

2016 Terrapin XXIX: Lead Can't Penetrate Steele

Packet 6

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Tossups

**1. Members of this group guarded wills and testaments and could pardon condemned criminals if they coincidentally met in the street. As part of his *correctio morum* campaign, Domitian had four members of this group executed. Years before his conspiracy, Catiline was acquitted in a trial involving a member of this group. Livy claimed that a traitorous member of this group was crushed by the shields of the Sabines and then (\*) thrown from the namesake Tarpeian Rock. A festival organized by this group was disrupted by Clodius Pulcher in drag, sparking the Bona Dea scandal. Members of this group could be buried alive if they broke their vows, and could be whipped for letting a sacred fire go out. For 10 points, name these chaste priestesses of the Roman hearth goddess.**

ANSWER: Vestal Virgins [or Vestales; prompt on priestesses of Vesta]

<JB European History>

**2. To please this person, a statue of a triton copied from a Gian Lorenzo Bernini fountain was made with its mouth curving upward so that it would “smile.” In a structure named for this person, Manuel Rosales helped construct an organ nicknamed “Hurricane Mama” that resembles French fries. Michael Graves designed a pair of sister hotels named for this person that feature statues of a (\*) swan and a dolphin respectively. A “magic wand” was added to a sphere featured at an “experimental prototype community of tomorrow” envisioned by this man. Curved stainless steel panels compose a structure named for this person that houses performances of the Los Angeles Philharmonic. For 10 points, identify this namesake of a Frank Gehry-designed concert hall and a Florida theme park called his “world.”**

ANSWER: Walt Disney [prompt on Disney; accept Walt Disney Concert Hall or Walt Disney World Swan or Walt Disney World Dolphin] (The “community of tomorrow” was realized as the Epcot theme park.)

<AP Other Arts (Architecture)>

**3. It's unrelated to the skin, eyes, or bowels, but some diseases of these structures can be diagnosed using the genetic marker HLA-B27. The innervation of these structures is described by Hilton's law. Rash, fever, and pain in these structures are the three main elements in diagnosing Still's disease. One disease affecting these structures can be treated using DMARDs or TNF-alpha inhibitors. Capsules that surround these structures have an outer fibrous stratum and inner membranes that contain bursae. Those bursae are filled with (\*) synovial fluid whose main function is to provide lubrication to these structures and the cartilage surrounding them. These structures come in ellipsoidal, saddle, ball-and-socket, and hinge types. They can perform gliding, rotating, or angular movements. For 10 points, name these structures that connect bones.**

ANSWER: synovial joints [prompt on spine or vertebrae until “Hilton's law” is read]

<SY Biology>

4. A refugee carries the briefcase of a deceased novelist to Marseilles in a novel in this language, *Transit*. The title character of a novel in this language is moved by the singing of a family of circus performers while recovering from a mental breakdown he suffered after seeing a flayed horse in a veterinary museum. In that novel in this language, an architecture expert who was raised by a Welsh minister visits Prague to learn about the fate of his parents. A writer who used this language incorporated (\*) black-and-white photographs into novels such as *Austerlitz*. A novel in this language follows a character who leads a gang called the Dusters, is sent to an asylum after being accused of murdering Sister Dorothea, and stops growing at the age of three. For 10 points, Anna Seghers and W. G. Sebald wrote in what language, used for *The Tin Drum* by Günter Grass?

ANSWER: German [or Deutsch]

<JB European Literature>

5. After dying while performing this activity, Glaucus haunted the Isthmus of Corinth as a ghost called Taraxippus. Admetus performed this activity with a wild boar and lion in order to win Alcestis's hand, and Idas won Evenus's daughter Marpessa by performing it. A king performed this activity while throwing torches and rattling bronze cauldrons in order to (\*) trick his subjects into thinking he was Zeus, leading that king, Salmoneus, to be struck by Zeus's lightning. Myrtilus sabotaged Oenomaus's performance of this activity with wax linchpins in order to aid Pelops. While engaged in this activity, Hypolitus was surprised by a monster sent by Poseidon and dragged to death. For 10 points, Phaethon was killed while trying to perform what activity, which his father, the sun god Helios, performed daily with a team of four horses?

