

2016 Terrapin XXIX: Lead Can't Penetrate Steele

Packet 9

Edited by Jordan Brownstein and Billy Busse

Questions by Jordan Brownstein, Billy Busse, Weijia Cheng, Naveed Chowdhury, Justin Hawkins, Will Kunkel, Ophir Lifshitz, Ani Perumalla, Sam Rombro, Jason Shi, Emma Stevens, Tanay Wakhare, and Sarang Yeola

Tossups

1. **The sea god Tangaroa creates these things out of his loincloth so that his lover Hina could climb them to visit him in heaven. By pointing a “death-bone” at someone, a creature named for these things can deposit quartz in their stomachs. In Vodou, Damballah-Wedo is the husband of Ayida-Wedo, who is a creature named for these things. After being bitten by an ant, a creature named for these things vomits up two sisters whom it had devoured after detecting the smell of their (*) menstrual blood. Alfred Radcliffe-Brown coined the term for a creature named for these things that vomited up all the world’s animals and created water by tickling the bellies of frogs during the Dreamtime. For 10 points, identify this phenomenon that in Aborigine myth names a multi-colored “Serpent.”**

ANSWER: rainbows [or the Rainbow Serpent]

<AP Mythology>

2. **Musicians sit on top of the box-shaped *cajón*, an instrument from this country used to accompany *marinera* dancing. After his work in the Congo, Roger Casement was knighted for exposing abuse against rubber workers in this country, whose principal seaport is Callao. This country’s capital is home to Latin America’s oldest university, the National University of Saint Marcos. The huge adobe city Chan Chan was built in this country by the (*) Chimu empire near present-day Trujillo. This country is home to the largest city unreachable by road, Iquitos. Zoomorphic designs such as a pelican, spider, and hummingbird were etched into the sands of this country’s Nazca desert. For 10 points, the ruins of Machu Picchu are found in which South American country whose capital is Lima?**

ANSWER: Republic of Perú [or Piruw]

<AP Other (Geography)>

3. **A leader of this country appointed Rafael Boban to head his militia, the Black Legion, whose members later joined the Crusaders guerrilla militia. A 1967 *Declaration on the Status of the Language* kicked off a nationalist movement in this country, its namesake “spring.” Ultras from this modern-day nation called the Bad Blue Boys clashed with fans of another nation’s Red Star club in a soccer riot that led to this country’s war of independence, during which an ethnic minority in this country erected log blockades around their state of (*) Krajina (“CRY-nah”). This country declared independence under Franjo Tudjman (“FRAN-yo TOOJ-mun”). In this modern-day country, crimes at the Jasenovac (“yah-seh-NO-vots”) concentration camp were carried out by the Ante Pavelić-led Ustaše (“OO-stah-shay”). For 10 points, Slobodan Milošević attacked Dubrovnik in which Balkan country whose capital is Zagreb?**

ANSWER: Croatia [or Hrvatska]

<AP European History>

4. A doctor in this opera says a woman will die unless he treats her in the song “Pour conjurer le danger.” The antagonist of this opera sings the aria “Dans les rôles d’amoureux langoureux,” in which he claims he has the spirit of the devil. Dappertutto plots to steal a man’s reflection in this opera, in which Dr. Miracle causes a woman to sing until she collapses by making a portrait of her dead mother come to life. A character in this opera must be constantly (*) rewound while singing the aria “Les oiseaux dans la charmille.” Olympia, Giulietta, and Antonia are all previous love interests of this opera’s title character, whose friend Nicklausse reveals himself to be the Muse in its last act. This opera contains the “Doll Song” and the barcarolle “Belle nuit, ô nuit d’amour.” For 10 points, name this Jacques Offenbach opera about the German author of the story “The Sandman.”
ANSWER: The *Tales of Hoffmann* [or *Les Contes d’Hoffmann*]

<ES Other Arts (Opera)>

5. A poem by this author wonders “How often underneath the sun / With childish bounds I used to run / To” the title place. Another work by this poet of “The Deserted Garden” asks “What was he doing, the great god Pan, / Down in the reeds by the river?” A poem by this author states “A creature might forget to weep, who bore / Thy comfort long.” A figure who claims to be “not Death, but Love” draws the narrator (*) “backward by the hair” in the first poem in a collection by this author. “I Thought Once How Theocritus Had Sung” is collected alongside a poem that states “I love thee freely, as men strive for; / I love thee purely, as they turn from praise” and that appears after a poem where the narrator commands to “call me by my pet name.” For 10 points, name this poet of *Sonnets from the Portuguese*.

