

2021 ACF Regionals

Packet P (Finals 2)

Edited by Jaimie Carlson, Annabelle Yang, Hari Parameswaran, Hasna Karim, Jonathan Tran, Jordan Brownstein, Michael Kearney, Natan Holtzman, Nick Dai, Stephen Eltinge, and Tim Morrison, with contributions from Olivia Murton and Jon Suh

Tossups

1. A numerical method named for this type of set can be classified as “direct” or “indirect,” based on how it converts the problem to an integral equation. The trace operator on Sobolev spaces is used to define functions on one of these sets. Unlike a fundamental solution, a Green’s function has conditions on one of these sets. The Cauchy (“koh-SHEE”), Neumann, and Dirichlet (“DEER-ih-klet”) conditions all apply to this type of set. These sets are typically notated by prefixing with a curved lowercase *d*. In differential equations, initial value problems are contrasted with problems named for this type of set, which impose conditions on a function and its derivatives on one of these sets. For a ball, this set is the sphere. For 10 points, name this type of set that, for a region enclosed by a polygon, traces out its perimeter.

ANSWER: **boundary** [or **boundary** element method; or **boundary** value problem; or **boundary** conditions; prompt on outer **edge**]

<Other Science (Math)>

2. *Description acceptable.* It’s not a death, but a real-life one of these events inspired a short story that Kyung-sook Shin was found to have plagiarized in her story “Legend.” In a story set during and after a real one of these events, a lieutenant and his wife share a final night of intimacy before both committing suicide. One of these events is the subject of the last of four chapters of a biopic (“bio-pick”) directed by Paul Schrader. The short story “Patriotism” depicts the aftermath of a real one of these events, which partly inspired a later one involving four members of its architect’s Shield Society. The failure of one of these events in 1970 led to the suicide of the author of *The Sea of Fertility* tetralogy. For 10 points, Yukio Mishima committed *seppuku* after a failed instance of what type of event aimed at restoring imperial rule to Japan?

ANSWER: attempted **coup** d’état [or government **overthrow**; or government **takeover**; or equivalents; accept **mutiny** or **insurrection** or **revolt** or **uprising** or **rebellion**; prompt on answers mentioning **suicide** or **death** or **seppuku** by asking “what type of event preceded that?”; prompt on **February 26** Incident or **Ni Ni Roku** Incident by asking “what type of event was that?”] (The Paul Schrader biopic is *Mishima: A Life in Four Chapters*.)

<World/Other Literature>

3. Tim Lewens has criticized Edouard Machery’s “nomological notion” of this two-word concept. In a book titled for this two-word concept, a thinker remarked that “when I enter most intimately into what I call myself, I always stumble on some particular perception or other” in arguing that the self is a “non-entity.” This two-word concept is “evil” according to Xunzi’s (“SHWIN-tzuh’s”) slogan “Xing’e” (“shing-UH”), and “good” according to Mencius’s slogan “Xing shàn.” A treatise titled for this two-word concept, which “fell stillborn from the press,” argues that reason is the “slave of the passions”; parts of that book were reworked into *Enquiry Concerning Human Understanding*. For 10 points, David Hume wrote a “Treatise of” what two-word phrase for the fundamental characteristics of *homo sapiens*?

ANSWER: **human nature** [accept any phrases containing the words **nature** and **human**, like **man’s nature**; accept *Treatise of **Human Nature***; prompt on **nature**]

<Philosophy>

4. Rogerius, an Italian prelate who lived in this kingdom, wrote about this country’s destruction in his *Carmen Miserabile*. In the 13th century, this kingdom adopted a red-and-white striped coat-of-arms that first appeared on the seals of King Emeric. Andrew II, a ruler of this kingdom, signed the celebrated Golden Bull of 1222, granting

special rights to nobility in his domain. Coloman the Book-Lover ruled this kingdom and traced his lineage to a grand prince who moved his people into the Carpathian Basin to avoid raids from the Pechenegs. Pope Sylvester II crowned a ruler of this kingdom in 1000 AD, and that ruler would later be canonized in 1083. For 10 points, the Árpád dynasty ruled what kingdom in the Middle Ages under such kings as Stephen I?

ANSWER: Kingdom of **Hungary** [or *Magyarország*]

<European History>

5. A large-scale 2000 work in this genre fuses Afro-Cuban, Jewish, and Latin styles and opens with a “Vision” and “Dance of the Ensnared Fisherman”; that work is by Osvaldo Golijov (“GO-lee-hov”). A work in this genre begins in 12/8 (“twelve-eight”) time with violins and winds playing the notes “long E, F-sharp, G, long F-sharp.” Near the climax of one piece in this genre, a lamenting viola da gamba solo is followed by the lyrics “It is accomplished.” The role of an Evangelist is often included in pieces of this genre. In a piece in this genre with a libretto by Picander, recitatives sung by one character are accompanied by a “halo effect” of strings; that piece includes the aria “Erbarme dich” (“air-BAR-muh deesh”). For 10 points, events around Jesus’s crucifixion are the subject of what type of oratorio, such as one by Bach titled for St. Matthew?

