



**ACADEMIC
COMPETITION
FEDERATION**

ACF NATIONALS 2022

PACKET 7

Packet by

Texas B

Authors

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TOSSUPS

1. A prologue by this author references Meret Oppenheim's *Object* and Salvador Dalí's *Rainy Taxi* in its definition of a concept as "bringing together objects which would never normally meet." The protagonist of one of this author's novels watches an indigenous shaman perform a funeral lament while surrounded by silent dogs, and feels he has witnessed the "Birth of Music." Near the end of another novel by this author, the protagonist is rejected by a group of geese after turning himself into a goose. This author wrote a novel in which a composer returns to the jungle to find that the path to Santa Monica de las Venados has sunk beneath a river. This man coined the term *lo real maravilloso* ("loh ray-ALL mah-rah-vee-ZHOH-soh") in the prologue to a novel in which the legacy of the slave Mackandal is recounted by Ti Noel ("tee no-EL") during the Haitian Revolution. For 10 points, name this Cuban author of *The Kingdom of this World*.

ANSWER: Alejo Carpentier ("ah-LAY-hoh car-PEN-tee-air") [or Alejo Carpentier y Valmont]
<World Literature>

2. This protein is part of, and names, a complex that upregulates m·R·N·As with terminal oligo-pyrimidine tracts. By inactivating Rhes ("rez"), a complex containing hamartin ("huh-MART-in") and tuberin ("TUBER-in") inhibits signaling through this protein; mutations in those inhibitors of this protein cause tuberous sclerosis. This protein and its partner L·S·T·8 are found in two different complexes, one of which activates S·6 kinase ("KIN-aze") and 4·E·B·P to regulate cell size, and the other of which activates A·k·t downstream of insulin. By triggering M·K·2 translation, this protein promotes secretion of inflammatory mediators by senescent ("suh-NESS-int") cells. In nutrient-rich states, this protein triggers phosphorylation ("foss-FOR-uh-LAY-shun") of A·T·G·13 to repress autophagy ("ah-TOFF-uh-jee"). Inhibiting this protein in *S. cerevisiae* ("S sair-uh-VISS-ee-ee") doubles lifespan. This protein gets its name from a compound from *Streptomyces hygroscopicus* ("strep-toh-MY-sees hye-groh-SCOP-ih-kuss") that inhibits it. For 10 points, name this protein that gets its name from its inhibition by rapamycin ("rap-uh-MY-sin").

ANSWER: mTOR [or mammalian target of rapamycin or mechanistic target of rapamycin]
<Biology>

3. In this book, a child figures out the secret of a magician who makes a wax duck move with a piece of bread. A controversial section of this book begins with a character's admission that he is "not a great philosopher" and asserts that "truths" are not drawn from "high philosophy," but rather from "the depths of [the] heart." This European book recommends understanding property rights through planting beans and singles out *Robinson Crusoe* as the only book one should read before turning twelve. The fifth and final book of this work was criticized for claiming that "woman is specially made to please man" when imagining an ideal wife named Sophie. This book was publicly burned in Paris for its section, "Profession of Faith of the Savoyard Vicar." For 10 points, name this treatise about the education of the title boy, written by Jean-Jacques Rousseau ("roo-SOH").

ANSWER: Emile, or *On Education* [accept Émile, ou *De l'éducation*]
<Philosophy>

4. This non-Australian leader often stated a goal of putting “science at the heart of democracy.” Culture minister Jack Lang advised this leader, who proposed the international tech research program EUREKA. With a country to the north, this leader agreed to a new national border in the middle of an infrastructure project via the Treaty of Canterbury. Buildings created during this leader’s tenure include a cubic “Great Arch of Defense,” the giant CSI science museum, and a metallic, boxy Arab World Institute. This promoter of architectural Grands Projets (“GRAHN proh-JAY”) had the short code “3615 TONTON” on the pre-Web network Minitel, whose usership peaked under his presidency. He inaugurated the Sud-Est (“s’yoo-DEST”) line, which brought high-speed transportation to the Rhône (“rone”) department. The first TGV (“teh-zeh-veh”) line was opened in 1981 by, for 10 points, what Socialist president of France?

ANSWER: François **Mitterrand** (“MEET-ter-RAHN”)
<European History>

5. *Note to players: Composer and genre required.* A 1950 book by Rudi Blesh analyzed how these pieces were influenced by their composer’s teacher Julius Weiss. A popular melody from one of these pieces features a repeating figure in octaves that begins with sixteenth pickups C-D, followed by sixteenths E-C-D, tied sixteenth E, and sixteenths C-D-C. Their composer published some of these pieces with the warning “It is not correct to play [these pieces] fast.” These pieces make up the backbone of the piano repertoire of William Bolcom, who recorded an album of them titled *Euphonic Sounds*. Their composer’s admiration for Theodore Roosevelt led him to compose one of these pieces called “The Strenuous Life.” Marvin Hamlisch won an Oscar for versions of these pieces for his movie score to *The Sting*. For 10 points, name these syncopated pieces by an African-American composer, which include *The Entertainer*.

