

Chicago Open 2020 2021: “We probably needed the extra year to finish it anyways.”

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TOSSUPS

1. **Reliefs of scrolls, baskets of fruit, and grotesque masks characterize a style of these objects originating in Venice called “Sansovino.” In 2018, Charlotte Chastel-Rousseau began an inventory of the 6,000 or so of these objects owned by the Louvre and staged an exhibition where styles of these objects named for Louis XV and Louis XVI were contrasted via paintings by Jean-Baptiste-Simeon Chardin. During the Italian Renaissance, religious works typically used the “tabernacle” style of these objects, while secular works used their (*) “cassetta” style. The only surviving example of these objects created by Vincent Van Gogh has yellow cross-hatching to imitate gilding. Seurat created both blue and white wooden examples of these objects for his masterpiece *A Sunday Afternoon on the Island of La Grande Jatte*. For 10 points, name these objects that typically surround and support a painting.**

ANSWER: picture **frames** [or painting **frames**]

<Painting/Sculpture, Mike Bentley>

2. **Ausonius created an incredibly vulgar poem in this genre by stitching together 100 half-lines and lines from Virgil. An idyll (“ID-ull”) in this poetic genre recounts an episode in the “house of flaxen-haired Menelaus” and is modelled on a collection of these poems by Sappho. The speaker desires to construct for a “short time an endless monument” in another of these poems and claims to have written it “in lieu of many ornaments.” Theocritus 18 is a classical example of these poems, which often begin with an invocation to the god (*)**

Hymenaeus. Variants of the line “the woods shall to me answer and my Eccho ring” are given in every stanza of one of these poems which is addressed to Elizabeth Boyle and is often appended to the author’s sonnet cycle *Amoretti*.

For 10 points, a poem by Edmund Spenser is named after what kind of poetic song sung at weddings?

ANSWER: **epithalamion(s)** [or **epithalamium** or **epithalamy** or **epithalamia**; prompt on marriage song/poem or bridal song or wedding poem; reject “song” or “prothalamion”]

<Poetry, Will Alston>

3. **In the subsonic limit, the Zakharov system reduces to a vector form of this partial differential equation that governs the dynamics of plasma oscillations coupled to ion acoustic waves. If the perturbation frequency is less than the Kerr coefficient times the signal power over beta-sub-two, this equation’s solutions blow up. This equation predicts that the refractive index increases with intensity, causing the self-focusing of laser light. Bepalov and Talanov discovered modulational instabilities in the solutions to this equation in gain mediums. This equation describes propagation through a medium with higher order electric susceptibilities. Due in part to their higher order terms, the (*) Ginzburg–Landau equation for the order parameter and the Gross–Pitaevskii equation are similar in form to this equation. For 10 points, name this equation that is essentially the equation governing wave function evolution, but with a cubic term.**

ANSWER: **nonlinear Schrödinger** equation [reject “Schrödinger equation”] (The second clue is a condition for modulational instability, where beta-sub-two is the second derivative of the phase constant with respect to angular frequency)

<Physics, Jonathen Settle>

4. Early in this period, landlords were given a period of five “fixed years” to capture any tenants who ran off. That was part of a series of laws passed during this period which made permanent the decrees of the [emphasize] *preceding* period, such as the “forbidden years” system. The dynasty which ended this period was supposedly cursed by a witch after her brigand son’s body was left hanging on a gate for months. In a climactic battle of this period, a militia of artisans and merchants called the “Second Volunteer Army” helped retake the (*) capital under the leadership of a butcher. In this period, the preacher Hermogenes was killed for giving his blessing to Mimin’s army. Beginning in this period, serfs were officially tied to the soil by a law authored by Patriarch Filaret. The incompetent king Fyodor the Bell-Ringer ruled for part of, for 10 points, what period of upheaval following the death of Ivan the Terrible?

ANSWER: **Time of Troubles** [or **Smuta** or **Smutnove vremya**; accept the **reign of Fyodor I** before “cursed by a witch”; prompt on occupation of Russia by Poland or occupation of Moscow by asking “we’re looking for the larger time period that’s part of”]

<Euro History, Will Alston>

5. The popularization of this word in the 19th century is credited to a passage which uses it to describe the “horrid hell” of the French Revolution from *The Misfortunes of Elphin* by Thomas Love Peacock. The first recorded English use of this word is a sermon describing a “mad kinde” of it among Parliamentarians by Paul Gosnold. Norm Ornstein, who resurrected this word in his 2017 *Atlantic* article about an “American” one, notes that its similarity in sound to many words for “shit” makes its meaning immediately obvious. A portmanteau of this word and one for a common type of soldier’s clothing is sometimes used to refer to (*) military dictatorships. A Tweet declaring that one of these institutions was “collapsing after its lamentable journey,” sent in 2018 by ex-CIA director John Brennan, briefly made it viral by using it to describe the Trump administration. For 10 points, give this word for government by the worst members of society.

