine. For 10 points, name these functional groups that contain a carbon–nitrogen double bond.

ANSWER: **imines** ("IM-eens" or "EYE-meens") [accept **Schiff bases** until read; accept **aldimines** and **ketimines**; do not accept or prompt on "amines" – ask them to spell it if necessary]

<Chemistry>

20. In a work titled for this idea's "conceptual practice," Reinhart Koselleck argues that a "concrete" form of it is produced by the interplay of "spaces of experience" and "horizons of expectation." The title essay of a 2002 book by Ian Hacking applies this concept to the field of ontology. This concept involves the use of "emplotment" via romance, satire, comedy, or tragedy, according to a book by Hayden White titled for its "meta" form. The "scissors-and-paste" form of this concept is criticized in a book that instead encourages approaching it through "re-enactment." That work by R. G. Collingwood is titled for *The Idea of* [this concept]. The universalizing of Western liberal democracy, according to the title of a book by Francis Fukuyama, represents the "end of" this concept. For 10 points, name this discipline practiced by Eric Hobsbawm and Herodotus.

ANSWER: **history** [accept *The Conceptual Practice of* **History** or **Historical** *Ontology* or *Meta***history** or *The Idea of* **History** or *The End of* **History** and *the Last Man*]

<Philosophy>

21. Ricochet firing, or shooting artillery at a low angle so that the shells bounce, was first used in this war at the Siege of Philippsburg. The "Camaret Bay" letter detailing British plans to land at Brest during this war cast doubts on one commander's loyalty following a disastrous defeat. An invasion of Britain was foiled at the naval battles of Barfleur and La Hogue during this war. The Dutch military engineer Menno van Coehoorn ("fon KOO-horn") defended the Belgian town of Namur ("nah-MOOR") twice during this war, which was also the last major war that the French military engineer Vauban ("voh-BAWN") took part in. King William's War was the North American

theater of this conflict, which was ended by the Treaty of Ryswick (“RICE-wick”). The namesake alliance opposed Louis XIV’s France in, for 10 points, what 1688 to 1697 European war?

ANSWER: **Nine Years’** War [or the War of the **League of Augsburg**; or the War of the **Grand Alliance**;
anti-prompt on **King William’s** War until read]

<European History>

Bonuses

1. Henry Swanzy organized a BBC radio program titled for the “Voices” of this region that helped popularize authors like Edgar Mittelholzer and Edward Kamau Brathwaite. For 10 points each:

[10] Name this region where authors like Michelle Cliff and Claude McKay were born. Many consider Thomas MacDermot’s *Becka’s Buckra Baby* to be the beginning of modern writing in this region.

ANSWER: the Caribbean [or the West Indies; anti-prompt on Jamaica or Barbados or Guyana]

[10] Another author popularized by the *Caribbean Voices* program was this Trinidadian novelist of *The Lonely Londoners*, which pioneered the use of creolized English in narration.

ANSWER: Sam Selvon [or Samuel Selvon]

[10] The Caribbean author Jean Rhys (“jeen reece”) wrote the postcolonial novel *Wide Sargasso Sea*, which retells this Charlotte Brontë novel.

ANSWER: Jane Eyre

<World Literature>

2. This country’s leader was a personal friend of Ian Smith and gave the white Rhodesian government aid during Rhodesia’s Bush War. For 10 points each:

[10] Name this country that fought to keep its overseas colonies in a war that lasted from 1961 to 1975. It also owned colonies like Daman (“duh-MON”) and Diu (“DEE-oo”).

ANSWER: Portugal [or Portuguese Republic; or República Portuguesa]

[10] This Portuguese leader responded to the loss of his country’s former territories of Goa, Daman, and Diu by dissolving diplomatic ties with India. This dictator presided over the Estado Novo (“ish-TAH-doo NOH-voo”) starting in 1933.

ANSWER: António de Oliveira Salazar (“suh-luh-ZARR”)

[10] Before entering politics, Salazar was a distinguished member of this profession. Indonesian members of this profession who advised Suharto’s “New Order” regime were known as the “Berkeley Mafia.”

