

TOSSUPS

1. This process's legacy is "decentralized despotism" per Mahmood Mamdani's *Citizen and Subject*. Following this process's "Epic School," Ali Mazrui called it the third source of a "triple heritage." Peripheral crises led "informal" collaborators to drive this "climactic" process per Robinson and Gallagher's book on its "official mind," which stressed its continuity with free trade in "legitimate commerce." This process was a mere "episode" per J. F. Ade Ajayi ("ah-day ah-jah-yee") of the Ibadan ("ih-BAH-dun") School, and it resulted from overproduction that led capitalists to seek protected markets, according to J. A. Hobson. Jules Ferry cited a "civilizing mission" to justify parts of this process, whose speed is often credited to quinine's breach of the "disease barrier" and the Maxim gun. For 10 points, the start of what centerpiece of the "new imperialism" is often dated to the Berlin Conference?

ANSWER: **Scramble** for Africa [or **Scramble** for African territory, or **partition** of **Africa**, **colonization** of **Africa**, European **conquest** of **Africa**, **African colonialism**, **race** for **Africa**, **acquisition** of **Africa**, **invasion** of **Africa**, or equivalents; accept specific African countries such as **Madagascar** or **Tunisia** in place of "Africa"; prompt on new **imperialism**, high **imperialism**, late **colonialism**, **colonization**, or equivalents by asking "where?"] (Robinson and Gallagher wrote *Africa and the Victorians* and "The Imperialism of Free Trade.")

<Other History>

2. A 2018 production of this opera had the main character enter in a gorilla suit. María Pagés's ("pah-HESS's") dance adaptation of this opera adds the word "*Yo*" to the title. Near the end of this opera's prelude, a slow section states the following motif over tremolo D minor triads: [read slowly] "long D, [pause] C-sharp, B-flat, C-sharp, A," followed by two soft timpani strokes. This opera's music was arranged into a percussion-heavy one-act ballet by Rodion Shchedrin ("shed-REEN"). The Hammerstein song "Stan' Up an' Fight" is in an all-Black musical based on this opera, whose 1954 film version stars Harry Belafonte and Dorothy Dandridge. During this opera's closing duet "*C'est toi? C'est moi!*" ("seh twah? seh mwah!"), the title character returns a ring to her former lover, who then stabs her. For 10 points, name this French opera that ends at a bullfight.

ANSWER: **Carmen** [accept **Carmen Jones**; accept **Carmen Suite** or **Karmén-syuíta**; accept *Yo*, **Carmen** or *I, Carmen*]

<Other Fine Arts>

3. A visual poem from this movement depicts a straight line and a curvy line, to which adding a doodled boat reveals the word "Navigation" hidden in its title, "Zion." A poet from this movement claimed that Borges ("BOR-hess") was a "philene" ("FILL-een"), but sorted most other poets into "currents" named for anti-gay slurs. Quím Font designed an ouroboros ("oo-ruh-BOH-russ") logo for this movement's magazine *Lee Harvey Oswald*, which published poems by Ernesto San Epifanio. In a novel based on the author's earlier *The Spirit of Science Fiction*, members of this movement hate the "great enemy," Octavio Paz. Poets from this movement named Juan García Madero, Ulises Lima, and Arturo Belano take a white Chevy Impala into the Sonoran Desert to look for Cesárea Tinajero ("say-SAH-ray-uh tee-nuh-HAY-ro"). For 10 points, name this fictional version of Mexican infrarealism from Roberto Bolaño's *The Savage Detectives*.

ANSWER: **visceral realism** [or **realismo visceral**; accept **infrarealism**, **infrarrealismo**, **infrarrealistas**, or **infras** until "infrarealism" is read; reject "realism" or "realismo"]

<World Literature>

4. Ayatollah Khomeini famously dismissed the idea that the price of this food caused Iran's revolution. A futuristic museum honors this food in Dàxīng ("dah-sheeng") District, Beijing, where consumers prize Xīnjiāng's Hāmi variety. A ruler born in Andijan who wept for joy to eat this food from Kabul ranked Akhsi's Mir Timur variety above Bukhara's in the *Bāburnāma*. Utility hikes by the Bakiyev ("bah-KEE-yeff") clan sparked an April 2010 revolution nicknamed for this food five years after the Tulip Revolution in Kyrgyzstan. A torpedo-shaped variety of these fruits inspired an August holiday created by Saparmurat Niyazov in Turkmenistan. These cucurbits ("kew-KER-bits") include the misleadingly named Armenian cucumber, waxy "winter" ones used in wife cakes, and orange Persian pepos named for their fragrance. For 10 points, the Silk Roads spread what rinded fruit's musk and honeydew varieties?

ANSWER: **melons** [accept water**melon**, musk**melon**, **honeydew** melon, **cantaloupe**, winter **melon**, **gulobi** melon, or other melon varieties; accept xī**guā**, dōng**guā**, xiāng **guā**, Hāmi **guā**, **qovun**, **battikh**, **Citrullus**, **C. lanatus**, **Cucumis**, or **C. melo**; accept **Melon** Revolution or **Melon** Day; prompt on **gourds** or **cucurbits** or **Cucurbitaceae** until "cucurbits" is read; reject "bitter melon"]

<Geography>

5. A book edited by Jörg ("yerg") Starflinger and Thomas Schulenberg discusses how a "high performance" design named for this substance may be destabilized by density waves. This substance partly lends its name to the VVER ("V-V-E-R") design, which uses assemblies made of a zirconium alloy and exploits a negative void coefficient. Once-through cycles can be used in a class of Generation IV ("four") designs in which this substance is kept supercritical. This substance moves through a primary loop after being raised to about 150 bars in a popular design named for it being "pressurized." Ahead of graphite, this is the most popular substance used to slow down neutrons in fission reactors. For 10 points, what liquid is both the most common nuclear moderator and the most common nuclear coolant, being more popular than its deuterated "heavy" variant?

