

Chicago Open 2018: The spice must flow

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Packet by Monday Begins on Saturday, and Sunday Comes Afterwards (Shan Kothari, Adam Silverman, Matt Bollinger, and Matt Weiner); and by Extremely Online Algorithms (Jaimie Carlson, Nick Collins, Caleb Kendrick, and Jerry Vinokurov)

Tossups

1. This author interpolated a song beginning: “Thou’rt passing from the lake’s green side” into a poem in which it is sung by a Native American man comforting his adopted English daughter as her “lovely sleep... melt[s] into death.” This poet included ekphrastic descriptions of the Apollo Belvedere and other artifacts plundered by Napoleon in a poem celebrating “The Restoration of the Works of Art to Italy.” Elizabeth Bishop wrote a parody about a boy trying to recite a poem by this author, in which “wreathing fires” “caught the flag on high” and “stream’d above... / like banners in the sky.” This author wrote sympathetic poems about historical (*) women such as Arabella Stuart and Juana of Castile in her major collection, *Records of Woman*. In her best known poem, a boy dies waiting in vain for his “father’s word” relieve him of duty as he stands “on the burning deck” of a ship at the Battle of the Nile. For 10 points, name this popular 19th century female English poet of “Casabianca.”

ANSWER: Felicia (Dorothea) Hemans

<Poetry>

2. A wing of this city’s Harwood Museum of Art is dedicated to 6-foot-square grid paintings and other works by the Canadian minimalist Agnes Martin. Another artist based in this city was inspired by the Mexican muralists in creating lithograph-like paintings of women of his own ethnicity, and was named R.C. Gorman. The “Absence” and “Presence” of an art patron from this city title abstract paintings by that patron’s lover, Andrew Dasburg. Joseph Henry Sharp and Ernest Blumenschein were among this city’s “Six,” who founded its namesake (*) “Society of Artists.” This city’s La Fonda hotel houses a collection of “forbidden” paintings by D.H. Lawrence, whose ashes are interred on his ranch in this city. In the 1940s, a generation of “moderns” was attracted to this city by the wealthy patron Mabel Dodge Luhan. Ansel Adams’s first book consists of photos of the pueblo bordering—for 10 points—what New Mexico town home to an art colony?

ANSWER: Taos, New Mexico [accept Taos Pueblo or Taos Society of Artists]

<Other Academic>

3. This song shares its name with a pamphlet by the “water-poet” John Taylor whose cover depicts a wild scene involving “eeles,” “gudgeons,” and a wheelbarrow. A book titled for this song describes visionary figures like John Tany, who took the name “Theareujohn” and burned his Bible, as part of its focus on the oft-dismissed “lunatic fringe.” That book titled for this song takes a “worms-eye view” of its period by detailing the radical ideas of groups such as the Ranters and the Levellers and was written by Christopher Hill. This song lists (*) “roast beef and shred pie,” as well as “Charity” among those slain at “Naseby fight” and laments how “Old Christmas is kickt out of Town” by the Puritans. Apocryphally, this English Civil War-era ballad was played as Charles O’Hara offered his sword to Benjamin Lincoln. For 10 points, what ballad was supposedly played by Cornwallis’s band during the surrender at Yorktown?

ANSWER: “The World Turned Upside Down”

<European/Other History>

4. *Warning: specific term required.* **This process is framed as a cycle of divergent and convergent activities and analogized to a river-rafting excursion, in a book titled for this process’s “journey” that summarizes the results of a longitudinal study led from Minnesota by Andrew Van de Ven. Gabriel Tarde’s work on the “laws of imitation” inspired a theory of this process, which used the example of a Peruvian village that stigmatized boiling water as an example of a failure to adopt the results of this process. “Organic” and “mechanistic” organizations are contrasted in a 1961 book by Tom (*) Burns and G.M. Stalker titled for the “management” of this process. A book about the “dilemma” of people who carry out this process used the rise and fall of disk-drive companies to illustrate a form of it that often begins in a “low-end foothold.” The results of this process are embraced last by “laggards” and first by “early adopters” according to a theory of their diffusion developed by Everett Rogers. Clayton Christensen theorized the “disruptive” form of—for 10 points—what process of inventing new or improved methods or products?**

ANSWER: **innovation** [accept *The Innovation Journey*, *The Management of Innovation*, *The Innovator’s Dilemma*, the diffusion of **innovation**, and disruptive **innovation**; prompt on disruption or invention before “disruptive” or “inventing” are read]

<Social Science>

5. **In the second half of a film from this country, the only dialogue comes from a monkey who’s “translated” in the subtitles. In another film from this country, a country music-loving dentist serenades a monk who dreamed of becoming a DJ. The two halves of that film from this country begin with nearly identical depictions of a woman interviewing a man for a job, first in a countryside medical clinic and then in an urban hospital. Different styles were used for each of the six reels of a film from this country in which a princess is pleased by a talking (*) catfish. In another film from this country, a soldier’s country-boy love is impersonated by a tiger-shaman. In a Palme d’Or-winning film from this country, the title dying man is joined by his dead wife Huay and his son Boonsong, who has turned into a red-eyed Ghost Monkey. The films *Tropical Malady* and *Uncle Boonmee Who Can Recall His Past Lives* were directed by Apichatpong Weerasethakul, a man from—for 10 points—what Southeast Asian country?**

