

Fall Open 2019

Written by Itamar Naveh-Benjamin, Jason Golfinos, Aseem Keyal, Jonathen Settle, Kenji Shimizu, Klaus Llwynog, Jack Mehr, Samir Khan, and Nick Collins

Tossups

1. This instrument plays several solos in the fourth movement of Haydn's Symphony No. 38, *Echo*. Some of its earliest study pieces include A. M. R. Barret's *A Complete Method* and Wilhelm Ferling's *48 Studies*. This instrument is unusually *excluded* from the instrumentation of Mozart's Symphony No. 39. Mozart also removed or rewrote many of this instrument's parts for a revised version of his Symphony No. 40. It is doubtful that Haydn was the actual composer of his only concerto for this instrument, which, like Mozart's only concerto for this instrument, is in (*) C major. The complete set of keys are included in "full conservatory" varieties of this instrument, whose name comes from the French for "high wood." Like the viola, this instrument had a lower-pitched "d'amore" ("dah-MOH-ray") variety popular until the late 1700s. For 10 points, name this woodwind instrument which, like the bassoon, uses a double reed.

ANSWER: oboe [or hautbois ("oh-BWAH"); accept oboe d'amore]

<KL, Classical Music and Opera>

2. For a trap free semiconductor, a factor of nine-eighths appears in the equation that relates this quantity to the square of the voltage. When this quantity exceeds the product of saturation velocity, doping concentration, and charge, the base transit time drastically increases in the Kirk effect. This quantity is proportional to temperature squared times a Boltzmann factor of the work function in Richardson's law for thermionic ("therm-ionic") emission. A displacement term is crossed with the sum of terms containing this quantity and its time derivative in Jefimenko's ("jeffy-MEN-ko") equation for the (*) B field. The Laplacian ("lah-PLASS-ian") of the magnetic vector potential equals mu-naught times this quantity. The continuity equation sets the negative divergence of this quantity equal to charge density. This quantity equals the product of conductivity and electric field in the microscopic form of Ohm's law. For 10 points, name this quantity defined as the current per unit area often written as the letter J.

ANSWER: volume current density [prompt on J; do NOT accept or prompt on "current"; do NOT accept or prompt on "surface current density" or "K"] (The first result is the Mott-Gurney law.)

<JS, Physics>

3. The illiterate cousin of a candidate in this election joined the campaign when opponents predictably alleged that letters dictated to Richard Oglesby were forged. A convention in this election was held in an ad-hoc hall termed "the Wigwam." John Hanks became a minor folk hero in this election. Supporters of a candidate in this election marched with banners reading "mind your eye." A Texan "People's Party" in this election nominated Sam Houston against his will. The (*) "Wide Awakes" backed this election's winner, who was promoted as a "rail-splitter." The winner of this election likened opponents to bandits that threaten, "Stand and deliver, or I shall kill you, and then you shall be a murderer" in a speech that ended "let us have faith that right makes might." "Fire Eaters" walked out of a convention in Charleston during this election. This election's winner gave the Cooper Union speech. For 10 points, name this election, whose result led several states to secede.

ANSWER: Election of 1860 [prompt on 60; prompt on descriptive answers that don't give a year]

<JG, US History>

4. *Tillai* ("TIL-lye") trees surround a temple named for this activity in Chidambaram ("chee-DUM-brum"). Fritjof ("FREE-joff") Capra's *The Tao of Physics* builds upon a collection of fourteen essays titled for this action by Ananda Coomaraswamy. A group of 108 *karanas* for participating in this activity are detailed in a book written by Bharata Muni. In Gujarat ("goo-juh-RAHT") during Navratri ("nav-RAH-tree"), people participate in this activity while using *dandiya*. The *Bhagavatam Purana* describes a form of this activity

called (*) *rasa lila*. Patterns called *hasta mudras* are used in a classical form of this activity called *bharatanatyam* (“BHUH-rath-NAHT-yum”). A depiction of one type of this activity called the *tandava* includes the dwarf Apasmara. A handheld two-headed drum is included in those depictions of a god performing this action as part of an image known as the *nataraja*. For 10 points, a ring of fire surrounds the god Shiva in depictions of him performing what activity?

ANSWER: **dancing** [prompt on *raas*; prompt on *nataraja* before mention]
<AK, Religion>

5. One of these items described by the Mile High Company as “one of the more impressive and popular” ones unusually depicts a dog named Midget. Carl Sandburg donated a group of these items once owned by Benjamin K. Edwards to the Library of Congress. Jefferson Burdick created a classification system for these items, in which the oldest ones, designated by the letter “N,” include Goodwin & Company’s “Old Judge” set. Los Angeles Kings owner Bruce McNall helped (*) Wayne Gretzky purchase one of these items, which he later sold to Wal-Mart for \$500,000. A major seller of these items revived the name of the tobacco company Allen & Ginter for their recent lines. The “Luckiest Man Alive” speech and the Pine Tar Incident are depicted in a gigantic set of these items released by Upper Deck that chronicles the history of a now-demolished Bronx stadium. For 10 points, identify these collectible items exemplified by the incredibly valuable T206 Honus Wagner.