ANSWER: **kakistocracy** [accept **khakistocracy**]

<Other Academic, Will Alston>

6. Oberto Airaudi, who renamed himself after this god, led his followers to build a Temple to Humanity in a commune named after this god’s cult center of Damanhur. A symbol of this god is drawn in six components representing fractional powers of two according to a document named for Alexander Rhind. After performing a ritual for sylphs, Rose Kelly correctly identified a statue of this god at the Boulak museum and told her husband about voices she heard from Aiwass. According to Thelema, the world is currently in the (*) Aeon of this god, whose most ancient cult center -- found at Hierakonpolis -- venerated his “elder” form. A spiral tail representing taste is attached to a symbol of this god depicted on amulets. This god names the oldest and most important name of a pharaoh and was often shown with a white and red crown symbolizing Egypt’s unity. For 10 points, what Egyptian god protected people with his *wedjat* eye?

ANSWER: **Horus** [or **Her**, or **Heru**-sa-Aset, or **Hor**, or **Har**] (Airaudi named himself “Falco.”)

<Misc Belief, Will Alston>

7. The protagonist of this novel dies while standing up after uttering the word “Here!” to which another character observes “when the voice of the Wahcondah called, he was ready to answer.” In this novel’s climax, the villain, who is said to “deal in black flesh,” kills himself after he is given a rope, then is forced to stand on a cliff ledge and either hang himself or starve. This novel’s protagonists are saved from a buffalo stampede after the braying of the donkey Asinus. Characters in this novel include Dr. Obed Battius and the (*) Pawnee warrior Hard Heart, who helps in the capture of Abiram White. This novel’s protagonist is framed for the murder of Asa and helps the “squatter” Ishmael avenge the murder of his son. That protagonist of this novel, who has crossed the title location to see the Pacific Ocean, is an octogenarian only referred to as “Trapper.” For 10 points, which of the *Leatherstocking* saga novels by James Fenimore Cooper is chronologically last?

ANSWER: *The Prairie*

<Long Fiction, Ike Jose>

8. When the output of this technique undergoes mass spectrometry, the results can be checked against known contaminants dubbed the CRAPome, which includes Sly·D. A version of this technique using the dye cibacron blue is used to deplete samples of albumin, and a version using boronate is used to measure A·1·C. In one version of this technique, imino·di·acetic acid or nitrilo·tri·acetic acid are commonly used as ligands. One version of this technique relies on the interaction between M·B·P and maltose. In the most popular version of this technique, imidazole is used to (*) elute the analyte off of resin containing cobalt or nickel. This technique is most commonly applied by attaching a G·S·T, FLAG, or poly·histidine tag to the target of interest, binding it to an appropriate column, then washing and eluting. For 10 points, name this purification technique which relies on a specific interaction between the analyte and the stationary phase.

ANSWER: affinity chromatography [or IMAC or immobilized metal affinity chromatography or affinity purification or pulldown; prompt on purification, protein purification, protein isolation, His-tag purification, chromatography, column chromatography, protein chromatography]

<Chemistry, Eric Mukherjee>

9. One of the hymns of Callimachus praises Ptolemy II for expelling some mercenaries that were hired from [emphasize] this non-European region after they rioted in Alexandria. At the Battle of the Elephants, Antiochus I defeated another band of mercenaries that were based in this region, who had been bribed to stop pillaging the realm of their employer Nicomedes I. After Cicero’s advocacy saved him from execution, a king of this region named Deiotarus aided Julius Caesar at the Battle of Zela. Three groups called the Trocmi, Tolistobogii (“toh-lee-STOH-boh-ghee”), and Tectosages (“tek-TOH-sah-gays”) formed a wave of (*) settlers of this region after a disastrous battle at Delphi killed their chief Brennus. As a Roman province, this region’s capital was the city of Ankyra, which is now today’s Ankara. A Pauline epistle that extensively discusses the conversion of Gentiles is titled after, for 10 points, what region of central Anatolia named for the migrating Celts who settled it?

ANSWER: Galatia [accept *Epistle to the Galatians*; prompt on Anatolia or Asia Minor; reject “Gaul” or “Galicia”]

<Ancient History, Will Alston>

10. S. J. Liebowitz and Stephen Margolis argued that some of these concepts are indirect, and thus “merely pecuniary,” in a paper that punningly labels one of them an “Uncommon Tragedy.” The paper “Coordination and Lock-In” explains how the presence of these concepts and switching costs creates a cycle in which firms repeatedly engage in price undercutting. These concepts simply have a value of N squared according to Metcalfe’s Law. Michael Katz and Carl Shapiro illustrated how these concepts proliferate in certain markets with the example of (*) WordPerfect’s parent company suing Microsoft. Their “negative” form is also called congestion. Competitive advantage from the “two-sided” variety of these effects is exemplified by Uber and Lyft, as it is easier to match riders and drivers when more people are searching for rides. Social media sites also exemplify, for 10 points, what effects in which a product’s utility grows as more people use it?

