

Chicago Open 2023

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Editors 1

Tossups

1. A function u is a “subsolution” named for this quantity at point x if, for any smooth function, ϕ , such that u minus ϕ is locally maximized at x , a PDE is non-positive on a combination of u and ϕ . Crandall and Lions introduced that type of generalized PDE solution named for this quantity in reference to a method of solving the Hamilton–Jacobi equations named for the “vanishing” of this quantity. A form of this quantity that equals another form of this quantity plus two-thirds times a third form of this quantity is assumed to equal zero in the (*) Stokes hypothesis. In a linear stress constitutive relation derived from the Cauchy momentum equation, two forms of this quantity each multiply a function of the velocity to give the deviatoric stress tensor. When this quantity is zero, the Navier–Stokes equations reduce to the Euler equations. For 10 points, name this quantity that is zero for a superfluid.

ANSWER: viscosity [accept viscosity solution, method of vanishing viscosity, volume viscosity, bulk viscosity, kinematic viscosity, shear viscosity coefficient, or second viscosity coefficient] (The Stokes hypothesis is the assumption that bulk viscosity, which equals the shear viscosity coefficient plus two-thirds times the second viscosity coefficient, equals zero.)

<Tim Morrison, Physics>

2. Note to moderator: Please read the answerline carefully.

Specific term required. Two of these ensembles commissioned a piece inspired by Google Earth in which glissandi mimic zooming in and out, *Close Up at a Distance*. To celebrate its 10th anniversary in 2023, one of these ensembles that is in residence at Purchase College performed both with Gil Shaham and Hilary Hahn; that ensemble was founded by Carnegie Hall. One of these ensembles popularized a piece that opens with the clarinet solo “long E, [pause] E, D, short D, F, E, short D, C.” Pieces by Valerie Coleman and Jessie Montgomery are featured on a self-titled, (*) Grammy-winning album by one of these ensembles named for New York. Teresa Carreño names the leading one of these ensembles in her home country. A reclassified one of these ensembles that popularized *Danzón No. 2* was founded by José Antonio Abreu and named for Simón Bolívar. For 10 points, El Sistema includes many of what ensembles that train pre-college musicians?

ANSWER: youth orchestras [or youth symphonies; accept World Youth Symphony Orchestra; accept New York Youth Symphony; accept the National Youth Orchestra of the USA; accept Teresa Carreño Youth Orchestra; accept Simón Bolívar Youth Orchestra; prompt on orchestras or symphony orchestras; prompt on youth ensembles; prompt on equivalent descriptions that indicate orchestras for young people by asking “what is the term for that type of orchestra?”; prompt on musical training programs, music education programs, or pre-college programs by asking “what specific part of those programs?”; prompt on El Sistema orchestras until “El Sistema” is read; reject “college orchestras” or answers that indicate an orchestra affiliated with a university or conservatory]

<Jacob Egol, Classical Music and Opera>

3. St. Boniface introduced a “Golden Mass” dedicated to these things, whose consecutive attendance over five days would spare someone from hell-fire. They’re not the Trisagion or Divine Mercy, but variations of the phrase “Holy God, Mighty God, Immortal God” are recited during a chaplet dedicated to these things that asks for pardon and mercy through their merit. St. Gertrude of Helfta prayed in honor of 5,466 of these things and rested her head against one of them to hear the Sacred Heart at St. John’s behest. They’re not corpses, but myroblytes produce a flowery (*) odor of sanctity from these things, as in Padre Pio’s case. A figure proclaims “Blessed are those who have not seen and yet believe” after asking a skeptic to touch these things. One of these things on the shoulder is the least remembered and most painful. For 10 points, stigmata correspond to what things touched by a doubting Thomas in the hands of Jesus?

ANSWER: Sacred Wounds of Jesus [or Five Sacred Wounds or Five Holy Wounds; accept answers that indicate any wound on Jesus’s body made during the crucifixion; prompt on wounds by asking “whose wounds?”; prompt on stigmata until read by asking “what do stigmata represent?”; prompt on injury or injuries]
<Kevin Thomas, Beliefs>

4. A poet in this language complains “I suffer on Earth” and “I am a hawk” in a “Song of Spring” composed for a banquet celebrating a new palace. A likely mistranslated prose lament in this language is the source of the line “Broken spears lie in the road / We have torn our hair in grief.” A volume of riddles is one of the many sources in this language collected in James Lockhart’s *We People Here*. A poet learned just enough of this non-African language to make horrible errors with it in several of her (*) *villancicos* (“vee-yahn-SEE-kohs”). The two surviving compilations of this language’s poetry include “The Ballads of the Lords.” This language of the poet-king “Hungry Coyote” referred to poetry as “flowers and songs.” For 10 points, name this indigenous language found in the Codex Borgia, which preserves stories about gods like Tezcatlipoca.

