

Tossups

1. **The most popular one of these devices uses elements labeled Q14 and Q20 in its Class AB output stage; that one of these devices has two offset null pins to adjust output. Three of these devices are combined in a related instrumentational device in order to increase the common-mode rejection ratio. The LM741 is one of these devices with a value of 0.5 for its slew rate. One of these devices is wired to three resistors in a weighted summer. The (*) golden rules of these devices taught to students include infinite input impedance and zero output impedance. On circuit diagrams, these devices are symbolized by a triangle crossed by power rails. Connecting the output to the plus or minus terminal distinguishes the inverting and non-inverting types of these devices. For 10 points, name these devices that output the difference of their two input voltages multiplied by a gain.**

ANSWER: operational amplifiers [or op-amps; prompt on differential amplifiers or amps]

<Physics, AK>

2. **In this film, the soundtrack is substituted for shattering sounds in a sequence in which a white-haired man repeatedly tosses the protagonist against glass objects in a penthouse. This film ends with a shot of the protagonist's grin warping into an expression of pain as the credits kick in. A three-minute-long continuous take in this film is set in a passage lit by a green light. This film comprises a trilogy along with the films (*) *Lady Vengeance* and *Mr. Vengeance*. The protagonist of this film eats a live octopus, cuts his own tongue with a pair of scissors, and uses a hammer to fight a group of assailants armed with wooden rods in a corridor. The protagonist of this film is kidnapped and held in prison for 15 years on his daughter's birthday. For 10 points, name this neo-noir film about the revenge of the incestuous businessman Oh Dae-Su, directed by Park Chan-wook ("pahk chan-ook").**

ANSWER: Oldboy [or Oldeuboi]

<Other Art: Film, WA>

3. **George Lamming wrote that an author with this surname name created "castrated satire" in the form of a novel whose characters include a carpenter who neglects his job to build "the thing without a name." A "deliberately awkward" girl "too big... for she boots" named Baby is described by a writer with this surname in a novel about the Lutchman family. Characters created by an author with this surname include one who calls himself the Messiah after his dog dies, named Man-Man, as well as the poet (*) B. Wordsworth. In another novel by that author with this surname, the title character sees his father drown while trying to rescue him, confirming a bad omen related to having six fingers, and also marries Shama to join the Tulsi family. *Miguel Street* and *A House for Mr. Biswas* are by an author with, for 10 points, what last name shared by the Trinidadian brothers Shiva and V. S.?**

ANSWER: Naipaul [accept Shiva Naipaul or Vidiadhar Surajprasad "Vidia" Naipaul]

<Long Fiction, EL>

4. **Charles Duclos's ("sharl due-KLOH's") *Memoirs of the Regency* mentions posters during this event that said "St. Bartholomew's Day will be enacted again," which protested a law that forbade possession of over 500 livres ("LEEV-ruhs") in coin. A hunchback rented his back as a desk for people to work on throughout this event, whose instigator had left his home country when his ideas were rejected following an Act of Union. Richard Cantillon, who benefitted hugely from this event, may have been spurred by it to develop a theory centered on land and agriculture called (*) physiocracy ("fizz-ee-AH-cruh-see"). This event is the first case study in Charles Mackay's *Extraordinary Popular Delusions*, along with Tulipmania and the South Sea Company. It resulted from a scheme to pay off debts from Louis XIV's wars concocted by Scotsman John Law. For 10 points, name this bubble in the 1710s involving a company named for a river.**

ANSWER: Mississippi Bubble [or Mississippi Scheme; accept Mississippi after “Bubble”; accept answers that refer to the Mississippi Company or Occident Company or Company of the West or Compagnie des Indes]
<Continental post-600 History, WA>

5. In February 2018, this company used Akamai (“ack-uh-my”) Prolexic to mitigate a 1.35-terabit-per-second DDOS (“D-doss”) attack that relied on exploiting UDP-enabled memcached (“mem-cash-D”) instances. In 2015, this company was DDOS’d in the first Great Cannon of China attack. This firm’s cofounder Tom Preston-Werner wrote the static site generator Jekyll, which is often used together with its “Pages” service. Node.js (“node-J-S”) is used for its cross-platform desktop application framework Electron and text editor Atom. It maintains the Pastebin-style snippet service (*) Gist (“jist”). In June 2018, Microsoft bought this company as part of its open source efforts. This company’s product is the biggest competitor of Atlassian’s Bitbucket, and allows users to star and submit pull requests for repositories. For 10 points, name this company that manages an online version control system for software development.