ANSWER: **water** [or **H2O**, light **water**, **water** vapor, or **steam**; accept pressurized **water** reactors, light **water** reactors, supercritical **water** reactors, **water**-water power reactors, **vodo**-vodyanoi energetichesky reaktor; prompt on **coolants** until "coolant" is read; prompt on **moderators** until "moderator" is read; reject "heavy water"]

<Physics>

6. A theologian from this country used lemon vendors without underwear to propose a "Bi/christ" representing bodily experiences of the divine excluded by heteronormative theology. The author of *Indecent Theology*, Marcella Althaus-Reid ("ALT-house REED"), was from this country, whose folk saints include a woman who still produced breast milk for her baby after dying of thirst, called "La Difunta Correa." A theologian born in this country wrote that "shepherds" of the church "should smell of sheep" to argue for decentralized church structures. That theologian born in this country, who argued that "integral ecology" should replace a "throwaway culture" threatening "our common home" with climate change, began the Synod on Synodality and wrote *Laudato si'*. For 10 points, name this birthplace of Jorge Bergoglio ("HOR-hay bair-GOAL-yo"), the first Latin American pope.

ANSWER: **Argentina** [or **Argentine** Republic or República **Argentina**]

<Religion>

7. This material was the stationary phase in the first 2D form of chromatography, which was used to sequence gramicidin S and insulin. MicroPADs are formed by patterning this material, then immersing it in periodate (“per-EYE-oh-date”) or ammonia to shrink it for use in POC microfluidics. Qualitative grades of this material offered by Whatman can be directly used in gravimetric analysis because they produce little ash. Electrophoresis has largely replaced the use of stacks of this material to lift analytes onto a nylon or PVDF membrane with capillary action. Discs of this material are used in Büchner funnels with a perforated plate. The Southern blot is named for using the “blotting” form of this material, which separated dyes in the first chromatograms. For 10 points, name this material formed from cellulose pressed into sheets.

ANSWER: **paper** [accept filter **paper**, blotting **paper**, **paper** chromatography, or microfluidic paper-based analytical devices; accept nitro**cellulose** or **cotton** wool until “cellulose” is read]

<Chemistry>

8. The dialogue named for this man anticipates the binding problem by imagining sense data sitting like soldiers in the Trojan horse. Socrates tells this man a “dream theory” holding that “primary elements” can be named but not described, which *Philosophical Investigations* notes as a precursor of logical atomism. This man “sits” and “flies” in predication examples that Donald Davidson borrowed from *The Sophist*, which takes place a day after his namesake dialogue and stars him opposite the Eleatic (“el-ee-AT-ic”) Stranger. This snub-nosed mathematician describes his work on irrational magnitudes in a dialogue in which Socrates reduces his proposed “perception”-based definition to the theory of flux. The dialogue titled for this man ends by rejecting a theory of “true belief with an account.” For 10 points, what man titles a Platonic dialogue about knowledge?

ANSWER: **Theaetetus** (“thee-uh-TEE-tuss”) [or **Theaitētos**; or **Theaetetus** of Athens]

<Philosophy>

9. This organization’s mass graves were exhumed from caverns for a religious funeral after stagings of the play *Pigeon Hole*. This group, whose émigrés trained terrorists in Wodonga, coined the slogan “For homeland – ready” adopted by the Melbourne Knights FC and the revived Party of Rights. The poem “The Pit” and the *Stone Flower* sculpture commemorate atrocities by this group, which mandated wearing a blue band with a letter “P” on the sleeve to indicate Orthodoxy. This group’s *poglavnik* advised Juan Perón after he escaped the Bleiburg repatriations on the ratlines. Pope John Paul II beatified this group’s collaborator Aloysius Stepinac (“steh-PEE-nots”), whom the victorious Partisans tried for treason. A memorial at Jasenovac (“yah-seh-NO-vots”) honors this group’s Serb genocide victims. For 10 points, what fascist group was led by Ante Pavelić (“ON-tay PAH-veh-leech”) in Croatia?

ANSWER: **Ustaše** [or **Ustaša** or **Ustashas** or **Ustashes**; accept Neo-**Ustašas**, **HRB**, **CRB**, **HNO**, **Crusaders**, **Križari**, or **Škripari**; until “Croatia” is read, accept **Croatian Revolutionary** Brotherhood, **Hrvatsko Revolucionarno** Bratstvo, Ustaša – **Croatian Revolutionary** Movement, **Hrvatski narodni otpor**, **Croatian National Resistance**, or Ustaša – **Hrvatski revolucionarni** pokret; reject “Otpor”] (Jovan Radulović wrote *Pigeon Hole*, which was banned until the 1980s. Ivan Goran Kovačić wrote “The Pit,” and Bogdan Bogdanović designed the *Stone Flower*.)

<European History>

10. The protagonist of a novel by this author compares the habits of a “neurasthenic” (“nur-uss-THEE-nick”) relative to a “miserable” water lily that perpetually floats back and forth across a river. A book by this author opens with the narrator trying to watch a bee fertilizing an orchid, only to catch sight of a sexual encounter in a tailor’s shop. In *Fun Home*, Alison Bechdel (“BECK-dell”) theorizes that this author inspired her father’s love of lilacs. In a novel by this author, two lovers use the phrase “to do a cattleya (“CAT-lee-yuh”)” as a euphemism for sex after one rearranges the other’s corsage. The narrator of a novel by this author becomes obsessed with the pink hawthorn blossoms that line the path to the house of a man who associates his relationship with a “little phrase” in a sonata. For 10 points, *Within a Budding Grove* is a volume in what author’s novel *In Search of Lost Time*?

