

TOSSUPS

1. This author described traveling around London with a companion app programmed with W. G. Sebald's personality in an account of the Olympics for Grantland.com, "Hard Times in the Uncanny Valley." In one of this author's novels, the protagonist intercedes for Ned the Copy Boy, a former office employee Xeroxing a picture of a butt forever. A "sweeper" nicknamed after Mark Spitz picks off "skels" in Manhattan in that novel by this author, which is set after the zombie apocalypse. This former television columnist for the *Village Voice* responded to a patronizing review by James Wood by parodying Wood's style in the essay "Wow, Fiction Works!" Lila Mae Watson searches for the "black box" in a novel by this author about warring elevator inspectors, and two slaves flee from Ridgeway on a literal train beneath the earth in his most recent book. For 10 points, name this contemporary novelist of *Zone One*, *The Intuitionist*, and *The Underground Railroad*.

ANSWER: Colson **Whitehead**

2. This procedure requires a half-form correction in order to satisfy the Kostant-Souriau condition. This procedure cannot be applied to any Lie subalgebra of polynomials on the symplectic manifold R -two- n with order greater than two. In the Gupta-Bleuler formalism, this procedure includes the addition of a gauge-fixing term to the Lagrangian to preserve Lorentz covariance. A form of this procedure uses the Kontsevich formula to define a star product algebra. Using the creation and annihilation operators to add and remove particles in Fock space is the "second" form of this procedure. The "first" form of this procedure replaces the Poisson bracket with one over $i\hbar$ times the commutator and replaces variables like momentum with their corresponding operators. For 10 points, name this procedure that converts classical field theories with continuous variables to quantum field theories with discrete operators.

ANSWER: **quantization** [accept geometric **quantization** or **quantization** of the electromagnetic field or deformation **quantization** or canonical **quantization** or second **quantization** or first **quantization**]

3. A world in which all agents demonstrate the "hyperbolic absolute" version of this behavior was used by Stiglitz and Cass to derive the two fund separation theorem. It dominates above the horizontal axis of the inverse S-shaped probability-weighted curve, but not below the horizontal axis, in a phenomenon called the "reflection effect." This behavior is measured by a coefficient equal to the negative second derivative of the utility function divided by the first derivative of the utility function, the Arrow-Pratt measure. Jensen's inequality can be used to prove that this behavior corresponds to a concave Von Neumann-Morgenstern utility function for an agent. Explanations for the Allais Paradox often invoke this behavior, as evidenced by the original "Prospect Theory" paper by Kahneman and Tversky. For 10 points, identify this microeconomic behavior exemplified in portfolio theory by a preference for safe, low-variance assets.

ANSWER: **risk aversion** [or equivalents that convey propensity to **take** or **not take risks**]

4. The FBS family of these constructs have their namesake property guaranteed via the well-known syndrome problem for linear codes. One of these constructs is a modification of the RadioGatun ("radio"-gah-toon) one and was made with a so-called "sponge" by Guido Bertoni and Gilles van Assche (zheel van ahsh); that one of these entities named Keccak was designed for a competition held by the National Institute of Standards and Technology. The version control system Git (giht) uses one of these constructs to generate practically unique identifiers for revisions. In Linux, the input to these constructs may be put inside a shadow file. These constructs are generally produced from one-way compression functions by the Merkle-Damgard construction. S-H-A-1 and M-D-5 are examples of these constructs, which are generally used to secure passwords before they are stored in a database. For 10 points, name these constructs which map inputs to a number in constant time, whose values are often stored in namesake "tables."

ANSWER: cryptographic **hash** functions

5. This tribe perpetrated the Williams Station Massacre in retaliation for the rape of two women by silver miners. This tribe's Chief Numaga caused the only historical disruptions to the Pony Express during the 1860 Pyramid Lake War. General Oliver Howard helped a "princess" from this tribe, Sarah Winnemucca, publicize the concentration camps that housed them after the Bannock War. This tribe denies allegations that some of its members helped John Lee's Mormon militia massacre the Baker-Fancher Party at Mountain Meadows. In 2016, Ammon Bundy's militiamen occupied this tribe's land in the Malheur National Wildlife Refuge. A shaman named Wodziwob from the Northern branch of this tribe, which inhabited California, Nevada, and Oregon, promised the return of the buffalo and disappearance of the white man. For 10 points, name these American Indians from the Great Basin who started the Ghost Dance movement.