ANSWER: GitHub [prompt on Microsoft until read; do not accept or prompt on “git”]
<Other Science: Computer Science, AK>

6. The title of Jacques Derrida’s essay “White Mythology” derives from this author’s description of a generic Oriental creation myth in his book *The Garden of Epicurus*. A chapter by this author discussing a “middle-class Jew named Pyrot” deals with the same affair as the last entry in his four-part series *Contemporary History*. A novel by this author mentions Draco the Simple among a succession of rulers who succeed the Charlemagne-like Draco the Great, as well as the Dragon of (*) Alca, which is slain by Orberosia’s husband Kraken. Jules Massenet (“zhool mass-NAY”) used a novel by this author as the basis of his opera *Thaïs* (“tah-EESE”). This author satirized his country’s history in a novel that features the Abbot Mael, who accidentally baptizes a group of the title birds. For 10 points, name this author of *Penguin Island*.

ANSWER: Anatole France [or Anatole Thibaud]
<Misc. Lit, WA>

7. The first of these speeches promises to “forego the use of” offices that might be filled via spoils rather than introduce “obnoxious strangers.” One of these speeches contrasts two groups who have “deprecated war” by noting that one group actively sought to “make war,” whereas the other would “accept war.” Another of these speeches ends with a paragraph stating “I am loath to close. We are not enemies, but friends.” Michael Kammen titled his book on “Tradition in American Culture” after a phrase from one of these speeches, (*) “mystic chords of memory.” The second of them rejects triumphalism, insisting instead on “malice towards none” and “charity for all.” A line about the “better angels of our nature” is found in the first of, for 10 points, what two speeches given in 1861 and 1865 when a US President was sworn in?

ANSWER: Abraham Lincoln’s inaugural addresses [accept answers indicating speeches that Abraham Lincoln gave at his inauguration ceremonies; prompt on inaugural addresses by asking “given by who?”; prompt on speeches by Abraham Lincoln by asking “on what occasion?”]
<US History, WA>

8. Art historian Taco Dibbits resolved a puzzle about perspective in one of this artist’s paintings by noting that a gateleg table would have an octagonal shape when not folded. This artist is presented as the prime example of a “descriptive” painter in Svetlana Alpers’s *The Art of Describing*. This man’s technique for showing light on white walls in such indoor scenes as *The Glass of Wine* and *Officer and Laughing Girl* was probably modeled on his senior in the Guild of St. Luke, (*) Pieter de Hooch (“Peter duh hoke”), since his earlier scenes like *The Procureess* mostly have dark settings. A genre painting by this artist shows a blue porcelain jar and several loaves of bread atop a table covered in blue cloth, next to which stands the title servant who pours a thin stream of white liquid. For 10 points, name this Dutch painter of *The Milkmaid* and *Girl with a Pearl Earring*.

ANSWER: Jan Vermeer
<Painting/Sculpture, WA>

9. A settlement on the shores of this body of water is named after a misspelled version of the name of Daniel Greysolon, the first French explorer in the area. It's sadly not near Philly, but the Magpie River empties into this body near the town of Wawa; about 40 miles southwest of Wawa is an island where the *mishipeshu* panther is said to live. The romanization of the (*) Ojibwe ("oh-JIB-way") name for this body that Longfellow used in *The Song of Hiawatha* is also used in a song about how this body of water "never gives up her dead" in November by Gordon Lightfoot. The indigenous name of this lake, Gichigami, means "Great Sea." While the original French name for this lake means "Upper Lake," a similar-sounding English translation refers to its size. For 10 points, name this largest Great Lake.

ANSWER: Lake Superior [accept Gichigami or Gitche Gumee before "Gichigami"]
<Geography, BB>

10. Two years after making a pilgrimage to this city in 1988, Dizzy Gillespie was inspired to form the United Nations Orchestra for one of his final tours. This city contains separate facilities designed to accommodate pilgrims from Asian and European cultural backgrounds, called the Eastern and Western Pilgrim Houses respectively. The Centre for Study of Sacred Texts is among the buildings that form a complex in this city called "The Arc," and is the main site where scriptures like the (*) *Seven Valleys* are translated. This city is where the Shrine of the Báb was dedicated by Shoghi Effendi. On the slopes of Mount Carmel in this city sits the governing body of a religion whose scriptures include the *Kitab-i-Iqan*. For 10 points, name this Israeli city where the Bahá'í Universal House of Justice is located.

ANSWER: Haifa, Israel
<Religion, WA>

11. The first stanza of this poem responds to, among other things, a line from Alexander Pope's *Essay on Man* that speaks of learning "to sail / Spread the thin oar, and catch the driving gale." This poem was inspired by a cross-section that the author viewed in Roget's ("ro-ZHAY's") *Bridgewater Treatise* according to an essay in *The Atlantic Monthly*, a magazine that its author helped found. This poem borrows a phrase from Wordsworth's "The World is Too Much With Us" to describe an instrument from which "a clearer note is born." It delivers its central metaphor for personal (*) growth by imploring its subject to "leave thy low-vaulted past" and leave relics of that past "by life's unresting sea." This poem commands the author's soul to "build thee more stately mansions" in admiration of an abode that it likens to a "ship of pearl." For 10 points, name this Oliver Wendell Holmes poem about a cephalopod.