ANSWER: **baseball cards** [prompt on *trading cards*]
<KS, General Knowledge>

6. In a poem from this collection, the speaker stumbles across a snake “inert as a shoelace” which the yardman had killed with a brick. This collection was described as the culmination of its author’s “apprenticeship in the craft of poetry” by Al Alvarez in *The Savage God*. After a vase breaks, the speaker’s “ten fingers shape a bowl for shadows” in this collection’s final poem, “The Stones.” This collection’s title poem is set “on a hill of black cypress,” beneath a “blue sky out of the Oresteia.” (“or-ess-TEE-uh”) The speaker describes this collection’s title object as (*) “pithy and historical as the Roman Forum,” and tells it, “I shall never get you put together entirely.” This collection was the only one released prior to its author’s 1963 suicide, and was followed by the posthumously published collection *Ariel*. For 10 points, identify this debut collection by Sylvia Plath titled for an ancient statue.

ANSWER: *The Colossus and Other Poems*
<INB, Non-epic Poetry>

7. In a short story, the trade of these objects is explained by Mr. K through the simple instruction, “They bring [these objects], and we pay the price — QUID PRO QUO.” One of these objects belonging to Charles Byrne was stolen and sold to John Hunter for 500 pounds. A character who incorrectly renders the Latin for “in the year of the Lord” as “Anna Dominoes” lies about “going a fishing” before setting off to acquire one of these objects. A dog nibbles part of one of these objects that lies sprawled across a table in the final engraving of William Hogarth’s series *The Four Stages of (*) Cruelty*. Sixteen of these objects were illegally procured for Robert Knox by the Edinburgh duo William Burke and William Hare. In *A Tale of Two Cities*, Jerry Cruncher’s son spots his father digging up one of these objects belonging to Roger Cly. For 10 points, identify these objects that were often “snatched” in the Victorian era by Resurrectionists and sold to anatomists for dissection.

ANSWER: dead **bodies** [or **cadavers**; or **corpses**]
<INB, Other Academic>

8. This culture’s “petaloid” motif is depicted alongside two square frame like shapes on a stone palimpsest called the Thruston tablet. The Wulfing cache is a set of hammered copper plates from this culture. Artifacts in this culture’s Braden style include many engraved shell gorgets. An iconographic style from this culture is called S.E.C.C, and includes copper plates that depict this culture’s common raptor-man hybrid imagery. This culture’s pottery often featured eye-shaped ogee motifs, polychrome red and white incised spiral

patterns, and used shell-tempered clay. This culture followed the Early (*) Woodlands period, and it includes an American site called Woodhenge. Over eighty burial structures are found alongside this culture's massive Monk's Mound in Illinois at its site of Cahokia ("kuh-HO-kia"). For 10 points, name this Native American culture of the Southeastern United States that was largely centered in the valley of its namesake river.

ANSWER: Mississippian culture

<AK, Painting and Sculpture>

9. A resident of this island is infuriated when a local magistrate fines him 200 dollars for selling watered-down milk. After the narrator of a story knocks over a brass jug, his mother predicts he will never return to this island; fortunately, the narrator's flight to London is delayed and he returns home for lunch. A man who scores poorly on his college entrance exam and fails his sanitary inspector exam ekes out a living driving one of this island's many scavenging carts. A perpetually unemployed tailor with a (*) *Casablanca*-inspired nickname is arrested on this island on the charge of bigamy. This island's residents include an overly enthusiastic teacher named Titus Hoyt, a carpenter-turned thief named Mr. Popo, and a poet suffering from a twenty-year-long period of writer's block named B. Wordsworth. For 10 points, identify this island setting of the collection *Miguel Street*, which was written by native son V. S. Naipaul.

ANSWER: Trinidad

<INB, Short Fiction>

Note to players: Two answers required.

10. A useful fact in functional analysis is that for a bounded operator between Hilbert spaces, the orthogonal complement of one of these objects equals the other of these objects applied to the adjoint ("AD-joint") operator. Given a chain complex, homology groups are defined as quotient groups of "cycles" mod "boundaries," which are names for these two objects. The First Isomorphism ("iso-morphism") Theorem states that for a homomorphism ("homo-morphism") out of a group G , G modulo one of these objects is isomorphic ("iso-morphic") to the other one of these objects. For a map between two vector spaces, the (*) dimension of the domain equals the sum of the dimensions of these two objects, which are the "rank" and the "nullity" of the map. A function is surjective if one of these objects equals the codomain ("co-domain"), and a function is injective if the other one of these objects is trivial. For 10 points, name these two sets from a function: the set of elements mapped to zero, and the set of elements to which the function maps.