ANSWER: **Paiute** Indians [do not accept "Ute"]

6. *Note to players: composer and type of piece required.* The key of an unpublished seventh piece from a set of these pieces can be deduced from the pattern of expanding intervals in alternating directions exhibited by the first six, which have the tonics B-flat, C, A, D, G, and E. The last of those pieces in this genre by this composer includes two movements derived from an early version of the composer's sixth sonata for violin and harpsichord: a *Corrente* and a *Tempo di Gavotta*. Six of these pieces for keyboard make up the first of the composer's volumes titled *Clavier-Übung* (klah-VEER OO-bung). In one of these pieces in B minor, each of the four movements is paired with a *Double* (DOO-bluh), and a *Tempo di Borea* is substituted for the expected gigue. Another one of these pieces in D minor ends with an extensive and frequently excerpted chaconne (shah-KAWN). For 10 points, name these pieces, three of which for solo violin were paired with three sonatas, by the composer of *The Well-Tempered Clavier*.

ANSWER: **partitas** by Johann Sebastian **Bach** [or **Bach's partitas** for keyboard; or **Bach's partitas** for solo violin; prompt on partitas; prompt on dance suites]

7. In one poem, this woman recalls her attraction to a stranger, saying, "bullwhip, horsewhip, unzip, I could have crawled through thorn and bee, the thick of hive, rosehip, courtship, lordship, gossip and lavender." In another poem, she is called "my more than meat and drink, my meal at every wink; this air, which, by life's law, my lung must draw and draw." This woman is the subject of a National Book Award-winning 2013 collection by Mary Szybist (SHEE-bist). Near the end of an epic poem, she is called a "noonday torch" and the source of warmth that enables the germination of a giant rose. In the *Education*, Henry Adams reflects that Americans were never afraid of either Venus or this woman, and contrasts her power with that of a device at the 1900 Paris Expo. The final canto of Dante's *Paradiso* opens with a prayer to this woman. For 10 points, name this woman whom Catholics like Gerard Manley Hopkins call "Immaculate."

ANSWER: The **Virgin Mary** [or The **Virgin** Mary; or **Mary**, Mother of **Jesus**; or obvious equivalents; prompt on Mary]

8. At one of the Monday Evening Concerts in Los Angeles, Aldous Huxley got so carried away on the subject of this composer that he started fabricating titillating stories about him mid-lecture. Bernardo Bertolucci has continually shelved a film project about the life of this man that he first conceived in 1997. The structure of Bach's *Musical Offering* was taken as the model for a short story about performers of this composer's works, Julio Cortazar's "Clone." In *The Doors of Perception*, Huxley recalls a mescaline episode in which he experienced the voices in this man's music as a "bridge back to the human world," speculating about the "psychological disintegration" experienced by this Renaissance composer, calling him a "fantastic character out of a Webster melodrama." For 10 points, name this Prince of Venosa who composed some revolutionary madrigals after committing a double murder of his wife and her lover.

ANSWER: Carlo **Gesualdo**

9. Individuals possess “contradictory” forms of this construct according to a model designed by Erik Olin Wright. The “X Way Out” is championed as a way of superseding this construct in a guide whose final section is a set of exercises with answers. That Paul Fussell book inspired a popular Michael Church blog post on this subject defining “E1s” and “L4s” (“e-ones” and “el-fours”). 150 interviews with Boston residents on the psychological effects of this construct form the basis for Richard Sennett’s book on its “Hidden Injuries.” It is constituted in the context of a “field” by a “habitus,” a set of behaviors like appreciation for *avant-garde* art, according to Pierre Bourdieu’s *Distinction*. Struggles defined by this construct make up “the history of all hitherto existing society” according to the *Communist Manifesto*. For 10 points, identify this socioeconomic construct that, according to Marx, stratifies people into the proletariat and the bourgeoisie.

ANSWER: social **class** [prompt on answers like status or attainment, but **class** is necessary]

10. Anja Harteros (AHN-yah har-TAIR-ose) sang this role in an acclaimed recording conducted by Antonio Pappano that won the 2016 Gramophone Award for opera. One of this character’s arias climaxes on a sustained high C marked *dolce* and *pianissimo* followed by *senza affrettare* (SEN-zah ah-fret-TAH-ray) falling sixteenth-note thirds into the words “non ti vedro, non ti vedro mai piu.” A 1985 televised performance of this role at the Met marked the farewell to the stage of Leontyne Price, who also sang it in 1960, becoming the first African American to sing a leading role at La Scala. In her last scene, this character sings the duet “La fatal pietra” with her lover, whom she wished would triumph in her aria “Ritorna vincitor.” This daughter of Amonasro sings the aria “O patria mia,” and is entombed alive with her Egyptian lover Radames. For 10 points, name this title character of a Giuseppe Verdi opera, an Ethiopian princess.