ANSWER: Kingdom of **Thailand** [or Ratcha-anachak **Thai**]

<Other Arts>

6. **Human T-cell leukemia virus enters white blood cells upon binding to a transporter of this compound. The rate of cellular import of this compound increases with its concentration inside the cell in the most common example of *trans*-acceleration. Because irradiation with UV light causes cytochalasin B to crosslink to an enzyme with this substrate, it is mostly used to study importers of this compound. All of the solute carrier family of proteins numbered with a two transport this compound. In mature mammals, a transporter for this compound is the most common receptor in the (*) blood brain barrier. The canonical example of cotransport is how sodium enables the movement of this species through the renal tubules to allow reabsorption of it from the filtrate. A monomeric kinase that unusually displays substrate cooperativity senses this compound in the liver. In bacteria, this compound serves as the catabolite repressor for the *lac* operon. For 10 points, name this compound whose GLUT4 receptors are regulated by insulin.**

ANSWER: **glucose** [prompt on C-6 H-12 O-6; prompt on hexose; prompt on sugar]

<Biology>

7. Like Balaam, the author of this story ended up blessing its main character despite trying to curse her, according to a critical essay by Tolstoy that translator Constance Garnett included in a collection headlined by this story. The protagonist of this story repeats the sentence “An island is a piece of dry land surrounded on all sides by water,” which is the “first opinion she uttered with conviction after so many years of silence.” The title character of this story feels numb upon hearing a knock at her front gate, fearing that (*) Sasha’s mother will return after six months away to reclaim her ten-year old son. The protagonist of this story is indignant at the public desire for buffoonery while married to the theater director Kukin, dreams of logs during her marriage to the lumber merchant Vasily, and is obsessed with animal diseases during her affair with the veterinarian Smirnin. For 10 points, name this Anton Chekhov story about Olenka, whose title nickname reflects her impressionability and need to be loved.

ANSWER: “The **Darling**” [or “**Dushechka**”]

<Short Fiction>

8. Donald Francis Tovey’s analysis of this piece at the end of an essay on “Some Aspects” of its composer’s “Art Forms” was used as the starting point for the analysis of this piece in the chapter “Dissociation and Integration” of a book by Joseph Kerman. This piece’s whirlwind, cut-time scherzo in E major ends with one of the earliest uses of *sul ponticello*. Schubert supposedly requested this piece to be played at his deathbed. After less than a minute, this quartet’s third movement dissolves into the fourth, a huge (*) variations set in A major. This piece opens with the second violin playing [read slowly] “G-sharp, B-sharp, C-sharp, A.” This piece’s numerical predecessor includes a lengthy, slow “Cavatina,” while its A-minor successor includes the “Heiliger Dankgesang” [“HIGH”-lih-guh DAHNK-guh-zahng]. The subject of this string quartet’s opening fugue is repeatedly evoked in its seventh and final movement. For 10 points, name this late Beethoven quartet in C-sharp minor, whose numerical predecessor originally ended with the *Grosse Fuge*.

ANSWER: Ludwig van **Beethoven**’s String Quartet No. **14** [accept Beethoven’s Opus **131**; answers indicating Beethoven’s **C-sharp minor quartet** until it’s mentioned]

<Auditory Arts>

9. A northeast Chinese delicacy called “fried ice” lends its name to the process of doping this substance with boron. Ruthenium (0001) is mostly used as a catalytic surface on which to react this substance. Lerf and Klinowski proposed that random epoxides form in the nonstoichiometric yellowish oxide of this substance, which then breaks down to give nanoparticles called platelets. Stoichiometric fluorination or chlorination of this substance makes wide-(*)gap semiconductors, though normally, its bandgap depends on if phonons are located at K points or at the center of a Brillouin zone. The “white” analog of this substance, which essentially repeated units of inorganic benzene, is made of boron and nitrogen. Nanoribbons of this substance are formed by treating nanotubes with a strong oxidizer and acid, causing them to unzip; traditionally, though, it is made through exfoliation. For 10 points, name this very conductive 2D planar array of carbon.

ANSWER: **graphene** [or fluor**ographene**; or **graphene** oxide; or **graphite** oxide; prompt on carbon]

<Chemistry>

10. Richard the Lionheart gifted a sword claimed to be Excalibur to a holder of this title who was nicknamed “The Monkey King” for his ugliness. The traveler Ibn Jubayr praised the Martorana cathedral constructed under a ruler of this title by a minister to whom he gave the rank *ammiratus ammiratorum*, George of Antioch. The first holder of this title obtained it by supporting Antipope Anacletus II over Innocent II, and commissioned a now-lost silver planisphere and a world map divided into seven climate zones from the (*) geographer Muhammad al-Idrisi. That holder of this title ruled a frontier zone called the Kingdom of Africa, which was lost by his unjustly-nicknamed son William the Bad. A fusion of Arab and Byzantine art styles developed under a line of holders of this title from the Hauteville family, beginning with Roger II. For 10 points, the Hohenstaufens and Angevins later held what royal title originated by the Norman conquerors of a Mediterranean island?