ANSWER: **Passion** [prompt on oratorio; prompt on vocal music, choral music, sacred music, or equivalents; accept *St Mark Passion* or *La Pasión según San Marcos*; accept *St. John Passion* or *Johannes-Passion* or *Passio secundum Joannem*; accept *St Matthew Passion* or *Matthäus-Passion* or *Passio Domini nostri J.C. secundum Evangelistam Matthæum*]

<Classical Music>

6. A reaction that consumes this substance was catalyzed by titanium dioxide nanoparticles in a 1972 study by Honda and Fujishima; that reaction requires a semiconductor with a band gap of at least 1.23 electron-volts. This compound is the input to the three-step sulfur–iodine cycle, in which it appears in two of the steps, and the two-step iron oxide cycle, in which it is directly reduced. This compound is stable between a pair of dashed diagonal lines on a Pourbaix (“poor-BAY”) diagram. This compound’s electrolysis is known as “splitting.” This compound reacts with methane to produce syngas (“sin-gas”), and reacts with carbon monoxide in a namesake “gas shift reaction.” In fuel cells, hydrogen is oxidized to form this product. For 10 points, what compound is formed when two hydrogen atoms and one oxygen atom react?

ANSWER: **water** [or **H₂O**; accept water splitting or water–gas shift reaction]

<Chemistry>

7. This character claims that we can be “sterile with idleness, or manured with industry” in an extended metaphor comparing bodies to gardens. This man declares “Hell and night / must bring this monstrous birth to the world’s light” to conclude a soliloquy that Coleridge called “the motive-hunting of motiveless malignity.” This character urges a lovelorn man to “defeat thy favor with an usurped beard” and to “put money in thy purse.” In the first scene, this man declares “I will wear my heart upon my sleeve / for daws to peck at” before telling a father that a ram is “tapping [his] white ewe.” This man plants a strawberry-patterned handkerchief in Cassio’s belongings amid a plot to convince the protagonist of Desdemona’s infidelity. For 10 points, name this conniving antagonist of *Othello*.

ANSWER: **Iago**

<British Literature>

8. This figure was sent to stop Paul from preaching in the province of Bithynia. In his Epistle to the Ephesians, Paul stated to “not grieve” this figure, as by this figure they “were sealed for the day of redemption.” Paul also described this figure’s sword as the word of God. Nine virtues of this figure, including love, joy, and peace, are collectively referred to as the “fruit of” this figure. According to Jesus, “everyone who blasphemes against the Son of Man will be forgiven, but the one who blasphemes against [this figure] will not be forgiven.” During the baptism of Jesus, this figure descended as a dove. In the Acts of the Apostles, the apostles spoke in tongues after the descent of this figure during Pentecost. For 10 points, name this third person of the Trinity alongside the Father and the Son.

ANSWER: **Holy Spirit** [or **Holy Ghost**; or **Spiritus Sanctus**; accept *Pneuma*; accept the **Paraclete**; accept the **Spirit of God** or the **Spirit of Jesus**; accept **God the Holy Spirit**; prompt on spirit; prompt on God; do not accept or prompt on “God the Father” or “God the Son” or “Jesus” or “Christ”]
<Religion>

9. In this state, the speech “I Claim the Rights of a Man” was given by one of this state’s “Original 33,” the minister Henry McNeal Turner. In 1912, 98 percent of African-American residents were expelled from a county in this state. A police chief in this Southern state paid bail for protesters, leading Martin Luther King Jr. to quip “for the first time, we [were] kicked out of jail” during the Albany Movement. The “Talented Tenth” opposed a “Compromise” named for a city in this state after a speech urging African-Americans to “Cast down your bucket where you are.” The “I Have a Dream” speech declares “Let freedom ring from Stone Mountain” in this state. For 10 points, John Lewis served as a representative for what state, where Booker T. Washington gave the Atlanta Exposition Speech?

ANSWER: **Georgia**
<American History>

10. Lorraine O’Grady argues that some of these entities are “stabilized” by excising “chaotic” others in an essay that begins “[this entity] in the West is not a unitary sign.” These entities support the “logic” of their owners’ speech and can be reclaimed via writing, according to Hélène Cixous (“ay-LEN seek-SOO”). John Berger suggested that one common depiction of these entities is “seen by others but not recognized.” The “surface allure and concealed decay” of these entities in Cindy Sherman’s photography is the subject of a Laura Mulvey essay on their “Phantasmagoria.” Naomi Wolf compares the beauty myth, which demands that women work on these entities, to iron maiden torture devices. One slogan connects owning one of these entities to “my choice.” For 10 points, name these physical objects of the male gaze.