ANSWER: **Aida**

11. The Eckart conditions allow simplification of the ro-vibrational Schrodinger equation that arises when applying this statement. A modification to this statement that better accounts for the electronic Hamiltonian is named for one of its formulators and Huang Kun. Potential energy surfaces can be calculated by applying the adiabatic theorem and this other statement. It allows the neglect of vibronic couplings. The Franck-Condon principle follows from this statement because it allows the separation of the initial and final wave functions into vibrational and electronic components. For 10 points, name this approximation that assumes that the movement of nuclei and movement of electrons in a molecule can be separated, named for two scientists.

ANSWER: **Born-Oppenheimer** approximation

12. This essay’s author claims, “Few artists, not Goethe or Byron even, work quite cleanly, casting off all debris, and leaving us only what the heat of their imagination has wholly fused and transformed.” In this essay, the author approvingly quotes William Blake’s note “The ages are all equal, but genius is always above its age,” after urging the importance of “the power of being deeply moved by the presence of beautiful objects” over a “correct abstract definition of beauty.” This essay argues that “the first step towards seeing one’s object as it really is, is to know one’s own impression as it really is, to discriminate it, to realize it distinctly.” This manifesto of aesthetic criticism opens a book on an age “productive in personalities, many-sided, centralized, complete,” that also includes the essays “The School of Giorgione,” “Sandro Botticelli” and “The Poetry of Michelangelo.” For 10 points, name this short essay that introduces the magnum opus of Walter Pater.

ANSWER: the **preface** to *The Renaissance* [prompt on *The Renaissance*]

13. In one paper, this philosopher muses that realism solves Nelson Goodman’s new “riddle of induction” by positing “perfectly natural” properties that “carve nature at the joints.” In another paper, this philosopher argues that a “rule of accommodation” distinguishes conversations from baseball, in which walking to first base after three balls does not change the count to four. This author of “New Work For a Theory of Universals” and “Scorekeeping in a Language Game” characterized reality as “a vast mosaic of local matters of particular fact.” Applying the “Ramsification” procedure, this philosopher defended mind-body identity, a special case of his Humean supervenience (HYOO-mee-an “super”-VEEN-ee-ents). Statements like “Had I made that shot, our team would have won the game” are the subject of his *Counterfactuals*, which led him to propose the factual existence of infinite isolated universes. For 10 points, name this analytic philosopher who advanced “modal realism” in *On the Plurality of Worlds*.

ANSWER: David Kellogg **Lewis**

14. A poster from this country captioned “Behold, the enemy!” rendered a priest with a billowing cassock clawing both spires of a cathedral. A president of this country worked with Masonic temples to put soldiers under surveillance, assigning those who went to mass with cards marked “Carthage” and those who did not with “Corinth.” The Assumptionists published an anti-Semitic magazine called “The Cross” in this country. A reactionary movement coalesced here around “integral nationalism.” Reactionaries in this country reviled the Affair of the Cards of Denunciation and erected a monument to Colonel Henry, a perjurious soldier. This country bulldozed over its religious establishment with a 1905 law passed under the Combes government. This country secularized its religious school system by banning Jesuits from teaching with the Ferry Laws, part of its drive towards “laicity” in the late 19th-century. For 10 points, name this country whose culture wars over the establishment of Catholicism intensified during the Dreyfus Affair.

ANSWER: **France** [or the **French** Republic; or République **française**]

15. A memoir relates how this writer checked himself into Silver Hill Hospital for psychiatric treatment in response to the disappointing reviews of the novel he believed to be his masterpiece. This writer’s memoirs include an account of his father Herman’s struggle with and eventual death from a supposedly benign brain tumor. This novelist had a strained relationship with his daughter-in-law Anna Steiger and disapproved of her long stays in his New York apartment. This author of *Patrimony* had his conduct as a husband attacked in the scandalous memoir *Leaving a Doll’s House*, which was written by his actress ex-wife Claire Bloom, whom he portrayed in one of his novels as Eve Frame. Anatole Broyard’s racial passing was long believed to be the inspiration for this writer’s novel about Professor Coleman Silk. For 10 points, name this American writer whose alter ego Nathan Zuckerman narrates novels including *I Married a Communist* and *The Human Stain*.