ANSWER: economists [or economics]

<European History>

3. Beethoven originally wrote the *Grosse Fuge* (“GROSS-uh FOO-guh”) as the finale of his Opus 130, a piece for this ensemble, until he was convinced by his publisher to replace it. For 10 points each:

[10] Name this kind of ensemble. Beethoven wrote five “late” works for this instrumentation, which consists of two violins, a viola, and a cello.

ANSWER: string quartet [prompt on quartet or SQ]

[10] Beethoven extensively used this musical ornament in the *Grosse Fuge*. It consists of a continuous oscillation between two neighboring notes and is often designated by two letters and a wavy horizontal line.

ANSWER: trill [or shake]

[10] *Description acceptable*. Immediately before the first fugue of the *Grosse Fuge*, the first violin’s presentation of the subject is notated in this way, which has raised questions as to how it and similar passages should be played.

ANSWER: two tied eighth notes of the same pitch, instead of just quarter notes [accept slurred in place of “tied”]

<Music>

4. A man particularly adept at this skill had plenty of time to practice while sitting out most of the Trojan War recovering from a nasty wound on Lemnos. For 10 points each:

[10] Name this skill that Philoctetes was a master of.

ANSWER: archery [accept anything related to shooting a bow and arrow]

[10] The arrows that Philoctetes received from Heracles were particularly potent because they had this quality, acquired during the fight with the Hydra.

ANSWER: they were **poisoned** with the Hydra's blood

[10] Heracles himself got to flex his archery skills when he defeated this king of Oechalia in an archery contest. As a prize, he then took this man's daughter Iole ("EYE-uh-lee") as a bride.

ANSWER: **Eurytus**

<Mythology>

5. Based on observations of 26 different galaxies, Gebhardt et al. found that the exponential parameter in this relation is equal to approximately 3.75. For 10 points each:

[10] Name this relation between the velocity dispersion of a galactic bulge to the mass of its central supermassive black hole.

ANSWER: **M-sigma** relation

[10] Gebhardt et al. normalized the velocity dispersion using an effective radius, defined as the radius containing half the galaxy's total value of this quantity. Before the M-sigma relation, this variable was related to central black hole mass, and for some galaxies, the Faber-Jackson relation links this variable to sigma.

ANSWER: **luminosity** [or **brightness**; or **light**; accept **half-light radius**; accept absolute **magnitude**]

[10] The Faber-Jackson relation predicts a power law dependence for luminosity on velocity dispersion for these roughly spherical galaxies, which are contrasted with spiral galaxies.

ANSWER: **elliptical** galaxies

<Other Science (Astronomy)>

6. On September 7, 1822, this ruler's wife Maria Leopoldina urged him to defy the demands of the *Cortes*. For 10 points each:

[10] Name this ruler who shouted "Independence or death!" in the Cry of Ipiranga.

ANSWER: **Pedro I** [prompt on **Pedro**]

[10] Pedro was the first emperor of this South American country, which won its independence from Portugal.

ANSWER: **Brazil** [or Federative Republic of **Brazil**; or República Federativa do **Brasil**]

[10] Two years after independence, Pedro I suppressed an uprising of wealthy landowners in Northeastern Brazil, who proclaimed a confederation named after this geographical feature.

ANSWER: the **Equator** [or **equador**]

<World History>

7. In this novel, the author Mark Asprey prints translations of his own books into multiple languages to make them look more popular than they actually are. For 10 points each:

[10] Name this novel that opens with Samson Young narrating the story of a murder that hasn't happened yet. The victim of that murder is named Nicola Six.

ANSWER: ***London Fields***

[10] The author of *London Fields*, Martin Amis, used this gimmick in his novel about the Auschwitz doctor Odilo Unverdorben. The play *Betrayal* traces Emma and Jerry's affair using this gimmick.

ANSWER: **reverse chronology** [or telling the story **backwards** in **time**]

[10] *Betrayal* was written by this British playwright of "comedies of menace" like *The Dumb Waiter* and *The Birthday Party*.

