

## CMST II

### Packet 8

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1. **A protein domain named for and found on several proteins in this structure has 8 conserved cysteines, includes a wide variety of subdomains, and is involved in polymerization of extracellular proteins. Talbot et al. pioneered the use of ionophore A23187 to artificially induce a process that degrades this structure. This structure is extracted from pigs in the most common wildlife immunocontraceptive. A small hole is poked in this structure in the assisted reproduction technique AZH. The (\*) “hatching”, or shedding, of this structure is required for implantation of a blastocyst to occur. This non-neuronal structure is surrounded by the corona radiata, the innermost layer of the cumulus oophorus (“oh-AH-for-us”). In a reaction that occurs after binding to ZP3, hyaluronase and acrosin break down this structure to enable zygote formation. For 10 points, name this site of the acrosome reaction, an extracellular structure on oocytes that sperm bind to that is named for its transparency.**

ANSWER: **zona pellucida** [or **pellucid zone**; or **egg coat**; accept **vitelline** membrane/envelope; prompt on **ZP**; prompt on **eggs**]

<AF - Science: Biology>

In classical Jewish law, the *tumtum* class of these individuals were subject to whichever of the laws for men or women imposed heavier obligations. For 10 points each:

[10e] Name these people, often called “eunuchs” in antiquity despite not being castrated or necessarily infertile. The nymph Salmacis physically merged with a young man into their mythical prototype.

ANSWER: **intersex** individuals [accept **androgyni** or word forms; accept **hermaphrodites** even though that term is considered insulting; accept descriptions of a person that **does not fit binary classifications of sex** or conditions causing that; prompt on **non-binary** and equivalents with “with respect to what?” and DO NOT accept or prompt on “non-binary gender,” because, as seen below, antique intersex individuals often had binary *gender* expressions]

[10m] Callon, a male-identifying intersex individual from this city, received one of the first-recorded gender affirmation surgeries. Sick mendicants would travel to this city to sleep in its temple to Ascepius.

ANSWER: **Epidaurus**

[10h] After another early gender-affirmation surgery, Diophantus of Abae joined this ruler’s personal guard. This inept Seleucid lost the eastern “Upper Satrapies” to the Parthians, and his loss at the Battle of the Oenaparas River triggered a civil war between Demetrius II Nicator and Diodotus Tryphon.

ANSWER: **Alexander I** [or **Alexander Balas**; or **Alexandros** in place of either “**Alexander**,” prompt on **Alexander/Alexandros** alone; accept answers giving **Theopator** or **Euergetes** with **Alexander** or **Alexandros**]

<JG - History: Ancient/Other>

2. **John Dewey’s *Art as Experience* inspired a designer to theorize that these things must be recognizable even in blurred pictures in his *Thoughts on Design*. An Israeli artist whom *The New Yorker* called a “prodigy” of these things, Sagi Haviv, wrote the book *Identify* on the theory of these things with his firm’s partners Chermayeff & Geismar. Also known for his work as an engineer designing streamline vehicles, Raymond Loewy was a pioneer in the design of these things. Along with his work on films, Saul (\*) Bass was an influential designer of these things, as was Paul Rand. Salvador Dali designed one of these things for Chupa Chups. Inspired by Robert Indiana’s *LOVE* sculptures, Milton Glaser designed an iconic one of these things for an American city featuring a heart. Along with corporate or product names and slogans, trademarks are used to legally protect these things. For 10 points, name these iconic representations, such as the Nike “swoosh” or McDonald’s “golden arches.”**

ANSWER: **logos** [or **logotypes**; reject “logograms;” prompt on (corporate/institutional/etc.) **brand(ing)** or **advertisements** by asking “which specific elements of branding/advertisement?”; prompt on “graphic **designs**” by asking “of what specific things?”]

<JM - Arts: Misc>

Literary scholars have debated over whether these two specific opening words were intended by James Joyce to be read as two adjectives separated by a comma, or if the first word is actually an adverb. For 10 points each:

[10h] Name these two words that open Joyce's novel *Ulysses* by describing a man who "came from the stairhead, bearing a bowl of lather on which a mirror and a razor lay crossed."

ANSWER: stately and plump [accept "Stately, plump Buck Mulligan came from the stairhead, bearing a bowl of lather on which a mirror and a razor lay crossed"]

[10e] By introducing the "stately, plump" Buck Mulligan first, Joyce ironically diminishes the "heroic status" of this secondary protagonist of *Ulysses* and primary protagonist of *A Portrait of the Artist as a Young Man*.

ANSWER: Stephen Dedalus [accept either underlined portion]

[10m] Throughout the first chapter of *Ulysses*, Mulligan refers to the sea that they reside by as a "great sweet mother," in reference to this author's poem "The Triumph of Time."

ANSWER: Algernon (Charles) Swinburne

<WJ - Literature: British>

3. **In 2019, the whistleblower Athol Williams revealed that a company founded in this city lied about dealings with Tom Moyane during an investigation of the South African Revenue Service. Despite achieving major revenue growth, primarily through corporate dividends, a private equity firm founded in this city was criticized for driving Kansas City's GST Steel Company into bankruptcy. A company founded in this city created a management strategy that uses "cash cows" to fund "stars" and "question marks," as rated by a (\*) "growth-share matrix" pioneered by Bruce Henderson. Rick Santorum criticized the former CEO of a private equity firm based in this city for business failures during the latter's leave of absence to run the Salt Lake City Olympics, which ironically had helped that former CEO get elected governor of the state this city is in and implement his namesake healthcare scheme. For 10 points, name this city, home to a namesake "Consulting Group" and the formerly Mitt Romney-led Bain Capital.**

ANSWER: Boston, Massachusetts [accept Boston Consulting Group]

<WJ - History: American>

Answer the following about solutions to the Schrödinger equation for different potentials, for 10 points each:

[10h] The integer Pöschl ("PUSH-ul")-Teller potentials, which are proportional to this function squared, have the unusual property that the reflection coefficient is 0 for all incident waves. 1-Soliton solutions to the KdV equation are connected to Pöschl-Teller potentials, since they are also proportional to the square of this function.