ANSWER: kernel and image [or ker and im; accept column space or range for image; accept nullspace for kernel]

<NC, Math>

11. This city's Martyrs' Mausoleum was rebuilt after a bombing that targeted South Korean president Chun Doo-hwan. A new section of the Kandawmin Garden Mausoleum was built in this city after students stole the body of a diplomat who was not given a state burial. This city is home to the notorious Insein ("insane") Prison, which housed political dissidents like the comedian Zarganar. The Allied recapture of this city in Operation Dracula was preceded by fighting in the nearby imperial city of Pegu. The Great Bell of (*) Dhammazedi ("DAH-muh-zed-ee") was kept in a structure in this city that was replicated in a newer, more inland city by the Uppātasanti ("oo-PAH-tuh-san-tee") Pagoda. In 2007, thousands of *bhikkhus* ("BEE-kooz") converged on this city in a revolution named for the saffron color of its participants' robes. The SLORC ("S-L-O-R-C") orchestrated a coup in this city to end student protests at the Shwedagon Pagoda during the 8888 ("eight-eight-eighty-eight") Uprising. Ne Win ("nay win") and Aung San ("aong san") ruled from this city. For 10 points, what city was replaced by Naypyidaw ("NAY-pee-daw") as the capital of Myanmar?

ANSWER: Yangon [or Rangoon; accept Dagon until "Shwedagon" is read]

<KS, Other History>

12. It's not related to thiamine ("THIGH-uh-meem"), but TPP is used to synthesize model systems of this complex. "Capped" and "pocket" models extend the "picket fence" model of this complex to include binding sites with steric hindrance for small molecules. When bound to a ligand, this complex becomes diamagnetic ("dia-magnetic") due to the antiferromagnetic ("anti-ferro-magnetic") coupling of unpaired electrons from the central atom in a plus-3 oxidation state and the reduced ligand. Perutz's "trigger mechanism" is a mechanism for the shortening of the distance between this complex and an (*) imidazole ("ih-MID-uh-zol") nitrogen. The central metal of this complex changes position when a protein containing it transitions from a tense state to a relaxed state. Protons and carbon dioxide allosterically regulate this complex's binding affinity in the Bohr effect. For 10 points, a porphyrin ring is bound to iron in what complex that reversibly binds four oxygen molecules in globins?

ANSWER: heme [or haem] (The first clue refers to tetraphenylporphyrin)

<JS, Chemistry>

13. To alleviate a seven-year-long drought, this island's king Grinus sent an expeditionary force to the south, where they first encountered the dye merchant Corobius. Blue, red, and yellow pigments accentuate the lilies and rocky outcroppings of the Spring Fresco from this island's Delta House, which was excavated by Spyridon Marinatos. The sons of every family on this island drew lots to determine who would join Battus aboard two *pentecontors* destined for Libya. This island, which is home to the ruins of a Dorian sanctuary to Apollo Karneios ("car-NAY-oss"), sent the settlers who founded the colony of (*) Cyrene ("sye-REE-nee"). David Pyle refuted the notion that an event on this island may have dramatically impacted the climate of areas as far as North America. That event on this member of the Cyclades ("SICK-luh-deez") may have produced tsunami waves that reached Minoan Crete. For 10 points, identify this crescent-shaped island whose Bronze Age settlement of Akrotiri was devastated by a cataclysmic volcanic eruption.

ANSWER: Thera [or Santorini]

<INB, European History (Commonwealth, Ancient, Historiography)>

14. In a novel set in this city, the physically incapacitated narrator cycles through memories from before the gunshot wound that put him into a decade-long coma. A literature student abandons his plans to pursue a PhD in this city and instead cares for his stroke-afflicted mentor in the novel *The Crazed*. An impoverished resident of this city obtains his nickname after stealing a herd of camels in an effort to afford his own rickshaw. A journey that begins in this city comes to a close as the narrator confronts a tiny (*) frog, whose unblinking eye he imagines as God. An author living in self-imposed exile away from this city exemplified what he called "cold literature" with a novel whose chapters alternate between accounts of the characters "You" and "I." The narrator flees this city after receiving an incorrect lung cancer diagnosis in that novel, *Soul Mountain*. For 10 points, until he moved to France in 1987, Gao Xingjian ("sheeng-jan") lived in what capital city?

ANSWER: Beijing [or Peking] (The novels clued are *Beijing Coma* by Ma Jian, *The Crazed* by Ha Jin, *Rickshaw Boy* by Lao She, and *Soul Mountain* by Gao Xingjian.)

<INB, Long Fiction>

15. One film by this director contains a shot of a girl roasting chicken over a fire underneath a yellow moon. Another film by this director opens with a shot of a crocodile submerging itself in a murky green river followed by scenes where children play with stones and dive over coral reefs. A camera pans to track the entirety of a train billowing black smoke in a film of this director shot by Nestor Almendros. In one of this director's films, a man sits meditating among a slew of corpses while a voiceover asks (*) "This great evil. Where's it come from?" In that film, a man accidentally pulls the pin off a grenade that explodes next to him. Iconic shots from one of this director's films include one of locusts swarming over a wheat field and a silhouette of Texas lovers Bill and Abby standing in front of blazing crops. For 10 points, name this director who adapted James Jones's story of the Guadalcanal Campaign in *The Thin Red Line* and made the Richard Gere ("geer") period piece *Days of Heaven*.