ANSWER: the female **body** [or equivalents like women’s **bodies**; accept specific answers like the white female **body** or the Black female **body**; accept **nudes**; accept “The Phantasmagoria of the Female **Body**”; accept “My **body**, my choice”; prompt on women or equivalents by asking “what thing belonging to women?”] (The first essay is “Olympia’s Maid: Reclaiming Black Female Subjectivity.”)
<Social Science>

11. According to the first Hohenberg–Kohn theorem, this quantity’s value at all points is uniquely determined by a system’s ground-state electron density. This quantity’s divergence at “ r equals 0” is removed in a similar “pseudo” quantity, which may be norm-conserving or ultrasoft. This quantity is assumed to change much more slowly than the wavefunction in the WKB approximation. The angular momentum barrier term in the radial Schrödinger equation is added to this quantity to obtain its “effective” form. This quantity, usually written as “ V of x ” in the Schrödinger equation, equals “one-half $k x$ -squared” for a harmonic oscillator. For 10 points, “ Mgh ” is the formula for the gravitational form of what type of positional energy, which can be added to kinetic energy to get total energy?

ANSWER: **potential** energy [accept external **potential** energy or pseudopotential or effective **potential** energy or elastic **potential** energy; prompt on energy; prompt on U or V before “ V of x ” is read]
<Physics>

12. When a man praises this character’s metaphor comparing life to a chess game, this character tells him that his conversation has been “the dung that has fallen on the... soil of my dry wit.” In one scene, this man is presented with many delicious meals, only for his physician to confiscate each one. This man retires from a job after ten days when he is woken up at night and tied between two shields during an attack. This man tries to get out of whipping himself 3,300 times to restore a woman’s beauty. This man complains about being tossed in a blanket at an inn, and briefly achieves his goal of becoming governor of an island. This proverb-quoting husband of Teresa rides Dapple and carries messages from his boss to Dulcinea del Toboso. For 10 points, name this squire of Don Quixote.

ANSWER: **Sancho Panza** [or Sancho **Panza**]
<European Literature>

13. In a satirical “memorial” to one of these things, Han Yu complained to the Xianzong Emperor over his adoration of one of these objects. White and black types of these objects were used to denote noble and common lineages by the Mongols, who also used them to train children in the game Shagai. *Seonggol* (“sung-gol”), or “sacred” types of these objects, denoted the highest rank in a caste system promulgated by Beopheung (“bup-hung”) of Silla. The “large seal” script evolved from writing on these objects, some of which were uncovered by Luo Zhenyu (“Iwoh jun-yoo”) in Anyang. Methods outlined in the *I Ching* (“ee ching”) gradually replaced a practice in which these objects were heated to produce cracks. For 10 points, a form of Shang dynasty divination used the “oracle” type of what objects?

ANSWER: **bones** [or oracle **bones**; accept “Memorial on the **Bone** of the Buddha” or “Jiàn yíng fū **gǔ** biǎo”; accept **Bone**-Rank system; accept ox **scapuli**, turtle **shells**, or specific animal bones; accept **relics** until “White” is read]
<World History>

14. This man and Michael J. Knowles co-host a podcast called “Verdict with” this man’s name, which shot up to number 1 on iTunes during the first Trump impeachment hearings. This politician authored a February 2020 letter to Jack Dorsey claiming that Twitter violated sanctions by allowing Ayatollah Khomeini to have an account. This politician was met with boos after declaring “vote your conscience” at the 2016 RNC. Democrats filed an ethics complaint against Josh Hawley and this senator for their role in the January 6th Capitol attack. This senator sparked a government shutdown by filibustering with *Green Eggs and Ham* in 2013. Beto O’Rourke unsuccessfully ran against this politician in 2018. For 10 points, name this Texas senator who ran against Donald Trump in the 2016 Republican primary.

ANSWER: Ted **Cruz** [or Rafael Edward **Cruz**]
<CE/Geo/Other/Pop Culture>

15. In one opera set in this type of location, the title character joyfully describes himself as “king of the birds.” In a Verdi opera, these places are the “Muslim pride” referenced in the aria “Esultate” (“eh-sool-TAH-tay”). This type of place is where two characters are given a love potion by Brangäne in Act 1 of another opera. Another opera set in this type of location includes the “Aria of the Falling Body” and the “Chorus of Exiled Palestinians.” In a Wagner opera named for one of these things, a character ascends to heaven after Daland’s daughter Senta helps break a curse that forced that character to live on one of these things. A stuttering young man in the Benjamin Britten opera *Billy Budd* clashes with a master-at-arms on, for 10 points, what type of vehicle exemplified by the *Flying Dutchman*?