ANSWER: hyperbolic secant [or sech ("setch" or "seck"); do not accept or prompt on "secant" alone]

[10e] The oscillatory solutions to this easily-solved potential are a common example of quantized energy levels. In this system, the potential is zero between positive and negative "L over 2" and infinity everywhere else.

ANSWER: infinite square well [or infinite potential well; accept particle in a box; prompt on square well]

[10m] In two dimensions, solving the Schrödinger equation for this potential requires regularization, an example of a quantum anomaly. In 1D, this potential admits a single Laplacian bound state as a well, and its reflection coefficient is the same regardless of whether it is a barrier or a well.

ANSWER: Dirac delta function [or delta potential]

<DE - Science: Physics>

4. **This character is described as living an “experimental life” because she is “as willing to feel pain as to give pain, to feel pleasure as to give pleasure.” A novel titled for this character opens by describing a war veteran who imagines his fingers growing “in higgledy-piggledy fashion like Jack’s beanstalk” before being happily bound in a straitjacket. A “pool haunt” named Ajax abandons his relationship with this character, who is blamed for Mr. Finley’s death from choking on a (\*) chicken bone. Every January 3rd, a man named Shadrack marches through this character’s town ringing a cowbell and carrying a hangman’s rope, leading to the declaration of a “National Suicide Day.” This resident of Medallion, Ohio commits murder by accidentally throwing a boy named Chicken Little into a river, which is witnessed by her best friend Nel Wright. For 10 points, name this daughter of Hannah Peace who lives in “the Bottom,” the title character of the second novel by Toni Morrison.**  
ANSWER: **Sula** Peace [prompt on Peace before “Peace” is read]  
<WJ - Literature: American>

This writer called André Derain (“duh-RAW”) a “haughty priest” and his students “a few dozen innocent catechumens” who “have received their baptism.” For 10 points each:

[10h] Name this 20th-century French art critic best-known for coining a term for an artistic school in a scathing review of the 1905 Salon d’Automne (“sal-AW daw-TON”) exhibition.

ANSWER: Louis **Vauxcelles** (“voo-SELL-eh”) [or Louis **Meyer**]

[10e] Vauxcelles was perplexed by this other haughty fauvist priest’s *Blue Nude*, saying its “artistic effect... escapes” him “completely.” This artist depicted a circle of nude people holding hands in *The Dance*.

ANSWER: Henri (Émile Benoît) **Matisse**

[10m] A lesser-known Vauxcelles coinage christened this artist’s idiosyncratic work “tubism.” This artist focused on gradients and cylindrical shapes in works like the robotic *Card Players*, *Soldier with a Pipe*, and *The City*.

ANSWER: (Joseph) Fernand (Henri) **Léger** (“lay-JAY”)

<JM - Arts: Painting and Sculpture>

5. **George Murdock is best known for large-scale cross-cultural comparisons of data on *this concept*. Older theories of this concept are “reversed” into a “symbolic” account of the “mutuality of being” in a book on what it “*Is - And Is Not*” by Marshall Sahlins. An evolutionary analysis of this concept’s “*Nurture*” form was developed by Maximillian Holland in response to an earlier “*Critique of the Study of*” it by David Schneider. The “**extensionist**” theory that a (\*) common form of this concept is foundational to all others was promulgated by Bronisław Malinowski (“braw-NIS-woff mah-li-NOFF-ski”). “Fictive” instances of this phenomenon aren’t based on affinal or consanguineal ties. These systems arise from taboos in the “alliance” theory of a book on their “*Elementary Structures*” by Claude Levi-Strauss. For 10 points, give this anthropological concept designating social structures including family ties.**  
ANSWER: **kinship** [accept answers like **family structure** before “symbolic” is read; accept *The Elementary Structures of Kinship* or *Les structures élémentaires de la parenté*; accept *What Kinship Is - and Is Not*; accept *Social Bonding and Nurture Kinship: Compatibility between Cultural and Biological Approaches*]  
<JM - Thought: Soft Social Science>

A 1525 edict by a befuddled Inquisition noted that these mystics considered reading for pleasure, loving one's family members, and crossing the street on purpose to be sins. For 10 points each:

[10h] Name this broad group of ecstatic Spanish preachers in the 1500s and 1600s who advocated a direct union of the soul and will with God. Leaders of this movement, like Fernando Méndez, were early targets of the Inquisition.

ANSWER: **alumbrados** [accept **perfectibilists** and word forms; accept **Illuminati** or any form of the word **illuminate**, as that is a fairly literal translation; prompt on **antinomians**]

[10e] This king patronized the early *alumbrada* La Beata de Piedrahita, who would try to unify her soul with Christ's by T-posing for hours on end, especially after the death of this king's wife Isabella of Castile.

ANSWER: **Ferdinand II** [accept **Ferdinand of Aragon** or **Ferdinand the Catholic**; accept **Ferdinand III** (of Naples), **Ferdinand I** (of Navarre) or **Ferdinand V** (of Castile and León); prompt on **Ferdinand**]

[10m] The Inquisition briefly accused this writer of being an *alumbrado*. After taking a cannonball to the leg in the 1521 Battle of Pamplona, this man wrote a work inspired by Thomas à Kempis in a cave near Manresa.

ANSWER: St. **Ignatius** of Loyola (The work is his *Spiritual Exercises*.)

<JG - History: European>

6. A writer of this ethnicity instructs the listener to “prove you're human. / Prove you stand on two legs. / Run.” in her poem “Running Orders.” In a poem by a writer of this ethnicity, a female soldier shouts, “Is that you again? Didn't I kill you?” That writer described meeting a critic of this ethnicity in New York “at the edge of an electric chasm sky high” in his poem “Antithesis,” and wrote a poem whose speaker “learnt all the words and broke them up / To make a single word: Homeland.” “Hiroshima Day” in (\*) besieged Beirut is the setting for a writer of this ethnicity's prose poem *Memory for Forgetfulness*. The speaker of a poem by a writer of this ethnicity warns “beware...of my hunger, / And of my anger,” and repeats the cry “Write down: I am Arab!” For 10 points, identify the ethnicity of “Identity Card” author Mahmoud Darwish and literary critic Edward Said (“sah-EED”).