ANSWER: Terrence Malick [or Terrence Frederick Malick]
<JM, Film>

16. This figure names an “effect” in which subjects in a control group try to match the experimental group’s behavior. Sherman James et al. proposed an “-ism” or “syndrome” named for this figure to explain racial differences in cardiovascular health. Some versions of this figure’s story describe a similarly-skilled wife “all dressed in blue” named Lucy or Polly Ann. This figure foretells his tale as a newborn “sittin’ on his papa’s knee” in songs by Big Bill (*) Broonzy and Pete Seeger that popularized his tale. Coosa Mountain in Alabama sometimes claims this figure, who is usually associated with West Virginia’s Big Bend Tunnel. Mississippi John Hurt’s “Spike Driver Blues,” which claims that this figure’s signature tool “won’t kill me,” describes this figure’s “captain” fearing that “the mountain’s caving in” during a legendary contest this figure won. For 10 points, name this African-American “steel-driving man” who defeats a steam drill but then dies “with my hammer in my hand.”

ANSWER: John Henry [prompt on partial answer]
<JG, Mythology>

17. When a follower of this political movement was accused during a trial of conspiring behind a gas lamp, that man responded “Which side of a gas lamp is its behind?” Members of this movement led by Jules Bonnot were nicknamed “The Auto Bandits” for their early use of automobiles. This movement was targeted by the Trial of the Thirty in response to the actions of Auguste Vaillant (“vay-YAHN”) and the mononymous Ravachol. Laws targeting this movement were denounced with the nickname (*) “lois scélérates” (“l’wah seh-leh-RAHT”), or “villainous laws.” Félix Faure (“for”) granted amnesty to several members of this political movement, which included art critic Félix Fénéon (“feh-nay-ON”) and Paris Commune leader Louise Michel. The assassination of Sadi Carnot exemplified the “propaganda of the deed” espoused by this movement, whose intellectual father declared that “property is theft.” For 10 points, what political movement spearheaded by Pierre-Joseph Proudhon (“proo-DON”) advocates for a stateless society?

ANSWER: anarchism [accept word forms; accept anarcho-syndicalism or anarcho-communism, but absolutely do NOT accept “anarcho-capitalism”]
<KS, European History (Continental)>

18. Likely influencing Ibn Khaldūn, a work of this title states that it would not be needed if *maḥabbah* (“mah-HAB-bah”) were always present. Jalāl ad-Dīn Dawwānī and Kīnalzade (“kuh-nah-luh-zah-DAY”) ‘Alī Pāsha’s commentaries on that work created a philosophical ethos common to all three Gunpowder Empires via a genre of works of this title that often used a “circle of justice” motif. The ideal of *i’tidāl* (“ih-tee-DAL”) or “equipoise” is advanced in an insanely influential work of this title by Naṣīr al-Dīn Ṭūsī that formed the basis of the (*) *akhlāq* literature and re-popularized Peripatetic (“peri-puh-TEE-tic”) philosophy. A work of this title contrasts *akrasia* with the virtue of *enkrateia* (“en-kruh-TAY-uh”) and posits that good leaders show a type of judgment called *phronesis*. That work of this title posits that a position between a deficiency and an excess characterizes virtues, and that casts the aim of life as *eudaimonia* (“yoo-dye-monia”). For 10 points, give this title of an Aristotle work named in part for his son Nicomachus.

ANSWER: Ethics [accept Ethica; accept akhlāq until mentioned; accept any answer that puts a name in front of the word “Ethics”; accept word forms of morality since you can also translate *akhlāq* that way]
<JG, Philosophy>

19. This place inspired the title of a 2007 book that concludes by examining “Reproduction in the Age of Mechanical Production,” written by Susan Gubar. A text titled for this place compares fiction to a “spider’s web, attached ever so slightly perhaps, but still attached to life at all four corners,” and was followed up by its author’s pacifist “sequel” *Three Guineas*. The name of this place was altered to title an Elaine Showalter book that includes a chapter about this place’s creator “and the Flight Into (*) Androgyny.” In her book *In Search of Our Mothers’ Gardens*, Alice Walker considered the necessity of this place in the context of Phyllis Wheatley, “who

owned not even herself.” A “sapphist” essay titled for this place explores lesbian themes through a quote from the fictional novel *Life’s Adventure* about Chloe liking Olivia. For 10 points, “a woman must have money and [what place] if she is to write fiction,” according to a book-length essay by Virginia Woolf?