ANSWER: Nahuatl [accept Aztec or Mexicano] (Sor Juana Inés de la Cruz used shoddy Nahuatl in her *villancicos*.)
<Henry Atkins, World Literature>

5. Prior to this person’s most notable action, this person told newspaper publisher Charles Morris that “I’ve got a real surprise” for one group. A mock execution of a lookalike of this person was held atop a parade float by the “Oscar Streaker” Robert Opel. Firefighters helped contribute 100 thousand dollars to a defense fund for this person to hire Martin Blinder. When discussing the motivations behind one action, this person claimed that Carol Ruth Silver was “the biggest snake” and that (*) Willie Brown had “[masterminded] the whole thing.” A protester angry that this person received just seven years in prison at a 1979 trial set a car on fire and told a reporter on Castro Street to “make sure you put in the paper that I ate too many Twinkies!” For 10 points, name this person who inspired a “night” of riots by assassinating George Moscone and Harvey Milk.

ANSWER: Dan White [or Daniel James White; accept White Night riots]
<Mike Bentley, US History>

6. At the end of a memoir, this person throws his wristwatch at the narrator and shouts, “Your time is no longer mine!” A loose biography of this person states that he “was always possessed by the necessity of emptying himself, of emptying himself completely.” A magisterial four-part biography of this person took John Richardson thirty years to complete. This person studied objects “as a surgeon dissects a cadaver,” according to his friend’s collection of “aesthetic meditations.” Françoise (*) Gilot (“zhee-LOH”) detailed her tempestuous relationship with this person in a memoir detailing the birth of their daughter Paloma. This painter’s portrayal of “travelers, even more transient than we are ourselves” inspired the fifth *Duino Elegy*, which describes his depiction of “the Saltimbanque’s smile.” For 10 points, a portrait by what artist was praised for being the “only reproduction of me which is always I” by its sitter, Gertrude Stein?

ANSWER: Pablo Picasso [or Pablo Ruiz Picasso]
<Itamar Naveh-Benjamin, Other Academic>

7. In a comic story by this author, a factory worker who lies about his cricket skills somehow manages to hit a six before the match ends due to rain. A novel by this author contains a long stream-of-consciousness passage that begins by describing summer coming to the city and girls changing their winter coats for light frocks. In that novel by this author, a woman threatens to call the police on a starving man who catches a pigeon in a park. Attendees of “fetes” in a novel by this author include a man nicknamed for being (*) “blacker than midnight,” Five past Twelve. This author shared a typewriter with George Lamming while coincidentally crossing the Atlantic on the same ship. *Moses Ascending* is a sequel to a novel by this author that follows immigrants like Tolroy and Galahad and is written in creole English. For 10 points, name this Trinidadian-British author of *The Lonely Londoners*.

ANSWER: Sam Selvon [or Samuel Dickson Selvon]

<Henry Atkins, British Literature>

8. An admiral from this modern-day country captured a fort off the coast of Murūd by hiding his men in boxes of silk and wine. A military leader born in this modern country designed the innovative *neher* aqueducts of the city where Aurangzeb is buried. A noble from this modern country sparked rumors by allegedly lifting a ruler onto her horse by her armpits; that alleged lover of Razia Sultāna from this modern-day country was Jamāl-ud-Din (*) Yāqut. A politician born in this modern country founded Aurangābād while regent of the Ahmadnagar Sultanate and was named Malik Ambar. This modern [emphasize] *landlocked* country was the home of the ancestors of the Siddī ethnic group, who are also known by the term *habshi*, deriving from the former Arabic name for this country. For 10 points, many of premodern India’s slaves came from what country formerly called Abyssinia?

ANSWER: Ethiopia [or Federal Democratic Republic of Ethiopia, Ityop’iya Federalawi Demokrasiyawi Ripeblik, or Rippabliikii Federaalawaa Dimokraatawaa Itiyooophiyaa]

<Ashish Subramanian, World History>

9. On susceptibility weighted imaging sequences, this structure’s posterior portion normally resembles a swallow’s tail. On an axial view, this structure separates the red nucleus from the peduncle. This structure closely corresponds to the rodent A9 cell group. This structure both stimulates the direct pathway [emphasize] *and* inhibits the indirect pathway through projections that synapse onto the medium spiny neurons of the dorsal (*) striatum. MPTP destroys the cells in this structure’s pars compacta responsible for producing a molecule whose deficiency can cause cogwheel rigidity and a shuffling gait. The characteristic appearance of this portion of the basal ganglia results from high levels of neuromelanin. For 10 points, the depletion of what structure’s dopaminergic neurons characterizes Parkinson’s disease, and causes it to lose its “black” appearance?

ANSWER: substantia nigra [accept substantia nigra pars compacta or substantia nigra pars reticulata; prompt on basal ganglia until read]

<Itamar Naveh-Benjamin, Biology>

10. Two aims of a theory of this concept open a chapter from María Lugones’s book *Pilgrimages/Peregrinajes*, which is subtitled for “multiple” forms of this concept. Claudia Jones popularized Louise Thompson Patterson’s idea of this concept’s “triple” form. Marilyn Frye’s book *The Politics of Reality* opens with an essay titled for this concept, which presents her idea of the “double bind.” In *Justice and the Politics of Difference*, Iris Marion Young opposes a unified view of this concept and instead divides it into (*) five “faces.” An intersectional paradigm from Patricia Hill Collins’s *Black Feminist Thought* situates this concept in a namesake “matrix.” Opponents of identity politics have analogized it to competing for this concept in an “Olympics.” For 10 points, critical theorists often discuss the goal of dismantling “systems” of what concept?