ANSWER: **Palestinian**-American [prompt on **Arab**-American before mention] (The unnamed Darwish poems are “In Jerusalem” and “I Come From There.” Lena Khalaf Tuffaha is the author of the poem in the lead-in.)

<CK - Literature: World>

This thinker argued that, since the nonexistence of nothing needn't be explained, the existence of the world is already justified if it is self-canceling and takes the form of an equation that adds up to zero. For 10 points each:

[10h] Name this 18th-19th century German philosopher and botanist who claimed that the world is characterized by “homology,” such that all parts are analogous repetitions of their wholes.

ANSWER: Lorenz **Oken** [or Lorenz **Oken**fuss]

[10e] Oken was a leading figure in a German intellectual movement named for this concept, a central theme of the romantic movement. In pre-modern times, what one now calls science was referred to as this kind of philosophy.

ANSWER: **nature** [accept (*romantische*) **Naturphilosophie** or **nature** philosophy; accept **natural** philosophy or philosophy of **nature**]

[10m] This German idealist philosopher popularized the term *Naturphilosophie* in a sequence of works on the concept. This thinker later wrote *Ages of the World* and the “Freedom Essay.”

ANSWER: Friedrich Wilhelm Joseph (von) **Schelling**

<JM - Thought: Philosophy>

7. A book by Erich Przywara (“SHIH-vahr-uh”) titled for one of this thinker’s ideas prompted Karl Barth (“BART”) to call that idea “the antichrist.” Herbert McCabe’s thought primarily drew from Marxism and this thinker’s school. It’s not Aristotle, but this thinker originated the dictum that “nothing is in the intellect that was not first in the senses,” the Peripatetic Axiom. This theologian proposed the idea that God’s similarity with created things can only be affirmed while also affirming God’s dissimilarity, a concept called the (\*) *Analogia Entis* or “Analogy of Being.” This thinker theorized that behaviors with harmful outcomes might be just in certain circumstances with his “Principle of Double Effect.” This theologian proposed the arguments “from contingency” and “from degree” as part of a collection of logical demonstrations of God’s existence. For 10 points, name this Dominican friar who presented his “Five Ways” in the *Summa Theologiae*.

ANSWER: (Saint) Thomas Aquinas [or Tommaso d’Aquino; or Doctor Angelicus, Doctor Communis, or Doctor Universalis]

<JM - Thought: Other Philosophy>

Matthias Klinghardt controversially argues that a mostly lost “gospel” attributed to this person is the common source of the synoptic gospels. For 10 points each:

[10m] Name this heretical thinker from Sinope (“SIN-oh-pee”) who assembled the first Christian canon, claimed that the Old Testament God was an evil being, and taught that Christ came to reveal the truth of a greater, purely benevolent God.

ANSWER: Marcion (“MAR-shun”) of Sinope

[10h] Marcion composed this other lost text, which contrasts Old Testament materials with the sayings of Jesus. Supporting the Marcionite priority theory, Markus Vinzent claimed Marcion published this text as a preface to his gospel after the other gospels plagiarized it.

ANSWER: Antithesis

[10e] Most scholars think the lost Gospel of Marcion was an edited form of this third canonical gospel, which is paired with Acts and contains the parables of the Prodigal Son and the Good Samaritan.

ANSWER: Gospel of Luke [or Gospel According to Luke; or *Evangélion katà Loukân*]

<JM - Religion>

8. A composition by this musician features the melody (read slowly) F sharp, G, short A (pause) G, F sharp, short E, and was adapted from a song called “Sponger Money.” This musician developed a method he called “strolling,” where he played his monophonic instrument with only bass and drums and no piano or guitar for harmony, on a 1957 album depicting him in a cowboy outfit in the desert on its cover. This musician’s resemblance to Dodgers pitcher Don Newcombe inspired a nickname that titled his album (\*) *Newk’s Time*.

This saxophonist played on Thelonious Monk’s *Brilliant Corners* and was joined by John Coltrane on the record *Tenor Madness*. This musician adapted a melody from a Bahamian folk song he learned as a child into a standard titled for a Caribbean island. “Strode Road” and “Oleo” were composed by—for 10 points—what jazz saxophonist who composed “St. Thomas” for his record *Saxophone Colossus*?

ANSWER: Sonny Rollins [or Walter Theodore Rollins; prompt on Newk before mention] (The cowboy outfit cover is for *Way Out West*.)

<JM - Arts: Jazz>

This technique is usually accompanied by multi-angle light scattering to measure size and molar mass after the analyte has been prepared. For 10 points each:

[10h] Name this analytical procedure in which a mobile-phase sample is subjected to some kind of force, leading to a separation of the constituents. Its widely used “asymmetric” form employs a single semi-permeable wall.

ANSWER: (asymmetric flow) **field-flow fractionation** [or **FFF**; accept **AF4**]

[10m] In FFF, this quantity can be expressed simply as  $L$  over  $V$ . In chromatography, the “problem of elution” refers to the tradeoff between this quantity and resolution.

ANSWER: **retention time** [or **t-r** or **t sub r**; prompt on time or t; reject “retention factor” or “r (sub) f”]

[10e] An alternative to asymmetric flow FFF uses one of these devices to provide the separation force. These devices separate fluids by rapidly spinning them.