ANSWER: Philip **Roth** [or Philip Milton **Roth**]

16. Once used to treat overactive bladders, mirabegron is *now* being tested for its ability to target this tissue’s beta-3 adrenergic receptors. The exercise-induced protein irisin causes an increase in the number of these cells. Hibernomas are neoplasms of this tissue. A protein found in this tissue performs the same function as agents like 2,4-di-nitro-phenol. Unlike their counterparts which are uniocular, the cells of this tissue are multilocular. In adults, it is found predominantly along the clavicle and down the spinal column. The proton gradient of the mitochondria is dissipated by uncoupling protein one in this tissue. This tissue, which comprises 5% of the body weight of neonates and disappears with age, is the site of nonshivering thermogenesis. For 10 points, name this type of adipose tissue whose abundance of mitochondria leads to its dark color.

ANSWER: **brown adipose** tissue [or **brown fat**, or **BAT**; prompt on adipose tissue; prompt on fat]

17. A marble sculpture of one of these entities spies on Love binding two gods together in Paolo Veronese’s *Mars and Venus United by Love*. Albrecht Altdorfer’s “Landscape with a Family” of these creatures depicts a naked man assaulting a woman in a meadow in the background. One of these beings kneels over the stricken wife of Cephalus in Piero di Cosimo’s *Landscape with the Death of Procris*. These creatures play with the helmet and lance of the sleeping Mars in Botticelli’s *Mars and Venus*. In Bellini’s *Feast of the Gods*, a bare-assed creature of this type carries a jar on its head; that creature of this type stands next to a drunk old man with a braying donkey, representing their companion, Silenus. For 10 points, name these Greek mythological creatures that represented lust in Renaissance art because they were half-human and half-goat.

ANSWER: **satyrs** [or **fauns**]

18. A mosaic in this city's Yaqto complex depicts a hunt scene surrounding an image of the pagan virtue *Megalopsychia*. Aurelian intervened to depose the heretical bishop Paul of Samosata in this city, whose Cherubim Gate opened to its Kerateion, a Jewish quarter. Because the Neoplatonist speaker Libanius taught in this city, Julian attempted to revive its Temple of Apollo by exhuming the corpse of Saint Babylas; Julian wrote the *Misopogon* because its citizens instead mocked his beard. In 253 A.D., Shapur I sacked this city, moving many of its citizens to a colony he gave a name meaning "Better than" this city. During a feud with the governor Gnaeus Piso, Germanicus died of illness in this city. Before becoming archbishop of Constantinople, John Chrysostom preached to Christians in this city. This city's Christians were the first to call themselves "Christians." For 10 points, name this former capital of the Seleucid Empire on the Orontes in Roman Syria.

ANSWER: Antioch [or Antakya; or Antiocheia]

19. According to one story, this scholar was born with a blindness that was cured after Ibrahim appeared to his mother in a dream. He was exiled from his hometown for refusing to provide private lessons to the governor's children. The biographies of this man are filled with accounts of his prodigious memory, such as an incident in which he recited sixteen days worth of material after being chided for not taking notes. This man pioneered the use of categories like *maudu* and *hasan*. His technique differed from that of his greatest student Muslim ibn al-Hajjaj in that he required evidence that two people had met and not just evidence that they had lived at the same time. This man's masterpiece, which is divided into 93 chapters and sometimes called *Al-Jami al-Sahih*, was composed by selecting from 600,000 stories and sayings of Muhammad according to the trustworthiness of their "isnads." For 10 points, name this Uzbek-born scholar whose namesake book is considered the most trustworthy collection of hadith.

ANSWER: Abd Allah Muhammad ibn Ismail al-Bukhari

20. Forces loyal to this man, commanded by his brother Nuri, broke through the Wolf's Gate to a city where they committed the September Days massacres. This general's attempt to encircle Russian forces without dependable communications led to disaster at the Battle of Sarikamish. This man reformed his country's military on the advice of Otto Liman von Sanders. Karl Radek persuaded this man to offer his services to the Soviet Union, but he instead died commanding the Army of Islam against Soviet forces in Turkmenistan in the Basmachi Uprising. This man delivered messages through "Responsible Secretaries" to a network of paramilitaries, Dr. Behaeddin Shakir's (*beh-HYE-eh-deen shah-KEER's*) "Special Organization." This adherent of Pan-Turanism advised subordinates not to build settlements near the Baghdad Railway while marching deportees back and forth across the desert. For 10 points, name this military commander of the Young Turks' "Three Pashas," the instigator of the Armenian Genocide.

