

## Chicago Open 2023

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## Finals 2

### Tossups

1. *Two answers required.* A 2015 Jimena Canales book about these two people claims a debate between them was preceded by a similar one between Paul Langevin and Edouard De Roy. These two people differed in their interpretation of Riemann's theory of discrete and continuous multiplicities according to a 1966 book by Gilles Deleuze. A chapter about these two people was omitted from the American edition of Sokal and Bricmont's *Fashionable Nonsense*. One of them published (\*) *Duration and Simultaneity* to rebut the other's claim that "the time of the philosophers does not exist." Svante Arrhenius cited an attack from one of them in explaining why the other won their Nobel for a June 1905 paper rather than for a September 1905 paper. For 10 points, name these two participants in a 1922 debate about time, one the author of *Time and Free Will*, and the other the discoverer of special relativity.

ANSWER: Henri **Bergson** AND Albert **Einstein** [accept Henri-Louis **Bergson** in place of "Henri Bergson"]  
<Arya Karthik, Other Academic>

2. In his revisionist account of a battle, this officer claimed that being "arrested for cowardice, tried, cashiered, and universally execrated," were punishments owed to the losing commanding officer. This officer's daughter is the commonly cited namesake of the city of Augusta, Maine. In a failed attempt to bolster a bid for Governor of Massachusetts, this officer wrote an account of the Battle of Bunker Hill accusing (\*) Israel Putnam of cowardice and incompetence. This general founded eight forts along the coast of Maine to enforce the Embargo Act as Thomas Jefferson's Secretary of War. The garrison of a fort named for this general was attacked in 1812 by the Potawatomi while retreating to Fort Wayne. For 10 points, name this early American general who names the fort around which Chicago developed, and a city in Michigan with the country's largest per capita Muslim population.

ANSWER: Henry **Dearborn**  
<Alex Fregeau, US History>

3. Components used for this process that are designed with a coat-hanger manifold are similar to those with a T-manifold, but coat-hanger manifolds are tapered to ensure a constant flow rate per unit width. Drool or plate-out refers to buildup on the lips of components used for this process that causes many negative effects including machine-direction lines. Screen packs sandwiched between breaker plates are used at the output of devices used to perform this process to provide sufficient (\*) backpressure and to filter out contaminants. The screws used for injection molding and this process are similar, but have different L-to-D ratios. Pipes, hoses, and straws can be manufactured by performing this process on plastic by heating pellets and then pushing the heated plastic with a screw. For 10 points, name this process that pushes material through a die to create products with a continuous profile.

ANSWER: **extrusion** [or **extruding** material; accept **extruders**, **extrusion** screws, or **extrusion** dies] (The first two sentences are about extrusion dies.)  
<Jonathen Settle, Other Science - Engineering>

4. This play is the basis of Wale Ogunyemi's half-English, half-Yoruba drama *A'are Akogun*, as well as a Joe de Graft adaptation centered on the entrepreneur Brampong, titled *Mambo*. Welcome Msomi used a cast of more than 40 dancers for a Zulu adaptation of this play with music. Audience members wear masks and wander the McKittrick hotel in a site-specific adaptation of this play run by Punchdrunk in New York. In 1849, (\*) rival performances of this play by English actor William Macready and American actor Edwin Forrest sparked bloody anti-immigrant riots in Astor Place, Manhattan. Jack Carter and the boxer Carter Lee starred in an adaptation of this play set in a fictional Caribbean country, which was picketed by the Harlem Communist Party. For 10 points, Orson Welles staged an all-Black "Voodoo" adaptation of what supposedly cursed play by Shakespeare?

ANSWER: Macbeth [or *The Tragedie of Macbeth*] (The site-specific adaptation is *Sleep No More*.)

<Henry Atkins, World Literature>

5. A reconstructed setting of *Ecce nunc* by a protégée of this location was premiered by the Australian Chamber Choir in 2022. A protégée of this location was immediately hired in Bayreuth as a "chamber music virtuosa," where she wrote many flute sonatas and divertimenti. The opera *Domina in Tempe* was the first collaboration between a protégée of this location and a composer who was there due to a dispensation from mass for asthma. The composer of *Tigrane* also taught Domenico Scarlatti while supervising this institution. A visiting poet wrote that "angels [dared] hover near" a (\*) mandolin prodigy at this institution who was featured in pieces such as one composer's RV 425. That composer wrote two concerti per month for this institution's *figlie di coro* ("FEEL-yeh di COH-roh"), who stayed behind a metal grate when they premiered pieces such as *L'estro armonico*. For 10 points, name this Venetian orphanage whose students learned music from Antonio Vivaldi.

ANSWER: Ospedale della Pietà [or Hospital of Mercy; prompt on Antonio Vivaldi's orphanage or convent by asking "what was its name?"] (The composers in the first four clues are Agata della Pietà, Anna Bon, Anna Girò, and Francesco Gasparini.)