ANSWER: **centrifuges**

<JM - Science: Chemistry>

9. **Given a group with this property and a subgroup, a relationship between the restriction and induction functors is given by Frobenius reciprocity. Any representation of a group with this property can be written as a direct sum of irreducible representations by Maschke’s theorem. Given a group with this property, all of its maximal p-subgroups are conjugate by one of a trio of related theorems. By a fundamental theorem, any abelian group with this property is the direct (\*) sum of cyclic p-groups. Major results in the study of groups with this property include the Sylow (“SEE-lov”) theorems and Lagrange’s theorem. Any cyclic group with this property is isomorphic to  $Z \text{ mod } nZ$  for some  $n$ . Simple groups with this property fall into four categories via a mammoth classification theorem of the late 20th century. For an element  $x$  of a group with this property, there must be some  $n$  for which  $x$ -to-the- $n$  is the identity, by the pigeonhole principle. For 10 points, name this property of a group whose order, or cardinality, is an integer.**

ANSWER: **finite** [or equivalents like **non-infinite**; accept **finite** order or **finite** cardinality; prompt on **finitely-generated**]

<TM - Science: Mathematics>

A monologue in which this character is told “we must live out our lives” until “we shall hear the angels” is delivered in Korean Sign Language at the end of the film *Drive My Car*. For 10 points each:

[10m] Name this character who steals a vial of morphine from a doctor while planning to commit suicide. His anguish stems from the fact that he has been tending a professor’s estate for 25 years by the start of the play.

ANSWER: Uncle **Vanya** [or Dyádyá **Ványa**; or **Ivan** Petrovich Voynitsky; or Ivan Petrovich **Voynitsky**]

[10e] In Act III, Vanya sinks into a chair after failing to use one of these objects on the professor Serebryakov. A principle attributed to Chekhov claims that one of these objects shown in Act I must be used by the end of the play.

ANSWER: **gun** [accept more specific answers such as **pistol** or **rifle**; accept “Chekhov’s **Gun**”]

[10h] Before trying to shoot Serebryakov, Vanya exclaims in despair that, if he had lived a normal life, he could have been the next of either of these two real-life people. Name both.

ANSWER: Arthur **Schopenhauer** AND Fyodor **Dostoevsky** [accept in either order]

<TM - Literature: European>

10. **These geographical features are the most common sites where epishelf lakes are formed. A rare example of this type of landform found on a body of fresh water is Huron Bay on the Lake Superior coast of Michigan's Upper Peninsula. An unusually isolated instance of this kind of feature lends its name to a national park where the Saguenay River joins the Saint Lawrence in Quebec. At one of these features, a recurrent 10-meter vortex is formed by perhaps the strongest (\*) tidal current on earth, called Saltstraumen. The western region of the South Island of New Zealand is named for these features, including a celebrated one called Piopiotahi or Milford Sound. Unlike similar features formed by rivers called "rias," these landforms emerge when glacial erosion proceeds to the coast below sea level. For 10 points, name these narrow, steep-sided inlets ubiquitous on the Norwegian coast.**

ANSWER: **fiords** [accept answers of "**fiord**land;" prompt on inlets; prompt on sounds before mentioned by asking "which, in this case, are examples of what specific type of geographical feature?"; prompt on glaciers before "Huron Bay" by asking "which in this instance are developing what kind of landform?"]

<JM - Geography>

Giuseppe Verdi's suggestion that this standard be slightly lowered has led to the strange misconception that 432 Hz is a more natural value. For 10 points each:

[10e] Name this standard value used to tune Western musical instruments, set to 440 Hz in contemporary practice, usually stated by the oboe in an orchestra for other performers to match in tuning.

ANSWER: **concert pitch** [accept answers indicating the **reference pitch** or **frequency** for performances; accept the **pitch** or **frequency** of (concert) **A(4)**; accept "the **pitch** (or **frequency**) of **A** above middle C;" accept "**A(4)=440** Hz;" prompt on **A(4)**]

[10m] This approach to playing early music attempts to match the reference pitches and tuning systems used at the time of composition, using period-accurate instruments and techniques to approximate works' original sound.

ANSWER: **Historically Informed Performance** [prompt on period performance or authentic performance]

[10h] HIP musicians are attentive to the fact that early composers intended this form of ornamentation differently than modern readings of the notation suggest. This ornament, where an on-beat non-chord tone in a melody is resolved in passing, is usually notated with slurred grace notes.

ANSWER: **appoggiatura** ("uh-PODJ-uh-TUR-uh") [or **Vorschlag**; or **Vorhalt**; or **port de voix**]

<JM - Arts: Classical Music>

11. **A classic history of this country tracks the "displacement" of complementary "Strategic," "Coastal" and "tannan" cartographies by a single, Western-style approach. That book is titled for this country "Mapped" and analyzes its "geo-body." A king of this country died after traveling to Wakor to prove he calculated a solar eclipse better than traditional astrologers. A photo from this country shows a man swinging a folding chair at a lynched protestor during a massacre involving the (\*) "Village Scouts" paramilitary. This country issued twelve "cultural decrees" to standardize its national character under a Mussolini-obsessed colonel. Its rulers used the Paknam Incident to create an irredentist nationalism later deployed by the Phibun government. Its king's involvement in a 1976 massacre of university students is probed in *The King Never Smiles*. This country signed the unequal Bowring Treaty and uses strict *lèse-majesté* ("lezz-ma-zhiss-TAY") laws against political opponents. For 10 points, name this country, whose current king is Rama X and whose prior kings include Mongkut, Chulalongkorn, and Bhumipol Adulyadej.**

ANSWER: Kingdom of **Thailand** [accept **Siam**] (*Siam Mapped* is by Benedict Anderson's student Thongchai Winichakul; the third sentence refers to Mongkut and *The King Never Smiles* concerns Bhumipol/Rama IX.)

<JG - History: World>

To get the ball rolling on the revival of this language, Eliezer Ben-Yehuda decided to raise his son Ben-Zion as its first native speaker in centuries by limiting his exposure to other tongues. For 10 points each:

[10e] Name this language revived to serve as the national language for a country primarily settled by speakers of Yiddish, Ladino, and Russian. Like most other Semitic languages, it is written right-to-left with an abjad.