ANSWER: Elizabeth Barrett Browning [or Elizabeth Barrett Browning; prompt on Browning]

<ES British Literature>

6. This process is studied by scientists using FOCE experiments. Resistance to this process can be quantified using the Revelle factor. The relative presence of various species involved in this process normalized by the total DIC is depicted on a Bjerrum plot. The growth patterns of *Mytilus edulis* and *Pisaster ochraceus* are altered by this process. This process causes the aragonite saturation horizon to rise, leading to a decrease in (*) calcification. Iron fertilization is thought to be able to slow this process, which exacerbates the progress of coral bleaching. Its causative mechanism is the fact that carbonic acid dissociates to form a bicarbonate ion and a free proton. For 10 points, name this “evil twin” of global warming in which dissolved CO₂ is decreasing the pH of Earth’s waters.

ANSWER: ocean acidification [or OA; prompt on answers indicating increased CO₂ levels; prompt on climate change; prompt on acidification]

<SR Other Science (Earth Science)>

7. In an essay on “improvements of the revenues” of this colony, Henry Patullo claimed the quality of its textiles was unrivaled, and that demand for those textiles would never lessen. To aid in the enforcement of a certain tax, a 1500-mile-long hedge was planted in this colony. A glazed, floral fabric known as chintz originated in this colony, and was a type of cotton fabric called (*) calico, which also originated from this colony. A trading company established in this colony developed into a conglomerate called the Tata Group. Inhabitants of this colony sought self-sufficiency by boycotting foreign manufactured goods as part of the *swadeshi* movement. For 10 points, British food policies in what colony led to a 1943 famine causing the death of three million people in Bengal?

ANSWER: British India [or Bhārat; accept British Raj; accept Bengal in the first sentence]

<WC World History>

8. A member of this family constantly complains about an ache which he claims is caused by the nerves on the left side of his body being too short. At the end of a novel about this family, a hunchbacked teacher known as “Sesame” yells “It is so!” to affirm her belief in heaven. A member of this family reads a chapter on “Death and Its Relation to the Indestructibility of Our Essential Nature” days before collapsing following a dental operation. A woman from this family leaves her (*) second husband when she finds him pursuing a maid and had earlier left her first, Grünlich, when he went bankrupt. Tony and her brothers Christian and Tom are at the center of a novel about this family, which ends with the death by typhoid of the boy Hanno. For 10 points, name this merchant family whose decline is the subject of a namesake novel by Thomas Mann.

ANSWER: the Buddenbrooks

<JB European Literature>

9. This protein is found in the controversial GIK infusion used to treat acute myocardial infarctions. It's not Wnt, but the IRS-mediated binding of this protein to its receptor triggers a PI-3 kinase-based signaling pathway that deactivates GSK3. The primary ligands of this protein's associated receptor tyrosine kinase are this protein and two growth factors that have a similar structure to this protein, whose precursor form consists of A and B chains connected by the (*) C-peptide. Frederick Sanger won a Nobel Prize for sequencing this hormone, which indirectly stimulates glycogen production. Glucagon opposes this hormone, which is secreted by the beta cells of the pancreas. For 10 points, the release of glucose from blood to tissues is promoted by what hormone whose deficiency causes diabetes?

ANSWER: insulin

<SR Biology>

10. A counterexample in one text compares this concept to a tailor who makes several cloaks over his lifetime. The different parts of this concept are illustrated by a story about Leontius, who cannot look away from a pile of corpses. By one argument, this entity must have a certain property since opposites such as sleeping and waking generate each other. This entity is compared to a chariot being pulled by a black horse and a white horse in the (*) *Phaedrus*. A dialogue about this entity puts forth the “affinity argument” and the “knowledge as recollection” theory for one of its properties. *The Republic* describes reason, spirit, and appetite as this thing's three parts. Before drinking hemlock in the *Phaedo*, Socrates makes a case for the transmigration of this entity. For 10 points, name this immaterial part of a person that Plato believed was immortal.