<Jacob Egol, Classical Music and Opera>

6. In this novel, a young girl wakes up in terror screaming "The spot! The spot!" after the protagonist reads her *Macbeth*. After this novel's protagonist hurls a plate at the obnoxious host of a dinner party, a duel is reluctantly agreed to, but is called off when the host faints and skins his thumb. This novel ends with two friends reminiscing about the "best time [they] ever had," when they were laughed out of a brothel for nervously offering the women flowers. In a failed attempt to save his love from leaving for (\*) Italy, this novel's protagonist cajoles a twelve-thousand franc loan from a mistress. Near this novel's end, after crying "Long live the Republic" during a protest, the shop worker Dussardier is murdered by Sénécal. This novel's protagonist has affairs with Rosanette and Madame Dambreuse after falling in love with Madame Arnoux. For 10 points, name this novel about Frédéric Moreau by Gustave Flaubert.

ANSWER: Sentimental Education [or L'Éducation sentimentale]

<Tim Morrison, European Literature>

7. Like David Kaplan, this thinker showed that, given universal instantiation, modal logic with propositional quantifiers leads to a Russell-like paradox in the paper "On a Family of Paradoxes." This thinker observed that, in standard deontic logic, "you ought to help someone who has been robbed" entails "someone ought to have been robbed," a result known as the Samaritan Paradox. In correspondence with this thinker, a teenage Saul Kripke proposed the branching theory of time; that prompted this thinker to distinguish between "Piercian" and "Ockhamist" theories in the book (\*) *Past, Present, and Future*. This thinker's paper "The Runabout Inference-Ticket" imagined a logical operator with the introduction rule for disjunction and the elimination rule for conjunction, which he dubbed "tonk." For 10 points, name this philosopher who invented modern tense logic.

ANSWER: Arthur Prior [or Arthur Norman Prior]

<Caleb Kendrick, Philosophy>

8. This is the [emphasize] *alphabetically first* of two families to which Fowler et al. 2011 applies the ripper model, spelled “R·P·R,” to propose a predatory behavior called “stability flapping.” DePalma et al. 2015 describes a newly discovered South Dakotan member of this family and posits that it was the fourth separate instance of gigantism in this family, although recent analysis has placed that member in the subfamily *Unenlagiinae*. Fossils of members of this family are often found alongside those of their prey, *Tenontosaurus*. Bakker and Ostrom’s study of this family’s (\*) *antirrhopus* species led to a “renaissance” that debated dinosaur endothermy. Like the Troodontidae, the second toe’s “sickle” claw was weaponized by this family whose members, like *Deinonychus*, are close relatives to birds. For 10 points, the Gobi Desert’s “Fighting Dinosaurs” fossil features a Protoceratops fighting a member of what family’s genus “*Veloci-*”?

ANSWER: **raptors** [or **Dromaeosauridae**, **dromaeosaurs**, or **dromaeosaurids**] (Troodontidae is the other clade of Deinonychosauria characterized in Fowler et al., 2011. Stability flapping refers to raptors pinning down their prey using their mass. Tenontosaurus fossils are often found with *Deinonychus* fossils. Robert DePalma was accused in 2022 of committing scientific fraud on a different paper.)

<Kevin Thomas, Biology>

9. A paper by De Lucia and Overholtzer argues that Xaltocan’s (“shahl-TOH-kahn”) access to this resource forced the city into paying its tribute to the Aztecs with cloth. Massive amounts of this resource were used at the site of Texcotzingo (“taysh-koht-SING-oh”), which was built to look onto a mountain believed to be the home of a deity associated with this resource. The name of this resource is combined with one for “mountain” in the Nahuatl word for city-states, *āltepētīl*. A structure associated with this resource at Atzacualco is typically credited to (\*) Nezahualcoyotl (“nay-sah-wahl-KOH-yoh-del”). This resource was transported to Tenochtitlan from Chapultepec Hill. Effective use of this non-plant resource is what made *chinampas* particularly productive. For 10 points, the Valley of Mexico lost an important source of which resource with the draining of Lake Texcoco (“taysh-KOH-koh”)?

ANSWER: **water** [or **agua**; accept **atl** until “āltepētīl” is read, and prompt afterwards] (Xaltocan was built on an artificial island in the brackish portion of Lake Texcoco, limiting its access to fresh water.)

<Alex Fregeau, World History>

10. A recurring character in this director’s films was present at the discovery of uranium and the fall of the Berlin Wall. The opening titles of one of this director’s films are interspersed with shots of two kids pulling a Dalmatian and of a tiger pacing next to a zebra’s decapitated head. In a film by this director, a woman’s dress inexplicably switches from red to white whenever she enters the bathroom, thus matching the palette of her surroundings. A librarian is killed by being force-fed pages of his books, after which his killer is forced to (\*) eat some of his dead body, in that film by this director, in which a gangster torments his wife Georgina and the staff at his French restaurant. Several of this director’s films are scored by Michael Nyman and reference Renaissance and Baroque art, such as the Vermeer-inspired *A Zed & Two Noughts*. For 10 points, name this director of *The Draughtsman’s Contract* and *The Cook, the Thief, His Wife & Her Lover*.

ANSWER: Peter **Greenaway** (The character in the first sentence is Tulse Luper.)