ANSWER: **King of Sicily**

<European History>

11. The narrator realizes that his eyes have melded with the eyes of this structure when he tracks the flight of a bee visiting a chrysanthemum. This structure seems like “a ship crossing the sea of time” to the narrator, who notes that time had “floated backwards” after it “had struck” the wings of a phoenix that crowns this building’s roof. The protagonist pictures a series of universes nested within one another, upon visiting this structure for the first time with his dying father and seeing a scale model of it inside. The protagonist slips a photograph of a prostitute into the morning newspaper of this place’s (*) Superior, who tells a story in which a disciple places a pair of shoes on his head in response to his master killing a kitten. The protagonist reminds himself of the koan “If you meet the Buddha, kill the Buddha” just before he lights bundles of straw in this building. For 10 points, name this structure whose beauty so overwhelms the acolyte Mizoguchi that he burns it to the ground in a novel by Yukio Mishima.

ANSWER: The **Temple of the Golden Pavilion** [or the **Golden Temple** as it is referred to many times in the novel; or **Kinkaku-ji**]

<Long Fiction>

12. In a case addressing this technology, Hugo Black wrote that “courts should not overrule an administrative decision merely because they disagree with its wisdom.” Illicit access to this technology in Israel was provided by the “anti-mehikon” device which disabled the mandatory “eraser.” Guillermo González Camarena's field-sequential disk system for this technology was invented in Mexico in 1940 and never became a consumer standard, though the system’s simplicity led to NASA using Gonzalez’s method to equip *Voyager* with this technology. This technology was introduced in the UK in 1928 when John Logie Baird used it on a basket of (*) strawberries. In Australia, this technology was first used in 1967 at the Pakenham races, the same year BBC2 brought it to Wimbledon for the first time. France and the Soviet Union used the SECAM system for this technology, while the rest of the world was split into the PAL and NTSC regions. For 10 points, name this technology which allows the NBC peacock to appear in six different hues.

ANSWER: **color** television [prompt on television or TV until “1967” is read]

<World History>

13. **Two biomarker proxies for this quantity are the alkenone unsaturation index, and TEX₈₆** [“T-E-X-eighty-six”], which is based on the abundance of different crenarchaeotal [kren-ar-kee-OH-tull] membrane lipids known as GDGTs. A proxy for this non-energy quantity abbreviated OHC is usually measured in units of 10 to the 22nd power joules. Harold Urey discovered a logarithmic relation between this quantity and the oxygen isotope fractionation during calcite precipitation, which Cesare Emiliani extended to foraminifera [for-am-min-NIF-uh-ruh]. A “composite plus scale” approach was used to generate estimated time series of this quantity from multiple sources of proxy data in a series of papers from the late 90s by (*) Mann, Bradley, and Hughes. Increased values of this quantity are correlated with higher-intensity tropical cyclones. This quantity’s response to a positive feedback mechanism proposed by Svante Arrhenius is commonly invoked to explain the hockey stick graph. For 10 points, name this quantity that rises over time in the greenhouse effect.

ANSWER: global sea surface **temperatures** [or **temperature** anomaly; or ocean **temperatures**; or surface **temperature** of the Earth; or similar answers; or **T**; do not accept or prompt on “air temperature” or “atmospheric temperature”]

<Other Science>

14. **At a fictional version of this university, a scholar of George Kenna is swarmed by protesting women after helping the sexist Professor Dibble escape down a rope through an office window. Romanticists flocked to this university after it amassed the second largest Wordsworth collection in the world and hired M.H. Abrams, who based the first edition of the Norton Anthology of English Literature on a survey class he taught here. The most prominent joint MFA/PhD program is offered by the English department of this school, where students like Thomas Pynchon saw Vera (*) Nabokov pass out blue books at her husband’s lectures. Allan Bloom ended *The Closing of the American Mind* by fuming over a 1969 incident in which Afro-American Society students carrying guns and bandoleers occupied Willard Straight Hall, the student union of this school’s central campus. For 10 points, name this college which Richard Fariña fictionalized as Mentor University, which is a reference to the *Odyssey* much like the name of its real-life hometown of Ithaca, New York.**

ANSWER: **Cornell** University (The first sentence is about Alison Lurie’s *The War Between the Tates*.)