ANSWER: network effects [or network externalities; accept any answer indicating the value of a network; accept two-sided network effects; prompt on externalities]

<Social Science: Econ, Kurtis Droge>

11. The protagonist of this story hears a “soul-invading” song which makes him wonder if he hears “wind or music” after he gazes into a sea of crystal-clear water and sees the sun shining, even though it is nighttime. This story ends as a bloody-nosed bell-ringer flees from an ale-house to hide in the weeds after stealing a boot sole out of habit. After threatening to pull off an old woman’s underwear, a man in this story tells the tale of Sheptun’s wife, whose corpse turned blue after she was bitten. For three consecutive nights, a (*) philosophy student in this story visits a church and draws circles around himself while reciting funerary prayers for a girl who died after being thrown off his back. In this story, a witch summons an iron-masked creature with enormous eyelids, which the author’s notes say is the “king of the gnomes” in Ukrainian folklore. For 10 points, name this Nikolai Gogol story in which Khoma encounters the title evil spirit.

ANSWER: “The Viy”

<Short Fiction, Jack Mehr>

12. One general renamed this territory “Shaheed” on behalf of martyrs and later likened his occupation of this territory to storming the Bastille while defending himself in the Red Fort Trials. While occupying this territory, Japanese troops rounded up suspected spies among the Independence League and killed them in the Homfreyganj (“HOM-fray-ganj”) massacre; they also tortured about 10% of its capital’s population to death in the Cellular Jail built by the British. In 1943, Japan nominally handed over this (*) archipelago to Azad Hind, the government of INA leader Subhas Chandra Bose. The indigenous people of this archipelago include the “Great” people of its North, Middle, and South islands, as well as a group that killed missionary John Allen Chau in 2018. Port Blair is the capital of, for 10 points, what islands controlled by India whose Sentinelese people remain uncontacted?

ANSWER: Andaman Islands [or Andaman and Nicobar Islands; prompt on Sentinel Islands by asking “what larger archipelago they are part of?”; reject “Nicobar Islands”]

<World History, Will Alston>

13. This composer depicted a couple kissing in a piece based on his aria “Nur für Natur” which was dedicated to his second wife, Angelika. Another concert piece by this composer was based on a trio from one of his operas titled “Ha, seht es winkt, es blinkt, es klingt,” which is sung after Sandor finds the family jewels. In another opera by this composer, a singing teacher agrees to adopt a disguise to confuse the prison warden, who sings about his “bird-cage” in the aria “Mein schönes, großes Vogelhaus” (“myne SHUEH-nus gros-sus FOH-guh-house”). This composer of (*) *The Merry War* created a prince played by a mezzo-soprano trouser role who expresses his philosophy in the aria “Chacun à son gout” (“shah-KOON ah sohn GOO”). In that opera by this composer, a soubrette character expresses her astonishment at being compared to a chambermaid in “Mein Herr Marquis,” also known as Adele’s Laughing Song. For 10 points, what composer of *The Gypsy Baron* featured the characters of Orlofsky and Eisenstein in his opera *Die Fledermaus* (“FLAY-dur-mouse”)?

ANSWER: Johann Strauss II [accept Johann Strauss Junior or Johann Strauss the Younger; prompt on Strauss] <Classical/Opera, Vardoms kaya>

14. The conductor of a finite abelian one of these objects is the minimal modulus for which the Artin reciprocity law holds for that one of these objects. Kummer theory is concerned with classifying abelian instances of these objects that are constructed in a particular manner. A very neat result relates the existence of a chain of these objects, where each is quadratic, to the constructibility of a regular n -gon. All of these objects that are both separable and finite must be simple as a consequence of the primitive element theorem. These objects are cyclotomic if they are formed by (*) adjoining a root of unity. The smallest one of these objects over which a polynomial decomposes into linear factors is the polynomial’s splitting field. If one of these objects is finite and Galois, its intermediate fields and the subgroups of the Galois group have a one-to-one correspondence. These objects are denoted L/K (“L-over-K”). For 10 points, what objects are obtained by adding elements to a field?

ANSWER: extensions [or extension fields; or overfields; accept field extensions; accept splitting fields before “splitting”; accept number fields; prompt on fields] <Other Science: Math, Jonathen Settle>

15. This architect’s quote “art is the flower - life is the green leaf” is often paired with sketches of roses, which this architect often paired with teardrops in designs. This architect designed a “kimono desk” and requested North American yellow pine to build a gallery of dark timber beams and columns for a library modeled on Japanese interiors. A stylized swallow decorates the high back of a series of chairs by this architect which were commissioned by Catherine Cranston and shown at the (*) 1900 Vienna Secession Exhibition. This architect of the Argyle Chair collaborated with his wife Margaret Macdonald on a business named for Miss Cranston. A 2018 retrospective of this artist at the Kelvingrove Art Gallery was cancelled after a fire badly damaged the library that this architect designed for an art school. For 10 points, name this architect of the Art Nouveau Willow Tea Rooms and the Glasgow School of Art.