ANSWER: Ismail Enver Pasha

TB. The most accurate computational model of these phenomena is the JONSWAP ("john swap") modification of the Pierson-Moskowitz spectrum. These phenomena are generated by the interaction of the Miles and Phillips mechanisms. A key parameter describing these phenomena is proportional to the one-third power of the cotangent of the reetment angle, according to Hudson's equation for rip-rap design. That parameter equals four times the square root of the zeroth moment of the variance spectrum of these phenomena, which are governed by Luke's variational principle. The Iribarren number characterizes instabilities in these phenomena that form below a value of about 0.07 for their H-to-lambda ratio. "Rogue" examples of these phenomena have over twice their "significant height" for a given set of marine weather conditions. For 10 points, name these phenomena that may travel thousands of miles before breaking on a beach.

ANSWER: ocean waves [or sea waves; or water waves; or wind-generated waves; or rogue waves or swells; prompt on waves; prompt on surface waves; do not accept "shallow water waves" or "tsunamis" or "tides"]

1. According to legend, this writer was torn apart by Molossian hounds while in self-imposed exile in Macedonia, and Plutarch relates that his verses persuaded victorious Spartans not to destroy Athens. For 10 points each:

[10] Name this ancient Greek writer. Known as a bookish recluse, he composed his works in a cave on Salamis now named for him.

ANSWER: **Euripides**

[10] Euripides's last tragedy produced during his lifetime centers on this man, who is also the protagonist of Aeschylus's *The Libation Bearers* and *The Eumenides*.

ANSWER: **Orestes**

[10] Orestes and Pylades appear in one of the two extant Euripides plays about this woman. The other one begins with Agamemnon entrusting an old servant with a secret letter that is intercepted by Menelaus, leading to an argument between them.

ANSWER: **Iphigenia**

2. This manuscript includes the lays of Helgi Hundingsbane as well as poems like the *Völuspá*. For 10 points each:

[10] Name this 13th-century Icelandic manuscript that is the primary source for the majority of the Poetic Edda.

ANSWER: **Codex Regius** [or **Konungsbok**]

[10] In a poem found in the *Codex Regius*, this devious god gatecrashes a feast hosted by Aegir and murders the servant Fimafeng, then trades insults with the assembled gods until Thor arrives and threatens to behead him with Mjölhnir.

ANSWER: **Loki**

[10] This term denotes the practice of trading insults that occurs in the *Lokasenna* as well as the *Harbardsljod*.

ANSWER: **flyting** [or **flyta**; or **flitan**]

3. In this image, a calf's head in a cup lies on a table between the main subjects, who are gathered near the Oak of Mamre. For 10 points each:

[10] Name this icon showing a group of angels about to meet Abraham, which is an allegorical depiction of its title subject.

ANSWER: *The* **Trinity** [or the *Holy* **Trinity**]

[10] Like Andrei Rublev, this artist depicted *The Holy Trinity*, in his case with an illusionistic barrel vault. This artist painted *The Tribute Money* and *The Expulsion from the Garden of Eden*.

ANSWER: **Masaccio** [or either underlined portion of **Tommaso** di Ser Giovanni **di Simone**]

[10] In the bottom half of Masaccio's version of *The Holy Trinity*, one of these objects rests on an outward-jutting receptacle beneath an inscription beginning "I once was what you are."

ANSWER: a **skeleton** [or a **cadaver**; or a decomposed **corpse**]

4. This close friend of Karl Kautsky wrote the pamphlet *Social Reform or Revolution*, denouncing as feeble the compromises made by Eduard Bernstein's "Revisionist" faction. For 10 points each:

[10] Name this author of *The Accumulation of Capital*, who was murdered by the *Freikorps* in 1919.

ANSWER: Rosa **Luxemburg**

[10] Rosa Luxemburg used the codename "Junius" while working with Karl Liebknecht to plan this Communist uprising against the government of Friedrich Ebert.

ANSWER: **Spartacist** Uprising [or the **January** Uprising; or the uprising of the **Spartakusbund**]

[10] This woman, also a Communist revolutionary opposed to Lenin, got acquitted for shooting the governor of St. Petersburg in 1878. Karl Marx wrote a famous response to a letter from this woman in which he allowed for the possibility of a Russian Communist revolution.