ANSWER: oppression [or word forms like oppressed; or domination; accept matrix of oppression, matrix of domination, triple oppression, or triple exploitation, or five faces of oppression]

<Tim Morrison, Philosophy>

11. A visitor to these people's possible capital of Ossossané observed a 10-day Feast of the Dead, in which disinterred relatives were moved to pelt-lined ossuaries. A travelogue by the Baron Lahontan contains probably fictional debates between himself and a real orator of these people named Kondiaronk. The mission of "Sainte-Marie Among [these people]" is now the location of a shrine to eight 17th-century martyrs. Many of these people banded together with the related "Tobacco People," or (*) Petun, after a 1648 attack that killed the Jesuit Jean de Brébeuf. Along with several northern Algonquin groups, a confederation of these people was defeated and displaced by the Haudenosaunee ("hoh-deh-noh-SHO-nee") during the Beaver Wars. For 10 points, Wendake was the home of what indigenous group, whose exonym names a lake between Michigan and Ontario?

ANSWER: **Huron** [or **Wendat**, **Wyandot**, **Wyandotte**, **Huron-Wendat**, or Nation **Huronne-Wendat**; accept **Huron-Petun** until "Petun" is read; prompt on Tionontati; prompt on Petun until read]
<Henry Atkins, Other History>

12. A dying tradition of dolls made in this medium in Celaya led Carolina Esparragoza to expand their designs to include godzillas and mermaids as part of the Miss Lupita project. Cane, wood, and wire are used alongside this material to create exploding little bulls called "toritos." A ban on the destruction of Judas effigies led an artist to create works in this medium that incorporate features like fins and viper tongues to represent the classical elements. A dream about a butterfly-winged donkey and bull-horned rooster led Pedro (*) Linares to coin the term for a type of surrealist artwork made from this material. Outside of Oaxaca ("wah-HAH-kah"), *engrudo* is used to create *cartonería* like *alebrijes* ("ah-lay-BREE-hess") from this material. Either clay or this material are used to create the seven-pointed stars that are broken during Las Posadas. For 10 points, one might use a water and wheat-flour paste to create what material used for piñatas?

ANSWER: **papier-mâché** [accept **cartonería** until read; prompt on paper, newspaper, cardboard, or confetti; prompt on alebrijes or piñatas until read by asking "what are they made of?"]
<Kevin Thomas, Visual Fine Arts>

13. A theorem about functions with this property uses a sequence of functions E -sub- n , the n th of which equals one minus z all times e to the partial sum of z to the k over k ; such functions are called elementary factors. Given a sequence with moduli tending to infinity, there exists a function with this property whose zeroes are precisely that sequence. The Taylor coefficients, a -sub- n , of functions with this property satisfy the condition that the lim-sup ("lim soup") of the absolute value of a -sub- n to the power of one over n is (*) zero. The Hadamard factorization theorem applies to functions with this property whose Cauchy–Hadamard radius is infinity. Non-constant functions with this property can miss at most one point by Picard's little theorem. Bounded functions with this property are constant by Liouville's theorem. For 10 points, name this property of functions that are holomorphic everywhere on the complex plane.

ANSWER: **entire** [accept answers indicating that the function is **everywhere differentiable**, **everywhere analytic**, or **everywhere holomorphic** until "everywhere" is read; prompt on holomorphic until read; prompt on complex differentiable or analytic by asking "what is this called for complex function?"]
<Tim Morrison, Other Science - Mathematics>

14. A character in this play remarks that "every easy choice today will have its consequences tomorrow" after complaining that children no longer write with fountain pens. That character in this play warns against idealizing Franklin Roosevelt and presenting History with "sugar all over it." In this play's opening monologue, a character tells a story about the sole survivor of a wrecked cargo ship, who navigates while the (*) stars are covered by clouds. A man who gives a lecture on the evils of "gossip" in this play shows his long but clean fingernails to children whom he teaches to play basketball. This play's cast of four includes the mother of Donald Muller, a student who returns from the rectory with wine on his breath. For 10 points, Sister Aloysius investigates sexual abuse by a Catholic school priest in what play by John Patrick Shanley?

ANSWER: **Doubt: A Parable**
<Henry Atkins, American Literature>

15. **Blanchard and Quah used a structural model named for this property to distinguish supply and demand disturbances. When using a model named for this property, the evolution of an endogenous variable due to exogenous shocks can be analyzed via impulse response functions. A method named for this property that models a vector of responses was popularized by Christopher Sims. In a popular method, a model named for this property corresponds to the parameter “p” in the triplet “p, d, q,” where “d” is the number of (*) differences taken and “q” is the number of error terms included. A model named for this property can be merged with a moving-average model and then “integrated” to get closer to stationarity. For 10 points, name this property of a time series model that predicts future values using past values, which is the “AR” in the acronyms ARIMA and ARCH.**
ANSWER: autoregressive [or word forms such as autoregression; accept vector autoregression or structural vector autoregression; prompt on AR or VAR; prompt on ARMA or ARIMA; prompt on regression or regressive]
<Tim Morrison, Social Science>