ANSWER: **ships** [or **boats**; or **vessels**; accept **navy**, **fleet**, **flotilla**, or equivalents; accept specific types of ships such as a **warship**, sailing **ship**, or cruise **ship**; prompt on answers describing a **cabin**, **deck** or other shipboard location by asking “on what type of vehicle?”; prompt on answers describing the **sea**, **ocean**, or **water** by asking “on what type of vehicle?”] (The other operas are *Billy Budd*, *Otello*, *Tristan und Isolde*, and *The Death of Klinghoffer*.)
<Other Arts (Auditory)>

16. Gerhard Domagk’s (“DOH-mak’s”) discovery that the azo compound KL695 inhibited infection by this genus in mice led to the eventual introduction of prontosil. It’s not *Neisseria*, but one protein secreted by this genus binds to factor H, inhibiting C3 convertase. Antibodies against an antiphagocytic virulence factor of this genus cross-react with myosin and cause valvular damage in one autoimmune condition. Rebecca Lancefield identified that M protein. Infection by a beta-hemolytic member of this genus is the most common cause of necrotizing fasciitis (“fash-ee-itis”). Unlike a similar genus that grows in clusters, this catalase-negative genus grows in chains. Group A members of this genus cause white tonsillar exudate in one pharyngitis. For 10 points, name this bacterial genus that causes scarlet fever and a namesake sore throat.

ANSWER: **Streptococcus** [accept **streptococcus pyogenes**; accept Group A **streptococcus**, Group B **streptococcus**, or Group C **streptococcus**; accept **strep** throat]
<Biology>

17. The long-nailed goddess Mágū offers this quality in a popular artistic motif. In addition to exemplary women and officials, Liú Xiàng (“l’yoh sh’yong”) collected biographies of people with this quality, including Ānqī Shēng (“ahn-chee shung”). Xú Fú (“shoo foo”) may have settled in Japan upon identifying Mt. Fuji with Mt. Penglai after voyaging for a master obsessed with this quality. In the *Hàn Wǔdì Nèi Chuán*, the title emperor receives instruction in obtaining this quality from the Queen Mother of the West. Guests at a banquet concluding with peaches include figures with this quality like Lǚ Dongbin and “Iron Crutch Lǐ.” In Chinese stories, the Jade Rabbit pounds out a concoction that confers this quality. That magical elixir grants, for 10 points, what quality, which Qín Shǐhuáng sought by consuming mercury?

ANSWER: **immortality** [or **eternal life** or **eternal youth** or **not dying**; accept Eight **Immortals**; accept **sagehood** or **sainthood** or **transcendence**; accept **longevity** until “exemplary women” is read, but prompt afterwards; do not accept or prompt on “enlightenment”] (Liú Xiàng wrote the *Lièxiān Zhuàn*, or *Biographies of the Immortals*, which includes Qín Shǐhuáng visiting Ānqī Shēng in his quest for immortality; Xú Fú was sent in search of immortality by Qín Shǐhuáng.)

<Mythology>

18. One poem by this author describes a subway-riding animal who “nervously begins to scale the faces of the buildings” and drops a tear “pure enough to drink”; that poem was inspired by a newspaper misprint. Another poem by this author describes objects “rising toward a saint” that “fill with light / that comes and goes, like hearts.” In a poem by this author of “The Man-Moth,” the narrator sees an animal with “a five-haired beard of wisdom” and observes oil spilling “until everything / was rainbow, rainbow, rainbow!” This author described a baby rabbit and “a weak mailed fist / clenched ignorant against the sky” against a background of fire balloons. This author of “The Fish” and “The Armadillo” began a villanelle (“vil-uh-NEL”) “the art of losing isn’t hard to master.” For 10 points, name this poet of “One Art.”

ANSWER: Elizabeth **Bishop**

<American Literature>

19. This leader attacked the barrister Edward St John over the meaning of the word “evidence” during hearings regarding the sinking of the *Voyager*. As treasurer, this leader introduced a credit squeeze known as his namesake “jolt,” causing unemployment in his country to rise to 3 percent. A historic referendum called by this leader’s government repealed Section 127 of his country’s constitution, allowing “full-blood” Aborigines to be included in the census. This prime minister declared that he was “all the way with LBJ” in showing his country’s support for the Vietnam War. Conspiracy theorists suggest that this prime minister boarded a Chinese submarine while swimming at Cheviot (“CHEV-ee-ut”) Beach. For 10 points, name this Liberal Party prime minister of Australia who disappeared in 1967.

ANSWER: Harold **Holt**

<Other History>

20. In a reimagining of this painting, a same-sex couple cradles a baby and the artist’s red-sashed Two-Spirit alter ego holds a feather aloft. In addition to Kent Monkman’s *Resurgence of the People*, this painting is parodied in a work with a blue-capped man vomiting by the feet of a figure in a pointed white hat. In that derivative of this painting, the pose of a figure resting his foot and the end of a scythe against ice mimics the figure at the far left of this painting. A red-scarfed man reeling in a fish and a banjo-playing man in blackface appear in a Robert Colescott spoof of this work. Three old women stand in front of this work in Grant Wood’s *Daughters of the Revolution*. James Monroe accompanies the title Founding Father on an icy river in, for 10 points, what Emanuel Leutze painting?

ANSWER: **Washington Crossing the Delaware** [accept Delacroix’s *The Natchez* until “red-sashed” is read] (The clue directly after *Resurgence of the People* references Kara Walker’s *The Crossing*. The Colescott work is *George Washington Carver Crossing the Delaware*.)