ANSWER: the **rags** of Scott **Joplin** [prompt on partial answer]
<Classical Music>

6. The protagonist of this story thinks, “She is lost. She was born lost. We were all born lost” while having sex for the final time with his wife, who then laughingly says “And that’s all. That’s all from me.” A revelation in this story occurs after the protagonist finds a book entry that reads, “June 21th (“twenty-one-th”) 1833 Drownd herself.” This story’s protagonist deduces that his grandfather probably had a daughter with one of his slaves and then fathered a child with his own daughter, leading the protagonist to refuse to inherit the family plantation. In this story, the longest in a book that includes “Pantaloone in Black” and “Delta Autumn,” the dog Lion is mauled to death by the title character, who is fatally stabbed by Boon Hogganbeck. For 10 points, Ike McCaslin hunts the title creature, who is named Old Ben, in what story from Faulkner’s *Go Down, Moses*?

ANSWER: “The **Bear**”
<American Literature>

7. The city of Chandler, Arizona built a “brine reduction” center to convert wastewater from one of these facilities into drinking water. In November 2021, Greg Abbott and Kinam Kim (“kee-nam kim”) announced a 17-billion-dollar investment in one of these facilities in Taylor, Texas. Klaiber’s (“KLYE-ber’s”) law estimates the amount of ultra-pure water that these facilities require. Starting in 2021, the CCP encouraged drastic limits on exports from these facilities by firms such as Wingtech and Hua Hong (“hwah hong”). The name of these facilities, plus the suffix “-less,” names a type of supply chain used by Qualcomm and Nvidia (“en-vidia”). Those companies outsource to firms such as TSMC, which operates the world’s largest example of these facilities in Taiwan. These facilities have large clean rooms for dicing, etching, and doping. For 10 points, name these facilities which produce wafer-thin devices containing integrated circuits.

ANSWER: semiconductor **fabs** [or **semiconductor foundries**; or **semiconductor factories**; or **semiconductor plants**; or **fabrication plants**; or **chip foundries**; or **chip factories** or **chip plants**; accept **fab**less supply chain; prompt on **clean rooms** before “clean rooms”; prompt on **foundries** or **factories** or **plants** by asking “Making what?”]

<Current Events>

8. This operation is applied to a function f on the boundary of the unit disk in the Schwarz integral, which computes f on the whole unit disk. The output of this operation on a function is set equal to a Cauchy (“COH-shee”) principal value in the [emphasize] *first* Kramers–Kronig relation. The Laplace (“luh-PLASS”) transform of the unit step function converges if its argument lies in the half-plane on which this operation is positive. The last step of phasor (“phaser”) analysis is to apply this operation to the phasor of interest to get a physical answer. If this continuous but non-analytic operation is applied to a complex number z , the result is [read slowly] “ z plus z -bar, all over two.” Every known nontrivial zero of the Riemann zeta function returns one-half under this operation, which yields “cosine of x ” when applied to “ e to the ix .” For 10 points, name this operation that returns the non-imaginary part of a complex number.

ANSWER: taking the **real** part of a number [accept **Re** (“R-E”); accept **imaginary** part before “first”; accept **z plus complex conjugate** of z all **over 2**, or the same with any letter in place of z , before “ z ”]

<Misc. Science>

9. This city briefly became the capital of a great emirate in the late 18th century under Yunus Khoja (“YOO-nis KOH-juh”), who defeated the hordes of the Senior Zhuz (“zhoozh”). In the 1860s, a Russian general gained popular support in this city by abolishing slavery and cancelling taxes for a year, thus winning fame as this city’s “Lion.” Japanese POWs built this city’s Navoi (“na-vah-ee”) Theater, one of the few large buildings to survive a 1966 earthquake that displaced a fifth of its population. Mikhail Chernyayev (“MEE-hyle chairn-YAH-yev”) captured this capital city, which contains the Kukeldash Madrasah (“KOO-kul-dosh muh-DRAH-sah”) built under the Shaybani (“shay-BAH-nee”) dynasty. It was the headquarters of a dictator who brutally repressed the Andijan (“ahn-dih-JAHN”) uprising and protests in Fergana (“far-gah-nah”) before his 2016 death, after which Shavkat Mirziyoyev (“SHAV-kat meer-zee-YOH-yev”) took over. Islam Karimov formerly ruled from, for 10 points, what capital of Uzbekistan?

ANSWER: **Tashkent** [or **Toshkent**; or **Tashkend**; or **Chach**; accept Lion of **Tashkent**]

<World History>

10. Per one hadith (“hah-DEETH”), God does not accept this action unless its performer gives up “forged speech” and “evil actions.” People who perform this action will be able to cross a gate called Ar-Raiyan (“ar-rye-YAN”) on the Day of Judgment. Per another hadith, this action serves as a “shield” and multiplies good deeds by ten times. Intentional failure to perform this action can be made up for by taking care of 60 impoverished people. A weak hadith states that, after Adam’s skin turned black, he performed this action on the “White Days,” or the 13th, 14th, and 15th days of each month. In another instance, this action begins at the time when a black thread can be distinguished from a white thread and ceases after the *maghrib* (“mog-reeb”) prayer during a daily event called *iftar* (“if-TAR”). For 10 points, identify this action which is mandatory from sunrise to sundown during Ramadan.