16. **Via an unusual, poorly understood mechanism, this metal explodes on contact with perchloric acid. A compound of this metal with an unusual crystal structure includes tubes made of rhombic dodecahedra of this element and oxygen that are partially filled by more oxygen; that substance, formed by heating this metal’s oxychloride, is Arppe’s compound. A compound of sodium and this metal is a “3D graphene” that is the first known three-dimensional topological Dirac semimetal. This metal’s vanadate is the most powerful known catalyst for the (*) photooxidation of water. Most topological insulators are based on this metal; the first known one was this metal’s antimonide. Besides pyrolytic carbon, this metal is the most diamagnetic substance known. In 2003, this metal’s 209 isotope was found to be very weakly radioactive. For 10 points, name this metal that was once thought to be the heaviest stable element.**
ANSWER: bismuth [or Bi]
<Gerhardt Hinkle, Chemistry>

17. **In this country, divers can view a porcelain statue of a woman riding a unicorn called “The Lady” by diving into the wreck of the SS *President Coolidge*. This country’s national dish, which consists of a paste of taro, yam, banana, and breadfruit baked in banana leaves, is known as *lap-lap*. A tomb on this country’s island of Eretoka features a UNESCO World Heritage Site centered around the burial ground of chief Roi Mata. Jimmy Stevens led this country’s Nagriamel movement which fought the (*) Coconut War in an attempt to win independence for its largest island, Espiritu Santo. The tradition of *gol*, or land diving, is practiced on this country’s island of Pentecost. This country’s Tanna Island is home to cargo cults that worship Prince Phillip and a US serviceman known as John Frum. For 10 points, name this Pacific Island country whose capital is Port Vila.**
ANSWER: Vanuatu [or New Hebrides]
<Munir Siddiqui, Geography>

18. **A grasshopper who carries one of these objects gets revenge on an adulterous beetle in a 1912 short that uses stop-motion with dead insect specimens. An angry man swallows one of these objects whole in James Williamson’s 1901 short *The Big Swallow*. In another film, a partly transparent one of these objects is shown in Dutch angle shots that are intercut with real footage from both a birth and a funeral. In that film’s opening scene, a man places one of these objects atop a much larger one on which he is standing, before entering a (*) theater whose seats open automatically for its patrons. One of these objects assembles itself late in that film, which ends with an eye being superimposed onto one of these objects. An outlaw fires his gun at one of these objects at the end of *The Great Train Robbery*. For 10 points, a 1929 experimental film by Dziga Vertov is titled for a man with what technology?**
ANSWER: movie camera [or camera lens; accept *The Cameraman’s Revenge*; accept *Man with a Movie Camera* or *Chelovek’s kinoapparatom*; prompt on lenses; prompt on frames by asking “what technology is creating the frame?”]
<Tim Morrison, Other Fine Arts>

19. **The Mutiny of the Trout was an alleged peasant revolt in this kingdom sparked by a conflict over who could buy the namesake fish from a merchant. A ruler of this kingdom inherited the realm of his older brother upon that brother's assassination, despite losing to him earlier in the same year at the Battle of Golpejera ("gol-pay-HEY-rah"). It's not Iceland, but an 1188 council in this kingdom has been called the earliest European parliament. In a now-discredited theory, the founding of this kingdom was part of a "repopulation" of the "Desert of the (*) Duero."** This kingdom joined with its eastern neighbor as part of the 1230 Treaty of Benavente while under the rule of Ferdinand III. García I founded this kingdom after Alfonso III of Asturias divided his lands between his three sons. For 10 points, what was this medieval kingdom in northwest Spain, which for a time controlled Galicia and lay to the west of Castile?

ANSWER: Kingdom of León [or Reinu de Llión, Reino de León, or Reino de Leão; accept Castilla y León; prompt on Kingdom of Galicia until "Galicia" is read by asking "what kingdom controlled Galicia for much of this period?"]
<Alex Fregeau, European History>

20. **This author compares the evolution of certain genres to the "change in function" of the *tolstovka* jacket in the essay "Monument to a Scientific Error." An essay by this author compares the quotes "Hey, you with the hat, you dropped a package!" and "Hey, clean up your act, you crumpled hat!" That essay by this author cites Boccaccio phrases like "the catching of the nightingale" and a Hamsun line about "two white miracles" in its examination of imagery in "erotic art." An essay by this author begins by critiquing the idea that (*) "Art is thinking in images." This author quotes the internal monologue of a horse named Strider, from Tolstoy's "Kholstomer," in examining a technique in which an object is described "as if it were perceived for the first time." This author wrote the book *Theory of Prose*. For 10 points, name this Russian formalist critic whose essay "Art as Device" theorizes *ostranenie* ("uh-struh-NEN-yuh"), or "defamiliarization."**

ANSWER: Viktor Shklovsky [or Viktor Borisovich Shklovsky] ("Monument to a Scientific Error" marked Shklovsky's turn away from pure formalism.)
<Itamar Naveh-Benjamin, European Literature>

Bonuses

1. In the 1960s and 70s, advocates of “clean” approaches to this sport like Royal Robbins began using gear like hexes and cams instead of environmentally harmful pitons (“pee-TAWNS”). For 10 points each:

[e] Name this sport whose popularity has resulted in chalk bans at some national parks. This sport grades routes using the Yosemite Decimal System.

ANSWER: rock **climbing** [accept sport **climbing**, trad **climbing**, or **mountaineering**; reject “bouldering”]

[m] More and more climbers have ignored the voluntary June climbing ban that respects local Lakota ceremonies around this site. Several tribes have pushed to call this site by its indigenous name of “Bear Lodge.”