<Painting/Sculpture>

Bonuses

1. Answer the following about cinematic uses of Bruegel's painting *Hunters in the Snow*, for 10 points each.

[10m] In a shot from this director's film *The Mirror*, a boy looks out at a frozen landscape that resembles *Hunters in the Snow*. Several close-ups of the painting also appear in this director's adaptation of *Solaris*.

ANSWER: Andrei **Tarkovsky**

[10e] A seemingly contemplative bird in *Hunters in the Snow* inspired the title of the film *A Pigeon Sat on a Branch Reflecting on Existence*, which is by Roy Andersson, a director from this home country of Ingmar Bergman.

ANSWER: **Sweden** [or **Sverige**]

[10h] The opening sequence of this 2011 film shows *Hunters in the Snow* catching on fire. That sequence also shows a woman trudging across a golf course while holding her son, and her sister floating downstream in a wedding dress.

ANSWER: **Melancholia** (by Lars von Trier)

<Other Arts (Visual)>

2. Following the Exposition Universelles of 1855, this good began to be classified into one of five "growths" or "cru." For 10 points each:

[10m] Name this good whose production following the French Revolution was revitalized by Jean-Antoine Chaptal. This industry was almost destroyed by the *Phylloxera* blight of the 19th century.

ANSWER: French **wine** industry

[10e] One of the major figures in Champagne's winemaking history is Dom Perignon, a monk from this order. This order, which constructed Cluny Abbey in Aquitaine, is named after a saint from Nursia.

ANSWER: **Benedictines** [or Order of Saint **Benedict**]

[10h] This family owns the wine-making Château Mouton, which was promoted to first *cru* in 1973 after being initially classified as second *cru*. They rivalled the Pereire ("pay-RAIR") Brothers in winemaking and other French industries.

ANSWER: **Rothschild** family [or **Rothschilds**]

<European History>

3. Margaret Murray hypothesized that this figure was the head of a witch coven. For 10 points each:

[10m] Name this folk hero who is identified with the King of one holiday. This figure defeats Guy of Gisbourne in a shooting contest and later dies due to a prioress's treachery.

ANSWER: **Robin Hood** [or **Robin Hode** or **Robin of Locksley**; prompt on partial answer] (Ronald Hutton discusses interpretations of Robin Hood in "Morris and Marian" from *The Stations of the Sun*.)

[10e] Robin Hood is often identified with the King in celebrations of this traditional British holiday associated with Beltane, which involves crowning a "Queen" and dancing around a namesake pole with ribbons.

ANSWER: **May Day** [or **Calan Mai** or **Calan Haf**]

[10h] Lady Raglan linked Robin Hood to this pagan figure, represented in leafy faces carved into cathedrals. Raglan also tied this figure to a man dressed as a bush on May Day, while others connect him to Tammuz and al-Khidr.

ANSWER: the **Green Man** [accept the **Green One** or the **Verdant One**] (The May Day custom referenced is the Jack-in-the-Green.)

<Mythology>

4. In 2021, Intel's Mobileye ("MO-bill-eye") division announced a breakthrough in building this technology "on a chip" for applications in self-driving cars. For 10 points each:

[10h] Name this technology used in devices built by Sick, Velodyne, and Quanergy. Those devices build a map of their surroundings by spinning in a circle, shooting a laser, and measuring the time that light takes to bounce back.

ANSWER: **LIDAR** [or **light detection and ranging**; or **laser detection and ranging**; accept **3D laser scanning**]

[10e] LIDAR mostly uses light with wavelengths of 905 or 1550 nanometers, placing it in this range of the electromagnetic spectrum with longer wavelengths than visible light.

ANSWER: **infrared** light [or **IR**]

[10m] Solid-state LIDARs tune the direction of light without a spinning base, often by optically phasing through a prism or through one of these devices. Bird feathers and the pitted surfaces of CDs can act as these optical devices.

ANSWER: diffraction **grating** [do not accept or prompt on “grater”]

<Physics>

5. In one story by this author, a man becomes young every spring and old again in the fall after rubbing sap on himself. For 10 points each:

[10h] Name this author of *The Wife of His Youth*. He included a story about Aunt Peggy in a collection of tales told by Uncle Julius.

ANSWER: Charles **Chesnutt** (The story is “The Goophered Grapevine.”)

[10m] Moses Dresser Philips founded this magazine, which published “The Goophered Grapevine” and other early Chesnutt stories. In 2014, it published Ta-Nehisi Coates’s “The Case for Reparations.”

ANSWER: *The **Atlantic Monthly***

[10e] Chesnutt wrote a biography of this man who penned a narrative of his escape from slavery. He delivered the oration “What to the Slave is the Fourth of July?”

ANSWER: Frederick **Douglass**

<American Literature>

6. The servant Halotus and the doctor Gaius Stertinius Xenophon, who used a specialized feather, allegedly helped a Gallic woman of this profession. For 10 points each:

[10h] Name this job of Locusta, who was sponsored by Nero to open a school that taught others this profession, such as the Syrian woman Martina.