ANSWER: Charles Rennie Mackintosh <OArts: Architecture, Mike Bentley>

16. While serving a caliph addicted to this activity, Safi al-Din al-Urmawi pioneered its scientific study in his book *Kitab al-Adwār*. Al-Kindi illustrated how God sets the length of everyone's life with the example of a boy who is revived from a coma by practitioners of this activity but who dies immediately afterward. The only surviving work of Aristoxenus is a treatise on this activity, which he claimed could purify the soul in a passage presaging Johannes Kepler's mathematical theories of this activity. Nicomachus of (*) Gersia wrote the earliest surviving philosophical tract on this activity, the practice of which he related to the movements of planetary bodies. Al-Farabi promoted the use of *maqams* in this activity in a book that separated this activity from mathematics due to the necessity of performance. For 10 points, name this artistic activity, which the Pythagoreans theorized was created from harmonic scales.

ANSWER: playing / composing / listening to music

<Philosophy, Brad McLain>

17. This molecule is ubiquitinated (“yoo-BICK-wih-tih-nated”) by R·N·F·213, the major susceptibility factor for moyamoya disease. The peptide thanatin binds to the beta taco domain of this molecule’s translocator. Amino-arabinosylation (“uh-RAB-in-oscillation”) of this molecule can confer colistin resistance. It binds intracellularly to caspases 4 and 5 to activate a non-canonical inflammasome pathway. This molecule is removed from lysates using the Qiagen (“KAI-uh-jen”) buffer E·R or a polymyxin–B column, which is done during large–scale plasmid preparation. This prototypical PAMP is bound by C·D·14 and (*) T·L·R·4. It is detected using Limulus Amoebocyte Lysate derived from horseshoe crabs. This molecule is composed of an outer and inner core, Lipid A, and O Antigen. For 10 points, name this component of the outer membrane of gram–negative bacteria, a potent inducer of sepsis.

ANSWER: lipopolysaccharide [or LPS; or endotoxin; prompt on Lipid A and O antigen before read by asking “In what larger molecules is that component found?”]

<Biology, Eric Mukherjee/James Lasker (Bentley et al)>

18. In her book about this work’s publishing, Leslie Blum notes that its author was the perfect “Trojan Horse” due to this success of his earlier work “Survival” about the sinking of a small boat. This work remarks on a “curious kind of elated community” formed by its subjects, several of whom lie down to die on a riverbank after drinking from a pastor’s tub of water. Its first section ends in a tin factory where, in the “first moment” of a new age, a clerk’s left leg is crushed by falling bookcases. This work, whose structure is based on *The Bridge of San Luis Rey*, closes with the section (*) “Panic Grass and Feverfew,” in which a widow discovers that her hair is falling out. An entire 1946 issue of *The New Yorker* was taken up by this piece of long-form journalism, which profiles Father Kleinsorge (“KLYNE-sor-guh”), Dr. Masakazu Fujii, and four other survivors. For 10 points, name this report by John Hersey about the city where the first atomic bomb was dropped.

ANSWER: “Hiroshima”

<Misc. Lit, Mike Bentley>

19. **This man's winter trip to Philadelphia's Frankford Powder Mill helped him organize the second-ever powder mill in the U.S. at Canton. A 2019 exhibit focusing on the entire career of this man at the New York Historical Society argued that he was a "proto-industrialist" for setting up a rolling mill which made copper in sheets. This man's daughter Maria Balestier gifted Singapore the only bell from this man's foundry that is found outside the U.S. The printer William F. Stratton popularized an image which this man cribbed from (*)** Henry Pelham ("PELL-um") and adapted to contemporary politics. Helen F. Moore parodied a popular verse about this man to give more credit to William Dawes. A Pulitzer-winning 1942 biography of this man was written by Esther Forbes, who featured him prominently in her novel *Johnny Tremain*. A copper engraving of the Boston Massacre was made by, for 10 points, what silversmith who famously warned that "the British are coming"?

ANSWER: Paul **Revere**

<American History, Mike Bentley>

20. **A speech by this politician compared one organization's charge to a mystery of nature that "shouldn't fly, but instead it does" and likened a series of structural reforms to making a "bumblebee into a real bee." In July 2021, this politician announced a ban on cruise ships traveling to protected lagoons. In March 2021, this politician's government controversially blocked Australia from receiving an export of 250,000 (*) AstraZeneca vaccines. In a 2012 speech before a London conference, he famously stated that the organization he led would do "whatever it takes." In February 2021, this politician successfully formed a national unity government with the Democratic Party, Northern League, and Five Star Movement. For 10 points, name this former head of the European Central Bank and current Prime Minister of Italy, affectionately called "Super Mario."**

ANSWER: Mario **Draghi** [prompt on Super Mario before "Super"]

<Modern World, Will Alston>

BONUSES

1. In Medieval England, these plays evolved out of liturgical dramas named for the question “whom do you seek,” or *quem quaeritis* (“kwem KWYE-ree-tis”), spoken by three angels at the tomb of Jesus. For 10 points each:

[10e] Name this genre of medieval religious plays which evolved later into morality plays. They share their name with a set of Catholic meditations on the Rosary.

ANSWER: **mystery** plays [or **miracle** plays; accept **Mysteries** of the Rosary]

[10h] The six surviving mystery plays which dramatize this event include the “Brome play,” performed by the parchment-makers and bookbinders of Brome, and a very similar one performed by the Chester Barbers.