ANSWER: Marcel **Proust** [or Valentin Louis Georges Eugène Marcel **Proust**]

<European Literature>

11. This instrument plays a solo over long cello trills to begin the fifth of Tchaikovsky's *Rococo Variations*. This instrument and a bassoon state the opening theme of Tchaikovsky's First Symphony. This instrument plays a fast, rising B-flat major scale to open the theme of the dance "Tea" in *The Nutcracker*. This instrument plays the opening solo in the slow movement of Tchaikovsky's First Piano Concerto. Tchaikovsky died before writing a concerto for this instrument for Paul Taffanel. It's not the trombone, but Tchaikovsky's Fifth and Sixth Symphonies call for [emphasize] *three* of these instruments, with the third doubling. In *The Nutcracker*, three of these instruments state the theme of the "Danse des Mirlitons," whose English title mentions their reed variant. For 10 points, name this full-size relative of the piccolo.

ANSWER: **flute** [or transverse **flute** or Boehm **flute**; accept reed **flute**]

<Classical Music>

12. Artur Avila and Svetlana Jitomirskaya ("zhih-TOH-mer-sky-uh") proved that if the frequency of the almost Mathieu ("maht-YEW") operator has this property, Hofstadter's butterfly is a Cantor set, resolving the "ten martini problem." For the tent map with parameter 2 and Arnold's cat map, inputs with this property give rise to [emphasize] *non*-periodic behavior. This property names a set of rotations that are ergodic. A "measure" named for this property is at least 2 for numbers with this property, per Dirichlet's ("dee-ree-KLAY's") approximation theorem. Zeta of 3 has this property, as shown by Roger Apéry ("ah-pay-REE"). Real roots of integer-coefficient monic polynomials are either integers or numbers with this property, the set of which is denoted by the expression "R backslash Q." For 10 points, name this property of numbers that [emphasize] *cannot* be expressed as one integer over another.

ANSWER: **irrational** [or **irrationality**; accept **irrational** rotation or **irrationality** measure; reject "real" or "transcendental"]

<Other Science>

13. Blizzards halted Sū Dingfāng's 662 siege of this city, where a monk at its castle used geomancy to declare an empire amid war with the Jīn ("jeen") in 1135. Citing the *Book of Wèi* ("way"), 13th-century "memorabilia" claim that this city's founder ruled for 1,500 years before the Zhōu ("joh") sage Gija drove him from Asadal. In 676, the Táng withdrew to Liáoyáng ("lee-ow-yahng") from this capital of the Protectorate General to Pacify the East. Nationalists deny that the Hàn Lèlàng ("luh-lahng") Commandery took this city from the Yàn ("yen") general Wiman. This city's tombs allegedly house a mythical *kirin* and its rider King Jumong from the *Samguk sagi*. In 918, Kaesong's ("KAY-song's") king Taejo ("TAY-joh") rebuilt this city as his western capital to recall its mythical founding by the bear-woman's son Dangun ("DAHNgoon"). For 10 points, what former capital of Gojoseon ("GO-joh-sun") and Goguryeo ("go-gur-yuh") lost prominence under Joseon ("JOH-sun") to the "southern capital," Seoul?

ANSWER: **Pyongyang** [or **Pingrǎng** or **Pyon'yan**-shi or **Piarna**; accept **Sōgyong**, **Seogyeong**, **Wanggeom**-seong, **Ryugyong**, **Gungholsan**, or **Guemmidal**; accept **Asadal** until read] (The first line refers to Myocheong.)

<World History>

14. This character recalls hearing "the sea, puffed up with winds, / Rage like an angry boar chafed with sweat" and boasts that "extreme gusts will blow out fire and all." This man vows that his "haggard" "must not be full-gorged" with meat in a conceit about falconry that codified the saying "kill with kindness." This man's innuendo "what, with my tongue in your tail?" leads a figurative "wildcat" to strike him. This man dismisses bespoke garments from a tailor and haberdasher and insists that the sun is the moon after he arrives late to his own wedding. This "mad-brained bridegroom," who comes to "wive it wealthily," wins a bet by calling his wife, who gives an equivocal speech about duty to husbands. For 10 points, what man from Verona frees Padua's suitors to court Bianca by wedding Baptista's older daughter Katherine in *The Taming of the Shrew*?

ANSWER: **Petruchio**

<British Literature>

15. This economist proposed a system of “cumulative averaging” to limit the tax advantage of capital gains. This economist argued that a 300-dollar car imposed a 23,000-dollar tax on cities in the form of road spending in a series of papers that led him to be called the “father of congestion pricing.” This economist’s name is the [emphasize] *first* in a mechanism that uses a “Clarke pivot rule” to stay DSIC (“D-S-I-C”). This economist drew on Abba Lerner’s idea of “counterspeculation” in a paper that gave an early proof of the revenue equivalence theorem. That paper’s result generalized into a system co-named for him, Edward Clarke, and Theodore Groves. This economist names a system in which the winner pays the second-highest bidder’s price. For 10 points, name this economist who pioneered auction theory with his namesake sealed bid auction.

ANSWER: William **Vickrey** [or William Spencer **Vickrey**; accept **Vickrey**–Clarke–Groves auction; prompt on **VCG** mechanism by asking “what does that stand for?”] (DSIC stands for “dominant-strategy incentive compatible.”)