ANSWER: "The Chambered Nautilus"
<Non-Epic Poetry, WA>

12. The Golay equation gives an inverse relation between the linear velocity and a quantity of these devices, which can come in WCOT ("W-C-O-T") and SCOT ("S-C-O-T") types. The oven surrounding one of these devices is given a ramp input in temperature programming. In a technique, a process that occurs inside these devices can be in the gradient or isocratic mode. Eddy diffusion, diffusion, and mass transfer, symbolized by A, B, and C coefficients, are related to a quantity of these devices by the (*) Van Deemter equation. Helium is often used as the carrier gas passing through these devices. The amount of time spent in them is called the retention time. Silica gel coats the walls of these devices when acting as a stationary phase, through which the mobile phase is eluted. For 10 points, name these tubular devices found between the injector and detectors in chromatography.

ANSWER: chromatography columns [prompt on chromatographs or chromatography devices]
<Chemistry, AK>

13. Jane Fulcher's book *The Nation as Art* rejects the traditional thesis that this style rose in prominence due to the influence of Louis Véron. In a composition in this style, deceased women rise from their tombs to seduce a knight in the "Ballet of the Nuns." The prayer "Nume del Ciel" ("NOO-may del CHELL") is sung before battle in another composition in this style that ends with an eruption of Mount Vesuvius. In a third composition in this style, the ringing of a bell signals the beginning of a (*) massacre, after which Raoul jumps out a window. Canonically, the earliest work in this style is Daniel Auber's ("don-YELL oh-BAY's") *The Mute Girl of Portici*. Works in this style include Hector Berlioz's *Les Troyens* ("lay twah-YANN") and most of the output of Giacomo Meyerbeer ("JAH-ko-mo MY-er-beer"). For 10 points, name this dominant style of opera in early 19th-century France characterized by lavish designs and very large orchestras.

ANSWER: **grand** operas [or **grand opéra** ("GRON top-pay-RAH"); prompt on operas; prompt on Romantic opera/style; prompt on French opera or Paris opera]

<Classical Music/Opera, WA>

14. A ruling in the 1997 case of *United States v. Nicholson* found that this law does not violate the due process or equal protection clauses. In 2016, the ODNI released revised targeting and minimization procedures for activities that were authorized by an amendment to this law; that amendment allows collection on US infrastructure when the subject is a non-USPER ("non-USS-per") located overseas and is often called "702." Judges on both of the (*) courts created by this law serve seven-year terms and are appointed by the Chief Justice. After previously criticizing "unmasking" procedures for information collected under this law, President Trump ordered the partial declassification of a probable cause warrant authorized under this law against Carter Page. For 10 points, name this act that allows the US government to surveil agents of overseas powers or suspected terrorists.

ANSWER: **FISA** ("FYE-zuh") [or **Foreign Intelligence Surveillance Act** of 1978; accept **FISA** section 702 or **FISA** courts or **FIS** courts or **FISC** or **FISCR** or **FISA** warrants]

<Other/Misc Academic, JL>

15. When asked to demonstrate her French, one of these characters shows knowledge of four tongues, saying "Dear Sir, Monsieur, Geehrter Herr ("guh-AIR-tuh HAIR"), Ctěný pane" ("STEH-nee PAH-neh"). The leader of a Central Committee of these characters begs a man to use "live bodies!" to further his research. A woman notes the oddity that a female one of these characters is named after the male Roman general Sulla. These characters desperately try to get a man to reconstruct a (*) manuscript burned by that woman, who is from the League of Humanity. These characters operate machines that spin veins and nerves at a factory run by Harry Domin. Two of them named Primus and Helena are seen as a new Adam and Eve by Alquist. For 10 points, identify these characters known by a Czech word for "peasant" or "worker," who feature in a Karel Čapek ("CHAH-peck") play about "Rossum's Universal" ones.

ANSWER: **robots** [accept *Rossum's Universal Robots* or *Rossumovi Univerzální Roboti*]

<Drama, WA>

16. In a 2003 paper, Benjamin Friedman noted the "disappearance" of this construct in recent models, citing Clarida, Gali, and Gertler's Neo-Keynesian framework that does not use this construct, but does incorporate the long-run aggregate supply. This construct can be derived by taking the basic velocity equation, which represents transactions demand, then adding a term to represent speculative demand, then replacing the demand for real balances with an equilibrium condition; thus, this (*) curve has a [emphasize] *positive* slope, since transactions demand is positively correlated with both income and the interest rate. This curve is combined with a curve that represents the goods market in the Hicks–Hansen model, in which it represents equilibrium points between liquidity preference and the money supply. For 10 points, name this curve paired with the IS curve.