ANSWER: the soul [or psyche; or the immortality of the soul]

<JB Philosophy>

11. An artist surrounded by these objects wears a red hat decorated with flowers and a feather in an 1899 self-portrait. A black woman with a baby on her back kneels before a man with a red object of this type in *The Missionary* by Emil Nolde, who also painted a still life of these objects against a green background. In another painting, a mayor on a green platform wears a bowler hat, a sash, and one of these objects. Fang objects of this type inspired the characteristic (*) features of Amedeo Modigliani's portraits. Most of the figures marching under the banner “Vive la sociale!” wear these objects in James Ensor's *Christ's Entry into Brussels*. Some African objects of this type that Picasso saw in a museum inspired the features of the women in *Les Femmes d'Alger*. For 10 points, a pair of which objects are used to represent comedy and tragedy?

ANSWER: masks

<JB Painting>

12. This company hired Norman Geddes to design a conveyor belt ride through the “City of the Future” for its Futurama exhibit at the 1939 World’s Fair. This company was the chief investor in National City Lines, a holding company it used to buy up and destroy certain infrastructure. After the so-called “Battle of Bulls Run,” the Women’s Emergency Brigade formed to supply food to workers of this company who participated in a 1936 (*) sit-down strike. This company’s founder, William C. Durant, bought out Ransom E. Olds in 1908. Charles Erwin Wilson was misquoted as saying “What’s good for [this company] is good for the country.” One of this company’s brands produced the Corvair, which Ralph Nader attacked in *Unsafe at Any Speed*. For 10 points, Cadillac and Chevrolet are divisions of what automobile manufacturer from Detroit?

ANSWER: General Motors [or GM]

<JB American History>

13. A spy manages the extra actors for a movie about this war directed by the Auteur in a 2015 novel. During this war, a character who had earlier fainted out of fear during a dentist’s visit gets blown into a tree while playing catch. The winner of the 2016 Pulitzer in Fiction, *The Sympathizer*, is set after this war, and Skip Sands fights in this war in Denis Johnson’s *Tree of Smoke*. During this war, Mary Ann begins (*) wearing a necklace of human tongues after falling in with the Greenies on a visit to her boyfriend. “How to Tell a True War Story” appears in a book set during this war, in which Kiowa drowns in mud and Lieutenant Cross blames himself for Lavender’s death. For 10 points, Tim O’Brien’s *The Things They Carried* follows a platoon in the jungles of what war?

ANSWER: Vietnam War

<JB American Literature>

14. Sheikh Edebali began the tradition of having the head of the Mevlevi Order present one of these objects to the Ottoman sultan during his coronation. Smaller versions of these objects are traditionally used to perform the *dhabihah* ritual. Zaynab was the first to perform a ritual in which these objects serve the same purpose as chains called *zanjeer*; that ritual, *tatbir*, is performed by some Shias on Ashura. Muhammad gave (*) Ali one of these objects named Zulfiqar, which had a bifurcated shape. These objects title a text that orders readers to perform certain actions “when the sacred months have passed”; that text is the fifth verse of the Sūrat at-Tawbah, or The Repentance. For 10 points, name these objects that title a Qur’anic verse that orders readers to slay unbelievers.

ANSWER: swords [accept knives, daggers, or other types of blades; accept sayf; prompt on weapons]

<WC Religion>

15. The energy required to perform this process is approximately equal to negative lattice energy minus two *RT*. Precise measurements of this process are used to calculate vapor pressures using a Knudsen effusion cell. A vacuum pump is used to perform this process during lyophilization. It’s not recrystallization, but this process is typically used to purify nickelocene and ferrocene. Collecting the products of this process in the lab involves using a spatula to scrape the product off a (*) cold finger. Mothballs work because naphthalene undergoes this process at room temperature. The enthalpy change of this process equals the sum of the enthalpies of fusion and vaporization. For 10 points, the reverse of deposition is what direct transition from a solid to a gas?