<Social Science>

16. Alfred Gilman restored the activity of this enzyme in “uncoupled” mutants using cell extracts later found to contain a factor predicted by Martin Rodbell. This enzyme is activated by fluoride, which binds magnesium atoms in the cleft between its C1 and C2 domains. A tetraphosphate group allows dideoxypurines (“di-deoxy-purines”) to inhibit this enzyme by binding its P-site. This enzyme is often crystallized while bound to forskolin (“FOR-skuh-lin”). Study of this enzyme’s interactions with the beta-2 adrenergic (“ad-ree-NER-jick”) receptor led to the description of G proteins. Immune response to pertussis is suppressed by ADP-ribosylation of G-sub-i alpha, which depresses the activity of this enzyme and suppresses the major [emphasize] *alternative* to the phosphoinositol (“phospho-in-OSS-uh-toll”) signaling pathway. For 10 points, name this enzyme that generates the secondary messenger cAMP (“C-A-M-P”) from ATP.

ANSWER: **adenylate cyclase** [or **adenylyl cyclase**; or **adenyl cyclase**; or **AC-III**; prompt on **cyclase**]

<Biology>

17. *Note to moderator: Read the answerline carefully.* A donor portrait is included in a panel centering on these objects in a bronze door by Filarete (“fee-la-RET-ay”). Along with the writings of Thomas Aquinas, these objects are held in the central panel of a painting by Orcagna (“or-KAHN-yuh”) for the Santa Maria Novella’s Strozzi (“STROAT-see”) Chapel. A boat is docked at the edge of a Raphael cartoon in which these objects are held by a kneeling man in blue and yellow robes. These objects rest on marble steps to the right of a turbaned prisoner of war in Titian’s *Pesaro Madonna*. A fresco titled for these objects features the Tribute Money and Stoning of Christ in its middle ground, and compares Sixtus IV with Solomon in two inscriptions on Arches of Constantine that flank an idealized octagonal temple. For 10 points, a Sistine Chapel fresco by Perugino centers on what gold and silver symbols of papal authority held by a gray-haired saint?

ANSWER: Saint **Peter**’s **keys** [or the **Keys** of **Heaven**; accept *Christ Giving the Keys to Saint Peter*; accept **Peter** the Apostle, San **Pietro**, Simon **Peter**, **Cephas**, **Petrus**, **Petros**, **Shimoun Bar Younahin**, or **Šīm‘ōn bar Yōnā** in place of “Saint Peter”; accept **chiave** or **chiavi** in place of “keys”; prompt on **keys**, **chiavi**, **chiave**, *Delivery of the Keys*, or *Consegna delle chiavi* by asking “which keys?”; reject “Simon” or “Keys to the Vatican”]

<Painting & Sculpture>

18. The speaker of a poem about one of these people who died of AIDS describes moments when she glimpsed herself in a store window and felt “a cherishing so deep” for herself that it left her speechless. That poem is Marie Howe’s “What the Living Do.” A poetic book about one of these people captions an image of red paint with an instruction to “begin with the blush.” That book about one of these people includes xeroxed dictionary definitions for words like *indigne* (“in-DIG-nay”) and *gentes* (“GHEN-taze”). Big Jim Evans calls the death of a person with this relation to the poet “a hard blow” in a poem that describes a mother’s “angry tearless sighs.” Both Anne Carson’s accordion book *Nox* and the Catullus poem it interpolates are elegies for these relatives. For 10 points, the death of what kind of family member inspired the image of a “four-foot box” in Seamus Heaney’s “Mid-Term Break”?

ANSWER: **brothers** [prompt on siblings, relatives, family members, kin, or equivalents until “relatives” is read; reject “children”]

<American Literature>

19. This person ordered the dismantlement of Duddington Manor while its owner, Daniel Carroll, was absent obtaining a summons to prevent such an act. Peter Colt replaced this person when the Society for Establishing Useful Manufactures fell into financial disarray. This person designed the badges used by the Society of the Cincinnati, as well as the engravings used to illustrate Baron von Steuben’s (“SHTOY-ben’s”) “Blue Book.” Alexander Hamilton tasked this person with harnessing water power in Paterson, New Jersey. This person planned an unfinished mansion for Robert Morris. The McMillan Plan sought to realize this person’s original vision for a project that had been altered by Andrew Ellicott to straighten the diagonal Massachusetts Avenue. For 10 points, name this French-born architect who designed a grid system for Washington, DC.

ANSWER: Pierre Charles **L’Enfant** (“lawn-FAWN”) [or Peter Charles **L’Enfant**; accept **L’Enfant** Plan; reject “Enfant”]

<American History>

20. An enigmatic early reference to this goddess relates her bowels to the names of ten dispersing spirits. In a 9th-century text, this goddess is a primeval human who prays for an omen of smoky mist, which convinces her to enter an incestuous marriage. A set of unanswered “questions to heaven” includes one about the making of the body of this goddess, whose modern name comprises the word for “woman” plus a homophone for “frog.” This goddess collects reed ashes, kills the black dragon, and melts five-colored stones in a creation myth that also recounts how she carefully makes rich people out of yellow earth, but drags a cord through mud to make poor people. Later depictions give snake bodies to this goddess and her brother-husband Fúxī (“foo-SHEE”). For 10 points, name this creator goddess who was superseded by Pángǔ during the Hàn dynasty.

ANSWER: **Nǚwā** (“new-WAH”) [or **Nǚguā** or **Wāhuáng** or **Neoi Wo**; prompt on Wā or Guā] (The enigmatic early reference is from the *Shānhǎi jīng*. The 9th-century text is the *Dúyìzhì*.)

<Mythology>

BONUSES

1. In a story by this author, a cooper's wife is accused of betraying her husband with an old man who musses her hair with a bowl, leading her to actually cheat in order to show up the accuser. For 10 points each:

[10h] Name this 17th-century author whose novellas "The Barrelmaker Brimful of Love" and "What the Seasons Brought the Almanac Maker" appear in the collection *Five Women Who Loved Love*.