ANSWER: **poisoners** [or word forms; accept **venefica** or **veneficae**; prompt on **assassins** or **murderers** or **killers** by asking “what weapon did they use?”; prompt on **witches** by asking “what profession did the school specifically prepare pupils for?”]

[10m] This woman originally hired Locusta to kill Claudius by poisoning mushrooms. This woman’s son, Nero, tried to poison her three times before hiring Anicetus to build a collapsible boat to sink her; that plot also failed.

ANSWER: Julia **Agrippina** the Younger [do not accept or prompt on “Agrippina the Elder”]

[10e] This man’s third wife, Livia, probably did not actually kill him by smearing poison on figs on a tree. Tacitus suspected Livia of poisoning Marcellus so that Tiberius would succeed this first Roman emperor.

ANSWER: Caesar **Augustus** [or **Octavian**; or Gaius **Octavius**; or Gaius Julius Caesar **Octavianus**; or Emperor Caesar Divi Filius **Augustus**; prompt on **Caesar**; do not accept or prompt on “Julius Caesar”]

<Other History>

7. Perhaps counterintuitively, topical patches with higher concentrations of this substance alleviate neuralgia symptoms more effectively than patches with lower concentrations do. For 10 points each:

[10m] Name this alkaloid molecule. More famously, it [emphasize] *causes* pain that can be alleviated by hydrophobic substances or the caseins (“KAY-see-ins”) in milk.

ANSWER: **capsaicin** (“cap-SAY-sin”) [or **8-methyl-N-vanillyl-6-nonenamide**]

[10e] Capsaicin and the allyl (“AL-ill”) isothiocyanate (“iso-thio-cyanate”) molecules in wasabi stimulate the TRPV1 receptor that is primarily activated by this stimulus, explaining why tasting chili or wasabi feels like the sensation of this stimulus.

ANSWER: **heat** [accept **high temperature** or **hotness** or similar]

[10h] Capsaicin’s analgesic (“ann-ul-JEEZ-ick”) function is a result of TRPV1 desensitization, which is partially modulated by this protein. TRPV1 has two binding sites for this protein that also has four EF-hands to detect influx of a specific ion.

ANSWER: **calmodulin**

<Biology>

8. An author with this first name wrote a play featuring a controversial lesbian kiss in the rain, whose 1923 Broadway premiere is depicted in Paula Vogel's play *Indecent*. For 10 points each:

[10h] Give this first name. In a story by another author with this first name, a poor woodcutter is rewarded with a cow for helping a pair of wealthy ladies who are lost in the woods.

ANSWER: **Sholem** [or **Shalom**; or **Solomon**; accept **Sholem** Asch or **Sholem** Aleichem] (The Sholem Asch play is *God of Vengeance*, and the Sholem Aleichem character is Tevye the Dairyman.)

[10e] I. L. Peretz convinced Sholem Asch to switch from writing in Hebrew to writing in this language, which is used by other Ashkenazi authors like Isaac Bashevis Singer.

ANSWER: **Yiddish**

[10m] At the climax of Singer's story "Gimpel the Fool," the title character finally succumbs to his anger by doing this action to some bread dough, after which the ghost of his wife appears to him to scold him for his sin.

ANSWER: he **urinates** in it [or word forms; or equivalents like **peeing**]

<European Literature>

9. A box created by this man includes glass ice cubes on a velvety background to represent the cold night when a highwayman forced Marie Taglioni to dance. For 10 points each:

[10h] Name this artist who collected random items into many shadow boxes, including "Medici Slot Machine" and "Soap Bubble Set."

ANSWER: Joseph **Cornell**

[10m] Cornell had a long friendship with this artist, who combined objects from his boxes with her own *Infinity Nets* after his death. This artist attributes a "warm feeling" to pumpkins, which she frequently covers with polka dots.

ANSWER: Yayoi **Kusama**

[10e] This artist claimed that Cornell had stolen his idea for *Rose Hobart*, a surrealistically re-cut version of the film *East of Borneo*. This artist of *The Persistence of Memory* collaborated with Luis Buñuel on *Un Chien Andalou*.

ANSWER: Salvador **Dalí** (Dalí overturned a projector at *Rose Hobart*'s premier and screamed "Joseph Cornell, you are a plagiarist of my unconscious mind!")

<Painting/Sculpture>

10. The 107th edition of this sporting event was postponed from June to August 2020 due to the COVID-19 pandemic. For 10 points each:

[10e] The Slovenian cyclist Primož Roglič ("PREE-mozh RO-glitch") was the 2020 runner-up in this 3-week-long bicycle race that has a ceremonial finish on the Champs-Élysées ("SHAWN-zay-lee-ZAY").

ANSWER: **Tour de France**

[10h] In 2020, this other Slovenian became the Tour's second-youngest winner ever. He clinched the yellow jersey by beating Roglič on the last competitive stage, a time trial in the Vosges ("vohzh") mountains.