ANSWER: driving a chariot [or chariot racing; or charioteering; prompt on answers like racing or driving horses]

<JB Mythology>

6. After Daniel Conover obtained an arrest warrant for this city's mayor, its Municipal and Metropolitan police forces clashed in an 1857 battle. A riot in this city began when William Charles MacCreedy's performance of *Macbeth* was interrupted with garbage thrown by supporters of actor Edwin Forrest. This city's Roach Guards, nicknamed for their symbol of a dead rabbit, sparked unrest in this city during the tenure of mayor (\*) Fernando Wood by attacking the Bowery Boys gang in the Five Points neighborhood. A law that allowed the paying of 300 dollars to hire a substitute inspired a riot in this city, during which predominately Irish mobs attacked blacks for four days. For 10 points, name this city that experienced the 1863 Draft Riots.

ANSWER: New York City [or NYC]

<JH American History>

7. The Chilton–Colburn *j*-factor is an extension of a statement named for this man that relates the skin friction and heat transfer coefficients. That statement, which conceptually links momentum transfer to heat transfer, is his namesake “analogy.” The laminar boundary layer thickness is inversely proportional to the square root of a quantity named for him. Empirical correlations between the friction factor and both roughness and a quantity named for this scientist are plotted on a (\*) Moody diagram. Creeping flow occurs at very low values of a quantity named for him, which equals density times velocity times characteristic length divided by viscosity. That dimensionless quantity is conceptually the ratio of inertial to viscous forces. For 10 points, name this scientist whose namesake number predicts whether a flow is laminar or turbulent.

ANSWER: Osborne Reynolds

<BB Physics>

8. In this novel, a painter tells the protagonist that he attended a school for “grotesque children,” where the principal started each day by declaring he was “sick and tired.” A couple in this novel consists of a bicycle manufacturer who loves the insult “pissant” and a woman who is proud of being an “Indiana Hoosier.” In this novel’s setting, all crimes are punished with impalement on “the hook.” A holy (\*) book in this novel describes teams called “karass” and a feet-touching ritual in some of its many “calypso” poems. The narrator of this novel encounters the religion Bokomonism on the island of San Lorenzo, which he travels to while researching a book on Felix Honecker, the inventor of “ice-nine.” For 10 points, name this novel by Kurt Vonnegut named for a string game.

ANSWER: Cat’s Cradle

<JH Other Literature>

9. A piano intermezzo by Arnold Bax is titled this word “in exile.” This thing titles Scriabin’s secretly-written first orchestral piece. La Monte Young named both a chord with a fourth, tritone, and fifth and a “House” of endless sound in New York after this word. In a piano piece titled for this thing, the 6th iteration of a rising C, long F, E F A C motif resolves to G major 9. Poems about kinds of love inspired three Liszt nocturnes also titled for this thing; the third one opens with a melody under A-flat major arpeggios. After killing his beloved in this state, the (\*) obsessed artist is depicted by a two-octave falling C minor scale and syncopated march to the scaffold before a witches’ sabbath in *Symphonie fantastique*. This state titles the calm 7th movement of Schumann’s *Kinderszenen* (“kin-dust-SAY-nin”), *Träumerei* (“TROY-muh-rye”). For 10 points, what word is at the end of the title of Mendelssohn’s incidental music for a Shakespeare play?

ANSWER: dream [or daydream, rêve, rêverie, songe, or Träume; accept dream chord or Dream House; accept Liebestträume or Dreams of Love; accept Träumerei until read; accept *Midsummer Night’s Dream*; do not accept “drugged”]

<OL Music>

10. A type of “clandestine marriage” named for one of these places was common until the passage of Hardwicke’s Act in 1753. Activities in these places included the shot-drill and the use of giant treadmills originally designed by William Cubitt. John Howard toured hundreds of these places, and Bible readings were introduced to one by Elizabeth Fry. The phrase “His Majesty, King Mob” was written on the wall of one of these places after it was largely destroyed during the (\*) Gordon Riot. A fleet of ships anchored in the Thames that served as these places were known as the “hulks.” Notorious examples of these places included Marshalsea and Newgate, and one at Milbank was originally intended to use the Panopticon model of Jeremy Bentham. For 10 points, the Tower of London often served as what sort of place for accused traitors?