ANSWER: modern **Hebrew** [or *ivrit hadasha*; reject Ancient, Classical, and Biblical Hebrew]

[10m] Modern Hebrew grammar modifies these words according to seven configurations called “*binyan*.” The term “ergativity” refers to a type of morphological alignment of words relative to this part of speech.

ANSWER: **verbs**

[10h] Modern Hebrew eliminated this Classical Hebrew grammatical construct, which prefixes a namesake letter at the front of a verb in order to reverse the temporality of the suffix or prefix conjugation and modify its aspect.

ANSWER: **vav-consecutive** [or **waw-consecutive**]

<JM - Hard Social Science: Linguistics>

- HALFTIME -

12. In a J. M. Coetzee (“kuut-SEE”) novella, this poem’s title figure is described as “vital embodiment of the kind of force that is released in an atomic explosion” when John Bernard arrives late to his mother’s lecture. In that lecture, Elizabeth Costello contrasts this poem with two by Ted Hughes, which, unlike this poem, “ask us to imagine our way into that way of moving, to inhabit that body.” The “vision” of this poem’s title figure is described as having “grown so weary that it cannot hold anything else,” and its (\*) “mighty will stands paralyzed.” The title figure of this poem sees “a thousand bars, and behind” them, “no world,” while “he paces in cramped circles, over and over ... like a ritual dance.” For 10 points, name this poem about the title creature’s confinement in the Jardin des Plantes (“ZHAR-dahn day PLAHNT”) in Paris by Rainer Maria Rilke (“RILL-kuh”).

ANSWER: “The **Panther**” [or *Der Panther: Im Jardin des Plantes, Paris*] (The Coetzee novella is *Lives of Animals*.)

<JM - Literature: European>

Because this movement’s founder thought intellectual property—and indeed owning books at all—was immoral, he never published any of the writings posthumously released as *Philosophy of the Common Task*. For 10 points each:

[10h] Name this philosophical movement begun by Nikolai Fyodorov, who was inspired by Eastern Orthodox ideas like *sobornost* to argue that humans must prioritize technological life extension, immortality, and body modification.

ANSWER: Russian **cosmism** [or *Russkiy Kosmizm*]

[10e] Russian Cosmism is a precursor to this contemporary movement that centers on life extension, evolution past the present anthropic age, and, in some cases, pursuing the AI singularity.

ANSWER: **transhumanism** [accept **h+**]

[10m] Donna Haraway advocated a “posthumanist” world where the boundaries between human, machine, and animal are broken down in this *Socialist Review* piece, the title figures of which “cannot dream of returning to dust.”

ANSWER: *A **Cyborg Manifesto***

<JM - Thought: Other Philosophy>



13. **R.W. Pekala produced the first carbon-based versions of these materials via polycondensation of resorcinol and formaldehyde. Between 2011 and 2013, the variety of these materials with the highest porosity transitioned from using silica to graphite, and then again from graphite to graphene. NASA’s “X-” class of these materials is created by embedding cross-linked polymers, which greatly increases their tensile strength. An alleged bet between Charles Learned and Samuel Kristler led Kristler to create the first of these materials via (\*) supercritical drying, which prevented the significant shrinkage and cracking seen in their “xero-” counterparts. These translucent materials have both extremely low thermal conductivity and ultralow density, making them useful as low-weight insulators. These fragile materials are produced by removing the liquid component of a certain type of colloid without it collapsing. For 10 points, name this lightest class of solids, a subtype of gels where the liquid has been replaced with a gas that are sometimes known as “frozen smoke.”**  
ANSWER: **aerogels** [accept **solid smokes** or **frozen smoke** before “smoke;” prompt on **gels** before mention; prompt on **colloids** or **colloidal suspensions** or **colloidal dispersions** before mention]  
<SS - Science: Chemistry>

In this author’s story “Who Will Greet You at Home?”, Ogechi crafts a child out of hair she collects from the floor of the salon she works at, Mama Said Hair Emporium. For 10 points each:

[10h] Name this author of the collection *What It Means When a Man Falls From the Sky* as well as the short story “Skinned,” which won the 2019 Caine Prize.

ANSWER: Lesley Nneka **Arimah**

[10m] The Caine Prize, which is awarded to the best short story by an African writer, was also won by this author for her story “Hitting Budapest,” which she turned into the first chapter of her debut novel *We Need New Names*.

ANSWER: NoViolet **Bulawayo**

[10e] This author’s story “You in America” was nominated for an early Caine Prize, although she went on to have more success with the collection *The Thing Around Your Neck* and the TED Talk “The Danger of a Single Story.”

ANSWER: Chimamanda (Ngozi) **Adichie**

<CM - Literature: World>

14. **The Cornish maltster John Nichols Tom led a revolt in Kent in this decade upon declaring himself “William Courtney, King of Jerusalem.” For backing Althorp’s Bill in this decade, “Tory-Radical” Richard Oastler gained the epithet “Factory King.” This decade concludes John and Barbara Hammond’s study *The Village Labourer*. William Cobbett controversially defended riots in this decade. In this decade, George Loveless was deported for making oaths to the Friendly Society of Agricultural Laborers in (\*) Tolpuddle. This decade saw the Newport Rising and riots in which threshing machine operators received letters from “Captain Swing.” In this decade, William Lovett published Chartism’s namesake People’s Charter and both The Slavery Abolition Act and William Wilberforce passed. A bill in this decade replaced “outdoor relief” with workhouses, while one passed by Earl Grey ended rotten boroughs. For 10 points, give this decade of the New Poor Law and the Great Reform Bill.**  
ANSWER: **1830s** [prompt on **thirties**] (The first sentence describes the Battle of Bossenden Hill.)  
<JG - History: European>

Alcira Soust Scaffo helped many of her students escape this event before blaring the anti-Falangist poet León Felipe over facility loudspeakers and hiding in a bathroom for 15 days. For 10 points each:

[10m] Name this 1968 event in which a secret police force created by Gustavo Diaz Ordaz wore white gloves or handkerchiefs while instigating the deaths of hundreds of protestors at the National Autonomous University.