ANSWER: Tadej **Pogačar** ("TA-day po-GA-char")

[10m] The 2019 Tour de France winner, Egan Bernal, is from this country, as is Nairo Quintana, a winner of the other two Grand Tour bike races. Soccer players Radamel Falcao and James ("HA-mez") Rodríguez are also from this country.

ANSWER: **Colombia** [or Republic of **Colombia**; or República de **Colombia**]

<CE/Geo/Other/Pop Culture>

11. This man claimed to have learned stage magic through "nine years' seclusion in the mines of Russia" while moonlighting as "the unparalleled necromancer Rhia Rhama Rhoos" ("ria rama roo"). For 10 points each:

[10h] Name this author who also indulged his theatrical side in many live readings of his works, including a successful American tour described in some "Notes for General Circulation."

ANSWER: Charles **Dickens**

[10m] Dickens used this novel to vent about the Americans he met on his tour by having the title character travel to the US and fall ill in the swamps of Eden. In this novel, Jonas performs card tricks for Merry and Cherry Pecksniff.

ANSWER: **Martin Chuzzlewit**

[10e] A modern stage magician takes his pseudonym from this Charles Dickens novel, in which the title character marries Dora but eventually ends up with the sensible Agnes Wickfield while foiling Uriah Heep.

ANSWER: **David Copperfield**

<British Literature>

12. When this material contains mostly equal parts of sand and silt, it is called loam, and it can be modeled as a liquid when its effective stress is suddenly reduced during earthquakes. For 10 points each:

[10e] Name this granular material composed of sediments weathered from bedrock as well as organic matter. The Atterberg limits define this material's behavior when saturated by water.

ANSWER: **soil** [or **soil** liquefaction; prompt on **sediment**]

[10m] This value, related to the angle of internal friction among grains, is the steepest angle at which a slope made of a granular material remains stable.

ANSWER: **angle of repose**

[10h] Along with Otto Mohr, this scientist names a theory that describes the failure conditions of granular materials like soil, basing their shear strength on normal stress, cohesion, and angle of internal friction.

ANSWER: Charles-Augustin de **Coulomb** [accept Mohr-**Coulomb** theory]

<Other Science (Earth Science)>

13. Devotees of this sect may be possessed by its namesake goddess to enter either the state of *bhar*, or the rarer and revered state of divine embodiment called *bhava*. For 10 points each:

[10m] Name this sect of Hinduism that recognizes a divine female godhead who represents creative and destructive primordial energy, as opposed to the static Brahman.

ANSWER: **Shaktism** [prompt on anything that includes **Shakti**, **Devi**, or **Mahadevi**]

[10h] This form of Shakti's energy coils like a snake at the bottom of the spinal cord. A namesake tantric form of yoga encourages this energy to rise to the seventh chakra, uniting male and female energy.

ANSWER: **Kundalini** [accept **kundalini**-yoga]

[10e] The *Devi-Bhagavata Purana* records Shakti saying "I am Female; I am male in [this form]." That male form refers to this destroyer god and Nataraj, who is the main focus of worship in another major Hindu sect.

ANSWER: **Shiva** [or **Siva**; or **Mahadeva**; or **Shankara**]

<Religion>

14. *Specific term required.* In 2017, Eduardo Tamanaha and Crystal McMichael used NASA satellite imagery to analyze this substance's effect on surrounding terrain. For 10 points each:

[10h] Name this charcoal-rich soil harnessed by pre-Columbian cultures such as the Cambeba. First identified by the explorer Francisco de Orellana, this soil was likely created through slash-and-char techniques.

ANSWER: **terra preta de indio**

[10e] Evidence of geoglyphs suggested that the Amazon and Peru may have been home to powerful pre-Columbian civilizations. This Peruvian culture created geoglyphs in the desert that resemble spiders and hummingbirds.

ANSWER: **Nazca** culture

[10m] While exploring the Amazon in the 1900s, Percy Fawcett claimed to have discovered a civilization with this name. David Grann adapted Fawcett's explorations into a 2009 book titled after this name.

ANSWER: Lost City of **Z**

<World History>

15. A poet born in this city was influenced by his sister's suicide to write progressive collections like *Childhood of a Breast*. For 10 points each:

[10h] Name this city whose "Jasmine Scent" titles a poem by that author. A poet who called this city "a rush of wind" in his poem "A Grave for New York" is best known for a collection about Mihyar, a man from this city.

ANSWER: **Damascus** [or **Dimashq**; accept "The Jasmine Scent of **Damascus**" or "A **Damascene** Ballad" or *Songs of Mihyar the **Damascene*** or "Mawwāl **Dimashqī**" or *Aghānī Mihyār al-**Dimashqī***] (Those poets are Nizar Qabbani and Adonis.)

[10e] Adonis writes in, and Nizar Qabbani wrote in, this national language of Syria.

ANSWER: **Arabic** [or *al-'arabiyyah*]

[10m] Adonis wrote *Songs of Mihyar the Damascene* while in exile in this country. An author from this modern-day country wrote the aphorism-laden poem "Sand and Foam" and a book of prose poems about a native of Orphalese ("OR-fuh-leez").