ANSWER: Vera Ivanovna **Zasulich**

5. Critics often cite Pierre Janelle's claim that the execution of this author of *An Epistle of Comfort* was "a work of art of supreme beauty." For 10 points each:

[10] Name this Catholic martyr who wrote *The Triumphs over Death*, his epistolary elegy for Margaret Sackville. He wrote, "Loves I allow, and passions I approve; only I would wish that men would alter their object, and better their intent," in the dedication to his prose work *Mary Magdalen's Funeral Tears*.

ANSWER: Robert **Southwell** ("subtle")

[10] This contemporary English poet wrote an essay on "The Absolute Reasonableness of Robert Southwell" and took Southwell as an inspiration for his seven-sonnet sequence "Lachrimae." His other poems include "God's Little Mountain" and *Mercian Hymns*.

ANSWER: Geoffrey **Hill**

[10] Hill's sonnet sequence "Funeral Music" describes this historical conflict. This conflict is also the setting for Shakespeare's *Richard III*.

ANSWER: **Wars of the Roses**

6. This philosopher proposed that the US military exemplified the "dual power" that could fundamentally reorder the means of production in his controversial recent essay, *An American Utopia*. For 10 points each:

[10] Name this Duke professor whose motto, "Always historicise!", opens *The Political Unconscious*. This author's major work critiques the title mode for a "waning of historicity," epitomized by ubiquitous "pastiche" in art.

ANSWER: Fredric **Jameson**

[10] Jameson characterized this condition as the "cultural logic of late capitalism." This broad cultural trend of the mid-to-late 20th century was defined by Jean-Francois Lyotard as "skepticism towards metanarratives."

ANSWER: **postmodernism** [or **postmodernity**; do not accept or prompt on "modernity"]

[10] In "Third-World Literature in the Era of Multinational Capitalism," Jameson infamously argued that all third-world literature should be read as a form of narrative defined as this two-word phrase.

ANSWER: "**national allegory**" [prompt on partial answers]

7. For a set A whose elements are one and three, this operation over A returns a set whose subsets are the empty set, the two sets containing one and three, and the set A itself. For 10 points each:

[10] Identify this operation.

ANSWER: **power** set

[10] The axiom of the power set is used in the definition of the set theory named for Abraham Fraenkel (FRAYN-kel) and this mathematician. A theorem named for him is equivalent to Zorn's Lemma and the well-ordering principle.

ANSWER: Ernst **Zermelo**

[10] Bernays, Godel, and von Neumann extended Zermelo-Fraenkel set theory to these constructs, defined as a collection of sets such that a particular property holds. The use of these constructs in von Neumann-Bernays-Godel set theory resolves Russell's paradox.

ANSWER: set **classes**

8. E. E. Schattschneider's ("SHOT"-shny-der's) *The Semisovereign People* attacks this theory, quipping that the "flaw" in its "heaven is that the heavenly chorus sings with a strong upper-class accent." For 10 points each:

[10] Name this theory of power allocation between interest groups in democracies, defended in *Polyarchy* and other books by Robert Dahl.

ANSWER: **pluralism** [accept word forms]

[10] Dahl's *Who Governs?* supported pluralist theory with an in-depth study of the governance of this American city. In an experiment here, subjects were faced with four verbal "prods," including "please continue."

ANSWER: **New Haven**, Connecticut

[10] Dahl disagreed with this Columbia professor, who argued that the military, political, and corporate classes determined American government policy in *The Power Elite*.

ANSWER: C. Wright **Mills** [or Charles Wright **Mills**]

9. The seer Andrew Jackson Davis preceded the 19th-century obsession with these beings, which captivated two million Americans including Horace Greeley, James Fenimore Cooper, and William Lloyd Garrison. For 10 points each:

[10] Name these beings whose popularity exploded after contact with one named “Splitfoot” in 1840s Rochester. Northern reformers without much interest in organized religion often tried to contact these beings through séances.

ANSWER: **ghosts** [or **spirits**; or **dead people**; or equivalents]

[10] This woman held as many as eight séances in Washington with the help of two Georgetown mediums named the Lauries, usually to contact her sons Eddie and Willie.

ANSWER: **Mary Todd Lincoln**

[10] The spiritualist craze got going when these two Rochester sisters purported to have contacted the door-rapping “Splitfoot.” In 1888, they confessed that “Splitfoot” had been an apple tied to a string.

ANSWER: Margaret and Kate **Fox**

10. Fascinating uses of these compounds include encapsulating ethanol to make alcohol powder and as the active ingredient in Febreze. For 10 points each:

[10] Name these large, cyclic polyoses that are also used to separate en-anti-omers as the stationary phase in chiral column chromatography.