ANSWER: **LM** curve [or **liquidity preference-money supply** curve before "liquidity"; prompt on IS-LM model or Hicks–Hansen model by asking "which component of that model?"; prompt on money demand curve or monetary demand curve; do not accept or prompt on "demand curve"]

<Social Science: Economics, WA>

17. A Downes score of 2 indicates a severe lack of function in this organ, which is also quantified by the Silverman–Anderson score in newborns. Distress in these organs can be modeled by movements towards the four quadrants of Davenport diagrams. In a common test of this organ, the area under the FEF curve is calculated as the FEV, whose ratio with the forced vital capacity should be approximately 80 percent in healthy adults; poor results on such tests indicate a decrease in this organ's (*) compliance with age. Low scores on a spirometry test may indicate COPD in this organ. The leading cause of death in babies born prematurely is due to distress caused by lack of surfactant in this organ. Due to elastic recoil, a neutral pressure in the pleural cavity will cause a pneumothorax in this organ. For 10 points, name this organ that contains alveoli.

ANSWER: lungs [prompt on alveoli or bronchioles]

<Biology, JC>

18. This kingdom's ruler Bernardo I was killed while fighting a group whose name became a byword for "vagabond," the Yakas or Jagas ("ZHAH-guhs"). After this kingdom's ruler António I lost the Battle of Ambuila ("am-BWEE-lah"), its politics became dictated by short-term alliances between noble clans called *gerações* ("zheh-rah-SOYSH"), rather than those of royal lineage, or *kanda*. A nobleman from this kingdom named (*) Ganga Zumba led the Quilombo dos Palmares ("kee-LOHM-boo doos pow-MAH-riss"). José Eduardo dos Santos ("zhoo-ZEH aid-WAR-doo doos SUN-toosh") had a statue built to commemorate this realm's queen Nzinga ("n'JING-ah"). This kingdom, which adopted Catholicism under Afonso I, helped Portugal establish a colony near present-day Luanda. For 10 points, name this kingdom eventually merged into Angola, and which is not actually named after a river.

ANSWER: Kingdom of Kongo

<World History, EL>

19. *Description acceptable.* Two brothers entering this realm are questioned by a character disguised as a priest with a chain around his neck when those brothers come here on the advice of Shabri. A prince from this realm had a boon that allowed him to gain half his opponent's strength, enabling him to take the throne from his brother, who later married that prince's wife Tara. An army recruited from this realm is credited with building what is now called Adam's Bridge, allowing a hero to cross the ocean to the city where (*) Jatayu ("JAH-tah-yoo") had died. A struggle for control of this realm between Sugriva and Vali forms a major subplot of the *Ramayana*. Characters from this realm include a son of Vayu who aids in the fight against Ravana. For 10 points, identify this realm home to a race of beings that look like Hanuman.

ANSWER: Kishkindha [or the kingdom of the monkeys; accept any answer referring to a realm/kingdom where vanaras or monkeys or apes or forest people live; prompt on forest; prompt on Karnataka or Hampi from people who live in Karnataka and believe that's where Kishkindha was located; do not accept or prompt on "Ayodhya"]

<Mythology, WA>

20. A tattooed arm found inside a shark on display in this city led to a bizarre murder case in which a key witness was found dead in his car. It's not Glasgow, but so called "razor gangs" active in this city fought the "Battle of Kellett Street." When a bridge opened in this city, an unauthorized man rode across on a horse and slashed the ribbon with his sword before it could be ceremonially cut by Jack Lang. This city was attacked by two midget submarines when they breached its harbor's net that protected (*) Port Jackson in 1942. Bizarre 1907 protests in this city countered an attempt to impose a particular tunic on people visiting Bondi Beach. Fatso the Wombat was an unofficial mascot of this city's Summer Olympic Games, held in 2000. For 10 points, name this city where you can see the iconic concrete "shells" that Jørn Utzon ("YUN OOT-sun") designed for its opera house.

ANSWER: Sydney

<British/CW History, NB>

Bonuses

1. Name these authors discussed in Colm Tóibín's ("CALL-um toh-BEAN's") *New Ways to Kill Your Mother*, for 10 points each.

[10] Tóibín opens the book discussing the liberating power of dead mothers and active aunts in the works of this author, whose Aunts include Lady Catherine de Bourgh in *Pride and Prejudice*.

ANSWER: Jane Austen

[10] Tóibín argues that for this author, "the suburban house" was "a sort of hell," which is visible in stories like "The Country Husband." That essay connects this author's family's love of his older brother to Moses and Coverly in this author's novels about the Wapshot family.