<Miscellaneous Lit>

15. **In his *Otia Imperialia*, Gervase of Tilbury explained that this condition’s existence can be proven by the fact that snakes have white bands on their heads. In Haitian legends, people with this condition were nicknamed for their red eyes. In Greek stories, Damarchus overcame this condition to become a champion boxer. A baron with this condition who tears off his wife’s nose for hiding his clothing was worked into the Arthurian sagas as the Tales of Melion and Marrok. In the *Volsunga* saga, Sigmund uses a magical leaf to heal (*) Sinfjotli’s wounded windpipe after the two of them spend months being afflicted by this condition. People with this condition were called *bisclavret* by the Bretons, after a popular lai by Marie de France. A man with this condition from Gevaudan popularized most of the common legends about it today. This condition gets its most common name from a son of Pelasgus who served the roasted flesh of his sons Nyctimus to Zeus, who angrily summoned a great flood in turn. For 10 points, name this condition legendarily treated by aconite, or, in more dire circumstances, by a silver bullet.**

ANSWER: **lycanthropy** [or being a **werewolf**; or obvious equivalents like **turning into a wolf**; prompt on partial answers]

<Mythology/Geography/Current Events>

16. An associate of Mayor Ed Koch who rose to prominence due to success in this event was forced to resign as head of the NYC Department of Consumer Affairs after Carl Andrew Capasso bribed Judge Hortense Gabel. The organizer of an action at this event recalled that “we wanted to do it... because we all saw how it related to our lives” in the essay “The Personal is Political.” This event is dubbed a “Consumer Con-Game” and a “Pop Culture Obsolescent Theme” in a ten point manifesto by Robin Morgan, who later in the same year founded an “International Terrorist (*) Conspiracy from Hell.” At one iteration of this event, items such as girdles and copies of *Ladies' Home Journal* were thrown into a “freedom trash can,” originating the trope of “bra-burning.” In response to the 1968 instance of this event, activists gathered on the Atlantic City boardwalk to crown a sheep. For 10 points, Bess Myerson was the first Jewish winner of what annual pageant?

ANSWER: **Miss America** [prompt on beauty pageants; do not accept or prompt on “Miss USA”]

<American History>

17. *Description acceptable.* The Egyptian liberal jurist Muhammad Abduh authored a treatise on this concept, in which he used it to argue that scientific reason was compatible with Islam. Junayd of Baghdad distinguished four levels of understanding regarding this concept, of which the highest is *fana*, or “annihilation.” Along with the prohibition of wrong, the injunction of right, the intermediary position, and the promises and threats of God, this is one of the key Mu’tazilite principles. Ibn Taymiyya divided this concept into two forms, “ar-rububiyah” and “al-uluhiyyah,” which respectively translate to “of (*) lordship” and “of worship.” Salafis refer to this concept with a gesture consisting of a raised index finger. Muhammad claimed that reciting a four-verse Surah devoted to this concept, Surah 112, is equivalent to reciting a third of the Quran. Disregarding this doctrine is the one sin that cannot be forgiven by God, and is known as *shirk*. This concept is encapsulated in the phrase *la ilaha illallah*, which is the first half of the *shahada*. *Tawhid* is the Arabic term referring to—for 10 points—what property of God?

ANSWER: **oneness of God** [or unity; or *tawhid* before it is mentioned; prompt on monotheism or word forms]
<Religion>

18. Igor Dzyaloshinskii first proposed that strain could cause a change in this quantity in an effect first observed in manganese and cobalt fluorides. The curl of this quantity gives the bound current density, and for a sphere in a uniform field, this quantity is proportional to the permeability minus 1 over the permeability plus two. Starting from the saturation value of this quantity, the coercivity is the field strength needed to reduce it to zero. In SI units, this quantity is measured in amperes per meter, and in many materials it equals the (*) susceptibility times the H-field. Remanence is defined as this quantity’s value at zero field strength in a hysteresis loop where this quantity is traditionally plotted on the y-axis. In SI units, adding this pseudovector to the H-field and multiplying the sum by the vacuum permeability gives the B-field, in exact analogy with the electric polarization. For 10 points, name this quantity equal to the magnetic moment per unit volume.

ANSWER: **magnetization** [accept **magnetic dipole moment per unit volume** or volume **density of magnetic dipole moment** before “moment”; prompt on magnetic polarization]

<Physics>

19. This concept and “Perceptual Illusion” title a 2009 paper by Jessica Moss, who argues that this concept should be understood in relation to beliefs about “apparent goodness” derived from a *phantasia* rather than the intellect. Book III of *de Anima* mentions this concept in the context of conflict between wish and appetite during a larger discussion of how living things move. This state is placed alongside “vice” and “brutishness” as one of the three moral states to be avoided in a section of a work that claims this state is observable, but only in people who are not (*) temperate. This state is said to be for the soul what paralysis is for the body in the *Nicomachean Ethics*, whose seventh book examines this state’s relation to ignorance. This state is contrasted with *enkrateia* or “continence.” In the *Protagoras*, Plato denies the possibility of this state by having Socrates claim that “no one willingly goes after evil.” For 10 points give this Greek term for when one allows *pathos* to overrule reason, sometimes called weakness of the will.