ANSWER: sublimation

<SR Chemistry>

16. A book partly titled for this group claims that Methodism served as a “chiliasm of despair” in a chapter discussing prophets such as Joanna Southcott. The preface of that book titled for this group states that the author intends to rescue “the hand-loom weaver [and] the ‘utopian’ artisan... from the enormous condescension of posterity.” A book partly titled for this group describes the unplanned rows of houses in the filthy “courts” of the Old Town slum on the River Kirk. E. P. (*) Thompson examined the formative years of this group from 1780 to 1830 in a history of its “making.” Statistics about the mortality of this group from disease in cities such as Manchester are cited in Friedrich Engels’s book on the “Condition” of this group in England. For 10 points, identify this class of wage-laborers.

ANSWER: the English working class [or the English proletariat; prompt on related terms such blue-collar or manual laborers]

<JB European History>

17. In 1999, Inge Kaul coined the “global” variant of these entities, which equally affect all countries, populations, and generations. In the Groves–Ledyard mechanisms, the dominant strategy is to truthfully reveal one’s benefits from these entities; those benefits are the basis of the Lindahl tax, through which these entities can be provided. The (*) Samuelson condition states that the marginal rate of transformation must equal the sum of each individual’s marginal rate of substitution for an arbitrary good for these goods to be allocated efficiently. Ronald Coase criticized a commonly used example of these goods in his paper “The Lighthouse in Economics.” For 10 points, the free rider problem concerns what goods that are both nonrival and nonexcludable?

ANSWER: public goods

<WC Social Science>

18. Homophonic secular songs in this country that imitated Ancient Greek music by setting longer syllables to longer notes were called “measured music.” Performers in the 17th century in this country used “unequal notes,” overdotting, and brief ornaments for greater elegance. A composer from here used whole notes joined by curves to notate his improvisatory “unmeasured preludes” for harpsichord. Suites and ballets in the 18th century opened with a two-section (*) overture named for this country. The Ars nova and Ars subtilior styles emerged in this country during the Middle Ages, and Léonin and Pérotin worked in the Ars antiqua style at a cathedral here. *Armide* was a “tragedy in music” by a conductor from here who died of gangrene. For 10 points, name this country whose composers include Louis Couperin and Jean-Baptiste Lully.

ANSWER: France

<OL Music>

19. The narrator of a novel by this author receives an accordion from the Caretaker of the Power Station in the Woods. In a story by this author, a couple attacks a McDonald’s in the middle of the night after failing to find an available bakery. In one of his novels, the narrator flees from the INKlings while traveling in the sewers and gives a unicorn skull to an unnamed librarian. This author wrote about a hitwoman who enters an (*) alternate universe after listening to Janáček’s (“yah-NAH-check’s”) *Sinfonietta* in a taxi. In a novel by this author, the data-stealing Semiotecs target the data-shuffling Calcutecs. This author of *The Elephant Vanishes* wrote a novel in which Toru looks back on his relationships with Naoko and Midori. For 10 points, *Hardboiled Wonderland and the End of the World*, *1Q84*, and *Norwegian Wood* are novels by what Japanese novelist?

ANSWER: Haruki Murakami

<JS Other Literature>

20. This scientist names a limit that can be exceeded using the resolved sideband method; that limit, which is equal to \hbar times the inverse of the excited state lifetime over 2 times Boltzmann's constant, is less strict than the recoil limit. A Gaussian profile is achieved due to thermal motion of particles in an effect referred to as this scientist's namesake broadening of spectral lines. Atoms are held in a magneto-optical trap and made to absorb and re-emit (*) photons in a form of laser cooling named for him. The frequency change caused by this scientist's namesake effect is given by the ratio of the sum of *source velocity* and wave velocity to the sum of *receiver velocity* and wave velocity. For 10 points, name this scientist who predicted "red" and "blue" wavelength shifts caused by a moving wave source.

ANSWER: Christian **Doppler**

<SY Physics>

Bonuses

1. The Czerny–Turner design for these components uses two concave mirrors, two slits, and a diffraction grating. For 10 points each:

[10] Name this component typically placed directly after the light source in spectrophotometers and other optical spectrographs. These devices use a prism or a diffraction grating to take an input light source comprised of multiple wavelengths and output a light ray with a single wavelength.