ANSWER: **Devils Tower** National Monument

[h] This climber sold the first hexes after realizing his company’s pitons were damaging the rock at Yosemite. This person lost billionaire status after donating the clothing company Patagonia to a trust to fight global warming.

ANSWER: Yvon **Chouinard** (“ee-VOHN sh’wee-NAR”)

<Henry Atkins, Modern World>

2. After leaving his namesake “Temple,” Zeena Schreck, daughter of Anton LeVay, founded a Liberation Movement named for this god to help others resolve their pains through spiritual guidance. For 10 points each:

[m] Name this ageless intelligence and true identity of Satan, whose “Temple” split from the Church of Satan after Michael Aquino received his revelation. The *sha* was sacred to this god, whom the Greeks conflated with Typhon.

ANSWER: **Set** [or **Seth**; accept Temple of **Set**, **Sethians**, or **Sethian** Liberation Movement]

[e] Set is seen as a manifestation of Netjer in Kemetism, a neopagan faith whose name translates to “land of this color,” in contrast to the Deshret’s infertile red sands. Green and this color were the two main complexions of Osiris.

ANSWER: **black** [accept **black** land]

[h] Archaeologists saw this British draftsman and Kemetite practitioner as indispensable due to her knowledge of Abydos and strangely accurate visions. This supposed reincarnated priestess claimed to be visited by her lover, Seti I.

ANSWER: **Omm Sety** [or **Om Seti**, Dorothy Louis **Eady**, or **Bentreshyt**; prompt on **Sety** or **Seti**]

<Kevin Thomas, Beliefs>

3. The ground state and excited state of these defects are both triplets, and the strength of the decays through intermediate singlets varies depending on the spin. For 10 points each:

[m] Name these point defects. The long coherence time of these defects makes them useful for constructing qubits by repeatedly exciting them with 532 nanometer green laser light and allowing them to decay in order to “initialize” the spin state.

ANSWER: **nitrogen-vacancy** centers [or **NV** centers; accept **NV**-minus centers or **NV0** centers; prompt on partial answer]

[h] Cooling a nitrogen-vacancy center allows increased resolution of this spectral line, which is analogous to the Mössbauer line. The Franck–Condon principle gives the frequency gap between this line and the peak of a related sideband.

ANSWER: **zero-phonon** line [or **ZPL**]

[e] Nitrogen-vacancy centers are found in this material. Extremely high pressures can be created using anvil cells that use this material.

ANSWER: **diamond** [accept **diamond** anvil cells; prompt on **carbon**]

<Geoffrey Wu, Chemistry>

4. In 1974, the Department of Defense mandated that all branches of the military use a common means of assessing this quality. For 10 points each:

[e] Name this quality, first widely measured with the Army Alpha and Beta tests employed during World War I.

ANSWER: **intelligence** [or **intelligence** quotient or **IQ**; accept **mental ability** or **mental aptitude**]

[h] During the Vietnam War, Robert McNamara began this program to lower the minimum intelligence test scores required of recruits. The men who enlisted under this program were derisively called “McNamara’s Morons.”

ANSWER: Project **100,000**

[m] McNamara pitched Project 100,000 as a means of addressing poverty, which had been recently studied by this political advisor. In one work, this political advisor cited a “tangle of pathology” as a problem facing the title institutions.

ANSWER: Daniel Patrick **Moynihan** [accept **Moynihan** Report]

<Alex Fregeau, US History>

5. After this character falls in love with a man’s “clean and fair” “pair of legs and feet” and marries him, she is rewarded with lectures on the treachery of women like Pasiphaë and Clytemnestra. For 10 points each:

[e] Name this character, who tears a page out of a collection of misogynistic texts read incessantly by her fifth husband Jankin. This character tells of a knight who is commanded to discover what “women desire most.”

ANSWER: **Wife of Bath** [or **Alisoun** or **Alyson**]

[h] Jankin’s reading list includes such antifeminist screeds as this author’s “Dissuasion of Valerius.” The first “Distinction” of a book by this author opens by comparing a royal court to the “infernal regions.”

ANSWER: Walter **Map** (The unnamed book is *De nugis curialium*.)

[m] Map begins the “Dissuasion of Valerius” by declaring his hatred for the dismal shrieks of these animals. In a Middle English poem, one of these animals trades insults with a “charming and dainty” opponent.

ANSWER: **owl** [accept screech-**owl**; prompt on “The Owl and the Nightingale”]

<Arya Karthik, British Literature>

6. A few months before the death of this ruler, his bodyguard Hephaestion died after eating a rotten chicken. For 10 points each:

[e] Name this Macedonian ruler who, according to Plutarch, died after a month-long illness in the palace of Nebuchadnezzar II at the age of 32.

ANSWER: **Alexander** the Great [or **Alexander** III of Macedon, **Aléxandros** Megas, or **Aléxandros** III]

[m] According to some accounts, Alexander was actually poisoned on the orders of this man. This general was appointed the “strategos of Europe” and regent of Macedon in 334 BCE when Alexander began his conquest.

ANSWER: **Antipater** [or **Antipatros**]

[h] After his death, Ptolemy I Soter took Alexander’s body to Alexandria, where it was claimed to be entombed in this substance. The Great Pharmacopoeia recounts an Arabian story about a legendary medicine made from men who used this substance on their bodies.