ANSWER: **Tlatelolco** Massacre [prompt on Mexican Student Movement or Movimiento Estudiantil; prompt on the 1968 Mexico City Olympics]

[10h] Vicente Fox indicted this ex-president and advocate of “tercermundismo” for ordering the massacre as Diaz Ordaz’s Minister of the Interior. He led Mexico during its Dirty War, including the 1971 Corpus Christi massacre.

ANSWER: Luis **Echeverría** Álvarez

[10e] Reacting to the Woodstock-like Avándaro Festival and the band Pop Music Team’s songs about the Tlatelolco Massacre, Echeverría banned this genre of music used to dislodge Manuel Noriega from Panama’s Vatican embassy.

ANSWER: **rock**(-’n-roll) music [accept any specific sub-genre like **metal** even if some would be anachronistic]

<CK - History: World>

15. **A form of this faculty can be experimentally observed using a “flanker task” named for two psychologists named Eriksen. Rachel and Stephen Kaplan developed the theory that spending time in nature causes a “restoration” of this faculty. The FEF and IPS are major neural components of a “dorsal network” named for this faculty. Damage to the right brain hemisphere, but almost never the left, can lead to a disorder named for the localized absence of this faculty. Duncan and Humphrey developed a theory of this faculty in which it follows a (\*) segmentation or grouping process with a selection. That theory competes with Anne Treisman's “Feature Integration Theory” of this faculty, which is impaired on one’s left side in “hemispatial neglect.” This faculty, which Donald Broadbent hypothesized functions through a “filter,” was the subject of an experiment involving a basketball game and a person in a gorilla suit testing its form of “blindness.” For 10 points, name this faculty that names a common deficit disorder.**

ANSWER: (visual) **attention** (Duncan and Humphrey's theory is the Attentional Engagement Theory, or AET.)

<JM - Hard Social Science: Psychology>

A consistent finite difference method for solving a linear, well-posed PDE will converge if and only if it possesses this property, by the Lax equivalence theorem. For 10 points each:

[10m] Name this property that requires the solution to remain bounded in terms of the initial condition. For ODEs, an equilibrium point has a form of this property named for Lyapunov if all solutions that start nearby remain nearby.

ANSWER: numerical **stability** [or word forms such as **stable**; accept Lyapunov **stability**]

[10e] Because it can be hard to check stability directly, von Neumann stability analysis decomposes the errors using these series. These series expand a function as an infinite sum of sine and cosine waves at different frequencies.

ANSWER: **Fourier** series [reject “Fourier transform”]

[10h] In numerical analysis of PDEs, a number named for this mathematician must be smaller than a critical value proportional to “delta  $t$  over delta  $x$ ” for an algorithm to be stable. This mathematician also names a prestigious Institute of Mathematical Sciences at NYU.

ANSWER: Richard **Courant**

<TM - Science: Mathematics>

16. **The main theme of a late-Romantic piece in this genre begins (read slowly) G, B flat, long G - G, B flat, A flat, B flat, long G. That piece in this genre has a *Romanza* second movement and a *Toccata* first movement. That second Nikolai Medtner piece in this genre is dedicated to a composer who ended two of his own compositions of this type with the same long-short-short-long “musical signature” that ends his (\*) second symphony. The main theme of one of those two pieces in this genre begins with ascending (read slowly) B flat, E flat, F, G, A flat. That C minor piece in this genre—dedicated to Nikolai Dahl, the composer’s therapist—opens with the soloist playing large, “bell”-like chords and a low F before the strings introduce a main theme. With his third, that second piece in this genre is one of two famously difficult examples by Sergei Rachmaninoff. For 10 points, give this genre that features a keyboard soloist with orchestral accompaniment.**

ANSWER: **piano concerto** [or **piano concerti**; prompt on **concerto** or **concerti**; prompt on **PC**]

<JM - Arts: Classical Music>

George A. Lincoln, Charles Bonesteel (“BON-uh-stell”), and a future secretary of state proposed this boundary based mainly on one glance at a National Geographic map. For 10 points each:

[10e] Describe this boundary, which cut through the village of Panmunjom and has been surrounded by a namesake Demilitarized Zone since the end of a 1953 “police action.”

ANSWER: **Korean Border** [accept the **38th parallel** north; accept any answer describing the **dividing line between North and South Korea**]

[10m] This aforementioned co-worker of Lincoln and Bonesteel names diplomatic correspondences with Yang You-chan (“yoh-CHAN”) over Japan’s liability for damage to Korea. As secretary of state, he greenlit Ngo Dinh Diem’s (“in-GOH DIN DYEM’s”) overthrow.

ANSWER: Dean **Rusk**

[10h] Rusk told Yang that the maritime Macarthur Line would hold until this 1951 treaty took effect. This treaty names the US’s “system” of “hub and spokes” bilateral defense treaties with Pacific countries, especially Japan.

ANSWER: Treaty of **San Francisco** [or **San Furanshisuko** kōwa-Jōyaku; prompt on **Treaty of Peace with Japan** or **U.S.-Japan Security Treaty** (or Japanese equivalents) with “In what city was that treaty signed?”]

<CS - History: American>

17. **A revision to a play about this person is believed to contain the only surviving handwriting of Shakespeare besides signatures, though it was mostly written by Anthony Munday and Henry Chettle. One version of a play about this person ends with a character saying, “It isn’t difficult to keep alive, friends ... If we should bump into one another, recognize me” after removing his hood to reveal he is a recurring actor. This man unfazedly replies, “Of course” when his servant is accused of being a spy. In that play, this person rejects the idea of cutting “a great road through the (\*) law to get after the Devil” in a conversation with Roper, and gives a silver goblet back to Richard Rich, who he chastises for selling his soul. The Common Man delivers the introduction and plays minor roles like the executioner throughout that Robert Bolt play about this person. For 10 points, name this subject of *A Man for All Seasons*, the author of *Utopia*.**

ANSWER: Sir Thomas **More**

<JM - Literature: British>

This producer covered Ivan Lins's composition "Velas Içadas" on his 1981 record *The Dude*, which had two hit singles featuring James Ingram, "One Hundred Ways" and "Just Once." For 10 points each:

[10h] Name this prolific producer who accrued 28 Grammys and 80 nominations across a seven-decade career.