ANSWER: Ihara **Saikaku** [or **Saikaku** Ihara; or Ihara **Kakuei**; or **Hirayama** Tōgo or Tōgo **Hirayama**]

[10e] Saikaku's work exemplifies this genre of literature focused on urban hedonism, whose name is typically translated as "floating world."

ANSWER: **ukiyo** [or **ukiyo-zōshi**; accept **ukiyo-e**]

[10m] In the first story of the set, Seijūrō ("SAY-joo-roh") uses lion dancers as a cover to seduce Onatsu while on one of these excursions. Teinosuke ("TAY-no-skeh") uses a Leica camera during one of these sightseeing excursions in Tanizaki's *The Makioka Sisters*.

ANSWER: cherry **blossom** viewings [or **hanami**; or cherry **flower** viewing; or **sakura** viewing; or descriptions of looking at **cherry** trees; prompt on **picnics** or **parties** or equivalents; reject "flower arrangement" or "ikebana"]
<World Literature>

2. Fault tree analysis identifies the root causes of these conditions, which name a "ratio" that compares event rates in survival analysis. For 10 points each:

[10e] Name these dangerous conditions that cause occupational mishaps. Risk is calculated from the probability and severity of these conditions, which name a series of warning symbols.

ANSWER: **hazards** [or word forms of **hazardous**; accept **hazard** symbols, occupational **hazards**, **hazard** analysis, **hazard** recognition, or **hazard** ratio; prompt on **threats** or **threatening** conditions; prompt on **undesired events**]

[10m] Exposure to infrared radiation made cataracts an occupational hazard of this trade, which encompasses caneworking and lampworking. This trade uses soda ash to reduce energy costs and lime to increase durability.

ANSWER: **glassblowing** [or **glassblowers**; accept **glassworking**, **glassmithing**; **glassmaking**, or word forms of any; accept soda-lime **glass**; prompt on **gaffers**]

[10h] Foodborne hazards are minimized by adhering to these quality assurance guidelines, which include the grades of glass used in safe food packaging. The FDA enforces these standards, which have a three-word name.

ANSWER: **good manufacturing practices** [or current **good manufacturing practices**; or cGMPs; prompt on manufacturing **practices**; prompt on standard operating **procedures** or **SOPs** or **protocols** by asking "outlining what set of guidelines?"]

<Other Academic>

3. In functional analysis, an artifact is examined for organic residues as well as for traces left behind by this process. For 10 points each:

[10m] Name this damaging tribological process in which material comes off of surfaces that are sliding against each other.

ANSWER: **wear** [accept use-**wear** analysis; prompt on **friction**; prompt on **abrasion**; reject "wear and tear"]

[10h] This geophysical technique can map artifacts at a higher resolution than electrical resistivity surveys. The interface reflections detected by this technique can be occluded by conductive soils with high clay or salt content.

ANSWER: **ground-penetrating radar** [or **GPR** or **ground-probing radar**; accept **subsurface radar** or **surface-penetrating radar** or **SPR**; prompt on **radar** or **radio detection and ranging**]

[10e] For a subsurface artifact modeled as this type of source, the reflected power detected by a radar receiver is proportional to the inverse fourth power of target depth. Geometrical optics assumes that light is emitted from this type of ideal source with negligible dimensions.

ANSWER: **point** source [accept **point** scatterer or **point** reflector]

<Other Science>

4. In *Making Social Science Matter*, this Danish geographer argued for a “phronetic” approach to social science that primarily aims to aid practical reason. For 10 points each:

[10h] Name this lead author of *Megaprojects and Risk*, which found that optimism bias and political pressure make project proposals that fudge numbers more likely to be approved than well-planned ones.

ANSWER: Bent **Flyvbjerg** (“FLOOB-yair”)

[10e] Flyvbjerg studied urban planning under Martin Wachs (“wacks”), who aimed to increase this measure of the ease of travel in an area. This term describes how easily a service can be used by people with disabilities.

ANSWER: **accessibility** [or word forms of **access**]

[10m] Flyvbjerg helped redesign this city’s public transit system with reference class forecasting. Anna and Patrick Geddes’s work in this European city helped found modern urban planning.

ANSWER: **Edinburgh** [or **Dùn Èideann**]

<Social Science>

5. This state minted Sāmānid-style silver dirhams in the early 10th century, when it supplanted Radhanite trade between Attil and cities like Derbent. For 10 points each:

[10h] Name this successor state of an “old great” Onogur confederation. The Chuvash National Congress traced its republic from this medieval state, which was visited by Friar Julian over 500 years after Kotrag founded it.

ANSWER: **Volga Bulgaria** [or **Volga Bulgars**; or **Volga–Kama Bulgaria**; prompt on **Bulgaria**, **Bulghars**, **Bulgari**, **Bolghar**, or variants; prompt on Proto-**Bulgarians**, Turkic **Bulgarians**, Silver **Bulgars**, White **Bulgars**, or “Interior **Bulgarians**”]

[10e] Volga Bulgaria adopted Islam as a tributary of this khaganate, which likely conquered Old Great Bulgaria before its elites converted to Judaism.

ANSWER: **Khazars** [or **Khazar** Khaganate or **Khazar** Empire or **Khazaria**]

[10m] Sviatoslav I razed Volga Bulgaria and conquered Khazaria after these relatives of the Cumans and Kipchaks possibly sacked Kyiv in 968. Macedonian emperors bought off these Turkic nomads, who drove the Magyars into Pannonia.

ANSWER: **Pechenegs** [or **Pečenegi**, **Pečenezi**, **Patzinaks**, **Patzinakos**, **Patzinakoi**, **Patzinakitai**, **Patzinakia**, **Pizenaci**, **Besenyó**, **Besseni**, **Bessi**, al-**Bajanak**, or **Pieczynowie**] (The sack is reported in the *Primary Chronicle*.)