ANSWER: **fasting** [or **sawm**; accept **fasting** on Ramadan; accept equivalent answers which indicate **not eating** or **abstaining** from **food** and drink]

<Religion>

11. A copy of a portrait usually attributed to this man hangs in the hallway of Aunt Ruth's apartment in *Mulholland Drive*. This man allegedly painted that portrait after visiting its subject in prison just before her execution. In another work, this painter showed Saint Michael slaying a monster who has the face of Innocent X. Elisabetta Sirani is sometimes given as the artist of a portrait by this man, in which a young woman in a white turban and white robes looks over her shoulder. That portrait of Beatrice Cenci by this man inspired a play by Percy Shelley. The Palazzo Pallavicini Rospigliosi ("palla-vee-CHEE-nee ross-peel-YO-see") holds the masterpiece of this student of Annibale Carracci, a ceiling fresco that shows the Hours circling around Apollo's chariot as the title Roman goddess floats ahead of the procession, bringing the dawn. For 10 points, name this Baroque artist from Bologna who painted *Aurora*.

ANSWER: Guido **Reni**

<Painting/Sculpture>

12. These institutions' legacy is the subject of the documentary *Our Fires Still Burn*. In 1895, nineteen "hostiles" from Arizona were sent to Alcatraz for not complying with policies pertaining to these institutions. Many of these institutions, such as one in Encanto Village, supplied farm and domestic workers via the "placing out" system. The Johnson O'Malley Act reduced the number of people in these institutions, whose overcrowding and malnutrition were attacked in the Meriam Report. Richard Henry Pratt summed up the goal of these institutions as to "save the man." In June 2021, Deb Haaland ("holland") began an investigation into abuse at these locations after the discovery of unmarked graves in Canada. Forced haircuts were used as punishments for not speaking English in, for 10 points, what educational institutions, which tried to assimilate youth from peoples such as the Lakota?

ANSWER: **Indian schools** [accept answers that indicate **schools** for **Native Americans**; or **schools** for **Indigenous Americans** or **schools** for **First Nations** people; accept **residential schools**; prompt on **schools** or **boarding schools**]
<American History>

13. This quantity is classified by its eigenvalues ("EYE-gun-values") into one of four Hawking–Ellis types, of which only type I ("one") has a full set of non-null eigenvectors ("EYE-gun-vectors"). This material quantity's four-divergence is exactly the negative of that of the Landau ("LAN-dao")–Lifshitz pseudo-tensor. This quantity is traceless in conformal field theories, while in a perfect fluid's co-moving reference frame, its off-diagonal components vanish. This quantity's spatial diagonal terms represent pressures that vanish for dust solutions. This quantity's ten independent components are the conserved Noether ("NOH-ter") currents of spacetime translations. This quantity is multiplied by "eight-pi-G, over c-to-the-fourth" in the Einstein field equations, in which it carries the same indices as the metric and the Ricci tensor. Spacetime curvature is caused by, for 10 points, what tensor named for the two quantities it encodes?

ANSWER: **stress–energy** tensor [or **energy–momentum** tensor; prompt on T ; reject partial answers like "stress tensor"]

<Physics>

14. In a play by this author, a banker who asks for a cigar cutter is mistaken for the doctor who is supposed to perform a baby's circumcision. A play by this author ends with the protagonist saying "you're either a revolutionary or you're not" and "if you can't be an artist, you might as well be a revolutionary." The five acts of this author's most recent play span the years 1899 to 1955 and depict the lives of the Merz family in the Jewish quarter of Vienna. In a play by him, the protagonist is told that Bennett was the English Consul General, not a manservant, by his wife, who earlier sang a parody of "Mister Gallagher and Mister Shean" with Cecily. That play by this author of *Leopoldstadt* ("LAY-oh-pold-shtot") twists the plot of *The Importance of Being Earnest* to be about Tristan Tzara, Lenin, and James Joyce. For 10 points, name this playwright who wrote *Travesties* and *Arcadia*.

ANSWER: Tom **Stoppard** [or Tomáš **Stráussler**]

<British Literature>

15. A stage named for this concept precedes the mythic and the theoretic in the development of symbolic cognition in *Origins of the Modern Mind* by Merlin Donald. The adjectival form of this concept names a theory that argues that humans must not be understood in isolation as individuals, but rather relationally as “interindividuals,” an idea introduced in *Things Hidden since the Foundation of the World*. This is the first title word of an ethnographic study that applies ideas from the Frankfurt school in examining the Cuna people. A book titled for this concept contrasts how the Book of Genesis and Homer’s *Odyssey* portray the world. A work by Michael Taussig (“TAO-sig”) pairs this concept with alterity, and its adjectival form names René Girard’s (“ruh-NAY jee-RAR’s”) theory of desire. For 10 points, Erich Auerbach’s (“AH-wer-bahk’s”) magnum opus is titled for what Greek term for the imitation of reality?