ANSWER: **honey**

<Munir Siddiqui, Other History>

7. Note to moderator: Please read the answerline for the first part carefully.

On Peter Schickele's "New Horizons in Music Appreciation," a fictional conductor with this name leads a performance riddled with sports-style commentary. For 10 points each:

[h] Name this movement written after its composer recovered from an intestinal disease. Its solemn, imitative melody, which begins "C, up to A, G, long high C," trades with a faster passage in 3/8 ("three-eight") marked "with renewed strength."

ANSWER: **Heiliger Dankgesang** [accept **Heiliger Dankgesang** eines Genesenen an die Gottheit, in der Lydischen Tonart; accept **Holy Song** of **Thanksgiving** to the Deity of a Convalescent, in the Lydian Mode; prompt on the **third** movement or Molto **adagio** – Andante of **Beethoven's 15th String Quartet** or **Opus 132** by asking "what is its formal name?"]

[m] To recover from an earlier illness, Beethoven went to Teplitz, where he wrote about his problems in a letter to this person. Beethoven wrote a movement cut from his "Waldstein" Sonata for someone who may have been this person.

ANSWER: **Immortal Beloved** [or **Unsterbliche Geliebte**; prompt on partial answer; prompt on Josephine **Brunsvick** by asking "what identity do some scholars think she may have held?"] (The unnamed movement is Beethoven's *Andante favori*.)

[e] Yale's Brentano String Quartet is named after another possible Immortal Beloved, Antonie, for whom Beethoven wrote a piano piece in this genre. That piece consists of 33 renditions of a waltz by Anton Diabelli.

ANSWER: theme and **variations** [accept *Diabelli Variations*, Op. 120; accept **33 Variations on a Waltz by Diabelli**, Op. 120 or **33 Veränderungen über einer Walzer von Diabelli**, Op. 120]

<Jacob Egol, Classical Music and Opera>

8. The first chapter of this novel, a detailed description of a richly furnished flat written entirely in the conditional mood, opens by noting that "your eye, first of all, would glide over the grey fitted carpet. . . ." For 10 points each:

[h] Name this novel that "is a piece of advertising copy" "in places," per its author. This novel centers on Sylvie and Jerome, who spend a year teaching in Sfax before returning to Paris and becoming marketing executives.

ANSWER: **Things: A Story of the Sixties** [or *Les Choses, une histoire des années soixante*]

[e] Georges Perec published *Things* two years before joining this movement founded by Raymond Queneau. While part of this movement, Perec wrote *Life: A User's Manual*, whose last chapter uses only the periphrastic future.

ANSWER: **OuLiPo** [or **Ouvroir de littérature potentielle** or **Workshop of Potential Literature**] (Perec's other Oulipo-period works include *Espèces d'espaces*, a section of which consists entirely of verbs in the infinitive.)

[m] Perec's frequent use of the conditional and simple future in *Things* counters this non-French collection's claim that "the publicity image. . . uses only the future tense." This collection of essays in art criticism was based on a BBC show.

ANSWER: **Ways of Seeing** (by John Berger)

<Arya Karthik, European Literature>

9. A Charles Ragin book titled in response to this text presents an argument that this book has ignored his use of fuzzy sets and Boolean logic to extend qualitative analysis. For 10 points each:

[h] Name this seminal 1994 methods textbook that sought to provide a scientific backbone to qualitative analysis in political science. You may give the title or the three-letter acronym by which it is often referred.

ANSWER: **Designing Social Inquiry: Scientific Inference in Qualitative Research** [or **KKV** or **King, Keohane, Verba**]

[e] In KKV's inferential framework, theories underlying qualitative designs can achieve this status by producing "observable implications." Karl Popper argued that, to be scientific, a theory must have this status.

ANSWER: **falsifiable** [or **refutable**; accept word forms such as **falsifiability**; reject "false"]

[m] A section of KKV devoted to this bias uses the example of [read slowly] predicting the likelihood of a coup in sub-Saharan African countries by the level of political repression in the country, but not controlling for economic conditions.

ANSWER: **omitted variable** bias

<Henry Atkins, Social Science>

10. *Two answers required.* After meals, a sharp, stabbing pain in the abdomen occurs in underweight patients whose transverse duodenum is being compressed by these two arteries. For 10 points each:

[h] Identify *both* of these arteries. In nutcracker syndrome, varicoceles can result from a backed up outflow when the left renal vein is compressed between these two arteries.

ANSWER: abdominal **aorta** AND **superior mesenteric** artery [accept **SMA** in place of “superior mesenteric artery”]

[m] The obstruction in nutcracker syndrome restricts the flow of blood into this large vessel, which returns blood from the lower body to the right atrium of the heart.

ANSWER: inferior **vena cava** [or **IVC**; reject “superior vena cava”]

[e] Venous return to the heart can also be hindered by the formation of one of these objects in a deep vein, typically in the lower leg or thigh. These objects may then dangerously dislodge and form obstructive emboli in the lungs.

ANSWER: **thrombi** [or **thrombus**; accept blood **clots** or deep vein **thrombosis**]

<Itamar Naveh-Benjamin, Biology>

11. The narrator of a story by this author is a rat who tells the reader, “I’m not a rat.” For 10 points each:

[h] Name this pseudonymous author whose fiction includes *I Live in the Slums* and *Frontier*. In a story by this author, a narrator obsessed with desk drawers realizes that there is no hut on the hill behind her family’s house.