<European History>

6. Lines by this poet were rearranged to praise Christ in an epic by the early Christian poet Faltonia Betitia Proba. For 10 points each:

[10e] Poems of the “patchwork” *cento* (“CHEN-toh”) form typically consisted of repurposed lines from what poet’s corpus, such as his *Eclogues* (“ECK-logs”) and *Georgics*?

ANSWER: **Vergil** [or **Virgil**; or Publius **Vergilius** Maro; accept *Cento Vergilianus de laudibus Christi*]

[10m] One of the North African centos in the Codex Salmasianus commemorates one of these events involving the Vandal noble Fridus. Sappho wrote “raise high the roof beam, carpenters” in a poem about one of these events.

ANSWER: **weddings** [or **marriages** or **nuptials** or equivalents; or **nuptiae** or **gamos** or **gamoj**; accept **epithalamion** or **epithalamium** or “**Epithalamium** Fridi”]

[10h] This poet wrote an obscene epithalamium called the *Cento Nuptialis*. This 4th-century poet described a bureaucrat’s typical day in the *Ephemeris* and a journey down the title Gallic river in the *Mosella*.

ANSWER: **Ausonius** [or Decimus Magnus **Ausonius**]

<European Literature>

7. Elliott Sober has disputed that a work of this type refuted psychological hedonism in an argument about someone swallowing a stone. For 10 points each:

[10h] Name this unusual philosophical format. A celebrated description of the “cool hour” of moral self-reflection appears in a set of 15 of these works by Joseph Butler.

ANSWER: **sermons** [or **preaching** or word forms; prompt on **speeches**, **orations**, **discourses**, or equivalents; prompt on descriptions of **religious** texts] (The argument is called “Butler’s Stone.”)

[10m] Butler’s disciple Richard Price preached a sermon that this philosopher defended in a 1790s “pamphlet war.” An essay by this philosopher attacks the didactic use of Fordyce’s sermons and Book V (“five”) of Rousseau’s *Émile*.

ANSWER: Mary **Wollstonecraft** (The works referenced are *A Vindication of the Rights of Men* and *A Vindication of the Rights of Woman*.)

[10e] Wollstonecraft wrote that “the most enlightened philosopher” was this faculty, which is the linchpin of Butler’s moral psychology. Religious liberty is often called “freedom of” this inner sense of right and wrong.

ANSWER: **conscience** [accept freedom of **conscience**; prompt on **reflection** or word forms]

<Philosophy>

8. Type A on Priscilla White’s namesake scale indicates the onset of diabetes after the development of this condition. For 10 points each:

[10m] Name this condition that often coincides with an increase in shoe size. Individuals who have had this condition multiple times may be referred to as “gravida 2, para 2.”

ANSWER: **pregnancy** [or being **pregnant**; accept **gestation** or **gestational** diabetes mellitus; prompt on **gravid** or **parous**]

[10e] Gestational diabetes increases the risk that the child’s shoulder will be caught on this bone during birth. The chainsaw was invented to cut the symphysis of this bone, whose “floor” muscles may be strengthened with Kegels.

ANSWER: **pelvis** [or bony **pelvis**; accept **pelvic** region or **pelvic** floor; accept **pubis** or **ilium** or **ischium**]

[10h] Ozempic (“oh-ZEM-pick”) and Rybelsus (“ruh-BELL-suss”) imitate this class of hormones and are often prescribed off-label for weight loss instead of diabetes. Semaglutide products like Wegovy (“wee-GO-vee”) mimic GLP-1, the best-known example of these hormones.

ANSWER: **incretins** [accept **incretin** mimetics]

<Biology>

9. Until its 1990 rediscovery in a Jesuit dining room, a depiction of *The Taking of Christ* was misattributed to an artist from this city. For 10 points each:

[10m] Name this home city of the artist of *The Procuress*. A genre of paintings from this city that depict sharply lit musicians and drunken revelers influenced the work of Georges de la Tour.

ANSWER: **Utrecht** (*The Taking of Christ* was misattributed to Gerard van Honthorst, who painted *The Procuress*.)

[10e] Utrecht artists like Hendrick ter Brugghen and Gerard van Honthorst were part of a group named for this Italian master of tenebrism.

ANSWER: **Caravaggio** [or Michelangelo **Merisi**; or Michelangelo Merisi da **Caravaggio**; accept Utrecht **Caravaggisti** or **Caravaggismo**]

[10h] A Flemish Caravaggist with this surname named Gerard obsessively painted *The Denial of St. Peter* before falling under the influence of Rubens. An idiosyncratic Dutch Golden Age printmaker with this surname was known for oddly-colored, desolate landscapes.

ANSWER: **Seghers** [accept Gerard **Seghers**; accept Hercules **Seghers**]

<Painting & Sculpture>

10. Answer the following about military service and the persecution of homosexuality in modern Latin America, for 10 points each.

[10e] Labor camps called UMAPs (“oo-MOPS”) interned gay men in this country in lieu of obligatory conscription. This country’s 26th of July Movement, which idealized the “new man,” was named for an attack on the Moncada Barracks.

ANSWER: **Cuba** [or Republic of **Cuba**; or República de **Cuba**]

[10m] The GOU exploited a sex scandal over nude photos of military cadets during the 1943 coup that marked the end of this corrupt period of Argentine politics. It began with José Félix Uriburu’s (“oo-ree-BOO-roo’s”) 1930 coup.

ANSWER: **Infamous Decade** [or **Década Infame**] (The GOU was the United Officers’ Group.)