ANSWER: **mimesis** [accept **mimetic** stage; accept **mimetic** theory of speech origins; accept **mimetic** theory of desire; reject “miming” or “mimicry”]

<Other Academic>

16. An experimental technique for measuring this quantity often uses a fractional factorial design to construct sets of hypothetical stimuli, as suggested by Paul Green. V. “Seenu” Srinivasan’s (“shree-nee-VAH-san’s”) reviews of that technique for measuring this quantity contrast “compositional” approaches with expectancy-value modeling. Partial values of this quantity are inferred for different levels in conjoint analysis studies, which are commonly used for market segmentation. Inferences of this quantity from observations are constrained by a “strong axiom” which ensures transitivity in a framework introduced by Paul Samuelson. Functions representing this quantity are reconstructed by observing behavior towards bundles in revealed preference theory. This quantity is constant along indifference curves. For 10 points, give this economic term for the value of a good or service.

ANSWER: **utility** [accept part-worth **utility**]

<Social Science>

17. At this opera’s American premiere, Gustav Mahler conducted the overture between the first and second acts, so latecomers could still hear it. After a sextet urging her to make up her mind, this opera’s protagonist bemoans having seen her beloved’s signature, in a recitative translated as “Oh, what grief!” The chorus repeatedly cries “Ejchuchu (“AY-koo-koo”)!” in the beer-drinking chorus that opens this opera’s second act. This is the second and more famous of the two operas its composer wrote following his five-year self-exile in Sweden. Three dances—a polka, a furiant, and the “Dance of the Comedians”—are frequently excerpted from this opera, which marked the composer’s second collaboration with Karel Sabina, after *The Brandenburgers in Bohemia*. For 10 points, to be with Jeník (“YEH-neek”), Mařenka (“MAR-zhen-kuh”) tries to wriggle out of her arranged marriage, in what best-known opera by Bedřich Smetana (“BED-rick SMET-uh-nuh”)?

ANSWER: *The **Bartered Bride*** [or ***Prodaná nevěsta***; or *The **Sold Bride***]

<Other Fine Arts>

18. This poet closed a collection with the advice “commit to present pleasure / your brief life” in a set of two loose translations of Simonides (“sy-MAHN-uh-deez”). This three-time translator of Homer’s *Batrachomyomachia* (“buh-TRACK-oh-MY-oh-MACK-ee-uh”) satirized Clemens von Metternich and Joachim Murat (“zhoh-ah-SHEM moo-RAH”) in his poetic satire *The War of the Mice and the Crabs*. This poet included “The Ascendant Thought” and “Love in Death” in a cycle of blank verse poems focusing on a woman named Aspasia (“uh-SPAY-zhuh”). One poem by this author recalls the “constant song” and “happy and elusive eyes” of a coachman’s daughter from his hometown of Recanati (“ray-kah-NAH-tee”). Another poem by this author closes by remarking that “foundering is sweet in such a sea” after describing a hedgerow blocking a view of the horizon beyond a “lonely hill.” For 10 points, name this Italian poet who included “To Sylvia” and “The Infinite” in his collection *Canti* (“CON-tee”).

ANSWER: Giacomo **Leopardi** [or Count Giacomo Taldegardo Francesco di Sales Saverio Pietro **Leopardi**]

<European Literature>

19. This metal is included in all of Barry Trost's ProPhenol bi-metallic catalysts for asymmetric addition. This metal's oxide is the second component of a tri-metallic catalyst that converts syn-gas into methanol. Silver activates scintillation of a salt of this metal, the namesake of a cubic lattice with the same geometry as diamond. Lithium activates this metal in the most common Rieke catalyst. Edward Frankland squeezed this metal between two covalent ethyl groups to make the first synthetic organo-metallic compound. An alloy of mostly this element reacts with methyl-ene iodide to form a carbenoid ("CAR-bee-noyd") that cyclo-propanates alkenes ("AL-keens"). Friedel-Crafts acylation ("ASS-uh-LAY-shun") is often followed by an acidic carbonyl ("CAR-buh-neel") reduction using this metal's amalgam ("uh-MAL-gum"). This metal is sacrificed to protect iron during galvanization. For 10 points, name this metal that alloys with copper to make brass.

ANSWER: **zinc** [or **Zn**] (The second sentence refers to the CZA catalyst, and the third sentence refers to the zincblende. The sixth is the Simmons-Smith reaction, and the seventh is the Clemmensen reduction.)

<Chemistry>

20. The collection of a philosopher and ambassador from this country includes a copy of *An Illustrated Depiction of the Three Kingdoms*. Books that were shipped from this country were commented on in the *New Writings on Calendrical Phenomena* and the *New Text on Anatomy*. The chief of a group of traders from this country had a title literally meaning "over-headman," but was locally known as the *kapitan*. Like local nobles, visiting merchants from this country made an annual court journey under the "alternate attendance" system. This non-Asian country names a movement of 18th and 19th century translators and interpreters, who rendered the writings of Johannes Kepler, Isaac Newton, and other Western scientists for scholars on the island of Dejima ("day-jee-mah"). For 10 points, name this country whose VOC company maintained a trading post in Nagasaki.

ANSWER: The **Netherlands** [or **Nederlands**; accept **Dutch** Learning or **Dutch Studies** or **Rangaku** or **Ran** or **Oranda**] (The first clue refers to Isaac Titsingh.)