ANSWER: English prisons [or equivalents such as jails or penitentiaries]

<JB European History>

11. Multicomponent diffusion in these materials can be described with Darken’s equations. They’re not polymers, but some of these materials exhibit a form of pseudoelasticity where temperature changes cause them to change phases via a hysteresis loop; that property is called “shape memory.” During phase changes of these solid-state materials, weight percentages can be determined using the lever rule. The movement of dislocations in these materials is hindered by a form of heat treatment called (\*) precipitation hardening, which increases their mechanical strength. The “interstitial” and “substitutional” forms of these materials differ in how their component atoms are arranged in a crystal lattice. For 10 points, identify these materials that are composed of two or more metals such as brass and steel.

ANSWER: alloys [or solid solutions; prompt on solutions or crystals]

<SY Chemistry>

12. One poem claims “And so we move as far as Enemies” away from these places after explaining why “We do not play” on them. In another poem, two people who converse in these places agree “we brethren are” and talk between the rooms “as kinsmen met a night.” A poem titled in reference to these places describes how, outside of them, “Diadems drop and Doges surrender – Soundless as dots on a Disc of Snow”; that poem calls these places “alabaster (\*) chambers.” On a journey to one of these places, the speaker passes “a School, where Children strove At Recess.” One of these places is “a House that seemed a Swelling of the Ground” in a poem describing a ride to one with a figure who “knew no haste.” For 10 points, the speaker of Emily Dickinson’s “Because I could not stop for Death” is taken to what type of place?

ANSWER: graves [or tombs; or graveyards; or alabaster chambers before “alabaster” is read; or equivalents such as coffins, crypts, or cemeteries; prompt on chambers or houses; prompt on afterlives or similar answers]

<JB American Literature>

13. The artist of this painting legendarily shaved off his hair to prevent himself from leaving his studio while working on it. The artist’s studies for this painting include a portrait of a model and acrobat from Santo Domingo named Joseph, and a painting of a disembodied arm resting on a pile of severed feet. In this painting, a grey-bearded man draped in a red mantle sits in a pensive pose with one arm holding the (\*) body of his son. Preparatory sketches for this painting were based on corpses that its artist took from a morgue and include “The Sighting of the Argus.” This painting contains veiled references to cannibalism and depicts a pyramid of figures attempting to hail a passing ship. For 10 points, name this Théodore Géricault painting of shipwreck survivors.

ANSWER: *The Raft of the Medusa* [or *Le Radeau de la Méduse*; or *Scene of Shipwreck*]

<JB Painting>

14. The Araldi Manuscript contains a history of this kingdom that was written by the Capuchin Giovanni Cavazzi. A heretical religious movement in this kingdom was founded by a woman who experienced a possession by Saint Anthony. This kingdom frequently fought with the count of Soyo, its rebellious vassal. In exchange for military assistance against warriors from the east called the Jagas, its ruler Álvaro I opened (\*) Luanda up for foreign settlement. The first Christian ruler of this kingdom was João I, whose son Afonso I established Christianity as its state religion. Pedro V ceded this kingdom to Portugal, leading to its eventual integration with Angola. For 10 points, name this kingdom that lent its name to a major river in central Africa.

ANSWER: Kongo

<WC World History>

15. After another man fell at this man’s feet and worshipped him, this man lifted him up and said, “Stand up; I too am a man.” That other man, described as “an upright and God-fearing man, who is well-spoken of by the whole Jewish nation,” sent three men from Caesarea to Joppa to find this man. This man received the command “What God has made clean, do not call common” during his vision of a (\*) sheet containing unclean animals being lowered from heaven. That vision took place a few days before this man met a Gentile convert, who was a centurion named Cornelius. Along with his brother Andrew, this man was called a “fisher of men.” For 10 points, name this apostle who denied knowing Jesus three times and is traditionally considered to be the first Pope.