ANSWER: John Cheever

[10] Tóibín discusses this author's obsession with and fear of becoming like his sister, whose madness inspired his play *Out Cry*. This author described his relationship with that sister in "The Resemblance Between a Violin Case and a Coffin."

ANSWER: Tennessee Williams

<Misc. Lit, EL>

2. This family made a number of strategic marriages with the wealthy Maleinos family in the mid-10th century to cement its power among the *dynatoi*. For 10 points each:

[10] Name this family of Cappadocian origin that gained the throne when one of its members married the Empress Theophano. Another of its members launched two rebellions against the Macedonian dynasty.

ANSWER: Phokas family (The two men referenced are Nikephoros Phokas and Bardas Phokas.)

[10] The power of the Phokas family was broken by the second Byzantine emperor of this name, who was known as the "Bulgar-slayer" for killing and blinding thousands of Bulgars after the Battle of Kleidion.

ANSWER: Basil II [or Basil the Bulgar-Slayer or Basileios Boulgaroktonos]

[10] Emperor Nikephoros Phokas's accomplishments include the Siege of Chandas, at which he reconquered this region from an emirate of Andalusian origin that conquered it in the 820s. After the Fourth Crusade, this Greek region was seized by Venice and ruled as the Duchy of Candia for four centuries.

ANSWER: Crete [or Kriti]

<Continental post-600 History, WA>

3. This event came about due to propaganda broadcasts made in Italy by its subject, who denounced "big Jews" as the main propagators of usury, which he referred to as *usura* in other works. For 10 points each:

[10] Identify this event whose subject was deemed mentally unfit to advise properly with counsel. Elizabeth Bishop visited this event's subject many times at St. Elizabeth's hospital after he was ordered to be placed there.

ANSWER: the trial of Ezra Pound [accept equivalents; prompt on prosecution of Ezra Pound]

[10] Pound was put on trial after being previously held in a cage in this city for several months, during which he wrote many of his *Cantos*. Galileo Galilei conducted experiments on an iconic building in this city.

ANSWER: Pisa

[10] This sociologist argued that art could not be separated from morality in leading the opposition to awarding Pound the Emerson-Thoreau Medal. A speculative book by this sociologist coined the term "post-industrial society."

ANSWER: Daniel Bell

<Other/Misc Academic, WA>

4. The "social psychology" of eight "world" examples of these systems was examined in a book by Max Weber. For 10 points each:

[10] Name these systems. "New Age" examples of these systems, which often seek to combine elements from the major world ones, have been heavily influenced by the Theosophical Society.

ANSWER: **religions** [accept *The Social Psychology of World Religions* or New Age **religions** or world **religions**]

[10] A book by an author of this ethnicity titled *The Invention of World Religions* explores how the concept of “world religions” is a recent invention that resulted from cultural imperialism. In *An Inquiry into the Good*, a man of this ethnicity articulated a philosophy of “pure experience” that he borrowed from William James.

ANSWER: **Japanese** [or **Japanese-Americans**; or **Nihonjin**; or **Yamato** people] (The authors are Tomoko Masuzawa and Kitarō Nishida, the latter of the Kyoto School of philosophy.)

[10] This Japanese author contributed to the dialogue of world religions by popularizing Zen Buddhism in the West. More controversially, he defended the nationalist concept of “Japaneseness” or *nihonjinron* (“nee-hone-jeen-rone”) as being rooted in Zen.

ANSWER: D. T. **Suzuki** [or Daisetsu Teitaro **Suzuki**]

<Religion, WA>

5. An author from this country depicted the narrator’s unhappy relationship with Lilly, a woman who asks him “So can’t we just be cozy?” in a story that explores the dark side of her country’s concept of *hygge* (“HEW-guh”). For 10 points each:

[10] Name this country home to an author who included “The Heron” and “Hair Salon” in her short story collection *Karate Chop*. Miss Nat-og-Dag (“nat-oh-day”) tells the story of Calypso, a girl who almost chops her own breasts off, in another short story from this country.

ANSWER: **Denmark** (The author of *Karate Chop* is Dorthe Nors.)

[10] Miss Nat-og-Dag appears in “The Deluge at Norderney,” a short story from this Danish collection that was originally written in English, and which also includes “Babette’s Feast.”

ANSWER: **Seven Gothic Tales** [or **Syv Fantastiske Fortællinger**] (by Isak Dinesen)

[10] This earlier Danish author wrote fairy tales such as “The Little Mermaid” and “The Ugly Duckling.”