<Tim Morrison, Other Fine Arts>

11. Counter the policy of Andrei Kozyrev, one country's first and only vice president traveled to a city on this river to support a conflict, and then helped negotiate a ceasefire to that conflict three months later. It's not in the Caucasus, but the Joint Control Commission was created to occupy a region along this river in the ceasefire following soon after the Battle of Tighina. The first 20th-century pogrom in the Russian Empire began in part in response to the death of a boy in the city of (\*) Dubăsari ("doo-buh-SAH-ree") on this river. Vladimir Voronin refused to accept the compromise offered by Russia in the Kozak Memorandum for ending a conflict along this river. Nazi Germany recognized the land between this river and the Southern Bug ("boog") as belonging to Romania in the Tiraspol Agreement. For 10 points, identify this river that names a breakaway region of Moldova.

ANSWER: Dniester River [or Nistru, Dnestr, or Dnister River; accept Transnistria, Trans-Dneister, Transdniester, Administrative-Territorial Unit of the Left Bank of the Dniester, or Pridnestrovian Moldavian Republic; accept Pridnestrovie or Pridnestrovskaya Moldavskaya Respublika; accept Prydnistrovia or Prydnistrovska Moldavska Respublika; accept Nistrenia, Republica Moldovenească Nistreană, or Unitățile Administrativ-Teritoriale din Stînga Nistrului] (The politician in the lead-in is Alexander Rutskoy)  
<Alex Fregeau, European History>

12. This sculpture inspired a textile whose patent has a side note recognizing Henriette Negrin's pleating machine. In 2017, a French team including Sophie Descamps tried to investigate the original colors of this sculpture, whose remaining color comes from white enamel surrounding colored glass in its eyes. A silk cord decorated with Murano glass adjusts the sleeves of a silk dress that Mariano Fortuny named after this sculpture because he admired its (\*) *chiton*. This sculpture includes a headband with a meandering design and a series of folds below a high waistband that resemble an Ionic column. The tyrant Polyzalos of Gela possibly donated this statue to commemorate a victory that it represents with an extended arm holding bronze bands. For 10 points, name this Early Classical Greek sculpture from the Sanctuary of Apollo that once held the reins of horses.

ANSWER: Charioteer of Delphi [or Iniohos; accept Henikhos or the Rein-Holder; accept L'Aurige; prompt on Delphos]  
<Ganon Evans, Visual Fine Arts>

13. After moving to the West Indies, James Grainger wrote a poem in this genre that James Boswell called a laughingstock for its line, "Now, Muse, let's sing of rats." A poem in this genre, John Dyer's *The Fleece*, was written during its 18th-century heyday in Britain. The most famous work in this genre inspired a poem in which readers are instructed on how to avoid being hit by chamber pots while walking London streets, John Gay's *Trivia*. An essay by Joseph Addison accompanied another author's 1697 translation of a poem in this genre that renders one line as "What cannot endless (\*) labour, urged by need?" The idiom "tempus fugit" comes from the poem that names this genre, whose fourth book contains descriptions of *bugonia* in its extended discussion of beekeeping, an Aristaeus epyllion. For 10 points, what genre of didactic poems is named for a verse treatise on agriculture that Virgil wrote after his *Eclogues*?

ANSWER: georgics [accept *The Georgics*; accept Georgica; prompt on didactic poem until "didactic" is read; prompt on pastorals or bucolics or descriptions of poems to do with agriculture or farming; reject "eclogues"] (The first clue appears in *The Life of Samuel Johnson*; the 1697 translation is by John Dryden.)  
<Henry Atkins, British Literature>

14. A 2009 paper from Eva Andrei's group reports values for this quantity at which the induced Van Hove singularities approximate the Fermi energy. A 2011 paper from Bistrizter and MacDonald theorizes several small values of this quantity at which Dirac-point band velocity vanishes, the largest of which was achieved experimentally by Pablo Jarillo-Herrero's group in 2018. Non-zero values of this quantity characterize TBG, which features (\*) Moiré ("m'wah-RAY") patterns. Unconventional superconductivity in a certain superlattice arises at "magic" values of this quantity, like 1.05 of a common unit. Graphene bilayers are often used to study the effect of this quantity on electrical properties in twistrionics. For 10 points, name this quantity that measures the relative orientation of two parallel layers.

ANSWER: twist angle [accept answers indicating the angle between parallel layers of a material]  
<David Bass, Physics>

15. During an annual *matsuri* named for these beings, a millenia-old mask with a god's face is taken from the Ebara Jinja shrine and paraded around Tokyo Bay. Kiyomasa Kato raised a monkey army against 9000 of these beings whose disdain for the calabash suggests a close relation to the *mizuchi*. Humans learned the art of bone-setting from these beings whose *hyōsube* relatives are known to steal eggplants and leave greasy hair in unsuspecting bathtubs. Kuzenbo rules these beings whose harvesting of (\*) *shirikodama* is linked to a carpenter who threw straw dolls into a river while yelling "eat people's anuses." A deep-bow incapacitates these beings whose honorable return of the gesture results in water spillage from their head "dish." For 10 points, webbed feet and a turtlish body characterize what cucumber-loving *yokai* known for terrorizing swimmers?