ANSWER: monochromators

[10] After the light source passes through the monochromator of a spectrophotometer, it goes directly to the sample, which is held in one of these small square-shaped tubes. They are often made using glass or plastic and provide a path length of exactly one centimeter to simplify Beer's law calculations.

ANSWER: cuvettes

[10] For ultraviolet light sources, cuvettes are typically made of this material. This mineral has a Mohs hardness of 7 and is represented by the chemical formula SiO₂.

ANSWER: fused quartz

<BB Chemistry>

2. The October Manifesto, a guarantee of reforms drafted following the 1905 Revolution, promised to create this legislative body. For 10 points each:

[10] Name this legislative body that served as the lower house of the parliament of the Russian Empire, under the State Council. It shares its name with the lower house of the modern Russian Federation's Federal Assembly.

ANSWER: State Duma [or Gosudarstvennaya Duma]

[10] The Duma was created during the reign of this tsar, whose reign saw the Russo-Japanese War, the Russian Revolution of 1905, and the beginning of World War I. He was overthrown in the Russian Revolution of 1917.

ANSWER: Nicholas II [or Nikolay II; prompt on Nicholas]

[10] This liberal political party, founded by Pavel Milyukov, took the most seats in the First Duma. Members of this political party and the Trudoviks called for tax resistance in the Vyborg Declaration.

ANSWER: Kadets [or Constitutional Democratic Party; or Konstitutsionno-Demokraticeskaya Partiya; or Party of People's Freedom; or Partiya Narodnoy Svobody]

<WC European History>

3. A Remedios Varo painting depicts the artist as a member of this profession in a checkered cloak. For 10 points each:

[10] Name this profession of a bearded old man who kneels before a glowing sphere in a Joseph Wright of Derby ("DAR-bee") painting. Laurinda Dixon claimed that the imagery of *The Garden of Earthly Delights* is inspired by this occupation's tools.

ANSWER: alchemists [or alchemy; prompt on chemists or scientists]

[10] *The Garden of Earthly Delights* was painted by this Netherlandish artist known for the fantastical imagery in his paintings.

ANSWER: Hieronymous Bosch

[10] A seven-runged ladder and a magic square are among the alchemical symbols in this Albrecht Dürer engraving depicting the title emotion as a glum-looking angel.

ANSWER: Melancholia I [or Melencolia I]

<JB Painting>

4. Starting with “Lions, Harts, Leaping Does,” a short story author of this surname wrote almost exclusively about priests. For 10 points each:

[10] Give this surname shared by Catholic author James Farl, and a contemporary novelist who wrote about composer Peter Els being suspected of bioterrorism in *Orfeo* and won the National Book Award for *The Echo Maker*.

ANSWER: **Powers** [or Richard **Powers**; or J. F. **Powers**]

[10] Another American Catholic author, Walker Percy, wrote about cinema-enthusiast Binx Bolling’s trip to Chicago in this novel.

ANSWER: *The **Moviegoer***

[10] This other Southern Catholic writer often wrote about grotesque characters experiencing moments of grace, as happens for the Grandmother in her story “A Good Man is Hard to Find.”

ANSWER: Flannery **O’Connor**

<JB American Literature>

5. Seven bronze and iron statues called *sanjaq* are artistic representations of this being. For 10 points each:

[10] Name this being that is the greatest of the divine beings known as the *heft sirr*, or Seven Mysteries. This being, which is the speaker of a non-Christian Book of Revelation, is sometimes identified with Satan.

ANSWER: The **Peacock Angel** [or **Melek Taus**; or **Tawûsê Melek**]

[10] The Peacock Angel is worshipped by members of this Kurdish ethnoreligious group. Members of this ethnoreligious group embark on an annual pilgrimage to the tomb of their leader Sheikh Adi in Lalish.

ANSWER: **Yazidis** [or **Yazidism**]

[10] Yazidis believe that, unlike other people, they are descended from this person, but not from his wife Eve.

ANSWER: **Adam**

<WC Religion>

6. This man was nicknamed the “Fighting Quaker” until he developed mental anxiety when his house was bombed, after which he was called the “Quaking Fighter.” For 10 points each:

[10] Name this Attorney General under Woodrow Wilson who began a series of namesake “raids” on alleged communists during the Red Scare of 1919.