ANSWER: **Lebanon** [or the **Lebanese Republic**] (The unnamed poet is Kahlil Gibran.)

<World/Other Literature>

16. Social science research depends on being able to perform this task in order to effectively quantify abstract phenomena like "anger" or "happiness." For 10 points each:

[10h] Name this process of measuring conceptual phenomena that cannot be measured directly, by using a tangible proxy for empirical observation.

ANSWER: **operationalization** [or word forms]

[10e] A common operationalization of emotion uses physiological phenomena such as increases in heart rate, which results from the activity of this excitatory branch of the autonomic nervous system.

ANSWER: **sympathetic** nervous system

[10m] This physiological quantity is measured by polygraphs and is often used to operationalize stress. This measure reflects primarily sympathetic input to sweat glands.

ANSWER: **electrodermal activity** [or **skin conductance** response; or **galvanic skin response**; or **electrodermal response**; or **psychogalvanic reflex**; or **sympathetic skin response**; or **skin conductance level**; or **GSR**, **EDR**, **PGR**, **SCR**, **SSR**, or **SCL**; prompt on **conductance** by asking "what specific kind of conductance is measured?"]

<Social Science>

17. This composer added an "Andante Spianato" as an introduction to his "Grand Polonaise Brillante." For 10 points each:

[10e] Name this composer of the "Revolutionary Etude" and the "Raindrop Prelude."

ANSWER: Frédéric **Chopin** [or Fryderyk **Chopin**]

[10m] In addition to polonaises, Chopin wrote many piano pieces in 3/4 time inspired by this other Polish dance, which typically has an accent on the second or third beat of each measure.

ANSWER: **mazurkas**

[10h] At age 17, Chopin wrote a set of variations on this operatic aria. Franz Liszt included two variations on this aria in a difficult piano piece titled for some "Réminiscences" of the 1787 opera it appears in.

ANSWER: "**La ci darem la mano**" [or "**There we will give each other our hands**"]

<Classical Music>

18. In his *Twenty Verses* and *Thirty Verses*, Vasubandhu described how karmic seeds, or *bija*, ripen in the "storehouse" form of this concept. For 10 points each:

[10h] Name this concept. This concept was analogized to a "monkey" by the Yogacara school of Buddhist philosophy, which detailed the "eight" types of this concept and held that it is the "only" thing that exists.

ANSWER: **consciousness** [or **mind**; accept **thought**, **manifestation**, mental **representation**, or **awareness**; accept "**consciousness** only," "**thought** only," *citta-matra*, or *vijñapti-mātrātā*]

[10e] The Yogacara doctrine of “consciousness-only” is an example of this general philosophical position, which holds that human thought creates reality. George Berkeley (“BARK-lee”) championed a “subjective” form of this position.

ANSWER: **idealism**

[10m] While accepting Yogacara idealism, Dharmakīrti wrote a treatise offering an analogical “proof” of these things. The “problem” of these things can be addressed with solipsism, which denies that these things exist.

ANSWER: **other minds** [or **other mind** streams; accept problem of **other minds**; prompt on descriptive answers indicating other people’s mental states or consciousnesses]

<Philosophy>

19. As the second leader of this organization, Aileen Hernandez organized a Bryant Park Strike for Equality, but quit out of frustration with this group’s racial bias. For 10 points each:

[10m] Name this organization that advocated for the Equal Credit Opportunity Act and the Equal Rights Amendment.

ANSWER: **National Organization for Women** [or **NOW**]

[10e] This founder of the National Organization for Women described “the problem that has no name” in *The Feminine Mystique*.

ANSWER: Betty **Friedan**

[10h] This lawyer wrote NOW’s Statement of Purpose with Friedan. Her work on *White v. Crook*, which overturned the exclusion of African-Americans and women from juries, caused Ginsburg to cite this woman in *Reed v. Reed*.

ANSWER: Pauli **Murray**

<American History>

20. In an elementary reaction, the law of mass action implies that each of these quantities equals the corresponding stoichiometric (“STOY-kee-oh-metric”) coefficient. For 10 points each:

[10m] Name these quantities, each of which is the slope of a log-log plot of reaction rate versus reactant concentration. They appear as exponents in a rate law, and they are usually, but not always, integers.

ANSWER: reaction **orders** [or partial **orders** of reaction; accept **order** of reaction with respect to *A*]

[10e] In a first-order reaction, the reactant is consumed at a rate proportional to its concentration. The concentration thus has this dependence on time, in which it is reduced by the same percentage every minute.

ANSWER: **exponential** decay [or ***e* to the negative *kt***; prompt on **decay**; do not accept or prompt on “exponential growth”]

[10h] A “flooding” method named for this chemist finds orders by providing all but one reactant in excess. In a dissolution–re-deposition process named for this chemist, the third power of average particle radius grows linearly with time.

ANSWER: Wilhelm **Ostwald** [accept **Ostwald** flooding or **Ostwald** ripening]

<Chemistry>