ANSWER: kappa [or kawatarō, komahiki, kawataro, suiko, kawappa, gawappa, kawako, kawauso, enkō or dangame; prompt on water goblin or water imp; reject "frogs"]

<Kevin Thomas, Beliefs>

16. An assassination attempt targeting this person failed in part because local police had recently accessed the attackers' weapons cache and replaced their bullets with low-velocity rounds. Paul Wilkinson publicized an abortive proposal to have this person appear on the talk show *After Dark*. The United States's approval of a 48-hour visa for this person to attend a conference in New York City caused a rift between Bill Clinton and John Major. In interviews for an oral history project conducted by Boston College, Brendan Hughes and (\*) Dolours Price implicated this person in the murder of Jean McConville. Years of secret negotiations between this person and John Hume of the SDLP eventually led to his party's affiliated paramilitary group announcing a ceasefire in 1994. For 10 points, name this Northern Irish politician who from 1983 to 2018 was the president of Sinn Féin.

ANSWER: Gerry Adams [or Gerard Adams; or Gearóid Mac Ádhaimh]

<Austin Brownlow, Other History>

17. *Author and type of work required.* One of these works muses that we must be "crowing cocks, and singing larks" to awaken a world "sleeping in ignorance and error" before concluding that "Alpha shall kiss Omega." The author describes how "the Frogs sing sweet - today" in one of these works that introduced the expression "the heart wants what it wants." The phrase "Little Cousins, Called Back" is the entire text of the last of these works, many of which include plant specimens from their author's herbarium. One of these works responds to an (\*) *Atlantic Monthly* piece by asking "are you too deeply occupied to say if my Verse is alive?" Three passionate examples of these works, in which the author self-identifies as "Daisy," are usually nicknamed for an unidentified "Master." For 10 points, Thomas Wentworth Higginson was the recipient of many of what correspondences by the reclusive "Belle of Amherst?"

ANSWER: letters by Emily Dickinson [or epistles by Emily Dickinson; prompt on Master letters or epistles]

<Tim Morrison, American Literature>

18. The paradox that flow obeying this condition simultaneously increases the horizontal temperature gradient and decreases the vertical shear can be resolved by introducing a forcing function into the omega equation. Jule Charney is credited with developing a theory based on flows nearly obeying this condition in order to analyze atmospheric disturbances. The namesake adjustment to this condition from a perturbed state is demonstrated by taking potential vorticity to be conserved, and then solving the shallow water equations for a fluid with a height discontinuity. This condition holds for nearly all (\*) synoptic-scale flows at middle latitudes. This condition holds for flows with a Rossby number much less than one. Winds that satisfy this condition always blow parallel to isobars. For 10 points, name this condition in which the Coriolis force is exactly balanced by the pressure gradient force.

ANSWER: geostrophic balance [or geostrophic approximation, geostrophic wind, or geostrophic flow; accept geostrophic adjustment or geostrophic paradox; accept quasigeostrophic, quasigeostrophic condition, quasigeostrophic theory, or quasigeostrophic approximation]

<Jonathen Settle, Earth Science>

19. The term “dyscravia” was coined in a 2010 paper by Gvion and Friedmann for a type of dysgraphia centered around this quality. When not realized as a glottal stop, Danish stød (“sturh”) manifests as a phonemic contrast between types of this quality. Aside from the checked tone, the other three tones in Burmese are each accompanied by a different realization of this quality. In certain contexts, high vowels in Japanese can (\*) lose this quality, particularly in words like *masu* and *desu*. Rather than using this quality itself, most varieties of English distinguish between stops at the same place of articulation by the “onset time” of this quality. In most speech, this quality is called “modal,” but can also be realized as “breathy” or “creaky.” For 10 points, identify this quality given to speech sounds by the vibration of the vocal folds.

ANSWER: voice [or voicing; accept word forms; accept creaky voice or creakiness; accept breathy voice or breathiness; accept modality; accept voiceless vowels; prompt on phonation]

<Alex Fregeau, Social Science>

20. A 25-year public health study in the north of this region used a community intervention model to cut heart disease rates from what had been the highest in the world in 1972. A large type of spitz bred to harry bears in this region is appropriately named the Bear Dog. The 22-dome Church of the Transfiguration is the centerpiece of an all-wood religious complex built on an island in this region in the 18th century. Koli National Park became a tourist destination during a late (\*) 19th-century romantic revival that promoted the folk culture of this region, which provided subjects for painters like Louis Sparre and Akseli Gallen-Kallela. During his fifteen years of collecting runic songs on field trips mostly taken in this region, Elias Lönnrot published *Kanteletar* and the *Kalevala*. For 10 points, Lake Ladoga is on the southern border of what historical region split between Finland and Russia?

ANSWER: Karelia [accept Republic of Karelia; accept West Karelia, North Karelia, South Karelia, East Karelia, Russian Karelia, Border Karelia, or Finnish Karelia; accept Karelianism; accept Karelian Bear Dog; accept the North Karelia Project; prompt on Finland or Eastern Finland; prompt on Russia or North-Western Russia] (The religious complex is Kizhi Pogost.)