ANSWER: Quincy (Delight) **Jones** (Jr.)

[10e] Frequent collaborator Toots Thielemans played this instrument on Jones's "Velas," among other tracks. The diatonic variant of this small rectangular instrument, played by blowing through holes along the side to vibrate internal metal reeds, is sometimes called a "blues harp."

ANSWER: **harmonica** [or **French harp**, **mouth organ**]

[10m] Quincy Jones was a student of this seminal music teacher, along with Astor Piazzolla, Aaron Copland, Virgil Thomson, and Philip Glass.

ANSWER: (Juliette) Nadia **Boulanger** ("boo-lahn-ZHAY")

<JM - Arts: Other Music>

18. **"Epic Histories" of these people wrongly attributed to a "Faustus of Byzantium" recount a love pentagon where their king married Pharantzem after two cousins died over her, only for her to then poison his other wife. Governors called *ostikans* ruled these people after invasions by what their historian Sebeos called an alliance of Jews and "Ishmaelites" that destroyed their *nakharar* nobility's chief family. After killing a nun, a king of these people acted like a boar until a saint he had imprisoned in a "deep dungeon" cured him. These people have identified with the (\*) Urartu civilization since the late antique historian Moses of Chorene. Sophene and Commagene were ruled by their Orontid dynasty. The Sassanids agreed not to spread Zoroastrianism among these people in the Nvarsak Treaty. With Gregory the Illuminator's baptism of Tiridates III, these people became the first to adopt Christianity as a state religion. For 10 points, name this ethnicity whose namesake church is based in the Etchmiadzin Cathedral near Yerevan.**

ANSWER: **Armenians** [or **Hayer**; prompt on **Bactrian** ONLY after "Orontid" has been read by asking "though originally Bactrian, the Orontids are mainly associated with what other ethnicity?"]

<JG - History: Ancient/Other>

Answer the following about the *New York Times* photography series *On the Street*, for 10 points each.

[10m] The series consisted of photos of NYC fashion taken by a street photographer named Bill with this surname. The photography group f/64 ("f stop 64") included a woman with this surname known for her close-ups of flowers like *Magnolia Blossom*.

ANSWER: **Cunningham** [accept Bill **Cunningham** or Imogen **Cunningham**]

[10e] Cunningham became famous for wearing a jacket of this color and riding a Schwinn bicycle while snapping photos for the series. A Voyager photograph partly titled for this color shows Earth as a distant "pale dot."

ANSWER: **blue** [accept *Pale Blue Dot*]

[10h] *On the Street* was greenlit in 1978 after Cunningham unknowingly captured this then-elderly woman in a nutria coat. Edward Steichen photographed her with elbows jutting out as her hands push back her hair at the temples.

ANSWER: Greta **Garbo** [or Greta Lovisa **Gustafsson**]

<TM - Arts: Misc>

19. A philosopher with this *first* name uses a tree chopped into cellulose molecules to show that “the ‘is’ of material constitution is not the ‘is’ of identity” in a 1968 paper. A thinker with this first name defined identity as an “aggregate of person-stages” and ended a book by using the Great Western Railway to refute relative identity theories. That book by a thinker with this first name distinguishes between “endurance” and “perdurance” and claims to offer “A (\*) Philosopher’s Paradise.” A philosopher with this first name holds that “the world is a vast mosaic of local matters of particular fact,” an idea named for another thinker with this first name. A thinker with this first name used the idea that the term “actual” is indexical and his counterpart theory to argue that all possible worlds actually exist. For 10 points, give this first name shared by a modal realist surnamed Lewis and the namesake of his “Humean supervenience” thesis.

ANSWER: **David** [accept **David** Wiggins, **David** Lewis, or **David** Hume]

<JG - Thought: Philosophy>

In a 2009 Nature Methods paper, a team led by the originator of this technique proved that it could produce fully synthetic DNA molecules hundreds of kilobases long. For 10 points each:

[10h] Name this single-tube cloning technique which uses an exonuclease to chew up the 5’ ends of multiple PCR products to anneal them together. Unlike Golden Gate cloning, this technique does not rely on restriction sites.

ANSWER: **Gibson assembly** [prompt on **assembly**]

[10e] The most common type of selectable marker introduced via Gibson assembly confers this trait to successfully cloned bacteria. This trait allows organisms to grow on Petri dishes prepared with kanamycin or ampicillin.

ANSWER: **antibiotic resistance** [or **ABR**; accept **drug resistance**; accept [things that sound like a drug] **resistance**]

[10m] Post-cloning DNA purity can be assessed by checking for a “salt peak” in this technique, which gives a peak at 260 nanometers for pure DNA. NanoDrop machines are used to quickly perform this technique.

ANSWER: **spectrophotometry** [or **UV-vis** spectroscopy; accept **ultraviolet visible** spectroscopy; prompt on **colorimetry**]

<SS - Science: Biology>

20. At the start of a poem, this figure is afraid of the darkness of a forest of tamāla trees. A song dedicated to this figure by a female saint is titled “On the Garland of Breath.” This figure was titled “runner from the battle-field” after transporting the citizens of a kingdom to another coastal city. Jayadeva’s poems about this deity are still sung at the Jagannatha Temple in Puri, and his infant form is worshiped in Kerala at a temple in Guruvayoor. India’s National Institute of Oceanography claims to have discovered the underwater ruins of the city of (\*) Dvārakā, which this deity established after fleeing from Mathura. Mira Bai followed this deity, and Swami Prabhupadha founded an International Society for this deity’s Consciousness known for proselytizing in airports. For 10 points, name this lover of Radha, eighth avatar of Vishnu, and central figure of the Bhagavad Gita.