ANSWER: Alexander Mitchell **Palmer**

[10] Supporters of this anarchist put a bomb under Palmer’s porch and were alleged to have committed the 1920 Wall Street Bombing. This man founded and edited the newspaper *The Subversive Chronicle*.

ANSWER: Luigi **Galleani**

[10] Palmer appointed this man to head the Bureau of Investigation’s General Intelligence Division. Helen Gandy destroyed his “Personal File” after his death while serving in a later post, during which he met Clyde Tolson.

ANSWER: **John Edgar Hoover** [prompt on **Hoover**]

<AP American History>

7. The terrestrial planets are smaller than the Jovian planets because they lie inside this boundary, where only silicates and metals can form solids. For 10 points each:

[10] Name this boundary lying between Mars and Jupiter. Beyond this boundary, small gases like water, hydrogen, and carbon dioxide condense into solid grains.

ANSWER: **frost line** [accept **snow line** or **ice line**]

[10] The space between Mars and Jupiter also contains this structure, a ring of small rocky objects orbiting the Sun. Ceres and Vesta lie within this structure.

ANSWER: **asteroid belt**

[10] The asteroid belt contains gaps created by this phenomenon, in which two bodies whose orbital periods are in whole-number ratios exert a regular and periodic gravitational influence on each other.

ANSWER: orbital **resonances**

<BB Other Science (Astronomy)>

8. Languages in this family include Mari and Udmurt. For 10 points each:

[10] Name this large language family whose Finno–Ugric branch includes Finnish and Hungarian. It is named for the mountain range that separates Europe and Asia.

ANSWER: **Uralic** languages

[10] Uralic languages, but not Estonian, have this morphological feature in which an underspecified phoneme gets height, backness, or roundness via long-distance assimilation. The Turkish plural suffix becomes either *-lar* or *-ler* due to this process.

ANSWER: **vowel harmony** [prompt on **harmony**]

[10] Uralic languages often have many grammatical cases to describe this attribute, such as the adessive and illative. Japanese and Korean have three deictic (“DIKE-tik”) demonstratives, such as the medial, to convey this information.

ANSWER: **location** [or **locative** cases; accept descriptions like **where** something is **located**; accept **place**, **distance**, **proximity**, or equivalents; do not accept “direction”]

<SR Social Science>

9. This composer based his orchestral suite *Rossiniana* and his ballet *La boutique fantasque* on Rossini’s piano music. For 10 points each:

[10] Name this 20th-century Italian composer who orchestrated his 3 Preludes on Gregorian Melodies for *Church Windows*. He also composed *Trittico botticelliano* and a trilogy of symphonic poems.

ANSWER: Ottorino **Respighi**

[10] Mario Castelnuovo-Tedesco wrote 24 preludes and fugues for two of these *Well-Tempered* instruments after studying Sor’s *Mozart Variations*. Ginastera imitated this instrument at the end of his first *Argentine Dance* and used folk music in his sonata for it.

ANSWER: **guitar**

[10] Alfredo Casella organized a weeklong 1939 festival reviving this composer’s music. The anti-modernist critic Alceo (“al-CHAY-oh”) Toni arranged this Baroque violinist’s *Four Seasons* for piano four-hands.

ANSWER: Antonio **Vivaldi**

<OL Music>

10. James Davidson discussed consumption in ancient Athens in a book titled for this profession and fishcakes. For 10 points each:

[10] Identify this profession of *hetaira* such as Phryne (“FRY-nee”), who was charged with impiety in a famous trial before the Areopagus.

ANSWER: courtesans [or prostitutes; or sex-workers or other equivalents]

[10] Another *hetaira* was Aspasia, the partner and advisor of this Athenian leader who patronized the building of the Parthenon and died during the Peloponnesian war.

ANSWER: Pericles

[10] King Nicomedes I of this state allegedly offered to pay off the debt of Cnidus if the city would give him a statue modeled on Phryne. This kingdom in Asia Minor became part of the same province as Pontus after falling to the Romans.