ANSWER: Saint Peter [or Simon]

<WC Religion>

16. If the square of this operation is four, then a Möbius transformation is parabolic. The Golden–Thompson inequality concerns this operation on exponentials. The Ricci decomposition produces a “scalar part” and two parts that are said to be “semi” and “fully” free of this operation. The scalar curvature is found by performing this operation on the Ricci tensor with respect to the metric. The value of this operation gives the coefficient of the second highest-degree term in the (\*) characteristic polynomial. When performing this operation on a product of matrices, the value of this operation is unchanged by cyclic permutations of the product due to the “cyclic property.” This linear operation is the same for a matrix and its transpose, and is equal to the sum of the eigenvalues. For 10 points, name this operation, the sum of the elements of the main diagonal of a square matrix.  
ANSWER: trace [prompt on tensor contraction]

<SR Other Science (Math)>

17. The narrator of this novel claims that the females in his family have no character at all except for his great aunt Dinah, who married a coachman. In this novel, Phutatorius is scalded after a roasted chestnut falls down his pants. A widow is hesitant to start a relationship with a character in this novel because of a wound he received to the groin during the Siege of (\*) Namur. A pregnant woman in this work wants a midwife to deliver her baby instead of Dr. Slop, who ends up crushing the title character’s nose with forceps during his birth. That title character of this novel begins to wear breeches after being circumcised by a falling window sash. Characters in this novel include Uncle Toby and Parson Yorick. For 10 points, name this digressive novel by Laurence Sterne.

ANSWER: *The Life and Opinions of Tristram Shandy, Gentleman*

<ES British Literature>

18. To discourage migration into this geographical region, a ditch and embankment planted with willows called the Willow Palisade was constructed. This region has a historical name meaning “east of the pass,” referring to the Shānhǎi Pass, an entry point into this region. Part of this region was ceded in the Treaty of Aigun, and this region’s northern border was set in the Treaty of (\*) Nerchinsk. A Neo-Byzantine Saint Sophia Cathedral was constructed by Russians in this region’s city of Harbin. A border between this region and a foreign country to its south is the site of Mount Paektu and is marked by the Yālǔ River. For 10 points, name this region in China, located between Russia and North Korea, which has an English name that derives from an ethnic group native to it.

ANSWER: Manchuria [or Mǎnzhōu; accept Dōngběi or Northeast China; accept Guāndōng] (Dongbei means “Northeast.”)

<WC Other (Geography)>

19. This book combines the commands “bring me milk” and “bring me sugar” into “milk me sugar” to illustrate that nonsensical statements can still have effects. This book discusses the difficulty of ascribing pain to a stone to argue that the word “pain” can only refer to “pain-behavior.” This book refers to unquestioned shared customs as “forms of life,” and it opens by critiquing a passage about learning the (\*) names of objects from Augustine’s *Confessions*. This book compares the relationship between different uses of a word to “family resemblances.” This book uses the example of a beetle in a box to attack the idea of private languages, and introduces the notion of “language games.” For 10 points, name this posthumously published work by Ludwig Wittgenstein.

ANSWER: Philosophical Investigations [or Philosophische Untersuchungen]

<ES Philosophy>

20. William J. Chambliss documented how people of this non-police profession treated the Saints gang more positively than the Roughnecks gang. Nalini Ambady showed silent 30-second clips of people in this profession to subjects in the original study of thin-slicing. Lenore Jacobson and Robert Rosenthal gave members of this profession a random list of names in an experiment that introduced the Pygmalion effect. Jerome Bruner's concept of (\*) scaffolding is used in this profession. Participants were given this title and told to administer shocks in response to incorrect word pairings in the Milgram experiment. Lev Vygotsky believed that people with this job should assist subjects with tasks in the zone of proximal development. For 10 points, people of what profession encourage self-directed activity when using the Montessori method of education?

ANSWER: teachers [or instructors; or word forms such as teaching or instruction; do not accept or prompt on "professors"]

<JB Social Science>

## Bonuses

1. The narrator of this short story claims that the title animals were “devouring him slowly with their eyes, in a cannibalism of gold.” For 10 points each:

[10] Name this short story in which the narrator becomes so obsessed with the title animal in the Jardin des Plantes aquarium that he assumes its body and sees his human body on the other side of the glass.

ANSWER: “Axolotl”

[10] “Axolotl” was written by Julio Cortázar, the author of this novel about Horacio Oliveira that includes 99 “expendable” chapters.