ANSWER: Harold **Pinter**

<British Literature>

8. A series of papers by Roger Myerson formulated this principle for Bayesian games, assuming the presence of a free and trustworthy mediator. For 10 points each:

[10] Name this principle in mechanism design theory which states that any mechanism can be transformed into an equivalent incentive-compatible mechanism in which agents make direct claims about their preferences.

ANSWER: **revelation** principle

[10] William Vickrey's design for one of these types of processes, in which the highest bidder wins but pays the price of the second-highest bid, is an example of an incentive-compatible direct-revelation mechanism.

ANSWER: **auctions** [accept Vickrey **auction**]

[10] The revelation principle allows one to assume that players are truthful when calculating the Bayesian form of these solutions to non-cooperative games.

ANSWER: Bayesian **Nash equilibrium** [or **Nash equilibria**; prompt on **equilibrium** or **equilibria**]

<Social Science>

9. This scientist wrote about the efficiency of steam engines in *Reflections on the Motive Power of Fire*. For 10 points each:

[10] Name this Frenchman who described a maximally efficient thermodynamic heat engine, where efficiency depends only on the temperatures of the hot and cold reservoirs.

ANSWER: Sadi **Carnot** [or Nicolas Léonard Sadi **Carnot**]

[10] Carnot's theorem is a consequence of the second law of thermodynamics, which in this statement says that heat cannot flow from a cold object to a hotter one. The scientist who posited this statement of the second law also developed an inequality about integrated heat in cyclic processes.

ANSWER: **Clausius**'s statement of the second law of thermodynamics

[10] The Carnot cycle corresponds to a rectangle on this type of diagram, with vertical lines from its isentropic processes. The area under the process curve on these diagrams is related to the heat transferred to the system.

ANSWER: **T-S** diagram [or **temperature** vs. specific **entropy** diagram; accept answers indicating **temperature** being plotted (on the y-axis) against **entropy** (on the x-axis)]

<Physics>

10. The Chinese *bāyīn* ("bah-yeen") system categorizes these objects as gold, stone, silk, bamboo, gourd, earth, hide, or wood, and the Natya Shastra classifies them as stretched, hollow, solid, or covered. For 10 points each:

[10] Name these things classified by the Hornbostel–Sachs system and studied by organologists. They are more commonly categorized as "strings," "woodwinds," "brass," and "percussion."

ANSWER: musical **instruments**

[10] The Hornbostel–Sachs system includes chordophones, aerophones, and these instruments that sound by vibrating themselves instead of relying on strings or membranes. They include xylophones, maracas, and gongs.

ANSWER: **idiophones** ("ID-ee-oh-phones")

[10] In this idiophone, hammers strike a set of steel bars atop wooden resonators. Bartók wrote *Music for Strings, Percussion*, and this small keyboard instrument, which sounds similar to a glockenspiel.

ANSWER: **celesta** ("suh-LESS-tuh") [or **celeste**]

<Other Arts>

11. In his book *The Reformation of the Image*, Joseph Koerner argues that this artwork's depiction of the Last Supper, which shows Jesus dining with a group of Germans, "negates sacred geography, revealing church as activity, not place." For 10 points each:

[10] Name this altarpiece, the bottom panel of which depicts the crucifixion occurring between a certain preacher and his audience.

ANSWER: **Wittenberg Altarpiece**

[10] The Wittenberg Altarpiece was painted by this court painter to the Elders of Saxony, who depicted Frederick the Wise engaging in a stag hunt in another work.

ANSWER: Lucas **Cranach the Elder** [prompt on **Cranach**]

[10] Cranach's ("CRAH-nuck's") religious paintings were heavily influenced by the theology of this good friend of his. Cranach provided a number of woodcut illustrations for this man's German translation of the Bible.