ANSWER: **Cán Xuě** (“tsan shwuh”) [prompt on partial answer; or **Dèng Xiǎohuá**] (The stories are “Story of the Slums” and “Hut on the Hill.”)

[e] As part of her self-aggrandizing public persona, Cán Xuě frequently extols the “perfection” of her stories and of her critical work on Kafka, Dante, and this Italian author of *Cosmicomics*.

ANSWER: Italo **Calvino**

[m] Cán Xuě has denigrated the “warped, low character” of violent scenes by this other pseudonymous author. Like Cán Xuě, this author used animal narrators in a novel about a landlord who undergoes repeated reincarnations.

ANSWER: **Mò Yán** [prompt on partial answer; or **Guǎn Móyè**] (The novel is *Life and Death Are Wearing Me Out*.)

<Henry Atkins, World Literature>

12. Congestive collapse occurs when a computer network is overwhelmed by traffic, often exacerbated by aggressive retrying of dropped packets. Answer the following about how to control congestion, for 10 points each:

[e] Since this transport-layer protocol retransmits to achieve correctness, it needs congestion control algorithms to prevent collapse. This protocol contrasts with the “spray-and-pray” UDP protocol.

ANSWER: **TCP** [or **Transmission Control Protocol**]

[m] This classic TCP congestion control algorithm maintains a window whose lengthening upon ACKs (“axe”) and shortening upon packet drops produces a characteristic sawtooth-shaped graph.

ANSWER: **AIMD** [or **Additive Increase, Multiplicative Decrease**]

[h] TCP CUBIC, which is more conservative near the largest achieved window size, prevents congestion better when this quantity for a network is large since it spends less time waiting. Long fat networks have large values of this quantity.

ANSWER: **delay-bandwidth product** [accept mathematically equivalent descriptions]

<Alistair Gray, Other Science - Computer Science>

13. A sack of this city, which led Romain Rolland to call the Germans “descendants of Attila the Hun,” was preceded by a similar action undertaken by Max von Hausen’s army in Dinant. For 10 points each:

[m] A chapter of *The Guns of August* details the burning of a university library in what city by invading German forces?

ANSWER: **Louvain** [or **Leuven**]

[h] This document authored by scientists, artists, and professors defends the invasion of Belgium. This document asserts that “we...refuse to buy a defeat at the cost of saving a work of art” in response to the destruction of Louvain.

ANSWER: ***Manifesto of the Ninety-Three German Intellectuals*** [or ***An Appeal To The World of Culture, An Appeal To The Civilized World, or An die Kulturwelt!***]

[e] The John Rylands Library in this city spearheaded the drive for donations to replenish the Catholic University of Louvain’s library. Friedrich Engels wrote *The Condition of the Working Class in England* while in this city.

ANSWER: **Manchester**

<Arya Karthik, European History>

14. Infrequent use of passing chords and the lead trumpet being doubled an octave lower are characteristics of Sammy Nestico’s arrangements for this bandleader. For 10 points each:

[e] Name this bandleader who collaborated with Nestico on an album titled [this artist] *Straight Ahead*. This musician, who recorded a signature big-band version of “April in Paris,” is called the *Atomic* in the title of a 1958 album.

ANSWER: Count **Basie** [or William James **Basie**; accept ***Basie Straight Ahead***; accept ***The Atomic Mr. Basie***]

[h] This musician established the arrangement style of the Count Basie Orchestra in the late 1950s through albums like *The Atomic Mr. Basie*. This musician arranged Woody Herman’s “Woodchopper’s Ball” and composed the original *Batman* theme.

ANSWER: Neal **Hefti** [or Neal Paul **Hefti**]

[m] This 1937 song by Basie makes use of a “head arrangement” developed during an improvised jam session. This song, which opens with a long F major piano solo, is allegedly titled for the hour of the morning that it was first broadcast.

ANSWER: **“One O’Clock Jump”**

<Victor Pavao, Other Fine Arts>

15. Following his asphyxiation via stuffed scarf at the hands of the Great Fifth’s followers, Tulku Dragpa Gyaltzen was reincarnated as this figure. For 10 points each:

[h] Name this *gyalpo* whose status as a protector deity led Pabongkhapa to utilize his cult in violently repressing the Rimé movement. This figure’s association with sectarian intolerance led to a ban on his worship in the Gelug school.

ANSWER: Dorje **Shugden** [or Dorje **Shuk-den, Dolgyal, or Gyalchen Shugden**]

[m] Modern controversy around Shugden’s worship is adjacent to a debate over the inclusion of teachings from this Tibetan school, which as the oldest of the four major schools fittingly has a name that translates to “old school.”

ANSWER: **Nyingma** school [or **Ngangyur**]

[e] The 14th Dalai Lama’s opposition to Shugden is exemplified by his rejection of a book titled for this color. “Hats” of this color act as an alternative name for the Gelug School.