<Other History>

BONUSES

1. In a film by this director, Janis Martínez asks her lover, the archaeologist Arturo, to excavate a mass grave where her great-grandfather is buried along with others executed during the Spanish Civil War. For 10 points each:

[10m] Name this director of *Parallel Mothers*, who also explored Franco's legacy as a producer on the documentary *The Silence of Others*. He also directed *Talk to Her* and *Pain and Glory*.

ANSWER: Pedro **Almodóvar** [or Pedro **Almodóvar** Caballero]

[10h] In this film by Victor Erice ("eh-REE-say"), a young girl named Ana imagines meeting Frankenstein's monster by a pond after learning that a wounded Republican soldier she befriended has been executed by Francoist police.

ANSWER: *The **Spirit of the Beehive*** [or *El **espíritu de la colmena***]

[10e] *The Spirit of the Beehive* was a major influence on this Mexican director, who also depicted the Spanish Civil War through the eyes of children in *The Devil's Backbone* and *Pan's Labyrinth*.

ANSWER: Guillermo **del Toro** [or Guillermo **del Toro** Gómez]

<Other Fine Arts>

2. For 10 points each, answer the following about the migrationism-diffusionism debate in archaeology.

[10e] Genetic testing supports the migrationist position that this period's agricultural revolution was caused by influxes of small groups of settlers. It's the final and most recent period of the Stone Age.

ANSWER: **Neolithic** period [accept **Neolithic** revolution]

[10m] Archaeologist Colin Renfrew proposed this diffusionist hypothesis of Indo-European expansion as a counter to Marija Gimbutas's ("mah-REE-ah GIM-boo-toss's") migrationist kurgan ("ker-GAHN") hypothesis. This idea is named for a region from which Neolithic farmers spread into Europe.

ANSWER: **Anatolian** hypothesis

[10h] The diffusionist position is summed up by this oft-quoted dictum, which contrasts the individuals who comprise cultures with the objects those cultures leave behind.

ANSWER: **pots** are **not people** [or **pots, not people** or **people, not pots**; accept answers which indicate a contrast between **pots** and **people**; or between **pottery** and **people**]

<Ancient History>

3. In a 2021 novel from this country, Alice finds search results for violent porn on Felix's phone while they are on a trip in Rome. For 10 points each:

[10e] Name this country of origin of the author of *Beautiful World, Where Are You*, Sally Rooney. Ellis Lacey emigrates from here to Brooklyn in a novel by Colm Tóibín ("KUL-em toh-BEEN").

ANSWER: Republic of **Ireland** [or **Éire**; reject "Northern Ireland"] (Rooney moved back to Ireland from New York in March 2020.)

[10m] In John Boyne's novel titled *A History of this feeling*, the bitter priest Aidan takes trips to Norway. Stephen Gordon serves as an ambulance driver in World War I in a pioneering lesbian novel partly titled for this feeling.

ANSWER: **loneliness** [or being **lonely**; accept *A History of **Loneliness***; accept *The Well of **Loneliness***]

[10h] Joe Cleary's study of the "Irish expatriate novel" discusses a work this author set largely in Paraguay, which opens: "Francisco Solano López put his penis inside Eliza Lynch." She won the Booker Prize for a novel titled for the convening of Liam Hegarty's family at his funeral.

ANSWER: Anne **Enright** (The historical fiction novel is *The Pleasure of Eliza Lynch*. The Booker Prize-winner is *The Gathering*.)

<British Literature>

4. Answer the following about recent advances in understanding and treating trauma, for 10 points each.

[10e] Francine Shapiro developed a treatment that involves “desensitization and reprocessing” while moving these organs. In some trauma patients, they exhibit a phenomenon named for a thousand yards.

ANSWER: **eyes** [accept **eye** movement desensitization and reprocessing; anti-prompt (ask “Can you be less specific?”) on **retinas**; prompt on **EMDR** by asking “What body part must be moved in that treatment?”]

[10m] This 2014 bestseller by Bessel van der Kolk describes how cognitive trauma can cause lasting disconnection from one’s physical self, and suggests that treatments like acupuncture and yoga might help.

ANSWER: *The **Body Keeps the Score**: Brain, Mind, and Body in the Healing of Trauma*

[10h] Edna Foa developed a therapy named for this adjective and “exposure” which encourages patients to undergo “imaginal” and “in-vivo” experiences by re-telling traumatic memories.

ANSWER: **prolonged** [accept **prolonged** exposure therapy]

<Social Science>

5. Bélády’s (“BAY-lah-DEE’s”) algorithm is a theoretically-optimal replacement policy for these components that uses knowledge of the future to evict the least-useful lines. For 10 points each:

[10e] Name these small portions of very fast memory situated near a CPU. Their “layers” are typically designated L1, L2, and L3.

ANSWER: CPU **caches**

[10m] This is the term for a query that successfully finds its target memory address in the cache. If this outcome does not occur, the data of interest must be read from or written to standard memory.

ANSWER: cache **hit**

[10h] In many cache designs, a particular memory address can be mapped to any of some fixed number of blocks. Such designs are said to be either “fully”-*this adjective* or “n-way set”-*this adjective*.

ANSWER: **associative** [accept **associativity**; accept n-way set-**associative** or fully-**associative**]

<Misc. Science>

6. Generally, there are just two steps to do this: be at least 15 years old, and sign a “declaration card” affirming your beliefs. For 10 points each:

[10m] Identify this process undergone by philosopher Alain Leroy Locke and Queen Marie of Romania. Some people who underwent it became Hands of the Cause of God. A description is fine.