ANSWER: Hans Christian **Andersen**

<Short Fiction, EL>

6. This process cannot occur at a finite temperature in 2-dimensional systems such as the XY model according to the Mermin–Wagner theorem. For 10 points each:

[10] Name this process that occurs when the vacuum expectation value of a quantum field is nonzero. Massless bosons that arise when this process occurs are called Nambu–Goldstone bosons.

ANSWER: **spontaneous symmetry breaking** [prompt on partial answers] (That is the Mermin–Wagner theorem.)

[10] The spontaneous symmetry breaking of the mechanism that shares its name with this boson results in other bosons having mass. This last particle in the Standard Model to be discovered was found in 2012.

ANSWER: **Higgs** boson [prompt on **H0**]

[10] Symmetry breaking is characterized by the change from zero to a non-zero value for one of these quantities. For ferromagnetism, the net magnetization serves as this quantity.

ANSWER: **order parameter**

<Physics, AK>

7. From 1757 until the Opium Wars, China maintained control over European merchants by focusing all trade on this city, a setup known as its namesake “System.” For 10 points each:

[10] Name this city on the Pearl River. It is the namesake of a language also called Yue (“y’WEH”), which is the most widely spoken non-Mandarin language in Southern China.

ANSWER: **Canton** [or **Guangzhou**; accept **Canton** System; prompt on **Cantonese**]

[10] This Chinese word denotes the large merchant houses that controlled most trade in and out of Canton in the 17th through 19th centuries. An edict by the Qianlong (“ch’yen-long”) emperor codified their power.

ANSWER: **hongs** [or **cohongs**]

[10] This Cantonese woman terrorized southern Chinese trade in the early 19th century as the commander of the Red Flag Fleet, which consisted of over 300 junks manned by over 20,000 pirates.

ANSWER: **Ching Shih** [or **Mistress Ching** or **Zheng Shi**; or **Zheng Yi Sao** or **Cheng I Sao** or **Shi Yang**; prompt on **Ching** or **Shi** or **Zheng** or **Cheng**; accept answers indicating the **wife** of **Zheng** Yi, since that's a common Chinese designation for her; do not accept or prompt on "Zheng Yi" alone]

<World History, WA>

8. The benevolent earth mother goddess Pachamama was worshipped throughout this culture's domain, which was called Tawantinsuyu ("tah-wahn-teen-SOO-yoo"), or "Land of Four Corners." For 10 points each:

[10] Name this pre-Columbian culture that worshipped such gods as Inti throughout their empire.

ANSWER: **Incas** [or **Incans** or **Inca** culture; prompt on **Quechua**]

[10] In Inca culture, the *axis mundi* was defined by Cusco, where Inti told Manco Capac to place one of these objects in the ground and found a city for his people.

ANSWER: a **staff** [or a **stick** or a **rod**]

[10] Early South American cultures worshipped a "staff god" that is commonly named for having these odd physical features, and which was venerated by shamans who are shown turning into jaguars in art. Along with goggle eyes, these unusual physical features are often found on statues of the Aztec god Tlaloc.

ANSWER: **fangs** [accept **fanged** god]

<Mythology, WA>

9. Answer the following about documentaries in the National Film Registry that covered pivotal moments in American history, for 10 points each.

[10] The documentary *The Plow that Broke the Plains* describes how damaging farming practices led to the widespread agricultural collapse and drought of the Great Plains during this part of the Great Depression.

ANSWER: **Dust Bowl**

[10] Leni Riefenstahl's *Triumph of the Will* inspired Frank Capra to direct this series of seven films to drum up support for America's involvement in World War II. Its entry *Prelude to War* depicts the Rising Sun and the Swastika patterning the globe to symbolize an Axis victory.

ANSWER: **Why We Fight**

[10] A 1976 Barbara Kopple documentary covers the efforts of coal miners in this Kentucky county to join the United Mine Workers despite the opposition of the Duke Power Company. A conflict that took place in this county also inspired the song "Which Side are You On?"

ANSWER: **Harlan** County, Kentucky [accept **Harlan** County War; accept **Harlan County, USA**]

<US History, AK>

10. In this technique, a double-lined arrow points from a molecule to the possible synthons that can be used to construct it. For 10 points each:

[10] Name this technique developed by E. J. Corey that involves working backwards from the target molecule to readily available starting reactants.

ANSWER: **retrosynthesis** [or **retrosynthetic analysis**]

[10] Chemical syntheses should have a high value for this quantity, which measures the amount of product that a reaction produces. As a percentage, it is calculated by multiplying 100 times its empirical value over the theoretical value.

ANSWER: chemical **yield** [or percent **yield**]

[10] Asymmetric synthesis can use BINOL or oxazolidinones ("OX-uh-zo-LID-in-owns") in this role, in which a compound is added to the substrate, undergoes a diastereoselective reaction, and is cleaved to give the desired enantiomer.