ANSWER: **cyclodextrins**

[10] Instead of cyclodextrins, this other large polysaccharide can be used as the stationary phase in chiral chromatography. It comprises the cell walls of plants.

ANSWER: **cellulose**

[10] Another chelating agent, nitrilo-tri-acetic acid, or NTA, is often complexed with this metal for use in affinity chromatography to isolate proteins with a hexa-histidine tag. This metal’s metallocene forms a bright green solid and has twenty valence electrons.

ANSWER: **nickel** [or **Ni**]

11. Virginia Jackson used this poet’s work to explore the evolution of reading and publishing practices in an acclaimed 2005 book titled for this poet’s “misery.” For 10 points each:

[10] Name this poet, whose work was published in a definitive three-volume variorum edition edited by Ralph W. Franklin in the 1990s.

ANSWER: Emily **Dickinson**

[10] Jackson’s work examines how this descriptive word came to be used as a generic term encompassing a wide range of short, expressive poems, becoming one of the three major categories of poetry along with “epic” and “dramatic.”

ANSWER: **lyric**

[10] In the 17th and 18th centuries, evolving ideas of lyric were influenced by Boileau’s translation of *On the Sublime*, a fragmentary treatise whose ancient Greek author is traditionally referred to by this name.

ANSWER: **Longinus** [or Pseudo-**Longinus**; do not accept “Longus”]

12. The Romans used this phrase first to describe the Tyrrhenian Sea and then to describe the Mediterranean Sea as they expanded. For 10 points each:

[10] Name this two-word Latin phrase that Benito Mussolini used as a byword for his expansionist goals.

ANSWER: **mare nostrum** (mah-ray noh-strum) [prompt on **our sea**]

[10] Operation Mare Nostrum, the Italian-run program for rescuing drowning migrants, was replaced by Operation Triton, which is run by this Warsaw-based EU border patrol agency.

ANSWER: **Frontex**

[10] Vicente Blasco Ibanez wrote the screenplay for Rex Ingram’s film *Mare Nostrum*, which follows a female spy in this war. It was also the subject of Stanley Kubrick’s *Paths of Glory*.

ANSWER: **World War I** [or obvious equivalents, such as **WWI**, The **Great War**, and The **War to End All Wars**]

13. This instrument was played by Alphonse Hasselmans, who wrote the étude *La Source* for it. For 10 points each:

[10] Name this instrument whose large concert variety has forty-seven strings.

ANSWER: **harp**

[10] Unlike smaller harps that use levers on the crossbar to modify the pitches of strings, concert harps use seven of these devices to do so.

ANSWER: **pedals**

[10] This 20th-century harpist and composer wrote *Scintillation* and included *Whirlwind* in his *Five Preludes for Harp Alone*. His namesake method for playing the harp is contrasted with the French method.

ANSWER: Carlos **Salzedo**

14. This system of church governance provided its name to the “Peace Party” in the Long Parliament, who opposed the radical “Independents.” For 10 points each:

[10] Name this system of church government that was implemented in Scotland by Andrew Melville after being devised by John Knox.

ANSWER: **Presbyterianism**

[10] In this 1643 agreement between the English Parliament and Scotland, the English agreed in principle to impose a Presbyterian religious system in return for an alliance against Charles I.

ANSWER: **Solemn League and Covenant**

[10] The Scottish Covenanters’ worst enemy was this Scottish nobleman, who switched sides to the Royalists over the Solemn League and Covenant. After Charles II betrayed him, the Covenanters hung him, dismembered his corpse, and impaled his head and limbs on the gates of Edinburgh, Stirling, Glasgow, Perth, and Aberdeen.

ANSWER: James Graham, 1st Marquis of **Montrose** [or James **Graham**]

15. These things were classified and given nicknames in George Puttenham’s charming handbook *The Arte of English Poesie*. For 10 points each:

[10] Name these definable rhetorical operations of language, many of which employ words in non-literal senses. Examples of these things include simile and metaphor.

ANSWER: **figures** of speech [or rhetorical **figures**; or rhetorical **tropes**; prompt on **figurative** language]

[10] This figure of speech employs the same word or group of words at the beginning of several consecutive lines or sentences, as in much of the poetry of Walt Whitman and in Martin Luther King, Jr.’s “I Have a Dream” speech.

ANSWER: **anaphora**

[10] This trope, also called “transumption,” occurs when a metonymy is substituted into another phrase that is already figurative. In Harold Bloom’s theory of influence, this trope is the mechanism of the final revisionary ratio, *apophrades* (ah-paw-FRAY-deez).