ANSWER: **converting** to **Baha’i** (“buh-HIGH” or buh-HAH-ee”) [accept any answer indicating **joining** the **Baha’i** Faith; accept answers which indicate **accepting** the teachings of **Baha'u'llah**, etc; prompt on **conversion** by asking “To what faith?”]

[10e] The only requirement for a Baha’i wedding is a vow whose English text is this many words long. This is also the minimum number of Jews required for a minyan and the number of gurus in Sikhism.

ANSWER: **ten** [accept **Ten** Commandments] (The vow is “We will all, verily, abide by the Will of God.”)

[10h] According to one of the few customs for Baha’i funerals, graves should be oriented towards this city, where Bahá’u’lláh (“buh-HAH-ull-LAH”) and his disciples were forced to endure imprisonment after an “eight hour crossing.”

ANSWER: **Akka** [or **Acre**]

<Religion>

7. At the end of the poem in which this character appears, she proclaims “Farewell” to her older counterpart and reassures her that “in a while you’ll tell another tale.” For 10 points each:

[10h] Name this poetic character who bids her “fairest Queen” to “cease complaints, and wipe your eyes” after this character is told to “use thy utmost skill, / And recompense me good for all my ill.”

ANSWER: **New England** [reject “Old England”; reject “England”]

[10e] This colonial-era Puritan author wrote “Dialogue between Old England and New.” She wrote of a “love... such that rivers cannot quench” in the poem “To My Dear and Loving Husband.”

ANSWER: Anne **Bradstreet**

[10m] A poem by Bradstreet calls this object “a rambling brat” and her “ill-form’d offspring.” That poem describes finding new defects while washing this object’s face and “rubbing off a spot” that makes a new flaw.

ANSWER: *The Tenth Muse, Lately Spring Up in America, By a Gentlewoman in those parts* [prompt on her book or her poetry collection or “The Author to her Book” by asking “Which of her books is she talking about?”]

<American Literature>

8. After a disastrous 1895 earthquake destroyed almost all Austrian Baroque architecture in this city, several new buildings were designed by Jože Plečnik (“YOH-zhay PLETCH-nick”). For 10 points each:

[10e] Name this present-day capital of Slovenia.

ANSWER: **Ljubljana** (“lew-blee-AH-nuh” or “l’yoo-bl’YAH-nuh”)

[10h] Plečnik’s designs include this magnificent bridge in Ljubljana, which is named for the four statues of creatures that decorate it, including one honoring Jason and the Argonauts.

ANSWER: **Dragon** Bridge [or Bridge of **Dragons**, or **Zmajski** most, or **Zmajev** most]

[10m] Plečnik also designed Žale (“ZHAH-lay”), which is one of these locations in Ljubljana. The so-called “Old Jewish” example of these locations is found in the capital of Bohemia.

ANSWER: **cemeteries** [or **cemetery** or **graveyard**; accept Žale Central **Cemetery** or Old Jewish **Cemetery**]

<Geography>

9. A 2021 *Science* paper from Fraser Stoddart’s group showed that a MOF (“moff”) acts like one of these machines via mechani-sorption. For 10 points each:

[10h] Name this general term for molecular motors that create non-equilibrium, high-energy states. In supra-molecular chemistry, these machines prototypically consume fuel to thread macro-cycles onto a rotaxane (“roh-TAX-ane”) axle.

ANSWER: molecular **pumps** [or stochastic **pumps**]

[10e] Pumping molecules onto an axle requires energy because this quantity symbolized mu (“mew”), the free energy per particle, is lowest when molecules are far apart.

ANSWER: **chemical potential** [prompt on potential]

[10m] Though a pump operates out of equilibrium, each elementary step in its mechanism must obey this principle, which states that, at the molecular level, the mechanisms for two equilibrated reactions are exact inverses, and their rates are the same. It further implies detailed balance.

ANSWER: principle of **microscopic reversibility** [or **microreversibility**; or **microscopically reversible**; prompt on reversibility or reversible]

<Chemistry>

10. This property names a set of medieval English chroniclers, including Layamon (“LAY-uh-min”) and John Harding, who wove Arthurian legend into historical accounts. For 10 points each:

[10h] Identify this property, unusual among works of history. It names a chronicle that was read to Livonia’s Brothers of the Sword during their meals.

ANSWER: **rhyming** [or **rhymed**; accept **Rhyming** Chroniclers or *Livonian Rhymed Chronicle*]

[10e] This country’s *Chronicle of Duke Eric* records 14th-century history in rhyme for its readership. It broke from the Kalmar Union under Vasa (“VAH-sah”) dynasty leadership.

ANSWER: (Kingdom of) **Sweden** [or Konungariket **Sverige**]

[10m] The *Peterborough Chronicle*, part of this set of annals, has Old French rhymed chronicles in the margins on occasion. This set of annals comprises nine texts, seven in Old English, which trace English history from Roman times through the Norman invasion.