ANSWER: chiral **auxiliaries**

<Chemistry, AK>

11. A large example of these objects is used by the subject of a caricature by Honoré Daumier's ("oh-no-RAY dome-YAY") that depicts a man "elevating photography to art." For 10 points each:

[10] Name these objects that were frequently used by that photographer, Nadar, who built the largest example of these objects in France, *Le Géant* ("luh zhay-AWN").

ANSWER: hot air **balloons** [or **montgolfières**]

[10] This French sculptor honored the Montgolfier brothers' pioneering work on balloon flights with his *Model for a Proposed Monument to Commemorate the Invention of the Balloon*. He primarily worked with terracotta, using the material to create his numerous sculptures of nymphs and satyrs.

ANSWER: **Clodion** [or Claude **Michel**; do not accept or prompt on "Claude"]

[10] The first hot air balloon experiments took place on the grounds of this palace outside of Paris. Vigée Le Brun ("vee-JAY luh BRUN") made portraits of Marie Antoinette at this primary residence of the Bourbon monarchs.

ANSWER: Palace of **Versailles** [or Château de **Versailles**]

<Painting/Sculpture, WA>

12. A collection of surviving fragments of this thinker's writings makes up the 22nd chapter of the Diels-Kranz numbering system. For 10 points each:

[10] Name this philosopher whose best known aphorism expresses his principle of *panta rhei*. This "weeping philosopher's" concept of a "unity of opposites" is exemplified by him equating "the way up and the way down."

ANSWER: **Heraclitus**

[10] Heraclitus introduced the idea that everything follows a nebulous principle denoted by this Greek word, usually translated as "the Word." In *Rhetoric*, Aristotle outlines *pathos*, *ethos*, and a concept denoted by this Greek word as three modes of persuasion.

ANSWER: **logos**

[10] This contemporary English philosopher and brother of a novelist excerpted passages from Pre-Socratic philosophers in *Early Greek Philosophy* and wrote *The Modes of Skepticism* with Julia Annas.

ANSWER: Jonathan **Barnes** (He's the brother of Julian Barnes.)

<Thought, AK>

13. A study by Matthew Liska and Casper Hesp published in January 2018 confirmed that relativistic examples of these objects undergo precession when the accretion discs surrounding them are tilted. For 10 points each:

[10] Identify these highly collimated outflows of material that are common in active galactic nuclei.

ANSWER: **jets** [or astrophysical **jets** or **jets** of matter or black hole **jets** or quasar **jets** or relativistic **jets**; prompt on **active galactic nuclei** or **AGNs** or **quasars**; do not accept or prompt on "black holes"]

[10] Most models of astrophysical jets assume that the accretion discs surrounding them are flat and obey the three laws of astrophysical motion named for this German astronomer.

ANSWER: Johannes **Kepler** [accept **Keplerian** disc]

[10] Beginning in 2017, this observatory on the Plains of San Agustin in New Mexico has undertaken its most expansive survey of the sky yet, which has thus far revealed many new examples of astrophysical jets.

ANSWER: Karl G. Jansky **Very Large Array** [or **VLA**]

<Other Science: Astronomy, WA>

14. This work notes that, throughout the 19th century, members of its title group have sought to define a role for themselves other than "the angel" of the home. For 10 points each:

[10] Name this 1898 treatise which argues that humans are set apart not by a "sex-energy," but by a "race-energy" that drives them to produce, and presents a critique of the contemporary "sex-relation." Its author famously suffered a bout of postpartum psychosis.

ANSWER: Women and Economics

[10] Charlotte Gilman's presentation of women as objects of exchange was influenced by this book, which presents an evolutionary approach to economics. This book argues that many purchases are motivated by the goal of achieving "invidious distinction."

ANSWER: The Theory of the Leisure Class (by Thorstein Veblen)

[10] This other 19th-century thinker wrote on the political economy of female subjugation with his wife Harriet Taylor in *The Subjection of Women*, though he's better known for writing *On Liberty*.

ANSWER: John Stuart Mill

<Social Science: Sociology, WA>

15. This composer wrote his *Four Serious Songs* for piano and bass in anticipation of the death of his long-time friend Clara Schumann. For 10 points each:

[10] Name this prolific German composer of chamber music. He wrote a lullaby as part of his Opus 49.

ANSWER: Johannes Brahms

[10] The third movement of Brahms's first piece in this chamber genre, his Opus 38 in E minor, opens with a fugal theme based on Contrapunctus 13 from *The Art of Fugue*. Beethoven's third piece in this genre, his Opus 69 in A major, has a second-movement *scherzo* ("SKAIRT-soh") with many off-beat accents.