[10h] This many partygoers were conscripted into forced labor during the Caste War after their 1901 arrest at a gay dance in Mexico City. Porfirio Díaz’s son-in-law allegedly attended that ball known by this number.

ANSWER: **41** [or **forty-one**; or **cuarenta y uno**; accept Dance of the **Forty-One** or Ball of the **Forty-One** or El baile de los **cuarenta y uno**; accept **42** or **forty-two** or **cuarenta y dos**]

<World History>

11. This author’s chapter “Be Bold, Be Bold, But Not Too Bold” shows letters between the title character and an aspiring female writer who considers Foxe’s *Book of Martyrs* to be the best book of the 1500s. For 10 points each:

[10m] Name this contemporary British author of *Mr. Fox*, in which an imaginary muse teaches a writer not to kill off female characters. She also wrote *The Icarus Girl* and *White Is for Witching*.

ANSWER: Helen **Oyeyemi** (“oh-yay-YEM-ee”)

[10e] In this poem, the lady warrior Britomart sees the phrase “be bold, be bold” above a door in the house of the sorcerer Busirane. Gloriana is this epic’s title character.

ANSWER: *The **Faerie Queene*** (by Edmund Spenser)

[10h] In this American author’s story “The Summer People,” Ophelia sees the phrase “be bold, be bold, but not too bold” in a house occupied by fairies. This magical realist wrote *Get in Trouble* and *Magic for Beginners*.

ANSWER: Kelly **Link**

<British Literature>

12. *Original-language term required.* Reconstructionist Jews refer to a state that is “post-” this system, while Modern Orthodox Jews, like the author of a book titled for its namesake “Man,” treat it as intact. For 10 points each:

[10m] Name this system that is applied in a *beth din* (“bait DEEN”). Experts called *poseks* or *dayans* often consult the *Shulchan Aruch* (“shool-KAHN ah-ROOK”) while using this system to determine the scope of *kashrut* (“kash-ROOT”) and *mitzvot* (“meets-VOTE”).

ANSWER: **halakha** (“ha-la-KHA”) [or word forms such as **halakhic**]

[10e] This text, now usually studied with the Brisker method, provides a major source for *halakha*. This compendium of the Oral Torah includes the Mishnah and the Gemara.

ANSWER: **Talmud** [accept Babylonian **Talmud** or **Talmud** Bavli; accept **Shas** or **Shisha** Sedarim]

[10h] Joseph, an influential American scion (“SY-on”) of this rabbinical “dynasty,” defended *halakha* in *The Lonely Man of Faith* and *Halakhic Man*. The Brisker method was created by a Belorussian member of this family named Chaim (“KHA-eem”).

ANSWER: **Soloveitchik** (“saul-oh-VAY-chick”) family [or **Solowiejczyk** family; accept Chaim **Soloveitchik** or Chaim **Solowiejczyk**; accept Joseph Ber **Soloveitchik** or Yosef Dov **Soloveitchik**]

<Religion>

13. Name these composers of chamber music in E-flat major for increasingly large ensembles, for 10 points each.

[10e] This composer's Divertimento in E-flat major is a string trio with a more serious tone than his *A Musical Joke*. Some of his joke pieces, like "*Leck mich im Arsch*," were published after his death.

ANSWER: Wolfgang Amadeus **Mozart** [or Johannes Chrysostomus Wolfgangus Theophilus **Mozart**]

[10m] This composer's Septet in E-flat is scored for clarinet, bassoon, horn, and one of each string instrument. Late in life, he wrote a string quartet centered around a "holy song of thanksgiving" in F Lydian.

ANSWER: Ludwig van **Beethoven**

[10h] This composer's Nonet in E-flat major adds a flute and an oboe to Beethoven's ensemble. Despite the popularity of grand opera in France, this composer stuck to instrumental music, including a G-minor Third Symphony.

ANSWER: Louise **Farrenc** ("fa-RONK") [or Jeanne-Louise **Dumont**]

<Classical Music>

14. These equations are fully compatible with special relativity, as can be shown by writing them covariantly in terms of the Faraday tensor. For 10 points each:

[10e] Identify this group of four equations named for a scientist who added a displacement current term to one of them.

ANSWER: **Maxwell's** equations [or James Clerk **Maxwell's** equations]

[10h] When Maxwell's equations are written covariantly using differential forms, one of the two equations states that the exterior derivative of this operation on the 2-form F equals the 3-form J .

ANSWER: **Hodge star** of F [or **Hodge dual** of F ; accept negative **Hodge star** of F or negative **Hodge dual** of F or equivalents; prompt on (negative) **star** of F or (negative) **dual** of F or equivalents]

[10m] The signs in covariant versions of Maxwell's equations differ under two metrics sometimes dubbed the "West Coast" and "East Coast" metrics. Give either metric, as a sequence of four numbers or signs, with the timelike component first.

ANSWER: **+1, -1, -1, -1** OR **-1, +1, +1, +1** [accept **plus, minus, minus, minus** OR **minus, plus, plus, plus**]

<Physics>

15. "Pepper pot women" served as early street vendors in this city by selling a soup with Caribbean influences throughout the 19th century. For 10 points each:

[10m] Name this city where American cuisine's earliest cookbook, *The New Art of Cookery*, was published in 1792. Campbell Soup Company sold pepper pot soup from its headquarters in Camden across the river from this city.

ANSWER: **Philadelphia** [or **Philly**; accept **Philadelphia** pepper pot]

[10h] Philadelphia's *New Art of Cookery* preceded the Hartford publication of the *American Cookery*, a foundational cookbook by this self-proclaimed "American orphan."

ANSWER: Amelia **Simmons**

[10e] Both cookbooks contained recipes for an upscale soup made from this animal's meat. A "mock" version of that soup made from this animal's meat was offered to mass society.