ANSWER: *The Anglo-Saxon Chronicle* [or *The Anglo-Saxon Chronicles*]

<European History>

11. Answer the following about genome organization, for 10 points each.

[10e] DNA wraps around histones to form this complex, which has a “beads-on-a-string” architecture. It condenses into chromosomes during mitosis, and its eu- (“you”) form is transcriptionally active.

ANSWER: **chromatin** [accept **heterochromatin** or **euchromatin**]

[10m] Some domains of chromatin interact strongly with this inner portion of the nuclear membrane, which is a meshwork consisting of a namesake intermediate filament.

ANSWER: nuclear **lamina**

[10h] Within the nucleus, chromatin tends to sort itself into these territories, which are regions of chromatin that almost exclusively interact within themselves. They are usually found using experiments like Hi-C.

ANSWER: **TADs** [or **topologically associating domains** or **contact domains**]

<Biology>

12. In a fairy tale from this country that is similar to Scotland’s “Rushen Coatie,” the heroine befriends a blue bull who keeps her from starving by producing a magical tablecloth from its ear. For 10 points each:

[10h] Name this country whose version of Cinderella is named Katie Woodencloak, referring to the ugly clothes she wears. In another story from this country, the West Wind leads a hero to Soria Moria Castle.

ANSWER: **Norway** [or Kingdom of **Norway**]

[10m] Versions of “Katie Woodencloak” and “Soria Moria Castle” appear in this Scottish folklorist’s *The Red Fairy Book*, one of his twelve colored collections of fairy tales. He names a lecture series at the University of St. Andrews.

ANSWER: Andrew **Lang**

[10e] This Oxford scholar’s 1939 “Fairy Stories” is considered the most famous Andrew Lang Lecture. This author also gave the lecture “*Beowulf: The Monsters and the Critics.*”

ANSWER: J. R. R. **Tolkien** [or John Ronald Reuel **Tolkien**]

<Mythology/Legends>

13. In a 1906 play, a character called The Masked Man appears in a graveyard and reveals that a character who supposedly died of anemia actually died from this cause. For 10 points each:

[10h] Name this cause of death, brought about by the actions of Mother Schmidt.

ANSWER: Wendla Bergmann’s **abortion** [accept anything that says that the **abortion** was botched; prompt on **medication**, **medicine**, **drugs**, or **pharmaceuticals** by asking “What were the drugs supposed to cause?”; reject anything related to an “operation,” as the abortion was achieved by taking drugs]

[10m] Wendla (“VENT-lah”) Bergmann’s abortion was controversially depicted in the play *Spring Awakening* by Frank Wedekind (“VED-uh-kint”), who created this ex-dancer who is murdered by Jack the Ripper in the play *Pandora’s Box*.

ANSWER: **Lulu** [accept **Lulu** Goll; accept **Lulu** Schwarz; accept **Lulu** Schön; prompt on **Goll**; prompt on **Schwarz**; prompt on **Schön**]

[10e] André de Lorde adapted the Jack the Ripper story into a play for the *Grand Guignol* (“grahn geen-YALL”), a theater named for this type of character. The protagonists in *Punch and Judy* shows are this type of character.

ANSWER: **puppets**

<European Literature>

14. The creation of the One Million Plan in the 1940s is often regarded as the first formal distinction between these Jews and the Ashkenazim (“AHSK-kuh-NAH-zim”). For 10 points each:

[10m] Give this broad term for Jews from the Middle East and North Africa, including those from Yemen, Iran, and Lebanon. They are sometimes called Oriental Jews.

ANSWER: **Mizrahi** Jews [or **Mizrahim**; or Edot Ha**Mizrach**]

[10e] Many Mizrahi Jews settled in *moshavim* (“moh-SHAH-veem”), which were analogous to these other communities built by Ashkenazi Jews. *Degania* (“d’GAHN-yah”) was the first of these collective farming settlements in Israel.

ANSWER: **kibbutzes** [or **kibbutzim**]

[10h] The term “Mizrahim” sometimes includes this group of Indian Jews, who developed the Judeo-Malayalam (“ju-DAY-oh-muh-LAH-luh-yum”) language. Along with migrants from Portugal, this group built the *Paradesi* synagogue in Kerala (“CARE-uh-luh”).

ANSWER: **Cochin** Jews [or **Malabar** Jews; or **Kochinim**]

<World History>

15. Answer the following about Heinrich Wilhelm Ernst’s (“AIRNST’S”) violin showpiece *Variations on “The Last Rose of Summer,”* for 10 points each.

[10m] The piece opens and begins with this technique in which the violinist plays a chord that involves all of the strings at once.

ANSWER: **quadruple stops** [or **quadruple stopping**; prompt on **multiple stops** or **multiple stopping**]

[10e] Ernst rented rooms next to this musician to eavesdrop on him practicing. This Italian violin virtuoso featured fancy techniques like double harmonics in his *24 Caprices*.

ANSWER: Niccolò **Paganini**

[10h] In the fourth variation on “The Last Rose of Summer,” Ernst requires the violinist to play the theme using this technique, accompanied by bowed arpeggios. The ninth variation of Paganini’s 24th caprice requires this difficult technique, which is usually notated with a small cross in violin sheet music.

ANSWER: **left-hand pizzicato** [prompt on “**pizzicato**” by asking “With what hand?”]