<Henry Atkins, Geography>

## Bonuses

1. The diversity of artifacts at prehistoric sites in this historical region like Durankulak and Pazardzhik disproved the notion of settlements being isolated. For 10 points each:

[m] Name this historical region and Roman province where the Odrysian kingdom was located.

ANSWER: **Thrace** [or **Thracia**, **Thráki**, **Trakiya**, or **Trakya**]

[e] This metal is commonly found across Thracian sites, often accenting primarily silver artifacts like the Lukovit Treasure and many found at Rogozen. This metal forms the alloy electrum with silver.

ANSWER: **gold** [or **Au**]

[h] The world's oldest golden artifacts were found at this 4,500-year-old site in modern-day Bulgaria. Most of this site's gold was in Grave 43, along with the remains of a man buried with a war mace and a golden penis sheath.

ANSWER: **Varna** Necropolis

<Munir Siddiqui, Other History>

2. Upon encountering this figure in a satire, Hercules is said to have noted their "incomprehensible voice that... seemed more appropriate to a sea-monster" and thought that "his thirteenth labor had arrived." For 10 points each:

[e] Name this emperor, who is abruptly claimed as a slave by his predecessor and sent to work as a legal secretary at the end of a Seneca the Younger satire describing his *Apocolocyntosis*, or "Pumpkinification."

ANSWER: Emperor **Claudius** [or Tiberius **Claudius** Caesar Augustus Germanicus; accept *The Pumpkinification of Claudius*, *The Apocolocyntosis of the Divine Claudius*, or *Apocolocyntosis divi Claudii*]

[m] In this work, Seneca asks, "how can you scorn [death] in the midst of a mushroom supper?" in an allusion to Claudius' murder. This work consists of 124 letters Seneca wrote to his friend Lucilius.

ANSWER: **Epistulae Morales ad Lucilium** [or **Moral Epistles to Lucilius**, or **Moral Letters to Lucilius**]

[h] Seneca had earlier heaped flattery on Claudius in a *Consolation* addressed to this person, a secretary of Claudius. Unlike in his *Consolations* to Marcia and Helvia, Seneca does *not* advise this person to pursue *apatheia*.

ANSWER: Gaius Julius **Polybius**

<Arya Karthik, European Literature>

3. Answer the following about jazz guitarist John McLaughlin's forays into other genres, for 10 points each:

[e] McLaughlin recorded the crossover album *Passion, Grace and Fire* with Al Di Meola and Paco de Lucía, two guitarists who primarily played this genre of Andalusian folk music. The fast, strum-heavy guitar accompaniment in this genre is divided into twelve *palos*.

ANSWER: **flamenco** [accept new **flamenco** or nuevo **flamenco**]

[m] McLaughlin formed the group Shakti with Indian musicians like L. Shankar, who played this instrument. Along with the sarangi, this instrument is the most popular bowed instrument in Hindustani classical music.

ANSWER: **violin** [or **fiddle**]

[h] Early in his career, McLaughlin played blues rock in the Graham Bond Quartet with this English rock drummer. This drummer, who is credited with popularizing African rhythms in the West, recorded with Fela Kuti on albums like his 1971 *Live!*.

ANSWER: Ginger **Baker** [or Peter Edward **Baker**]

<Victor Pavao, Other Fine Arts>

4. This disease could be eradicated by branding oneself with St. Hubert's Key, removing the frenulum of the tongue, or administering a "madstone" hairball harvested from an albino deer. For 10 points each:

[h] Name this disease that can be cured through moral growth upon visiting Hadkai's Gujarati temples. Several vase scenes depicting Actaeon's death also depict a goddess of this disease, a daughter of Nyx who reluctantly curses Heracles at Iris' instigation.

ANSWER: **rabies** [prompt on madness] (The goddess is Lyssa; the lingual frenulum clue refers to dog removal, not human.)

[m] Antaeus believed that a potion made using the skulls of people who underwent this action could cure rabies. Skull moss grew from the "vital spirits" of this action's victims, whose fat could be used to make a Hand of Glory.

ANSWER: **hanging** [prompt on dying or executions by asking "what manner of death"; prompt on crime] (Paracelsians believed in the vital spirits.)

[e] In this Euripides play, a god unleashes Lyssa, the spirit of rabies and madness, on Cadmus' daughters to kill Pentheus.

ANSWER: *The **Bacchae*** [or *The **Bacchantes***; or ***Bakkhai***]

<Kevin Thomas, Beliefs>

5. Sheephead wrasse and spiny lobsters prevent the formation of these ecosystems in Southern California by feeding on their namesake organisms. For 10 points each:

[m] Name these desert-like ecosystems that form from the destructive grazing of kelp forests by a namesake echinoderm.

ANSWER: sea **urchin barrens**

[e] Sea urchin barrens are also prevented by predation of sea urchins by this species in the subfamily Lutrinae whose members wrap themselves in "rafts" of kelp before going to sleep.

ANSWER: sea **otters** [or ***Enhydra lutris***]

[h] Filbee-Dexter and Scheibling 2014 argues that sea urchin barrens are characterized by this pattern in which namesake "shifts" triggered by the crossing of ecological thresholds cause an ecosystem to change among static configurations.