ANSWER: Martin **Luther**

<Painting>

12. The speaker of this poem sings Baptist hymns and “A Mighty Fortress Is Our God” to a seal that she sees every morning. For 10 points each:

[10] Name this Elizabeth Bishop poem that opens with an old man sitting and netting on a cold evening.

ANSWER: “**At the Fishhouses**”

[10] Bishop’s poem “The Fish” repeats this word three times to describe oil spreading around the engine of a boat. The speaker of William Wordsworth’s “My Heart Leaps Up” sees one of these things.

ANSWER: **rainbows**

[10] In a Bishop poem, this character quotes Wordsworth’s “I Wandered Lonely as a Cloud” but forgets exactly how it goes. This Daniel Defoe character is stranded on a desert island.

ANSWER: **Robinson Crusoe** [accept either underlined portion; accept “**Crusoe** in England”]

<American Literature>

13. Learned (“LEARN-id”) Hand used this term in *Commissioner v. Ickelheimer* to refer to rights that existed that were not explicitly written out. For 10 points each:

[10] Name this term for rights that are implicitly derived from enumerated rights in the Constitution. Most notably, William Douglas used this term to overturn a ban on contraception in his majority opinion in *Griswold v. Connecticut*.

ANSWER: **penumbras**

[10] This constitutional amendment affirms the existence of rights that are not explicitly enumerated in the Constitution. It states that “the enumeration in the Constitution, of certain rights, shall not be construed to deny or disparage others retained by the people.”

ANSWER: **Ninth** Amendment

[10] Suspects are read that they have the right to remain silent and to obtain an attorney during interrogations while in police custody following this 1966 Supreme Court case.

ANSWER: **Miranda** v. *Arizona*

<American History>

14. This philosopher’s best-known work describes how the title construct demarcates “civil” and “wild” spaces. For 10 points each:

[10] Name this Jamaican-American thinker who analyzed how white supremacy is integrated into liberal political systems in his book *The Racial Contract*.

ANSWER: Charles Wade **Mills** [do not accept “C. Wright Mills”]

[10] The title of Mills’s *The Racial Contract* is a play on this French philosopher’s book *The Social Contract*.

ANSWER: Jean-Jacques **Rousseau**

[10] To show how contracts are used to explain non-ideal societies, Mills analyzes a different Rousseau discourse titled for the “origin and basis of” this phenomenon “among men.”

ANSWER: **inequality** [or *l’inegalité*]

<Philosophy>

15. Flame ionization detectors are commonly used in the “gas” version of this technique. For 10 points each:

[10] Name this lab technique used to separate a mixture dissolved in a mobile phase by passing it through a stationary phase.

ANSWER: **chromatography** [accept gas **chromatography**]

[10] In chromatography, this is the time it takes a particular analyte in the mixture to pass through the system. The Kovats index normalizes these values.

ANSWER: **retention** time [do not accept or prompt on “retention factor” or “Rf” or “R-sub-f”]

[10] This problem in chromatography asks how to adequately separate analytes with widely varying retention times. Temperature programming and gradient programming can be used to alleviate this problem.

ANSWER: **general elution** problem

<Chemistry>

16. During a visit to this place, it is described as having a “lote-tree of extremity” that marks its entrance. For 10 points each:

[10] Name this destination of the *mi'raj*.

ANSWER: **heaven** [or **Jannah**]

[10] While in Jannah, this figure has Muhammad ask Allah to reduce the number of daily prayers to five. This brother of Aaron is the most-mentioned figure in the Quran.

ANSWER: **Moses** [or **Mûsâ** ibn ‘Imran]

[10] The Quran describes the first half of Muhammad’s night journey as being a trip to this nebulous place, which is identified by most Muslims as a still-extant building in Jerusalem.

ANSWER: the **furthest mosque** [or the **furthest masjid**]

<Religion>

17. This politician names the Ottawa headquarters of the Canadian Department of Global Affairs. For 10 points each:

[10] Name this former Prime Minister of Canada. After this politician suggested that American forces cease bombing North Vietnam in a Philadelphia speech, Lyndon B. Johnson grabbed him by his lapels and shouted “Don’t you come into my living room and piss on my rug.”