ANSWER: akrasia [accept incontinence before “continence”; prompt on weakness of will until mentioned]
<Philosophy>

20. In a photo from this country, a gramophone horn sits in a bin near the title *Ladder*, which leans next to a stack of coffins. In another photo from this country, a topless woman lies on her back wearing shorts cut away to reveal her pubic hair. A photographer from this country created *Ladder of Ladders* and *The Good Reputation Sleeping*, and took a photo in which blood trails down to the right from a man’s body after a union leader was shot during a sugar-mill strike. Anita (*) Brenner’s *Idols Behind Altars* was the first major English-language account of art in this country, which is the setting of the photo *Striking Worker Assassinated*. In the mid-1920s, Tina Modotti and her lover Edward Weston lived in this country, where they worked with a painter who depicted two suspended, empty dresses in *Memory, the Heart*. A photographer’s daughter from this country referenced a crippling bus accident in works like *The Broken Column*. For 10 points, name this home of Manuel Álvarez Bravo and Frida Kahlo.

ANSWER: Mexico [or United Mexican States; or Estados Unidos Mexicanos]
<Visual Arts>

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Bonuses

1. The Hartree-Fock equation is essentially a self-consistent application of this method, where the free parameters are the various weights of basis functions. For 10 points each:

[10] Name this ubiquitous approach in computational chemistry in which you estimate molecular orbitals by simply choosing parameter values that minimize the energy. These methods are often contrasted with perturbative methods.

ANSWER: **variational** methods [or word forms]

[10] A very simple version of the variational method minimizes the energy in this system with respect to the effective nuclear charge, thus yielding an estimate for Z of around $27/16$. Because its subatomic particles form a three-body problem, a closed-form solution to the Schrodinger equation has not been found for this atom.

ANSWER: **helium** atom

[10] Electronic correlation can be determined both using variational methods like CI as well as nonvariational approaches, like this one in which the exponential of a namesake operator provides an ansatz to the reference wavefunction to obtain excitations.

ANSWER: **coupled cluster** [or **CC**]

<Chemistry>

2. During this period, the attempted assassination of the prince regent in the Toranomom incident was used as a justification for a 1925 law aimed at the Communist Party. For 10 points each:

[10] Name this period whose namesake democracy, which flourished under Katō Takaaki, was cut short by the passage of that Peace Preservation Law. This era occurred between the Meiji Restoration and the Showa era.

ANSWER: **Taishō** era

[10] The common English name of the Tokkō police force empowered by the 1925 Peace Preservation Law indicates that they were charged with suppressing this type of crime. The *tenko* policy allowed charges for this sort of crime to be dropped if the defendant renounced their politics.

ANSWER: **thought** crime

[10] The Tokkō was a secret police wing of this military police force of the Japanese Army, which oversaw the Sook Ching purge in Singapore and included the human experimentation group Unit 731.

ANSWER: **Kempeitai** [or **Kenpeitai**]

<World History>

3. This work criticizes the historical inaccuracies in *Richard II* as well as Viola's cross-dressing in *Twelfth Night* for weakening the "probability" of their respective narratives. For 10 points each:

[10] Identify this 1754 work in three volumes by Charlotte Lennox, the earliest comparative study of Shakespeare's source material as well as one of the earliest works of feminist literary criticism.

ANSWER: ***Shakespeare Illustrated*** [or ***Shakespear illustrated***, or, *The novels and histories on which the plays of Shakespeare are founded*]

[10] *Shakespeare Illustrated* was written with the input of this friend of Lennox's, who prepared a complete edition of Shakespeare's plays out of spite for the terrible editions he was forced to quote from in hundreds of entries of his *Dictionary*.

ANSWER: Samuel **Johnson** [or Dr. **Johnson**]

[10] The preface to Johnson's edition was attacked for being insufficiently fawning toward Shakespeare by Elizabeth Montagu, who founded this society to which Lennox and Johnson belonged. The sartorial name of this society was eventually applied pejoratively to describe any woman of intellectual bent.

ANSWER: **Blue Stocking** Society [or **bluestockings**]

<Miscellaneous Lit>

4. August Hollingshead and Frederick Redlich found that social class and psychiatric treatment in this city were correlated in their book *Social Class and Mental Health*. For 10 points each:

[10] Name this American city, whose governmental structure was used to support a pluralistic theory of political power in Robert Dahl's book *Who Governs?*

ANSWER: **New Haven**, Connecticut

[10] In *A Preface to Democratic Theory*, Dahl coined *this* term to describe political systems that have a core set of well-established democratic institutions, but which may not be fully democratic.

ANSWER: **polyarchy**

[10] In a 1957 article titled for *this* concept, Dahl argued that an entity has it to the extent that it can get another entity to do something it would not otherwise do. In his book *Bound to Lead*, Joseph Nye discussed the "soft" form of this concept, which uses co-optation instead of coercion.

ANSWER: **power** [accept "The Concept of **Power**" or soft **power**]

<Social Science>

5. Answer the following about various pursuits referred to as "ethnology" in 19th-century America, for 10 points each.

[10] The founder of the American Ethnological Society, Treasury Secretary Albert Gallatin, spent his last years classifying these things, which were also classified by the Bureau of Ethnology under John Wesley Powell. Roger Williams's major work is a "Key Into" this subject.