ANSWER: a room of one’s own [or A Room of One’s Own; prompt on a room]

<INB, Miscellaneous Lit>

20. **The DIVA software collection is used to gather and interpret data for this technique. An area vs height graph can be generated for this technique when performing doublet discrimination. BD Biosciences produces the Accuri and Fortessa instruments for this technique. Instruments for this technique often use a trigon or octagon configuration and can be calibrated using FMO controls. Polygon, histogram, quadrant, and box are approaches to a process known as gating in this technique. It’s not microscopy, but Alexa 488, (*) FITC, and propidium (“pro-PID-ium”) iodide are often used in this technique. While forward-scattered light indicates size in this technique, side-scattered light indicates granularity. This technique can be combined with fluorescent *in situ* (“in SEE-too”) hybridization to measure telomere length. This technique can perform cell-sorting based on whether fluorescence is detected in a technique called FACS (“fax”). For 10 points, name this technique that sort or counts cells by scattering laser light.**

ANSWER: flow cytometry [prompt on cytometry; accept FACS or fluorescence activated cell sorting until read]

<AK, Biology>

Bonuses

1. Answer some questions related to the greatest hits of the “scandalmongering” pamphleteer James Callender, for 10 points each:

[10] Callender’s broadsides exposed this man’s affair with Maria Reynolds. Though his reputation did not recover, this politician had already written his *First Report on Public Credit* and masterminded the First Bank of the U.S.

ANSWER: Alexander **Hamilton** (his name is Alexander Hamilton)

[10] Callender’s pamphlet *The Prospect Before Us* led to a controversial sedition trial presided over by a judge of this surname, shared by a politician who issued the first “greenbacks” as Lincoln’s treasury secretary.

ANSWER: **Chase** [accept Samuel **Chase** or Salmon P. **Chase**]

[10] Callender was the subject of a novel by this author of a famous Rupert Brooke-quoting speech to be given if the Apollo 11 astronauts got stranded on the moon. He photographed the “Kitchen Debate” while working as the trade fair’s publicist.

ANSWER: William **Safire** [or William Lewis **Safir**] (his work at the trade fair was how he got the job of Nixon’s speechwriter, incidentally) <JG, US History>

2. A paper describing this theory’s step of “calibration” was co-authored by Gary Hansen, who extended this theory with Richard Rogerson to account for the indivisibility of labor. For 10 points each:

[10] Name this theory developed in the paper “Time to Build And Aggregate Fluctuations” by Finn Kydland and Edward Prescott. This theory models booms and busts by extending the Ramsey model with productivity shocks.

ANSWER: **real business cycle** theory [or **RBC**]

[10] Because real business cycle theory considers monetary policy to have no effect on fluctuations, it does not follow the economic theories of this author of *The General Theory of Employment, Interest, and Money*.

ANSWER: John Maynard **Keynes** (“canes”)

[10] A 1989 paper by this economist criticizes RBC theory’s reliance on technology shocks to explain Solow residual fluctuations. He also endorsed a model based on sticky-information rather than sticky-prices in a paper written with Ricardo Reis.

ANSWER: Greg **Mankiw** [or Nicholas Gregory **Mankiw**]

<AK, Economics>

3. A poet of this name savaged the retreating loser at the Battle of Cynoscephalae (“cyno-SKEP-puh-lye”) with an epigram that ends, “nimblar than fleet-footed deer, fled that dauntless spirit of Philip.” For 10 points each:

[10] Give this name of a Hellenistic poet from Messene (“mess-SEE-nee”). Lord Tennyson’s poem “Milton” was written in the namesake meter of a poet with this name from Mytilene (“mit-ee-LEE-nee”).

ANSWER: **Alcaeus** [accept **Alcaeus** of Messene or **Alcaeus** of Mytilene; accept **Alcaic** meter/stanza]

[10] Alcaeus of Mytilene and his alleged lover Sappho were included in a group of this many canonical lyric poets, mirroring the number of Muses.

ANSWER: **nine**

[10] This other member of the Nine Lyric Poets was a native of Teos who apocryphally died from choking on a grape. He primarily wrote Ionic verse poetry about wine, revelry, and love.

ANSWER: **Anacreon**

<INB, Non-epic Poetry>

4. PACE (“pace”) uses bacteriophages to reduce the time and labor costs of this process. For 10 points each:

[10] Name this process that uses processes like StEP (“step”) and DNA shuffling for diversification. This process induces mutations to find peaks in fitness landscapes.

ANSWER: **directed evolution**

[10] Diversification methods like DNA shuffling rely on recombination between DNA strands with this property. Two proteins have this property if they have high sequence similarity.

ANSWER: **homologous** [or **homology**; accept **homologous** recombination; accept sequence **homology**]

[10] Frances Arnold et al. engineered these enzymes to catalyze cyclopropanation (“cyclo-propane-ation”) via carbene (“car-bean”) transfer. The oxidation of drugs and carcinogens catalyzed by these enzymes proceeds via the abstraction of a hydrogen atom followed by oxygen rebound.

ANSWER: **cytochrome(s) P450** [or **CYPs**; accept **CYP450**; prompt on **cytochrome**; prompt on **P450**; prompt on **monooxygenases**]

<JS, Chemistry>

5. Binyavanga Wainaina’s satirical essay “How to Write About Africa” informs budding writers that, “after celebrity activists and aid workers,” people with this profession are “Africa’s most important people.” For 10 points each:

[10] Identify this profession of people who, according to Wainaina, work to preserve “Africa’s rich heritage.” A novel titled for a member of this profession is set on a 400-acre farm administered by the foreman Jacobus.