ANSWER: **alternative stable states** [or **alternative stable equilibria**]

<Munir Siddiqui and David Bass, Biology>

6. In an apocryphal love story partially titled for this woman, snow-white bees crowned with golden diadems emerge from honeycombs to sit on her lap at the command of an angel who calls her "City of Refuge." For 10 points each:

[h] Name this woman who, depending on the account, was the daughter of either Potiphar, the priest Potipherah, or Dinah. A child of this woman names a tribe that settled on both sides of the Jordan River.

ANSWER: **Asenath** [or **Aseneth**, **Āsnat**, or **Ősnát**; accept *Joseph and Asenath*; prompt on Joseph's wife] (The Child is Manasseh.)

[e] In the apocryphal *Joseph and Asenath*, this figure's son recruits Gad and Dan in a plot to take Asenath by force, only to be foiled by Benjamin. Joseph interprets this figure's dream about seven lean cows devouring seven fat ones.

ANSWER: **Pharaoh**

[m] It's not the *Midrash Aggadah*, but this other apocryphal text calls Asenath the daughter of Potiphar. This work, known as the "Lesser Genesis," is a unique member of the Ethiopian Narrower Canon along with Enoch and the Meqabyan.

ANSWER: Book of **Jubilees** [accept Book of **Division** or **Mets'hafe Kufale**; prompt on Leptogenesis]

<Kevin Thomas, Beliefs>

7. Kate Beaton's graphic memoir *Ducks* describes her two brutal years working in this region. For 10 points each:  
[m] Name this specific region that holds the largest deposit of bitumen in the world. The boomtown of Fort McMurray is in this region, which is located northeast of smaller deposits at Peace River and Cold Lake.

ANSWER: **Athabasca** oil sands [or **Athabasca** tar sands; prompt on oil sands; prompt on Alberta; prompt on prairies; prompt on Western Canada; prompt on Western Canadian Sedimentary Basin or WCSB]

[h] The title of *Ducks* refers to an incident in which hundreds of birds died after landing at one of these structures. Many of these structures, which store toxic slurry, are expected to undergo catastrophic failure in the coming years.

ANSWER: **tailings dams** [or **tailings ponds**; prompt on embankment **dams**]

[e] This pipeline system connects the oil sands of Alberta to Illinois and the Gulf Coast. In 2021, Joe Biden finally killed a proposed "XL" extension to this pipeline that would have cut over Nebraska's Sandhills.

ANSWER: **Keystone** [or TransCanada **Keystone** Pipeline GP Ltd; accept **Keystone XL**]

<Henry Atkins, Modern World>

8. Deer imagery on a type of these objects suggests that they were used as agricultural fertility offerings. For 10 points each:

[m] Name these objects, the *bonshō* variety of which were used in Buddhist temples. Some of these objects called *dōtaku* have been found with sides too thin to be used outside of ritual purposes.

ANSWER: **bells**

[e] Bronze-working entered Japan in the Yayoi Period, allowing for the production of *dōtaku* and these objects. Along with a sword and a jewel, one of these objects, Yata no Kagami, is part of the Imperial Regalia of Japan.

ANSWER: bronze **mirrors** [accept *Shinjū-kyō*]

[h] This historian recorded that Cáo Rui ("tsao r'way") presented Queen Himiko of Yamatai with 100 bronze mirrors in the *Records of the Three Kingdoms*. Zhūgě Liàng punished this historian's father, leading him to denigrate the former's leadership ability.

ANSWER: **Chén** Shuò [accept **Chéngzuò**]

<Alex Fregeau, World History>

9. This family of compounds is divided into ones with nine-membered rings, like Neocarzinostatin, and ones with ten-membered rings, like Calicheamicin. For 10 points each:

[h] Name these compounds with antitumor activity that undergo the Bergman cyclization to generate reactive 1,4-benzoid diradicals, which causes crosslinking in DNA.

ANSWER: **enediynes**

[m] This other chemotherapeutic compound is activated by aquation before it creates crosslinks in DNA by binding to the N7 position of guanines. Common derivatives of this compound replace its chloride ligands with bidentate CBDCA or oxalate ligands.

ANSWER: **cisplatin** (The derivatives are carboplatin and oxaliplatin, respectively.)

[e] Exposure to this form of radiation can result in DNA crosslinking as well as the formation of thymine dimers.

ANSWER: **ultraviolet** radiation [or **UV** radiation]

<Jason Hong, Chemistry>

10. A Gillian Beer book titled for this writer's *Plots* analyzes the influence of this writer's works on Thomas Hardy's attempts to "find a scale for the human." For 10 points each:

[e] Name this writer whose journal recounts their circumnavigation of the world with Robert FitzRoy.

ANSWER: Charles **Darwin** [or Charles Robert **Darwin**]

[h] Beer notes that this section of a larger work proposes a Darwinian study of "the history of man... under the varying experiments of Time." This section discusses the "many [Saint] Therasas" who "found for themselves no epic life."

ANSWER: the "**Prelude**" to **Middlemarch** [prompt on descriptive answers such as the preface to **Middlemarch** or the opening of **Middlemarch**]

[m] Beer also analyzes a passage in *A Pair of Blue Eyes* in which Knight contemplates one of these objects while hanging from a cliff. Charles Smithson is an amateur enthusiast of these objects in *The French Lieutenant's Woman*.