<Classical Music>

16. An investigation of this event blamed governor Blanton Winship, who falsely accused protestors of opening fire first and was dismissed two years later. For 10 points each:

[10h] Name this March 1937 event where police fired on a protest led by the Puerto Rican Nationalist Party, killing twenty-one people.

ANSWER: **Ponce** (“PON-say”) massacre

[10e] Arthur Garfield Hays, a co-founder of this organization, led the inquiry into the Ponce Massacre. This organization lost much funding after defending the rights of Neo-Nazis to march through Skokie, Illinois.

ANSWER: **American Civil Liberties Union** [or **ACLU**]

[10m] This anti-Nationalist politician, who had opposed Millard Tydings’ Puerto Rican independence bill a year prior, was also part of the inquiry. He later became the first democratically elected governor of Puerto Rico.

ANSWER: Luis **Muñoz** Marín

<American History>

17. These systems are called “the essence ... of Utopia” in philosopher Bernard Suits’s 1978 book *The Grasshopper*; a 2020 book by C. Thi Nguyen (“C tee n’win”) warns that imitation of their features can result in “value capture.” For 10 points each:

[10h] Identify these systems. Nguyen extended a notion from John Dewey to describe them as “crystallizations” of practical reason whose medium is “agency itself.”

ANSWER: **games** [or board **games**; or computer **games**; or video **games**; accept **gamified** systems or **gamifying**; or **gamification**; prompt on **artworks**; prompt on **play** or **ludic** systems or **lusory** attitudes or **interactives** by asking “In what context?”; anti-prompt (ask “Can you be less specific?”) on **sports**] (Dewey described painting as “crystallization” in *Art as Experience*.)

[10e] This Austrian discussed the difficulty of defining “games,” and referred to some simple use-cases of words as “language games,” in *Philosophical Investigations*.

ANSWER: Ludwig **Wittgenstein**

[10m] For Wittgenstein, the things we call “games” have this semantic relationship, in which some entities defined by a term share overlapping traits with others, but no necessary or sufficient trait obtains in all of them.

ANSWER: **family resemblances** [or **family-likeness** terms; or **Familienähnlichkeit**]

<Philosophy>

18. The architect Camille Lefèvre (“kah-MEE luh-FEV”) collaborated with Claude Monet on the design of a section of this museum that André Masson called the “Sistine Chapel of Impressionism.” For 10 points each:

[10m] Name this museum in the Tuileries that contains two skylit oval rooms dedicated to displaying Monet’s *Water Lilies*. This museum occupies a former greenhouse built by Napoleon III.

ANSWER: Musée de l’**Orangerie** (“m’yoo-ZAY duh lo-ran-JREE”)

[10e] The Orangerie also contains one of this painter’s many portraits of his wife Marie-Hortense Fiquet (“fee-KAY”). The nearby Musée d’Orsay (“m’yoo-ZAY dor-SAY”) contains a version of this Post-Impressionist’s *The Card Players*.

ANSWER: Paul **Cézanne**

[10h] During the Nazi occupation of Paris, the Orangerie hosted an exhibition on this German sculptor. This artist’s neoclassical style won him many Nazi commissions, including his twin sculptures *The Party* and *The Army*.

ANSWER: Arno **Breker**

<Painting/Sculpture>

19. This author’s early short stories were collected in *Six Feet of the Country*, whose title story involves the discovery of a corpse on a farm, like her later novel *The Conservationist*. For 10 points each:

[10e] Name this author who defended her fiction in *What Happened to Burger’s Daughter* or *How South African Censorship Works*.

ANSWER: Nadine **Gordimer**

[10m] In this Gordimer story, white professor Frederick Morris hears the title claim on classical music radio and wonders about his own somewhat dark-skinned great-grandfather. It titles a 2007 collection that includes “A Beneficiary”.

ANSWER: “**Beethoven Was One-Sixteenth Black**”

[10h] The menacing title of this Gordimer novella alludes both to a baboon stalking the white suburbs of Johannesburg and to a multiracial four-person terrorist cell. It titles a 1984 collection.

ANSWER: “**Something Out There**”

<World Literature>

20. In the theory of Fermi liquids, well-defined examples of these phenomena have a lifetime much longer than “ \hbar over kT .” For 10 points each:

[10m] Name these emergent excitations of physical systems that can be formally treated as discrete localized objects. Common examples of them include excitons (“EX-uh-tahns”) and holes.

ANSWER: quasiparticles [or collective excitations; prompt on particles]

[10e] Bogoliubov (“BO-go-l’YOO-boff”) quasiparticles in these materials are a superposition of an electron and a hole. Electrons pair up in these materials to form Cooper pairs, as described in the BCS (“B-C-S”) theory.

ANSWER: superconductors

[10h] Bogoliubons (“BO-go-l’YOO-bons”) diagonalize the mean-field BCS Hamiltonian, whose “ c ” and “ c -dagger” terms violate this principle. Terms violating this principle do not commute with an operator written “ c -dagger times c .”

ANSWER: conservation of particle number [accept conservation of particles; accept having a fixed or constant number of particles; accept conservation of electron number or conservation of hole number; prompt on conservation of charge]

<Physics>