ANSWER: **metalepsis**

16. This company has the European rights to manufacture Verner Panton’s Heart Cone Chair and the Eames Lounge Chair. For 10 points each:

[10] Name this Swiss furniture and design company that may be best known for its German campus at Weil am Rhein (“VILE” ahm RINE), which includes factories designed by SANAA and Alvaro Siza and a design museum by Frank Gehry.

ANSWER: **Vitra**

[10] The Vitra campus’ angular fire station was designed by this architect, who also designed the Contemporary Arts Center in Cincinnati and the London Aquatics Centre for the 2012 Summer Olympics.

ANSWER: Zaha **Hadid**

[10] The Vitra Design Museum includes the Tulip Chair designed by this Finnish architect, who also designed the TWA Flight Center at JFK International Airport.

ANSWER: **Eero Saarinen** [prompt on **Saarinen**; prompt on **E. Saarinen**; do not accept or prompt on “Eliel Saarinen”]

17. According to this school, people who forgot to say a prayer after a meal were required to go back to the spot of the meal before reciting that prayer. For 10 points each:

[10] Name this school of Jewish thought that generally took stricter positions than the rival House of Hillel.

ANSWER: the House of **Shammai** [or Bet **Shammai**; or School of **Shammai**]

[10] The opinions of the House of Shammai were generally followed by these Jews, who were led by Judas of Galilee and known for their active and violent opposition to Roman rule.

ANSWER: **Zealots**

[10] Shammai was succeeded as president of the Sanhedrin by this grandson of his rival Hillel. The Acts of the Apostles records a speech in which Paul claims to have studied under this man.

ANSWER: **Gamaliel**

18. This method can be used for whole-genome sequencing of regulatory regions by looking for sites that are hypersensitive to DNase. For 10 points each:

[10] Name this technique that identifies DNA-binding proteins by exposing a protein-DNA complex to a cleavage agent like DNase I (dee-en-"ace one") or UV light and observing the appearance of a "gap" on the gel corresponding to the protected DNA region.

ANSWER: **footprinting** [do not accept "fingerprinting" or "toeprinting"]

[10] In footprinting, DNA is labeled radioactively at its 5-prime end using a polynucleotide kinase derived from one of these agents known as T-4. One of these subcellular agents was used by Hershey and Chase to verify that DNA was the genetic material.

ANSWER: bacteriophage [prompt on virus]

[10] Another method of footprinting uses radicals of this functional group generated from a Fenton reaction. Phenyl-keto-nuria is caused by a deficiency in a tetra-hydro-biopterin enzyme that catalyzes the addition of this functional group to a certain aromatic amino acid.

ANSWER: **hydroxyl** [or **OH minus**]

19. Name these alumni of the School of the Americas, a CIA-run torture academy in Fort Benning, Georgia, for 10 points each.

[10] After *Time* published a photo of opposition candidate Billy Ford bloodied by this Panamanian dictator's "Dignity Battalions," former buddy George H.W. Bush ordered him deposed in Operation Just Cause.

ANSWER: Manuel Antonio **Noriega** Moreno

[10] This alumnus of the Panamanian campus graduated to supervise Grupo Colina, a death squad trained to fight the Shining Path. This director of the National Intelligence Service was videotaped bribing political opponents of his boss, Alberto Fujimori.

ANSWER: Vladimiro **Montesinos**

[10] Several alumni formed this paramilitary group in Honduras during the '80s, which electrocuted thousands of leftist testicles in a Tegucigalpa soccer stadium under the supervision of US Ambassador John Negroponte.

ANSWER: Battalion **3-16** [prompt on the "**Death** Battalion"]

20. This theorem is the three-dimensional analog of the Leibniz integral rule. For 10 points each:

[10] Name this theorem that provides a general form for converting conservation laws from control masses to control volumes, thus bridging the Lagrangian and Eulerian descriptions of fluid mechanics.

ANSWER: **Reynolds** transport theorem [or **Reynolds'** theorem; or Leibniz-**Reynolds** theorem]

[10] Reynolds also names a decomposition that can be used to impose this condition on the Navier-Stokes equations. Performing this operation on the Poynting vector involves taking the real part of the expression "one-half times the cross product of the E-field with the complex conjugate of the H-field."

ANSWER: **time-average** [accept word forms; prompt on **average** or **mean**]

[10] The Poynting vector has units of intensity, which is this quantity divided by area.

ANSWER: **power**