ANSWER: the **sacrifice** of **Isaac** [or the **binding** of **Isaac**; accept **Akeda** or **Akedat** Yisshaq]

[10m] The Brome play ends with a common trope from medieval religious dramas, in which a character named for this title explains the moral of the story. Similarly, *Everyman* ends after a character designated by this title reminds the audience that “Beauty, Five-wits, Strength, and Discretion” forsake people after they die.

ANSWER: a **doctor** (of theology) [prompt on **scholar** or **theologian**]

<Drama, Mike Bentley>

2. An example of these policies imposed in Sierra Leone in 1898 prompted a rebellion led by the Sufi mystic Bai Bureh. For 10 points each:

[10h] Identify these policies. An example of them with a value of 10 shillings introduced by Theophilus Shepstone in the Cape Colony and Basotholand was adopted as a model in other parts of British Africa.

ANSWER: **hut taxes** [or **house duty** or **house duties**; prompt on **tax** or **levy** or **duty** or **fee**; prompt on any answers referring to a tax on **property**]

[10m] The Hut Tax War highlights problems with this approach used by the British in colonial governance, in which taxes and military rule were established by the colonizer, but local governments and indigeous leaders retained some relative autonomy. It contrasts with more assimilatory approaches, such as that of France.

ANSWER: **indirect rule** [reject “rule” or “imperialism” or “colonialism” or “direct rule”]

[10e] After writing about the negative consequences of hut taxes, Frederick Lugard avoided introducing them while governing this present-day country. Its current president is former dictator Muhammadu Buhari.

ANSWER: **Nigeria** [or Federal Republic of **Nigeria**]

<CW / International History, Will Alston>

3. This club’s long-standing orchestra was led by Mel Lewis. For 10 points each:

[10m] Name this jazz club which was the site of a live Sunday recording of the Bill Evans trio in 1961, done shortly before bassist Scott LaFaro died. This club is named in part for the New York neighborhood it’s found in.

ANSWER: The **Village Vanguard** [accept *Sunday at the Village Vanguard*; prompt on The **Village**; reject “Greenwich Village”]

[10h] This drummer played with Evans and LaFaro on *Sunday at the Village Vanguard* and later recorded four albums at the Vanguard as a bandleader. This musician’s Electric Bebop Band recorded classic jazz standards using drums, sax, and electric guitars.

ANSWER: Paul **Motian**

[10e] This saxophonist’s tenth album, and first live one, was recorded at the Village Vanguard for *Impulse!* Records. Another of his albums at the Vanguard contains his signature modal jazz cover of “My Favorite Things.”

ANSWER: John **Coltrane**

<OArts: Auditory, Will Alston>

4. Landy and Szalay developed a commonly-used estimator for the angular form of this function, which is related to its spatial form using Limber's approximation. For 10 points each:

[10h] Name this function in which the SDSS collaboration detected a BAO peak at 150 megaparsec separation. The "Fingers of God" is a squashed structure along the line of sight in the redshift-space form of this function.

ANSWER: galaxy **correlation** function [accept anything that mentions **correlation** function; prompt on abbreviations such as: 2PCF, 3PCF, or ACE; prompt on galaxy clustering with "what function measures galaxy clustering?"]

[10e] Measuring the isotropy of the two-point correlation function is one way to conduct an Alcock-Paczynski test, which estimates this constant, denoted capital lambda. It multiplies the metric in Einstein's field equations.

ANSWER: **cosmological** constant

[10m] The scale-free, or power-law, spectrum for these phenomena results in the power-law behavior of the two-point correlation function. Produced in the radiation-dominated era after inflation, these phenomena led to the observed anisotropy in the CMB temperature.

ANSWER: **primordial** density **fluctuations** [or **density fluctuations**; prompt on fluctuations; reject "quantum fluctuations" or "vacuum fluctuations"]

<Other Science: Astronomy, James Lasker/Jonathen Settle>

5. For 10 points each, identify the following about the psychology of racial prejudice:

[10e] In the book *Whistling Vivaldi*, Claude Steele argued that this effect helped explain the underperformance of minorities in college. In a study Steele published with Joshua Aronson, this effect was elicited by stating that an exam was indicative of overall intelligence.

ANSWER: **stereotype threat** [prompt on stereotypes]

[10m] This controversial assessment, developed by Anthony Greenwald and Mahzarin Banaji, uses reaction time measurements to assess racial prejudice and other biases.

ANSWER: **implicit association test** [or **IAT**; prompt on implicit bias test]

[10h] In an article written with Mark Fergusson, Thomas Ford argued that disparaging varieties of this concept on television reinforce stereotypes against African Americans. Ford also co-wrote a textbook on the *Psychology of this phenomenon* with Rod. A. Martin whose second edition cover depicts an elephant sitting in a tree.

ANSWER: **humor** [accept **comedy** or word forms; answers indicating being **funny**; reject "laughter"]

<Social Science: Psych, Kurtis Droge>

6. For 10 points each, answer the following about controller design, unrelated to the DualShock or Wiimote.

[10h] This controller design, which is easily automated because stability of the closed-loop system is guaranteed, is equivalent to optimizing the H2-norm. This controller design is obtained by using the separation principle to independently evaluate a linear quadratic regulator control and a Kalman filter state estimator.