ANSWER: **turtle** [accept **terrapin**, **tortoise**, **chelonians**, **Testudines**, snapping **turtle**, sea **turtles**, or other specific turtles; accept **turtle** soup or **snapper** soup; accept mock **turtle** soup; prompt on **reptiles**] (Mock turtle was veal.)

<American History>

16. *Specific term required.* The 2023 act that suspended the debt ceiling also created time and page limits for these documents, which take a median of 4.5 years to prepare. For 10 points each:

[10m] Name these documents that agencies must issue under NEPA (“NEE-puh”) if a briefer “assessment” does not produce a FONSI (“FON-see”). The EPA files these statements during the permitting of projects like Pebble Mine.

ANSWER: **environmental impact** statements [or **EISs**] (The Fiscal Responsibility Act suspended the debt ceiling. FONSI stands for “finding of no significant impact.”)

[10e] During the public comment period for an 8,000-page EIS (“E-I-S”) in 2015, the Chamorro protested the transfer of Marines from Okinawa to this Pacific island territory that hosts multinational Air Force exercises.

ANSWER: **Guam** [or **Guåhan**]

[10h] This independent DOE (“D-O-E”) agency prepares EISs for interstate pipelines and oversees regional transmission. The SPEED and Reliability Act would expedite this agency’s permitting of transmission lines.

ANSWER: **FERC** (“furk”) [or **Federal Energy Regulatory Commission**]

<Current Events>

17. A film with this structural conceit ends with different women reading from Robert Grosseteste’s *On Light* at the rate of a word per second over a wide shot of a snowy landscape. For 10 points each:

[10h] Name this system that provides a repetitive structure for Hollis Frampton’s film *Zorns Lemma*. In *Semiotics of the Kitchen*, Martha Rosler holds up cooking implements that correspond to this system.

ANSWER: the **alphabet** [accept the Latin **alphabet** or English **alphabet**]

[10m] This director’s wife Saskia Boddeke shot a documentary in which he and his daughter Zoë use the alphabet to structure their conversations. He directed *The Cook, the Thief, His Wife & Her Lover*.

ANSWER: Peter **Greenaway**

[10e] A girl with a mask-like face sings the ABC song before coughing up blood on her bed in *The Alphabet*, a short film by this director of *Lost Highway* and *Blue Velvet*.

ANSWER: David **Lynch** [or David Keith **Lynch**]

<Other Fine Arts>

18. These typically non-professional soldiers were required to furnish their own panoply (“PAN-uh-plee”) of armor, whose heavy helmet and greaves became rarer by the 4th century BCE. For 10 points each:

[10e] Name these heavy infantry whose slow, cooperative phalanx tactics developed in Archaic Greece.

ANSWER: **hoplites** [or **hoplítai**]

[10m] Hoplites lost their primacy in Greek warfare after Philip II introduced *phalangítēs* (“fah-lang-GHEE-tays”) armed with these long spears. Thracian (“THRAY-shun”) peltasts may have inspired these pikes, which Macedonian phalanxes used to create protective walls.

ANSWER: **sarissas** [or **sárisas**; accept **sarissophoros** or **sarissophoroi**] (Other factors, such as heavy cavalry, also likely contributed to the shift.)

[10h] To complement the mobility afforded by cuirasses of this material, hypaspists (“hy-PASS-pists”) discarded *sárisas* for the shorter hoplite *dóry*. This light, flexible material was glued and laminated to reconstruct the breastplate in the *Alexander Mosaic*.

ANSWER: **linen** [accept **linothorax**, **linothorakes**, thorakes **lineoi** or loricae **linteae**; prompt on **clothing** or **textiles** or **fibers**] (The book *Reconstructing Ancient Linen Body Armor* examines the technology’s replication.)

<Other History>

19. The heat-up method developed by the Hyeon (“hyun”) lab controls this parameter by forming oleic acid complexes. For 10 points each:

[10h] Name this parameter that is “focused” by maintaining high concentrations in the diffusion-limited regime. The Bawendi lab developed a method that controls this parameter by rapidly adding reactants to a heated solution, briefly inducing supersaturation.

ANSWER: nanoparticle size [or quantum dot size; accept nanocrystallite size or nanocluster size; accept monodispersity or monodispersed in place of “size”; prompt on size focusing or width by asking “of what?”]

[10e] Both hot injection and heat-up form one of these mixtures with nanoparticles as the dispersed phase. These mixtures can be stabilized against flocculation by capping quantum dots with ligands.

ANSWER: colloids [accept colloidal quantum dots]

[10m] Quantum dot emission is tunable because they are smaller than the Bohr radius of these quasiparticles, whose two constituents are bound together by Coulombic forces.

ANSWER: excitons

<Chemistry>

20. In a novel by this author, the protagonist decides to build a labyrinth between her abbey and the town after she has a vision of the Virgin Mary surrounded by swirling rose petals. For 10 points each:

[10m] Name this author who wrote about Marie de France in her 2021 novel *Matrix*. The marriage of the Broadway writer Lotto Satterwhite and Mathilde Yoder is the subject of this author’s *Fates and Furies*.

ANSWER: Lauren Groff

[10h] In Groff’s *The Monsters of Templeton*, a 50-foot creature turns up dead in a lake with this name. Hurry Harry explains this other name for Otsego Lake to Natty Bumppo in *The Deerslayer*.

ANSWER: Lake Glimmerglass [prompt on Glimmey]

[10e] Groff’s novel with this title is about a utopian commune in upstate New York. The hermit of Sidley Park turns out to be Thomasina Coverly’s tutor Septimus Hodge in Tom Stoppard’s play with this title.

ANSWER: *Arcadia*

<American Literature>