ANSWER: **Krishna** [or **Krsna**; accept **Kanhaiva**, **Parthasarathy**, or **Shrinathji**; accept **Keshava**, **Mādhava**, **Govinda**, or **Dāmodara**; accept **Gopala**, Bala **Krishna**, or Bala **Gopala**; accept **Ranchhod**]

<VA - Religion (Mythology)>

In Alejandro Inárritu's *Birdman*, a journalist quotes this book's claim that "the cultural work done in the past by gods and epic sagas is now done by laundry-detergent commercials and comic-strip characters." For 10 points each:  
[10h] Name this book that applies Saussure's semiology to modern cultural forms like mass-produced toys. Its author later wrote a companion piece to this work titled *The Eiffel Tower*.

ANSWER: Mythologies (by Roland Barthes)

[10e] Roland Barthes ("row-LAHN BART") distinguished *jouissance* ("zhoo-ee-SAWNCE") from the title concept in his book on "*The Pleasure of*" this thing. Jacques Derrida's *Of Grammatology* asserted that "there is nothing outside" this concept.

ANSWER: (the) text [accept *The Pleasure of the Text* or *Le Plaisir du Texte*; accept "there is nothing outside the text," "there is no outside-text," or "*il n'y a pas de hors-texte*"]

[10m] *Mythologies* has been compared to this thinker's *The Mechanical Bride*. This theorist distinguished mediums by level of involvement and wrote a book arguing electronics would lead to the title worldwide collective identity.

ANSWER: (Herbert) Marshall McLuhan (The clues refer to his ideas of "hot" and "cold" media and *The Global Village*, respectively.)

<JM - Thought: Soft Social Science>

21. **Norma Broude discussed "Homosexuality and Homosocial Bonding" in the work of Frédéric Bazille and this artist in the essay "Outing Impressionism." This artist depicted his relative reading at the family estate in the same outfit he himself wears in Renoir's *Oarsmen at Chatou*. This artist painted a journalist sitting cross-armed on an ornate sofa with a competing newspaper unfolded on his lap in his *Portrait of Richard Gallo*. The Boston MFA contentiously sold a number of works to purchase this artist's depiction of a nude man (\*) drying himself from behind. In one work, this artist depicted a man in gray gazing through the metal trusses of a bridge while a stray dog wanders past. A painting by this artist controversially depicted three shirtless men shaving curls of material off a hardwood surface. For 10 points, name this French artist of *The Bridge of Europe* and *The Floor-Scrapers*.**

ANSWER: Gustave Caillebotte ("KAI-bot") (The painting depicting his brother Martial at their Yerres estate is *Les Orangers*, and the painting acquired by the Boston MFA is *Man at his Bath*.)

<JM - Arts: Painting and Sculpture>

A Jonathan Z. Smith essay punning on this animal examines Ainu and Nivkh hunting rituals, claiming that their impracticality implies they are aspirational rather than actually performed. For 10 points each:

[10e] Name these large land mammals slain by the legendary national hero of a Baltic country. A Russian taboo around these animals led the euphemism *medved* ("MED-vyehd") or "honey-eater" to become their common name.

ANSWER: (brown) bears [or *Ursus arctos*; accept *Ursidae*] (The essay is "The Bare Facts of Ritual.")

[10m] Andrejs Pumpurs immortalized the aforementioned bear-slayer Lāčplēsis ("LAHCH-play-sis") in the national epic of this Baltic country, set during the Livonian crusades. Its capital sits on a gulf of the same name.

ANSWER: (Republic of) Latvia [or *Latvijas (Republika)*; or *Letmō (Vabāmō)*]

[10h] Pumpurs's epic opens at the palace of this Baltic thunder deity, where the gods decide to protect Latvia from Christianization. Pre-Christian Latvians burned honeycombs to supplicate this thunder deity, second only to Dievs.

ANSWER: Pērkons [or Perkūnas]

<JM - Geography (Mythology)>

22. **Eigenvalue analysis of a linearized form of the equations governing these systems demonstrates that these systems stably oscillate between the “weave” and “capsize” modes. These systems have four components and seven degrees of freedom in the Whipple model. The responsiveness of these systems is inversely proportional to their Koch index. A collaboration between Andy Ruina at Cornell and Arend Schwab at TU Delft showed that these systems are self-stable even with negative trail and no (\*) caster or gyroscopic effects. William Rankine was the first to observe that altering the trajectory of these systems begins with a small movement in the opposite direction, known as countersteering. In a common classroom demonstration of conservation of angular momentum, a component of these systems is tilted, causing the rotation of a student on a stool to change. For 10 points, name these systems whose idealized form consists of a fork, a frame, and two wheels.**

ANSWER: **bicycles** [or **bikes**; accept **motorcycles**; accept **single-track** vehicles]

<AF - Science: Physics> (author’s note: this tossup is based on my experience watching 5 hours of videos about how we don’t know how bicycles work when I had COVID in July.)

This character wins a dish-drying contest and receives a set of encyclopedia volumes that are mostly blank. For 10 points each:

[10h] Name this character who is inspired to join the Civil Rights Movement by his teacher Mr. Hill and the recorded speeches of Martin Luther King Jr. This character later lands a job at Marconi’s Tobacco & Cigars and exposes boys who steal candy from the store.

ANSWER: **Elwood** Curtis [or Elwood **Curtis**]

[10e] Elwood Curtis is a character from this author’s novel *The Nickel Boys*. This author won the 2016 Pulitzer Prize in Fiction for his novel *The Underground Railroad*.

ANSWER: Colson **Whitehead** [or Arch Colson Chipp **Whitehead**]

[10m] The protagonist of this Whitehead novel becomes the first Black female elevator inspector in an unnamed city. This novel’s title refers to a school of elevator inspection contrasted with the “empiricist” school, which promotes inspection using established instruments.

ANSWER: *The **Intuitionist***

<EL - Literature: American>