ANSWER: **fossils** [accept **ammonites**; accept **trilobites**; accept **petrified sea urchins** or **tests** or **sand dollars**; prompt on just **sea urchins**]

<Henry Atkins, British Literature>

11. A family of programming languages uses these expressions to achieve homoiconicity, a property that's frequently useful for self-modifying programs where code is represented in the same way as data. For 10 points each:

[h] Name these expressions, which are either atoms or lists that can be evaluated through a tree of function evaluations into atoms. The *quote* function treats expressions of this kind as data rather than code.

ANSWER: S-expressions

[e] S-expressions form the basis of this influential early functional language whose descendants include Racket, Scheme, and Clojure ("closure"). This language is famous for using lots of parentheses.

ANSWER: Lisp [or List Processor]

[m] Lisp introduced a widely-copied function of this name, which complements *quote* by computing the value of an S-expression, interpreted as code rather than data. This function makes Lisp metaprogramming mundane.

ANSWER: eval

<Alistair Gray, Other Science - Computer Science>

12. In a story set in this town, an overly friendly dog named Attila accidentally foils a robbery by tripping the thief in the street. For 10 points each:

[m] Name this town whose hospital is the site of an equestrian statue of its founder, Sir Fredrick Lawley. In another novel, a con artist from this town fasts for eleven days to bring rain during a drought.

ANSWER: Malgudi (The books are *Malgudi Days* and *The Guide* by R. K. Narayan.)

[h] The old woman Achakka narrates a novel set in this other town, most of which gets sold off to residents of Bombay. Moorthy attempts to bring the Gandhian movement to this title village in the first novel by Raja Rao.

ANSWER: Kanthapura ("KAHN-tah-poo-ruh")

[e] This author's *Between the Assassinations* collects worldbuilding stories about the fictional town of Kittur in Karnataka. The son of a rickshaw-puller writes a letter to Wen Jiabao in this author's novel *The White Tiger*.

ANSWER: Aravind Adiga

<Henry Atkins, World Literature>

13. Michael Dummett's "Bringing about the Past" presents a version of this argument which concludes that taking precautions during an air raid is either superfluous or ineffective. For 10 points each:

[m] Cicero's *On Fate* famously discusses what argument for fatalism in constructive dilemma form which purportedly demonstrates that every action is futile?

ANSWER: Lazy Argument [or Idle Argument]

[e] Gottfried Leibniz criticized the Lazy Argument in this 1710 book, which attempted to solve the problem of evil. Voltaire's novel *Candide* satirizes this book's contention that "we live in the best of all possible worlds."

ANSWER: Théodicée ("tay-oh-dee-SAY") [or Theodicy; or *Essais de Théodicée sur la bonté de Dieu, la liberté de l'homme et l'origine du mal*; or *Essays of Theodicy on the Goodness of God, the Freedom of Man and the Origin of Evil*]

[h] Medieval philosophers posited that this specific attribute of God entailed fatalism. Molinists like Alvin Plantinga attempt to solve the problem posed by this attribute by ascribing "middle knowledge" to God.

ANSWER: divine foreknowledge [prompt on descriptions like "God knowing the future"]

<Caleb Kendrick, Philosophy>

14. The lovers Horace and Angèle sing the duet “Parlez! parlez! quel destin est le notre” (“par-LAY par-LAY kel day-STAN ay luh NOH-truh”) during one of these events in Madrid in Daniel Auber’s (“oh-BAYR’s”) opera *Le Domino Noir*. For 10 points each:

[h] Name this type of event. At the end of a different “opéra historique” by Auber, Amélie sings “Here is my last present” during one of these events, shortly before her husband kills the protagonist.

ANSWER: **masked balls** [or **masques** or **masquerades**; prompt on **balls**]

[m] The masked ball in Auber’s *Gustave III* sometimes includes audience participation in one of these dances. When Jupiter’s minuet is rejected, one of these fast dances occurs on the banks of the River Styx in a later French opera.

ANSWER: **galop** [accept infernal **galop** or **galop** infernal; reject “can-can”]

[e] After *La muette de Portici*, *Gustave III* was Auber’s second venture in this French operatic genre named for its extravagant length and spectacle, and whose other composers included Giacomo Meyerbeer.

ANSWER: **grand** opera

<Arya Karthik and Jacob Egol, Classical Music and Opera>

15. Both salver trays and credenzas get their names from their relation to this practice. For 10 points each:

[m] Name this practice, which prompted the use of allegedly magical objects from the digestive tracts of animals.

An aphorism about this practice is commonly attributed to Paracelsus’s *Third Defense*.

ANSWER: **poisoning** [prompt on **assassination** or **murder** by asking “by what method?”]

[h] This physician showed that bezoars were not a remedy to poisoning when one did not save a cook sentenced to death. This pioneer of battlefield surgery served four kings of France in the 16th century.

ANSWER: Ambroise **Paré**

[e] Paracelsus favored psychosomatic explanations of spontaneous outbreaks of this activity named after St. Vitus, which some modern scholars have attributed to ergot-infected rye. The connection between wolf spider bites and this activity led to the creation of a type of it called the tarantella.