ANSWER: American **Indian languages** [accept obvious equivalents or more specific language groups; accept *A Key Into the Language of America*; prompt on partial answers]

[10] Josiah Nott's super-racist *Types of Mankind: Or, Ethnological Researches* drew on the work of Samuel George Morton with these objects to argue for racial polygenism. The measurement of these objects was the subject of the science of phrenology.

ANSWER: **skulls** [or **crania**]

[10] While engaged in ethnological research and mythography in the Michigan Territory, this explorer obtained 14 million acres for the U.S. by the Treaty of Washington. His first wife, Jane Johnston, wrote poetry in Ojibwa, and his second wrote the anti-Tom novel *The Black Gauntlet*.

ANSWER: Henry Rowe **Schoolcraft**

<American History>

6. In his 1952 paper “The Chemical Basis of Morphogenesis,” this man identified patterns that emerge only if there is a long-range inhibitor that diffuses faster than a short-range activator that has positive feedback. For 10 points each:

[10] Identify this polymath who names repeated patterns with finite wavelength, such as zebra stripes and lizard scales. He first formulated reaction-diffusion networks during his late in life stint as a theoretical biologist.

ANSWER: Alan (Mathison) **Turing**

[10] Turing proposed that a small perturbation on a spherical system could lead to predictable chemical patterning every time, such as during this part of embryonic development, when the spherical symmetry of the blastula is broken due to the formation of a primitive streak.

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

[10] The exact definition of positive feedback loops in biochemical systems is usually attributed to this Israeli biologist, who more or less invented systems biology with his observation of network motifs in the transcriptome of *E. coli*, which he included in his classic textbook on the subject.

ANSWER: Uri **Alon**

<Biology>

7. This theologian dubbed the proto-Creeds of his time the “Rule of Truth” or “Rule of Faith.” For 10 points each:

[10] Name this theologian who was the first to emphasize all four gospels as equal sources of scriptural authority. He claimed that Christ’s Incarnation “sums up” or “recapitulates” the rest of human Creation.

ANSWER: Saint **Irenaeus**

[10] Irenaeus is best-known as an opponent of this movement, whose modern name he coined. Thinkers influenced by this movement typically distinguished between a transcendent, true God, and the actual creator of the universe

ANSWER: **Gnosticism**

[10] Irenaeus was much more forgiving toward the Quartodecimans, who insisted on celebrating *this* Christian holiday on the 14th of Nisan [nee-SAHN] to coincide with Passover.

ANSWER: **Easter** [or **Pascha**]

<Religion>

8. This author set a poem in “the tall house of our habit,” where “the soup kettle will clang five notes of pleasure / and love will take up quarters.” For 10 points each:

[10] Identify this Jewish-American poet who won the 1973 Pulitzer for her volume *Up Country*, which explores life on her farm in rural New Hampshire. She wrote her final memoir, *The Pawnbroker’s Daughter*, just before her death in 2014.

ANSWER: Maxine **Kumin**

[10] Kumin was deeply shaken by the 1974 suicide of this Confessional poet, which she reflected upon in her poem “How It Is” with the lines: “I think of the last day of your life, / old friend, how I would unwind it, paste / it together in a different collage, / back from the death car idling in the garage.”

ANSWER: Anne **Sexton**

[10] Over lunch earlier that fateful day, Kumin had helped Sexton revise the manuscript of this posthumously-published collection, whose final poem features Sexton playing a royal straight flush in a game of poker, having arrived at an island at the end of the title metaphorical journey.

ANSWER: *The **Awful Rowing Toward God***

<Poetry>

9. This feature was first discovered by white explorers in 1869, when Charles Cook saw it from Inspiration Point. For 10 points each:

[10] Name this 24-mile feature that runs parallel to Uncle Tom's Trail. This feature's namesake river enters it shortly after leaving the Hayden Valley and travelling over the lower of two namesake waterfalls.

ANSWER: **Grand Canyon of the Yellowstone** [do not accept or prompt on partial answers, especially "Grand Canyon"]

[10] Early 2018 flooding around the Yellowstone River was attributed to this phenomenon, in which chunks of ice prevent a river from flowing downstream.

ANSWER: ice **jam** [or **ice dams**]

[10] Yellowstone *County* is home to Pictograph Cave, Pompey's Pillar, and this city, which is both the most populous on the Yellowstone and the most populous in Montana, with a whopping 150,000 residents.

ANSWER: **Billings**

<Mythology/Geography/Current Events>

10. Coincidentally, both John Griffiths and Robert Gill copied the frescoes found at this location onto canvases that were almost entirely destroyed in unrelated fires. For 10 points each:

[10] Name this World Heritage site in Maharashtra that is home to the world's largest collection of Buddhist cave paintings, as well as numerous rock sculptures.