ANSWER: **LQG** design [or **linear quadratic Gaussian** design]

[10e] Controllers can be designed by graphing the system's response to changes in this quantity on a Bode ("boh-dee") plot. High-pass filters attenuate signals with a value for this quantity lower than a cutoff value.

ANSWER: **frequency** [or angular **frequency**; or **omega**]

[10m] Systems are also designed with a root locus, where the angle subtended by a complex pole to the origin of the s-plane gives this quantity. When this quantity equals one, a system returns to equilibrium as fast as possible.

ANSWER: **damping ratio** [prompt on zeta]

<Other Science: Applied/Data Science/Engineering, James Lasker/Jonathen Settle>

7. For 10 points each, answer the following about the philosopher of science Ian Hacking:

[10m] Hacking wrote the introduction to this book which advocates a kind of “epistemological anarchism” over the nomological model of the title scientific framework.

ANSWER: *Against Method* (by Paul Feyerabend.)

[10h] A 1998 book by Ian Hacking refers to this psychological condition as a "transient mental illness" and centers on the case of Jean-Albert Dadas, one of the first people to be diagnosed with it. A general description of this condition is acceptable.

ANSWER: dromomania [or wanderlust or traveling fugue; accept any answer of having an insatiable desire to travel; accept Mad Travellers; prompt on fugue]

[10e] Hacking's most-cited book concerns the historical reconciliation of two conflicting theories of this science. Today, frequentism and Bayesianism are two different interpretations in it.

ANSWER: probability [accept statistics; prompt on mathematics]

<Philosophy, Ike Jose>

8. This woman's best-known work begins by explaining the choice of its title, as learners “ought diligently to seek pleasing food” and refresh their “exhausted soul[s]” with its “honeyed dewdrops.” For 10 points each:

[10h] Name this abbess of Hohenburg Abbey in Alsace. She compiled a pictorial encyclopedia called the *Garden of Delights* or *Hortus deliciarum* (“OR-toos deh-lee-chee-AH-room”) for the instruction of nuns.

ANSWER: Herrad of Landsberg [or Herrada Landsbergensis]

[10e] The 1870 siege of this largest Alsatian city destroyed the only full manuscript copy of the *Hortus deliciarum*. This city was the site of some oaths taken by Charles the Bald and Louis the German.

ANSWER: Strasbourg [accept Oaths of Strasbourg]

[10m] An illustration in the *Hortus deliciarum* shows philosophy surrounded by this set of concepts, which consisted of the *trivium* and *quadrivium* during the medieval era.

ANSWER: the liberal arts [or artes liberales or studia liberalia; prompt on arts; prompt on school subjects or courses of study]

<Euro History, Mike Bentley>

9. This novel begins with the line “They shoot the white girl first,” describing a raid on a shelter called The Convent, but never reveals which of the Convent's residents is White. For 10 points each:

[10m] Name this novel which details the founding of the town of Ruby by darker-skinned Black residents, who sought refuge from colorism in their former home of Haven. It is the successor to the novel *Jazz* in a trilogy.

ANSWER: Paradise

[10e] *Paradise* and *Jazz* are both novels by this Nobel-winning American author.

ANSWER: Toni Morrison

[10h] In *Paradise*, the women and men of Ruby have differing interpretations of an inscription on this object referring to the “the Furrow of His Brow.” This object was first built by men in Haven so that women would not have to work in White people's homes and then taken to Ruby, where it is the center of the town.

ANSWER: the oven

<Long Fiction, Will Alston>

10. Two gypsum statues of these figures flank the entrance to a room in the British Museum. For 10 points each: [10m] Name these protective figures. Paired statues of these figures typically adorned the gates of Near Eastern imperial palaces, such as the ones at the gates of the throne room of Sargon II.

ANSWER: **lamassu** [or **aladlammû**; prompt on winged bulls or man-lions or animals; reject “lions” or “bulls”]

[10e] The builders of this city created a number of *lamassu* statues to signify its intent to be the capital of a vast, diverse empire. This Achaemenid capital contains a monumental hypostyle hall called the Apadana.

ANSWER: **Persepolis** [or **Parsa**]

[10h] A Persian king repulses two *lamassu* in an example of this artistic motif, which is also exemplified by the depiction of the god Cernunnos (“CARE-noo-nohs”) on the Gundestrup Cauldron. Typically, this motif shows a deity placing their hands around the necks of two attendants or assailants.

ANSWER: **Master** of the **Animals** [or **Mistress** of the **Animals** or **Lord** of the **Animals**; accept **potnia theron**; prompt on confronted animals]

<Painting/Sculpture, Will Alston>

11. This was the [emphasize] *ultimate* large-scale political goal of Koxinga (“koh-SHING-ah”), who established his Tungning kingdom as a base of operations for pirates and rebels who aimed to carry it out. For 10 points each:

[10m] Give this primary stated political goal of the activities of the White Lotus sect and the earlier Revolt of the Three Feudatories led by Wu Sangui (“sahn-gway”). A description is fine.