ANSWER: cello sonata [prompt on sonata]

[10] Brahms composed a theme-and-variations for piano based on the second movement of his Opus 18, which is a B-flat major piece in this genre of chamber music. Arnold Schoenberg's *Transfigured Night* is a piece in this genre.

ANSWER: string sextet

<Classical Music/Opera, WA>

16. This language developed a separate female dialect, Emesal, whose name translates as "fine tongue," which differed in pronunciation from its primary "princely tongue," Emigir. For 10 points each:

[10] Name this language that was taught through rigorous copying of tablets such as "lentils" and "imgidas" in *e-dubba*, or "tablet schools."

ANSWER: Sumerian language

[10] Sumer was the first civilization to use this script. Henry Rawlinson's deciphering of this script on the Behistun Inscriptions facilitated the decipherment of the Sumerian language.

ANSWER: cuneiform ("koo-NAY-ih-form")

[10] The best example of a Sumerian schoolhouse was found in this city, which was the center of worship for Enlil. This city's Ekur Temple was rebuilt by Naram-Sin.

ANSWER: Nippur

<Ancient History, EL>

17. One of these two musicians lambasted the other by saying "Jazz is dead... Why get caught up in that old shit?" while the other attacked the fusion style for being inauthentic to the "jazz tradition." For 10 points each:

[10] Name these two players of the same instrument who began a beef after one of them crashed the other's performance at the inaugural 1986 Vancouver International Jazz Festival. One of them composed the oratorio *Blood on the Fields*, while the other inaugurated his electric period with *In a Silent Way*.

ANSWER: Wynton Marsalis AND Miles Davis

[10] This was the primary instrument of Miles Davis and is still the primary instrument of Wynton Marsalis.

ANSWER: trumpet

[10] Wynton Marsalis's self-titled debut album was released in 1982 by this record company. Miles Davis signed with this company in 1955 and kept recording albums for it until 1985, when he released *You're Under Arrest*.

ANSWER: Columbia Records

<Other Art: Jazz, WA>

18. This character scribbles a note addressed to the President claiming that the “life of every citizen is becoming a business” because the IRS is turning the US into a “nation of bookkeepers.” For 10 points each:

[10] Name this character who accepts his friend Libbie’s offer to visit Montauk to avoid vacationing with Ramona, a lover who teaches him the phrase “una navaja en la liga” (“OO-na na-VAH-ha en la LEE-gah”).

ANSWER: **Moses Herzog** [accept either name]

[10] In *Herzog*, much of Herzog’s life is revealed through these items. These items relate the story in epistolary novels.

ANSWER: **letters**

[10] Herzog teaches a college class on “The Roots of” this literary movement that, with Christianity, names his only published book. Penelope Fitzgerald’s *The Blue Flower* is titled for a symbol of this literary movement in Germany.

ANSWER: **Romanticism** [or **Romantic** movement; accept “The Roots of **Romanticism**”]

<Long Fiction, EL>

19. *Sulfolobus* and other genera in Archaea contain one of these enzymes that reverses their normal eukaryotic function in order to counteract the effects of the temperature of their environment. For 10 points each:

[10] Name these enzymes that can perform catenation and decatenation on their substrate. These enzymes are inhibited by derivatives of quinolone.

ANSWER: **topoisomerases** [or **gyrases**]

[10] Topoisomerases alter this quantity, the sum of twist and writhe, with DNA gyrase, reducing it by two.

ANSWER: **linking** number [or **Lk**]

[10] By reducing supercoiling, the topoisomerase gyrase relieves strain caused during DNA replication when this enzyme unwinds DNA at the replication fork.

ANSWER: **helicase**

<Biology, AK>

20. While gazing at one of these geographical features, the speaker of a poem claims, “They demanded a song” and “May this right hand be withered for ever, / Ere it string our high harp for the foe!” For 10 points each:

[10] Name these features, one of which names a poem in which the speaker asks, “let me perish young— / Live as I lived, and love as I have loved.” Countess Guiccioli (“gwee-CHOH-lee”) inspired that poem in which the speaker hopes that she remembers him when looking at one of these features.

ANSWER: **rivers** [or the Po **River**; or the **rivers** of Babylon]

[10] Countess Guiccioli was the lover of this English poet, the author of *Childe Harold’s Pilgrimage*, whom she helped write *Don Juan*.

ANSWER: George **Gordon**, Lord **Byron** [accept either name]

[10] Guiccioli also inspired Byron’s translation of Canto Five of Dante’s *Inferno*, which tells the story of this woman who kisses her lover after reading about Lancelot’s forbidden love. This woman’s killer, Gianciotto Malatesta, is awaited by Caina.

ANSWER: **Francesca** da Rimini [or **Francesca** of Rimini]

<Non-Epic Poetry, EL>