ANSWER: **conservationists** [or *The **Conservationist***] (The novel is by Nadine Gordimer.)

[10] Wainaina advises writers to always use either the word “Africa,” “Darkness,” or *this* one in the title of a book. The narrator of Hemingway’s “The Snows of Kilimanjaro” dies of gangrene during one of these hunting trips.

ANSWER: **safaris** [prompt on big-game **hunting**]

[10] Wainaina concludes his essay by suggesting that books about Africa should contain a nightclub with this name where “prostitutes and guerillas” hang out. Cyprian Ekwensi’s *Jagua Nana* works at one such nightclub in Lagos.

ANSWER: **Tropicana** Club

<INB, Miscellaneous Lit>

6. Answer the following about eating children, for 10 points each.

[10] This Titan eats five of his infant children to avoid being usurped like his father Uranus, a fate he suffers anyways when he swallows a rock rather than his youngest son Zeus.

ANSWER: **Cronus** [or **Kronos**; accept **Saturn** or **Saturnus**]

[10] This queen of Libya and one-time lover of Zeus rips out her eyes and wanders the night eating children out of grief, after her family is struck down by a jealous Hera.

ANSWER: **Lamia**

[10] This fiery-haired boy-eating servant of Hecate has one leg of brass and one leg of ass; that is, a donkey. Earlier myths group her with Lamia and Mormo, but later myths describe an entire species of such creatures.

ANSWER: **Empusa** [or **Empousa**; or the **empusai** or the **empousai**]

<KL, Mythology>

7. Prison inmates and sailors produced this material by “picking” pieces of frayed rope back down into individual strands. For 10 points each:

[10] Identify this material that would then be mixed with tar and used to caulk, or waterproof, the seams of ships.

ANSWER: **oakum**

[10] In some of these places, destitute laborers were expected to pick a pound or more of oakum per day using large nails called “spikes.” Conditions in these places grew markedly harsher in the wake of the New Poor Law of 1834.

ANSWER: **workhouses** [or **poorhouses**]

[10] Workhouses were labeled “abodes of shame” by this writer, who criticized the Speenhamland system of outdoor relief as an effort by the squirearchy to maintain the status quo in a 1944 book.

ANSWER: Karl **Polanyi** [or Karl Paul **Polanyi**] (The book is *The Great Transformation*.)

<INB, European History (Commonwealth, Ancient, Historiography)>

8. Ruth Lewin Sime’s biography details how this physicist had six semesters of physics at the University of Vienna with only one professor, Ludwig Boltzmann. For 10 points each:

[10] Name this scientist who sharply criticized C. D. Ellis' supposed finding of a continuous beta-spectrum in Radium B. While living in Sweden, this physicist used the liquid drop model to explain how "radium" isotopes behaved exactly like barium.

ANSWER: Lise **Meitner**

[10] The aforementioned radium experiment was carried out by Fritz Strassman and this chemist. This chemist won the Nobel Prize in Chemistry for discovering nuclear fission and denied Meitner having any role in the discovery.

ANSWER: Otto **Hahn**

[10] Two years before Auger ("aw-ZHAY"), Meitner published a paper on the beta spectrum of thorium in which she observed radiationless electron transitions. Thorium-234 is a decay product of the 238 isotope of this element.

ANSWER: **uranium** [or **U**] (Meitner published that paper as part of the back and forth with C.D. Ellis)

<JS, Physics>

9. This activity's "arrogance" is avoided in Erwin Panofsky's "Style and Medium in the Motion Pictures," which instead "dissolves considerations of content into those of form." For 10 points each:

[10] Identify this activity, which was derided as "the revenge of the intellect upon art" by a thinker who argued that the temptation to apply it to such works as *Last Year in Marienbad* ought to be avoided.

ANSWER: **interpretation** [accept "Against **Interpretation**"]

[10] Susan Sontag's "Against Interpretation" opens by discussing the "incantatory" art found in these places, examples of which include Niaux ("nee-YO"), Altamira, and Lascaux ("lass-CO").

ANSWER: **caves**

[10] In a tirade about the "philistinism" of interpretation, Sontag singled out this writer for attracting "interpreters like leeches." For a play, this writer commissioned Alberto Giacometti ("JAH-co-metty") to replace a prop originally made of wire coat hangers and tissue paper.

ANSWER: Samuel **Beckett** [or Samuel Barclay **Beckett**]

<INB, Criticism>

10. This island, whose attractions are clustered around Imbiah Lookout, is linked by a cableway to a much larger island's Mount Faber. For 10 points each:

[10] Identify this two-square-mile island, where Fort Siloso is now surrounded by several tourist attractions. Its branch of the Resorts World franchise is among the top ten most expensive buildings ever constructed.

ANSWER: **Sentosa** Island

[10] Many of this country's theme parks, including its Universal Studios branch, are located on Sentosa. The obscenely expensive Marina Bay Sands hotel is in this country at the tip of the Malay Peninsula.

ANSWER: **Singapore** [or Republic of **Singapore**; or **Singapura**]

[10] Sentosa is home to a statue of this fictional hybrid creature, which appears on many souvenirs from Singapore. Another statue of this creature spits water into Marina Bay.