ANSWER: **yellow**

<Young Fenimore Lee, Beliefs>

16. A Patricia Hampl essay for *The Paris Review* reads “not a smug ha ha but an exultant aha!” into this line, which comes after “The droppings of last year’s horses / Blaze up into golden stones.” For 10 points each:

[m] Give this full sentence that concludes the poem “Lying in a Hammock at William Duffy’s Farm in Pine Island, Minnesota.”

ANSWER: “**I have wasted my life.**”

[e] Hammock-user James Wright is associated with a school named for a “deep” form of this concept. Ezra Pound and H.D. were major poets in an earlier school named for this concept, which favored precision of language.

ANSWER: **image** [or **imagery**; accept “deep **image**” or **Imagism**]

[h] This deep image poet of *The Lice* wrote collections like *The Rain in the Trees* while living in a palm sanctuary on Maui. After winning a Pulitzer for *The Carrier of Ladders*, this poet donated the prize money to help draft dodgers.

ANSWER: W. S. **Merwin** [or William Stanley **Merwin**]

<Henry Atkins, American Literature>

17. *Two answers required.* To display his loyalty during a conflict between these two powers, Yuè Fēi (“y’weh fay”) ripped his shirt open to reveal a tattoo of the phrase “*jìn zhōng bào guó*,” (“cheen chung bau gwo”) widely called the most famous tattoo in Chinese history. For 10 points each:

[h] Name these two powers, one of which Yuè Fēi served with undying loyalty in a conflict with the other. These two powers were at peace for most of the 70 years that followed the Treaty of Shàoxīng (“shao-sheeng”).

ANSWER: **Sòng** Dynasty [or **Sòng cháo**] AND **Jīn** Dynasty [accept **Jīn cháo** in place of “Jīn Dynasty”; accept **Jīn-Sòng** Wars; prompt on partial answer]

[m] A tablet made by a community in this city references the phrase *jìn zhōng bào guó* to emphasize their loyalty to the Míng emperor. This city was the capital of the Jīn until captured by the Mongols in 1233.

ANSWER: **Kāifēng** (“kye-fung”) [accept **Kāifēng** Jews]

[e] Máo Zédōng was reportedly a fan of *Mother Yuè Tattoos Her Son*, a work in this genre emphasizing filial piety. Jiāng Qīng (“j’yahng cheeng”) promoted eight revolutionary works in this genre based on the Peking form of this performance art.

ANSWER: **opera** [accept Peking **opera**, revolutionary **operas**, model **operas**; accept **plays** in place of “opera”]

<Ashish Subramanian, World History>

18. This artwork includes a ladder leading to red bubbles listing concepts such as “meekness” and “long suffering.” For 10 points each:

[h] Name this artwork made using adobe bricks, automobile parts, and thousands of gallons of paint. This artwork depicts large slabs inscribed with writing similar to the Sinner’s Prayer.

ANSWER: **Salvation Mountain**

[m] Leonard Knight, the creator of *Salvation Mountain*, is considered an outsider artist similar to this other artist, who drew a frog with tentacle eyes for the cover of his album *Hi, How Are You*.

ANSWER: Daniel **Johnston** [or Daniel Dale **Johnston**]

[e] Besides coining the term “art brut” (“ahr broot”) for outsider art, Jean Dubuffet formed an art gallery with artists like this author of a *Surrealist Manifesto* that describes “psychic automata.”

ANSWER: André **Breton** [or André Robert **Breton**]

<Young Fenimore Lee, Visual Fine Arts>

19. A book by this philosopher argues that the creation of artificial general intelligence could freeze moral standards in place creating what he dubs a “value lock-in.” For 10 points each:

[h] Name this Oxford philosopher who defended longtermism in his 2022 book *What We Owe the Future*. Until late 2022, this philosopher was a board member of cryptocurrency fraudster Sam Bankman-Fried’s FTX Future Fund.

ANSWER: William **MacAskill**

[e] Bankman-Fried’s cryptocurrency fortune helped bankroll this trendy utilitarian social movement, which aims to eliminate poverty via evidence-based charity and earning to give.

ANSWER: **effective altruism** [or **EA**]

[m] As a teenager, MacAskill read Peter Singer’s essay “Famine, Affluence, and Morality,” which argues that there is no moral difference between doing this specific action and helping “a Bengali whose name [you] shall never know.”

ANSWER: saving a **drowning child** [accept clear knowledge equivalents mentioning both **drowning** AND a **child**; prompt on partial answers]

<Caleb Kendrick, Philosophy>

20. *Two answers required.* One of these two equivalent principles directly generalizes Hertz’s principle of least curvature, while the other directly generalizes the principle of virtual work to dynamical systems. For 10 points each:

[h] Name these equivalent principles. One gives that systems minimize a mass-weighted sum of squares of differences in acceleration, and the other gives that a sum of dot products with virtual displacement equals zero.

ANSWER: Gauss’s principle of **least constraint** AND **D’Alembert’s** principle [accept Lagrange–**d’Alembert’s** principle in place of “D’Alembert’s principle”]

[m] Gauss’s principle is an example of one of these statements that give an inequality between a known quantity and a function of a trial quantity, allowing the trial quantity to be refined by finding the extrema of a functional.

ANSWER: **variational** principles

[e] Another variational principle gives that this quantity, the time integral of the Lagrangian, is minimized along a system’s true trajectory.

ANSWER: **action** [accept principle of least **action** or stationary-**action** principle]

<Geoffrey Wu, Physics>