ANSWER: **Ajanta** Caves

[10] Outside India, the major collection of Ajanta works can be found in *this* American museum. This museum, which houses the largest collection of Japanese art outside of Japan, is also home to Turner's *The Slave Ship* and Paul Gauguin's *Where Do We Come From? What Are We? Where Are We Going?*

ANSWER: **Museum of Fine Arts**, Boston [or Boston **MFA**]

[10] The most frequently reproduced image from the Ajanta caves is a picture of this Bodhisattva holding a blue lotus in Cave 1. This Bodhisattva is usually depicted in Indian art with a blue jewel around the neck or holding a willow branch.

ANSWER: **Avalokiteshvara** [or **Avalokitesvara**; or **Padmapani**; accept **Guānyīn**]

<Visual Arts>

11. The variance of this quantity is the Fisher information. For 10 points each:

[10] Name this quantity, which equals the partial derivative of the log-likelihood with respect to a given parameter.

ANSWER: **score** function

[10] The maximum likelihood estimator for a parameter is asymptotically efficient, meaning it achieves the lower bound on variance set by this rule. It states that the variance of any unbiased estimator of a parameter is at least as high as the inverse of the Fisher information for that parameter.

ANSWER: **Cramér-Rao** bound or inequality

[10] Maximum likelihood estimation is analogous to the use of this man's namesake "multipliers" in optimization problems. With Euler, this Frenchman co-names a PDE originally used to find the stationary point in the tautochrone problem.

ANSWER: Joseph-Louis **Lagrange** [accept **Lagrange** multipliers or **Euler-Lagrange equation**]

<Other Science>

12. This novel ends with its protagonist telling the sea: “I fix my eyes upon you, and you glitter, without limit” in the afterlife, having just been stabbed to death by the Fool for refusing to pray at the grave of his teacher Thierno. For 10 points each:

[10] Name this 1961 novel by Senegalese author Cheikh Hamidou Kane, which concerns the loss of spiritual identity felt by the Koranic scholar Samba Diallo after he is sent to France to study philosophy.

ANSWER: **Ambiguous Adventure** [or *L’Aventure ambiguë*]

[10] A passage from *Ambiguous Adventure* describing how the cannons of European colonizers were not as powerful as the schools they established afterwards is highlighted in this essay, which justifies the decision of its author Ngũgĩ wa Thiong’o to write in his native tongue of Gikuyu.

ANSWER; **Decolonizing the Mind**

[10] Chinua Achebe explored the destabilizing influence of Western education on African society in this novel, in which Obi Okonkwo returns from a university in England and succumbs to the corruption of the Nigerian civil service.

ANSWER: **No Longer at Ease**

<Long Fiction>

13. Kidnappers known as “khappers” terrorized Jewish communities to fill quotas for these institutions. For 10 points each:

[10] Name these schools of Czarist Russia where the children of conscripts were trained before being sent to mandatory 25-year-terms in the army.

ANSWER: **canton** schools [or **garrison** schools; or the **cantonist** system]

[10] Aleksander Wielopolski’s imposition of conscription to the Imperial Russian Army in Poland instigated this 1863 Polish uprising, which Giuseppe Garibaldi’s son Menotti led an Italian volunteer unit to aid.

ANSWER: **January** Uprising

[10] A reduction in the required period of military service was introduced in 1874 by Dmitry Milyutin, who also organized an 1864 genocide targeting these people. The majority of the Egyptian Mamluks came from this group of oft-fetishized Caucasian Muslims.

ANSWER: **Circassians** [or **Adyghe**; or **Cherkess**]

<European History>

14. Alluding to this action, the Choragos tells its perpetrator that “You suffer it all twice over, pain in remorse, remorse in pain.” For 10 points each:

[10] Name this dramatic action that is accomplished offstage with a pair of golden brooches, as relayed by the Second Messenger.

ANSWER: **Oedipus** Rex **blinding** himself [prompt on partial answer]

[10] Oedipus cries “You will never see the crime I have committed or had done upon me!” as he slashes his eyeballs, producing *this* release of emotions through art that Aristotle called a hallmark of tragedy.

ANSWER: **catharsis**

[10] This Irish classical scholar countered the idea that the play proves there’s no free will by pointing to Second Messenger’s usage of the phrase “evils done on purpose” in reference to Oedipus’s self-blinding. He examined the influence of the supernatural in the age of Plato in his seminal book *The Greeks and the Irrational*.

ANSWER: E.R. **Dodds** [or Eric Robertson **Dodds**]

<Drama>

15. Among other goals, the PANDA experiment intends to study these composite particles, which are unique in the Standard Model in that they can have a total angular momentum of 2 or 3 in their ground state. For 10 points each:
[10] Name these hypothetical particles that are made up of strong-force-carrying particles without any valence quarks.

ANSWER: **glueballs**

[10] Glueballs are predicted by this theory of the strong force, which uses the concepts of asymptotic freedom and color confinement.