ANSWER: the **Merlion** [or **Singa-Laut**]

<KS, Geography>

11. This character's *Meditation and Dance of Vengeance* titles a concert extract from a Samuel Barber ballet. For 10 points each:

[10] Name this mythological title character of Marc-Antoine Charpentier's final opera, as well as Luigi Cherubini's best-known opera today.

ANSWER: **Medea** [or **Médée**]

[10] *Medea's Dance of Vengeance* opens with a solo for this instrument, played over ominous string harmonics. It also plays a solo in the middle of the galop from Dmitry Kabalevsky's *The Comedians* suite.

ANSWER: **xylophone**

[10] This German composer of *Carmina Burana* emphasised the xylophone and other percussion instruments in his approach to music education, called Schulwerk.

ANSWER: Carl **Orff**

<KL, Classical Music and Opera>

12. The devices created in this field are used in lab-on-a-chip and DNA microarray technologies. For 10 points each:
[10] Name this field that utilizes the transport of liquids with reaction volumes on the order of picoliters and nanoliters.

ANSWER: **microfluidics**

[10] Microfluidics is done at a scale where fluid transport is dominated by this phenomenon, in which a fluid travels up a narrow pipe due to surface tension and adhesion.

ANSWER: **capillary** action [accept **capillarity**; prompt on **wicking**]

[10] Microfluidics chips are often made using this silicon containing organic polymer, which is mixed with a cross-linking agent and cured. This polymer is also often used in soft lithography.

ANSWER: **PDMS** [or **polydimethylsiloxane** (“poly-di-methyl-sil-oxane”)]

<AK, Engineering>

13. The exploits of the libertine John Wilmot likely inspired this play’s title character. For 10 points each:

[10] Identify this play centered on the love between the rakish Willmore and the crossdressing Hellena. A prostitute in this play named Angellica Bianca shares her initials with the play’s spy-turned-playwright author, Aphra Behn.

ANSWER: *The **Rover***

[10] Aphra Behn wrote *The Rover* during this period of British history which began when Charles II assumed the throne. Other playwrights active during this period include William Wycherley and William Congreve.

ANSWER: the **Restoration**

[10] Behn’s late play *The Widow Ranter* is subtitled for this real-life person’s “history.” In the play, this person kills himself with poison after mistakenly slaying his crossdressing lover, the “Indian Queen” Semernia.

ANSWER: Nathaniel **Bacon** (of Bacon’s Rebellion fame)

<INB, Drama>

14. The statement “I’m sure that one of my teammates will thirty this bonus” either means that I will be satisfied by one particular teammate that I have in mind, or by any unspecified teammate. For 10 points each:

[10] Give either of the terms for these two conflicting interpretations. One is Latin for “of the thing”, and the other is Latin for “of what is said”.

ANSWER: **de re** (“day ray”) or **de dicto**

[10] Formally, the ambiguity comes from whether this operation has higher scope than the predicate “I’m sure that”. This operation can be universal or existential.

ANSWER: **quantification** [or **quantifier**; or word forms]

[10] If quantifiers and modal operators can be swapped as in the Barcan formula, then objects in possible worlds controversially have this ontological property. In other words, every accessible world has the same domain.

ANSWER: **actual existence** [or **existence in our world**; prompt on answers about **existence** that do not specify **actual** existence or **our** world]

<KL, Philosophy>

15. Members of this movement reoccupied the abandoned capital of São Salvador after failing to recruit Pedro IV (“the-fourth”), who later burnt its leader at the stake. For 10 points each:

[10] Name this syncretic religious movement led by Kimpa Vita, who took the name Dona Beatriz and claimed to have been possessed by a certain saint.

ANSWER: **Antonianism** [accept word forms, such as **Antonine**]

[10] Dona Beatriz’s followers attempted to reunite this kingdom after a civil war. This kingdom in present-day Angola adopted Catholicism from Portuguese explorers like Diogo Cão (“dee-OH-goo kao”).

ANSWER: Kingdom of **Kongo**

[10] This son of Kongo's first Christian ruler, João ("zhoo-AO") I, legendarily secured his kingship when an apparition of Saint James intimidated the army of his brother Mpanza ("um-PANZA"). He wrote several letters to Portuguese kings protesting his realm's depopulation through the slave trade.

ANSWER: **Afonso** I [or **Alfonso** I; or **Mvemba Nzinga**; or **Nzinga Mvemba**]

<KS, Other History>

16. In *The Great Tradition*, F. R. Leavis pinpointed a novel's "danger-signal" to its discussion of this person's flame, which "quickly burned up" and "soared after some illimitable satisfaction." For 10 points each:

[10] Identify this person. In the "prelude" to that novel, the reader is asked, "Who that cares much to know the history of man... has not dwelt, at least briefly, on the life of [this person]?"