ANSWER: Bithynia

<JB European History>

11. In this novel, pedestrians speculate that a car contains the Queen or the Prime Minister after it backfires. For 10 points each:

[10] Name this novel in which the title character learns that Septimus Smith committed suicide by jumping out a window.

ANSWER: Mrs. Dalloway

[10] This author of *Mrs. Dalloway* also wrote a novel that concludes with Lily Briscoe completing her painting and Cam, James, and Mr. Ramsey take their trip *To the Lighthouse* and the essay “A Room of One’s Own.”

ANSWER: Virginia Woolf

[10] Woolf also wrote this long essay framed as a response to an unnamed gentleman asking her how best to prevent war, which she answers by arguing in favor of improvements to education for women in order to prevent the rise of fascism in the first place.

ANSWER: “Three Guineas”

<JH British Literature>

12. In superfluids, this quantity is quantized in units of one-half Planck’s constant divided by atomic mass. For 10 points each:

[10] Identify this quantity, which is conserved in an inviscid and barotropic fluid according to a theorem derived by Lord Kelvin.

ANSWER: circulation

[10] The Kutta–Joukowski (“zhoo-KOV-skee”) theorem links this quantity for an airfoil to the circulation around the airfoil. The coefficient characterizing the strength of this quantity is maximized for an airfoil whose angle of attack is around 15 to 20 degrees.

ANSWER: lift force

[10] Circulation is related to the vorticity by a theorem named for this mathematician that links the surface integral of the curl of a vector field to the line integral of the vector field on the curve that bounds the surface. Along with Claude-Louis Navier (“nahv-YAY”), he names a set of differential equations that describe fluid flow.

ANSWER: George Gabriel Stokes

<SY Physics>

13. The winged guardian of Crete, Talos, had a single vein full of this substance that was kept from leakage by a nail in his back. For 10 points each:

[10] Name this golden substance that filled the veins of immortals and Greek gods.

ANSWER: **ichor** (“IKE-er” or “EEK-er”)

[10] The sorceress Medea aided this hero by convincing Talos to let his ichor out by removing the nail in his back, killing him in the process. This man led the Argonauts on the quest for the Golden Fleece.

ANSWER: **Jason**

[10] Talos was sometimes said to be the son of this daughter of Helios. This wife of Minos asked Daedalus to construct an enormous bull, with which she mothered Asterion, or the Minotaur.

ANSWER: **Pasiphaë**

<AP Mythology>

14. In this novel, four landlords called the “Wild Boar,” “Stork,” “Buffalo,” and “Raven” rule the protagonist’s village. For 10 points each:

[10] Name this novel in which Balram figures that the deaths of his family and his murder of Ashok was worth the trouble, since he was freed from the “rooster coop” of rickshaw pulling.

ANSWER: *The **White Tiger***

[10] For his novel *The White Tiger*, Aravind Adiga became the fourth Indian author to win the Man Booker Prize. This author of *The Satanic Verses* became the first when he won for *Midnight’s Children*.

ANSWER: Salman **Rushdie**

[10] *The White Tiger* is framed as a series of letters from Balram to a leader of this country. A short story from this country is titled for a low-class character who calls defeats “spiritual victories” and hates the “imitation foreign devil.”

ANSWER: People’s Republic of **China** [or **Zhōngguó**] (The character is Ah Q.)

<AP Other Literature>

15. A commander in this war introduced the use of flax leaves to create a bulletproof barrier around his *pā*, or “fortress.” For 10 points each:

[10] Name this 1845 war, often nicknamed for the object that chief Hōne Heke cut down four times at the beginning of hostilities.

ANSWER: **Flagstaff** War [or **Northern** War; or **First Māori** War; prompt on **Māori** war]

[10] Hōne Heke and his uncle Hongi Hika had earlier fought against other Māori tribes in a series of wars named for this type of firearm, the introduction of which to New Zealand sparked a bloody arms race.

ANSWER: **Musket** Wars

[10] Hōne Heke’s loss at Ruapekapeka was partly due to the absence of many of his soldiers, who were attending Sunday church as practitioners of this religion brought to New Zealand by British missionaries.