ANSWER: Lester Bowles **Pearson**

[10] Pearson won a Nobel Peace Prize for his role in mediating the resolution of this event. Anthony Eden resigned in the aftermath of this event, in which Gamal Abdel Nasser nationalized a certain Egyptian waterway.

ANSWER: **Suez** Crisis

[10] This foreign politician angered Pearson by declaring “Long live Free Quebec” in Montreal during Expo 67.

ANSWER: Charles **de Gaulle**

<World History>

18. An exhibition of this woman’s work partly titled “The Art of the In-Between” was put on at the Metropolitan Museum of Art in 2017. For 10 points each:

[10] Name this Japanese fashion designer who established the Tokyo- and Paris-based fashion label Comme des Garçons (“kum day gar-SAWN”).

ANSWER: Rei **Kawakubo**

[10] Kawakubo and her husband Adrian Joffe are the cofounders of Dover Street Market, a fashion retailer whose original location is in this English city. Its Savile (“SAV-ill”) Row is the home of many high-end bespoke tailors.

ANSWER: **London**

[10] Kawakubo became the first living artist to have an exhibition in the Met’s Costume Institute since this French couturier (“koo-turr-ee-AY”), who apprenticed under Christian Dior and designed a women’s dinner suit called *Le Smoking*.

ANSWER: Yves **Saint Laurent** [or Yves Henri Donat **Mathieu-Saint-Laurent**; prompt on **YSL**]

<Other Academic>

19. This man wrote the novels *Arc de Triomphe* and *Shadows in Paradise* while in exile in the US. For 10 points each:

[10] Name this German author whose anti-war novel *All Quiet on the Western Front* was banned by the Nazis in 1933.

ANSWER: Erich Maria **Remarque** [or Erich Paul **Remark**]

[10] This other German novel was also written in exile. In it, the composer Adrian Leverkühn intentionally contracts syphilis and subsequently enjoys 24 years of musical genius before descending into madness.

ANSWER: **Doktor Faustus** [do not accept or prompt on “*Faust*”]

[10] While in exile in Brazil, Stefan Zweig wrote a novella in which Dr. B splits into two personas while obsessively studying this activity in solitary confinement.

ANSWER: **chess** [accept **Chess** *Story*; prompt on the **royal game**]

<European Literature>

20. Several DH10B strains from Thermo Fisher can be used for this process, during which the time constant is used as a measure of efficiency. For 10 points each:

[10] Name this process in which current is used to induce bacteria to take up foreign DNA.

ANSWER: **electroporation**

[10] Electroporation is often used to get bacteria to take up these small circular segments of DNA discovered by Joshua Lederberg. Their “R” type carries genes for antibiotic resistance.

ANSWER: **plasmids**

[10] Electroporation often uses pUC19 (“P-U-C-nineteen”) as a control, which has a resistance gene for this antibiotic. This beta-lactam antibiotic is combined with sulbactam to give Unasyn (“YOO-nuh-sin”), and it is used to treat *Listeria meningitis*.

ANSWER: **ampicillin**

<Biology>

21. While on his deathbed, Goethe supposedly spoke this two-word phrase, possibly referencing the philosophy outlined in his *Theory of Colors*. For 10 points each:

[10] Name this two-word phrase that also repetitively titles a poem dedicated to “Heinrich Blucher and Hannah Arendt” that describes horrific executions in the Tower of London and “outside a German wood.”

ANSWER: **more light** [or “**More Light! More Light!**”]

[10] “More Light! More Light!” is by Anthony Hecht, who co-created a poetic form named for a “double” one of these poetic feet. This foot consists of a long syllable followed by two short syllables, as in the word “poetry.”

ANSWER: **dactyls** [accept double **dactyl**]

[10] With Helen H. Bacon, Anthony Hecht translated this Aeschylus play that consists largely of discussions between Eteocles and his subjects.

ANSWER: **Seven Against Thebes** [or **Hepta epi Thebas**]

<Other Literature>