ANSWER: **quantum chromodynamics** [or **QCD**]

[10] This man and Giovanni Jona-Lasinio introduced a model of nucleons and mesons that is seen as a low-energy approximation of QCD at the chiral limit. 47 years later, Jona-Lasinio presented this man's Nobel lecture.

ANSWER: Yoichiro **Nambu** [accept **Nambu-Jona-Lasinio** model]

<Physics>

16. Starting in the mid-'50s, this singer began recording an eight-volume survey of the Great American Songbook for Verve, a label founded to promote her. For 10 points each:

[10] Name this "First Lady of Jazz," best-known for her scat singing on songs like "A-Tisket, A-Tasket."

ANSWER: Ella (Jane) **Fitzgerald** [prompt on just **Ella**]

[10] During the classic 1960 *Ella in Berlin concert*, Fitzgerald forgot the lyrics to this song, improvising with lines like "Ah, Louis Miller... oh... something about cash. / Yeah... Miller... he was spending that trash" and mentioning earlier jazz performers of this song, like Bobby Darin.

ANSWER: "The Ballad of **Mack the Knife**" [or "Die Moritat von **Mackie Messer**"]

[10] *Ella in Berlin* then ends with a version of *this* jazz standard, including references to Charlie Parker's contrafact of this song, "Ornithology." Les Paul and Mary Ford's hit 1951 recording of this song is often cited as a key influence on early Rock and Roll.

ANSWER: "**How High the Moon**"

<Auditory Arts>

17. Words like "thing" or "object" lack individuating criteria and thus exemplify "dummy" concepts of *this* kind, according to David Wiggins, whose book *Sameness and Substance* promotes essentialism with respect to them. For 10 points each:

[10] Name this philosophical term that describes a principle for identifying or distinguishing particulars from each other and allows them to be counted together. Quine described them as terms "that divide their reference."

ANSWER: **sortals**

[10] The term "sortal" was coined to denote both real and nominal essences in this book by John Locke, which rejects Aristotelian essentialism but allows that experience allows us to make nominal essences.

ANSWER: *An **Essay** Concerning Human Understanding*

[10] In their debate over sortals, Quine and Peter Geach discussed the example of a statue and the gold from which it was made, a pairing that's also the object of much discussion in *this* area of philosophy, which is concerned with the relations of parts to wholes.

ANSWER: **mereology**

<Philosophy>

18. This style was used for the now-demolished mansion of Kraggsyde, which had an open wooden porch atop a massive archway and a covered wooden deck cantilevered over rocks sloping towards the ocean. For 10 points each:
[10] Name this New England architectural style of firms like Peabody and Stearns, which arose in the 1870s as a reaction to the ornate Eastlake style. Vincent Scully coined the name of this style in his PhD dissertation.

ANSWER: **shingle** style

[10] The iconic shingle-style William G. Low House was designed by McKim, Mead & White, a firm that mainly worked in *this* style of architecture, which was largely based on the curriculum of its namesake school in France.

ANSWER: **Beaux-Arts** style

[10] The Low House was located in this state, where Richard Morris Hunt built a series of summer homes. While building an estate in North Carolina, Hunt also built a mansion in this state for the same client.

ANSWER: **Rhode Island** (The mansion is The Breakers.)

<Other Arts>

19. A major conflict in this location began when members of one side pulled Godi, a member of a rival clan, out of a tree and beat him to death with a rock. For 10 points each:

[10] Name this site of a four-year war that ended when the Kasakela community ambushed and killed all remaining members of the Kahama community in 1978. In this Tanzanian location, David Greybeard was observed catching termites with twigs and blades of grass.

ANSWER: **Gombe** Stream National Park

[10] This British chimpanzee expert documented the Gombe Chimpanzee War, which, together with her observations of cannibalistic infanticide, altered primatologists' views of violence in non-human primates.

ANSWER: Jane (Morris) **Goodall**

[10] This other primatologist at Emory University wrote about power dynamics and aggression among primates in books like *Chimpanzee Politics*. He discussed the origins of morality in books like *The Age of Empathy* and *The Bonobo and the Atheist*.

ANSWER: Frans **de Waal** [or Franciscus Bernardus Maria **de Waal**]

<Other Academic>

20. Many members of this group were sent to the Moringen and Ravensbrück concentration camps, where they defied guards by singing songs such as "Jeepers Creepers" to each other. For 10 points each:

[10] Name this Hamburg-based subculture of teenagers in Nazi Germany who spoke English and held clandestine parties at which they danced to a namesake style of music.

ANSWER: **Swing Kids** [or **Swingjugend**]

[10] Swing fans in France during the same period comprised this culture, which defied government clothing rationing by wearing garish jackets extending to the knees festooned with dozens of useless pockets and belts. They were named for a line in a Johnny Hess cover of a Cab Calloway song.

ANSWER: **Zazou** culture [or Les **Zazous**]

[10] Swing and jazz were among the genres denounced by the Nazis under this label, which names a 1937 exhibition designed to mock unapproved art.

ANSWER: **degenerate** art [or **Ent-artete** Kunst]

<European History>