ANSWER: **dance** [accept St. Vitus’s **Dance**; accept Sydenham’s **chorea**]

<Alex Fregeau, European History>

16. This psychologist found evidence of the “birthday-number effect,” in which people feel more positively about numbers in their birthdays, in an attempt to create a novel self-esteem metric for Japanese people. For 10 points each:

[h] Name this psychologist who collaborated with Hazel Markus on a paper that introduced the notions of an “independent self” more common among Western people and an “interdependent self” more common among Asians.

ANSWER: Shinobu **Kitayama**

[m] The “birthday-number effect” can be thought of as a case of this effect discovered by Robert Zajonc (“ZYE-awnts”), in which people are more positive about something simply by virtue of being familiar with it.

ANSWER: **mere exposure** effect

[e] The most common measure of self-esteem is a test paradigm named for this type of association. This adjective often is used to describe biases that are the result of subconscious processes.

ANSWER: **implicit** [accept **implicit-association** test or **implicit biases**]

<Ryan Rosenberg, Social Science>

17. An 1896 letter submitted to *The Washington Post* claims that a plantation owner living along this river, Meredith Calhoun, was the main inspiration for Simon Legree. For 10 points each:

[e] Name this river, which the Adams–Onís Treaty established as the eastern portion of the border between Texas and Oklahoma.

ANSWER: **Red** River of the South [reject “Red River of the North”]

[h] Fortunately for Calhoun, he lived downstream of this feature, which blocked tens of miles of the Red River at the time. A boat called the *Heliopolis* was built to remove this massive logjam, but could only do so temporarily.

ANSWER: **Great Raft**

[m] *Two answers required*. The Great Raft was cleared by Henry Shreve, who had earlier broken the efforts of these two men to control navigation on Louisiana’s rivers. An 1824 Supreme Court case invalidated these men’s economic power in another state.

ANSWER: Robert R. **Livingston** AND Robert **Fulton** [accept Robert Robert **Livingston** in place of “Robert R. Livingston”]

<Alex Fregeau, US History>

18. Booker T. Washington announces to the press that a pianist is “brainsick” after he reiterates his demand for this object to be restored during a hostage negotiation. For 10 points each:

[m] Name this object whose owner, Coalhouse Walker, begins bombing firehouses after it is damaged by a group of firemen.

ANSWER: Ford **Model T** [or **Tin Lizzie**; accept **Leaping Lena** pr **flivver**; prompt on car or automobile; prompt on Ford]

[e] Coalhouse Walker takes his revenge on New York firefighters in this historical novel by E. L. Doctorow whose real-life characters include Evelyn Nesbit and Emma Goldman.

ANSWER: **Ragtime**

[h] Ford himself appears in *Ragtime*, in which he and J. P. Morgan discuss this structure over lunch and found a secret society inspired by it. Morgan travels to this structure to scope out sites for a copy designed by McKim and White.

ANSWER: **Great Pyramid** of Giza [prompt on Pyramid]

<Munir Siddiqui, American Literature>

19. Orson Welles purportedly used a set of this artist’s best-known works to illustrate his concept of the “magic box” and as a reference for his lighting of *Citizen Kane* and *The Magnificent Ambersons*. For 10 points each:

[h] Name this American artist who was the creative and financial force behind nearly 100 miniature rooms, 68 of which are now exhibited in the lower level of the Art Institute of Chicago.

ANSWER: Narcissa Nisblack **Thorne** [or Narcissa Ward **Thorne**; accept **Thorne** miniature rooms]

[m] Viewers often point out Thorne’s inaccurate use of wallpaper patterned with these objects for her New Mexico Dining Room. A person with an enormous right foot sits pensively next to one of these objects in Tarsila do Amaral’s *Abaporu*.

ANSWER: **cactuses** [or **cacti**; accept **saguaro** cactuses; prompt on plants or succulents] (Saguaro cactuses are native to Arizona, not New Mexico.)

[e] Thorne commissioned John Storrs and Hildreth Meière to create tiny sculptures and murals in this 1920s style for her rooms, whose scale contrasts with the huge skyscrapers in this style like the Chrysler Building.

ANSWER: Art **Deco**

<Ani Perumalla, Visual Fine Arts>

20. This property's "hypothesis" equates arbitrarily small time integrals with integrals over phase space. For 10 points each:

[e] Name this thermodynamic property of systems in which time averages equal ensemble averages. Its name comes from the Ancient Greek word for "work."

ANSWER: **ergodicity** [accept **ergodic** hypothesis]

[h] The breaking of ergodicity forms these subspaces of chaotic quantum systems that are decoupled from the energy spectrum. These subspaces form around the unstable classical periodic orbits where probability density is enhanced.

ANSWER: quantum **scars** [accept quantum **scarring**]

[m] Ergodic systems undergo this process by which local observables "relax" towards equilibrium values. A hypothesis of this process on eigenstates of a Hamiltonian describes their equilibration behavior as an ensemble.

ANSWER: **thermalization** [accept eigenstate **thermalization** hypothesis]

<David Bass, Physics>