ANSWER: **restoration** of the **Ming** dynasty [accept answers which indicate returning the **Ming** to power; prompt on any answer involving anti-Qing sentiment or expelling Manchus; reject “conquering China”]

[10h] Among the largest pro-Ming restoration groups was this secret society originating in Fujian, whose members worshipped Guan Yu. Historically, this society has been particularly prominent in Taiwan, where its members were killed during the Lin Shuangwen rebellion and continue to have influence within the KMT.

ANSWER: **Tiandihui** (“t’yen-dee-hway”) [or **Heaven and Earth** Society, or **Tin Dei** Wui, or **Hongmen**, or **Hung Mun**; prompt on Sanhehui, or Saam Hap Wui, or Three Harmonies Society; prompt on Vast Family; prompt on Chinese Freemasons but reject “Masons”; reject “triads” or “Harmonious Fists”]

[10e] A subgroup of the Tiandihui, the “Three Harmonies Societies,” is the origin of the common English name of these Chinese gangs, which still organize much criminal activity in Hong Kong today.

ANSWER: **triads**

<World History, Will Alston>

12. In this reaction, E enolates give you anti products, while Z enolates give you syn products. For 10 points each:

[10e] Name this reaction, whose base-catalyzed version begins with deprotonation to create an enolate, which then adds to a carbonyl to form a beta-hydroxy-carbonyl, which is then dehydrated to an alpha-beta unsaturated carbonyl.

ANSWER: **aldol** condensation [or **aldol** reaction]

[10m] This is the term to describe an aldol condensation between two different molecules. Usually this reaction is carried out between one reactant that doesn’t have an enolizable carbon and one that does.

ANSWER: **crossed** aldol condensation

[10h] An aldol condensation in which both reactants have one enolizable carbon will generate this many possible products, not counting stereochemistry. You have 10 seconds.

ANSWER: **four** (two “self” products and two “crossed” products)

<Chemistry, Eric Mukherjee>

13. This novel's narrator lapses from High Anglicanism through her affair with Vere ("veer"), commenting that the "Church met its Waterloo a few years later when I took up with adultery." For 10 points each:

[10h] Name this novel whose protagonists propose to liberate Muslim women by introducing bathing hats and converting them to Christianity. It begins with Aunt Dot advising the narrator to "Take my camel, dear."

ANSWER: *The **Towers of Trebizond*** (by Rose Macaulay.)

[10m] Like *Towers of Trebizond* author Rose Macaulay, this 18th century British woman of letters traveled widely in Turkey and wrote about it while living with her ambassador husband Edward. In a feud with Jonathan Swift, she retorted "I'm glad you'll write. You'll furnish paper [for] when I shite."

ANSWER: Lady **Montagu** [or Mary Wortley **Montagu**]

[10e] This other British author declared "Turkey was rotten" in his memoir *Seven Pillars of Wisdom*, which recounts his travels and tribulations in the Middle East while serving under Edmund Allenby.

ANSWER: T. E. **Lawrence** [or **Lawrence** of Arabia]

<Misc. Lit, Tamara Vardomsкая>

14. For 10 points each, answer the following about the 43-note scale created by the so-called "Hobo Composer" Harry Partch:

[10e] Partch based his scale on the limit of this number and the corresponding tonality diamond to make his music sound as foreign as possible. This is one less than the number of tones used in Schonberg-style serialism.

ANSWER: **eleven**

[10m] Partch's 43-note scale exemplifies this approach to tuning, in which the frequency ratio of any two given notes played by an instrument is an exact ratio of two whole numbers. It's often contrasted with equal temperament.

ANSWER: **just** intonation [or **just** temperament or **just**-tempered; prompt on **Pythagorean** tuning]

[10h] This instrument, one of the many Partch created to play the 43-note scale, consists of three different marimbas attached together, with the one at the center closely resembling Partch's Diamond Marimba. If it helps, this instrument has a two-word Latin name that sounds rather like a Harry Potter spell. Good luck!

ANSWER: **Quadrangularis Reversum** [reject partial answers]

<Classical Music/Opera, Mike Bentley>

15. In a Polish fairy tale, a schoolboy cuts off a lynx's claws to climb to the top of Glass Mountain to retrieve some of these objects. For 10 points each:

[10e] Identify these mythical objects, the recovery of which is a common trope in European fairy tales. In Norse mythology, the Aesir maintain their youth by eating some of these objects belonging to Idun.

ANSWER: **golden apples** [prompt on magical **apples**; prompt on **fruit**]

[10h] In Romanian legends, this hero is tasked with guarding and later recovering golden apples after the *zmeu* ("zmay-oo") ogres steal them from the king's garden. This hero is later given a magic whip which produces more of the fruit.

ANSWER: **Prâslea** the Brave [or **Prâslea** cel voinic]

[10m] Similarly to Prâslea, a Slavic hero with this name is sent to recover the king's golden apples after they are stolen by the Firebird. In another tale, a hero with this name rescues his wife Marya from Koschei the Deathless.