ANSWER: **Christianity** [or **Protestantism**; or **Anglicanism**]

<AP World History>

16. Fumarase, acetylcholinesterase, and catalase are examples of enzymes that either achieve or come close to achieving this condition. For 10 points each:

[10] Name this condition regarding the efficiency of an enzyme. It occurs when the ratio of the turnover number to the Michaelis constant is very high, or around 10 to the 9 inverse molar-seconds.

ANSWER: catalytic perfection [or kinetic perfection; accept word forms like catalytically perfect; accept but **DO NOT REVEAL**: diffusion-limited or diffusion-controlled]

[10] If an enzyme is catalytically perfect, the rate of reaction only depends on the rate of this process, which is the movement of a chemical in solution from regions of high to low concentration.

ANSWER: diffusion

[10] Another example of a catalytically perfect enzyme is this one, which maintains the buffer system in the blood. It catalyzes the reaction between carbon dioxide and water to form carbonic acid.

ANSWER: carbonic anhydrase [or carbonic dehydratase]

<BB Biology>

17. A mask likely worn as a pendant by a queen of this empire is fringed with eleven depictions of bearded Portuguese men. For 10 points each:

[10] Name this empire, much of whose art was auctioned off by the British empire. Its artists produced heads with large beaded collars and bronze bells.

ANSWER: Benin Empire

[10] Elsewhere in West Africa, Sapi artists were commissioned by Portuguese traders to create lidded containers for this substance. Two gods recline on a gold container for this stuff that Benvenuto Cellini made for Francis I.

ANSWER: salt

[10] Both the Sapi saltcellars and the Benin Pendant Mask were made from this material, which is carved after being obtained from elephants.

ANSWER: ivory [prompt on tusks or bones]

<JB Other Arts (Visual)>

18. One solution to the problem of this thing is panpsychism, which holds that all matter has mental properties. For 10 points each:

[10] Philosophers of mind discuss the “hard problem” of this concept, defined as the state of being aware. Qualia are the subjective aspects of this type of experience.

ANSWER: consciousness [or conscious experience]

[10] Thomas Nagel’s argument for panpsychism is partly based on the idea that mental states cannot be reduced to physical states, which he’d earlier argued for in this 1974 paper that uses the experiences of the title animal as an example.

ANSWER: “What Is it Like to Be a Bat?”

[10] This philosopher expressed sympathy for panpsychism in the section “What is it like to be a thermostat?” of his best-known book, which also uses the conceivability of p-zombies to argue that consciousness is nonphysical.

ANSWER: David Chalmers (The book is *The Conscious Mind*.)

<JB Philosophy>

19. This practice can be carried out in “impoverished” or “country club” styles according to a grid developed by Blake and Moulton. For 10 points each:

[10] Name this practice in which Peter Drucker was a pioneering theorist. Douglas MacGregor argued that people engaged in this practice can view the motivation of others through Theory X or Theory Y.

ANSWER: **management** [or word forms such as **managing** or **managers**; prompt on word forms of **leadership**]

[10] Earlier in management theory, this leader of the Progressive-era “efficiency movement” implemented his theory of scientific management at the Bethlehem Steel Works.

ANSWER: Frederick **Taylor**

[10] In *The Managerial Revolution*, James Burnham argued that this economic system was being replaced by the rule of managers. Karl Marx believed that a revolution would replace this market-based system with communism.

ANSWER: **capitalism**

<JB Other (Academic)>

20. This cycle of poems was dedicated to Christiane Vulpius and begins “speak to me, stones, oh say, you lofty palaces, tell me!” For 10 points each:

[10] Name this cycle of twenty-four erotic poems that its author penned while touring Italy in 1787.

ANSWER: *The* **Roman Elegies** [or **Erotica Romana**; or **Römische Elegien**]

[10] *The Roman Elegies* are by this German writer, who penned the verse drama *Faust* and the novel *The Sorrows of Young Werther*.

ANSWER: Johann Wolfgang von **Goethe** (“GUR-tuh”)

[10] Friedrich Schiller discussed Goethe in an essay that divides poets into “naïve” and this other category. This adjective partly titles a Gustave Flaubert novel about Frederic Moreau and his infatuation with Madame Arnoux.

ANSWER: **sentimental** [or **Sentimental** *Education*; or *L'Éducation* **sentimentale**; or **sentimentalische**]

<JB European Literature>