ANSWER: Saint **Theresa** [or Saint **Teresa** of Ávila]

[10] In a 2014 book, Rebecca Mead wrote that she identified with this character, a "later-born Theresa," when she first read an 1872 novel. This character's "antique beauty" fuels Naumann's desire to paint a portrait of her.

ANSWER: **Dorothea Brooke** [accept either]

[10] Dorothea Brooke settles on the "common yearnings of womanhood" by marrying Will Ladislaw and having two children in this George Eliot novel.

ANSWER: **Middlemarch**

<INB, Long Fiction>

17. The Dawoodi Bohra constitute most of the remaining members of this sect's Musta'li branch, while the Aga Khān leads the most prominent group within its majority tendency. For 10 points each:

[10] Name this sect, which disputes Mūsā al-Kāzīm's ("MOO-suh al-KAH-zim") succession to Ja'far al-Šādiq ("JAH-fer us-SAH-dic"). This sect holds that the imām has special access to divine truth, and that imāms serve as *wāsī* or "aid" to Muḥammad's final prophetic revelation.

ANSWER: **Ismā'īlī** ("iss-mah-ILL-ee") [or **Ismā'īlīyyūn**; accept **Nizārī** Ismā'īlī; accept **Seveners** or **Sab'iyya**]

[10] The Ismā'īlīs' original messianism drew heavily on a numerological cycle of prophets and imāms with the seventh imām in the first cycle being this person, who Shī'ites ("shee-ites") generally think should have been the first Caliph.

ANSWER: 'Alī ibn Abī Ṭālib

[10] In particular, Ismā'īlīs think that the imām has special access to this "inner meaning" of scripture, while other Muslims get fooled by the "surface meaning" or *ẓāhir* ("ZAH-her"). Šūfīs often use the same scheme with less messianism.

ANSWER: the **bātin** [prompt on sirr or "secret"]

<JG, Religion>

18. For 10 points each, answer some questions about how important lichens are to their ecosystems.

[10] The expansion and contraction of the thallus of saxicolous ("sack-SICK-olous") lichens ("LYE-kenz") contributes to this process. The oxalic ("ox-AH-lick") acid produced by lichens ("LYE-kenz") also advances this process first modeled with five factors by Vasily Dokuchaev.

ANSWER: **soil formation** [or **pedogenesis**; accept **soil production**, **soil genesis**, **soil development**, or **soil evolution**; prompt on rock weathering with "What process occurs as a result of weathering?"]

[10] The ability of lichens to colonize bare rock and form soil makes them excellent examples of these species that prepare a bare environment for plant growth in primary succession.

ANSWER: **pioneer** species

[10] Lichens are used as indicators of ecosystem health because they are sensitive to air pollutants containing sulfur and this element. Fungi in cyanolichens ("cyan-oh-LYE-kenz") rely on the phycobiont ("phyco-BYE-ont") to fix the diatomic gas of this element into ammonia.

ANSWER: **nitrogen** [or **N**]

<JS, Biology>

19. Answer some questions about some Balkan social bandits and their battles against the Ottomans and, of course, other Balkan folks, for 10 points each:

[10] Bandits called *kachaks* were central to the independence movement of this country, which reveres the anti-Ottoman efforts of Skanderbeg. This country was led in the Cold War by bunker-enthusiast Enver Hoxha (“HOJ-uh”).

ANSWER: **Albania** [or Republic of **Albania**; or **Shqipëria**; or Republika e **Shqipërisë**]

[10] These Greek bandits were called the “yeast of liberty” for making up much of the key muscle in the Greek War of Independence. Theodoros Kolokotronis led a force of them to a critical, lopsided victory at Dervenakia.

ANSWER: **Klephtes** [accept **armatoloí**, which weren’t bandits per se but pretty much all of them were klephts by the point of Greek War of Independence anyway]

[10] These Croatian pirates spent the 16th century in guerilla campaigns against the Ottomans like Peter Lažić’s (“LAH-zitch’s”) defense of Klis. They fought at Lepanto but were wiped out in a namesake 1615 war between Venice and Austria.

ANSWER: **Uskoks** [or **uskoci**]

<JG, European History (Continental)>

20. An essay from *The Politics of Vision* asserts that a painting titled for one of these people depicts a “world without change.” For 10 points each:

[10] Identify this sort of person. The aforementioned Linda Nochlin essay titled for an “Imaginary” location argues that an 1880 painting ought to have been titled for this type of person “and his audience.”

ANSWER: **snake charmers** [or *The Snake Charmer*]

[10] Edward Said (“SAH-eed”) borrowed this artist’s painting *The Snake Charmer* for the cover of his book *Orientalism*. A crowd of Vestal Virgins give thumbs down to a gladiator in this artist’s *Pollice Verso*.

ANSWER: Jean-Léon **Gérôme**

[10] This Primitivist painter depicted a dark-skinned figure playing a flute by the water’s edge in his 1907 painting *The Snake Charmer*, and included a mandolin beside the title woman in his painting *The Sleeping Gypsy*.

ANSWER: Henri **Rousseau** [or Henri Julien Félix **Rousseau**] (“on-REE roo-SOH”)

<INB, Painting and Sculpture>