ANSWER: Prince **Ivan** Tsarevitch [or **John** or **Johannes**]

<Legends, Brad McLain>

16. The refusal of Onan to faithfully carry out this practice resulted in him being struck down by God, although today it is prohibited by the Chief Rabbinate of Israel. For 10 points each,

[10e] Identify this practice that requires that a man has to marry his brother's widow. Either the English or Hebrew name is acceptable.

ANSWER: **levirate** marriage [or **yibbum**]

[10m] Men who wished to renounce their obligation to levirate marriage undergo the *halizah* ceremony, which prominently features the removal of one of these clothing items.

ANSWER: **shoe** [or **sandal**; reject any other types of footwear]

[10h] During the *halizah* ceremony, the widowed woman performs this action after taking her brother-in-law's shoe. Traditionally, Chabad Jews perform this action after describing a group who "bow to vanity and nothingness" during the Aleinu prayer.

ANSWER: **spitting**

<Theology and Practice, Tamara Vardomskaya>

17. This man was hailed as a hero throughout the Arab world for organizing and deploying one of the first UN peacekeeping forces in 1956 to effectively protect the nationalization of the Suez Canal. For 10 points each:

[10m] Name this American diplomat who won a Nobel Prize for an earlier peacekeeping effort after he replaced Folke Bernadotte, who had been killed by members of the Stern Gang.

ANSWER: Ralph **Bunche** [or Ralph Johnson **Bunche**] (He won the prize for negotiating an Arab-Israeli peace.)

[10e] Bunche took a break from his U.S. civil rights activism to supervise a 1965 ceasefire between these two countries. These countries also went to war in 1971 and in the Kargil War of 1997.

ANSWER: **India** [or **Bhārat** Gaṇarājya] AND **Pakistan** [or Islāmī Jumhūriyah **Pakistān**]

[10h] Bunche's last major diplomatic assignment was in this country, where he negotiated the terms for a referendum on its independence in 1971. Shortly after, the U.S. established its Naval Support Activity base in this country on the former site of the Royal Navy's HMS *Jufair* ("jew-FAIR") base.

ANSWER: **Bahrain** [or Kingdom of **Bahrain** or Mamlakat al-**Bahravn**]

<American History, Mike Bentley>

Note to moderator: emphasize the "but" in the first bonus part

18. Transglutaminases catalyze the formation of one of these bonds, which also form spontaneously between SpyTag and SpyCatcher. For 10 points each:

[10h] Name this kind of bond between an amine on one amino acid and the carboxyl group of another, BUT with at least one of those two groups being on the side chain.

ANSWER: **isopeptide** bond [do not accept or prompt on peptide bond]

[10m] An E3 ligase attaches this 76-amino-acid peptide via an isopeptide bond to lysine residues on the target protein. In addition to its best known function, this peptide can also mark proteins for endocytosis.

ANSWER: **ubiquitin**

[10e] Ubiquitin-mediated degradation is vital to creating peptides for loading onto this complex. The class I type of this highly polymorphic complex is present on almost all cells and displays internal peptides.

ANSWER: **MHC** [or **major histocompatibility complex**; or **HLA** or **human leukocyte antigen**]

<Biology, Eric Mukherjee>

19. For 10 points each, answer the following about film festivals in mountainous locations in the Americas:

[10e] Beautiful Rocky Mountain ski locations are easily accessible to attendees of this annual festival in Park City, Utah, the largest in North America to focus on independent filmmakers.

ANSWER: **Sundance** Festival [accept answers mentioning **Sundance**]

[10m] This town's Centre for Arts and Creativity hosts the annual Mountain Film Festival, which focuses on environmental films. It shares its name with a surrounding park which is home to the Valley of the Ten Peaks and the beautiful turquoise Lake Louise, which is fed by nearby glaciers.

ANSWER: **Banff**, Alberta [accept **Banff** National Park]

[10h] The International Mountain Film Festival is held in this city near the Martial Mountains and Cerro Castor resort. It is home to a museum of the Yámana people, who mostly died out during epidemics in the late 19th century.

ANSWER: **Ushuaia**, Argentina

<Geography, Mike Bentley / Will Alston>

20. In this author's novel *Augustown*, Ma Taffy tells Kaia the story of Alexander Bedward, a preacher who can fly in Ma Taffy's telling, but in real life was sent to an asylum after claiming he could fly. For 10 points each:

[10h] Name this author. A Rastaman who uses patois ("pah-TWAH") debates a mapmaker who uses the Queen's English in the title poem of this author's collection *The Cartographer Tries to Map a Way to Zion*.

ANSWER: Kei **Miller**

[10m] Miller's *Cartographer* quotes this Barbadian poet's line "the hurricane does not roar in pentameters" to express the difficulty of mapping the Caribbean experience. This author of the *Arrivants* trilogy coined the term "nation language" to describe non-standard varieties of English used in the Caribbean.

ANSWER: Kamau **Brathwaite**

[10e] Miller's themes of language and heritage are often compared to those of this St. Lucian poet of "Ruins of a Great House" and "A Far Cry from Africa."

ANSWER: Derek **Walcott**

<Poetry, Will Alston>