ANSWER: Hopscotch [or Rayuela]

[10] Another animal transformation in Argentine literature occurs in Adolfo Bioy Casares’s *Asleep in the Sun*, in which the spirit of Lucio’s wife is transferred to one of these animals. Buck, the protagonist of Jack London’s *The Call of the Wild*, is an animal of this type.

ANSWER: dogs [or perros; accept specific types of dogs like German Shepherds or huskies]

<AP Other Literature>

2. These galaxies are located on the branched component of the Hubble tuning-fork diagram. For 10 points each:

[10] Name this type of galaxy exemplified by the Milky Way. Unlike elliptical galaxies, these galaxies have long arms.

ANSWER: spiral galaxies

[10] This component of a galaxy is the roughly-spherical portion that extends beyond its visible component. It contains scattered stars, gas, and dark matter.

ANSWER: galactic halo

[10] This problem refers to the fact that according to classical mechanics, objects at the end of spiral arms should have lower angular velocities than objects near the center, leading to the disappearance of the spiral arms after a few rotations. Density wave theory was proposed to solve this problem.

ANSWER: winding problem

<BB Other Science (Astronomy)>

3. The sūrah named after these beings describes how some of these beings tried to reach heaven, but found it to be filled with guards and flaming stars. For 10 points each:

[10] Name these beings that the Qur’an claims were created from smokeless fire. In other stories, these beings can be trapped in lamps and forced to grant wishes.

ANSWER: jinni [or djinn; or genies]

[10] The Qur’an describes how this man was given control over the wind and the servitude of jinn, who continued to work after he died leaning on his staff. In Sura 27, a hoopoe tells this king about Queen Bilqis.

ANSWER: Solomon [or Sulayman]

[10] This type of jinn is assigned to a specific person. Most encourage their companions to do evil things, although the one belonging to Muhammad became Muslim, and thus only encouraged him to do good things.

ANSWER: garīn

<WC Religion>

4. This word titles a Rodion Shchedrin (“rud-YONE shid-REEN”) piano piece that alternates 5/8 and 2/8 time, and names the “Big” group of modernist Soviet composers Alfred Schnittke, Sofia Gubaidulina, and Edison Denisov. For 10 points each:

[10] Give this title of a movement that depicts a horse-drawn sleigh ride with saxophones, bells, and pizzicato strings. That piece with this title follows the imaginary officer’s wedding in a five-movement suite.

ANSWER: “Troika”

[10] This composer’s first film score *Lieutenant Kijé* included that “Troika.” He soon returned to Soviet Russia and found renewed success with *Alexander Nevsky*, *Romeo and Juliet*, three War Sonatas, and *Peter and the Wolf*.

ANSWER: Sergei Prokofiev

[10] Rachmaninoff often played as an encore the November “Troika” movement from this Tchaikovsky piano suite whose June movement is a Barcarolle in G minor. Glazunov wrote a ballet with the same title for Petipa.

ANSWER: *The Seasons* [accept *Les saisons* or *Vremena goda*]

<OL Music>

5. The protagonist of this play has Chiron and Demetrius killed and baked into pies, which are then fed to their mother Tamora. For 10 points each:

[10] Name this play about the father of Lavinia, a general who has returned from defeating the Goths.

ANSWER: Titus Andronicus

[10] In Shakespeare’s *Titus Andronicus*, Tamora’s lover Aaron is one of these people. The title character of *Othello* is identified by this term for Muslim North Africans.

ANSWER: Moors

[10] In *Titus Andronicus*, a character of this specific role is hung after delivering a letter and some pigeons to Emperor Saturninus. In *Othello*, a character of this role is sent to shoo away musicians sent by Claudio.

ANSWER: a clown [do not accept or prompt on “fools” or “jesters”]

<JH British Literature>

6. A microcytotoxicity assay is used to determine specific loci in proteins derived from this gene complex during tissue typing, a procedure that tests matches between donor and recipient in allograft transplantation. For 10 points each:

[10] Identify this protein complex that is used by the body’s immune system to distinguish between self and non-self.

ANSWER: major histocompatibility complex [or human leukocyte antigen complex; accept MHC or HLA; accept MHC class I or MHC class II]

[10] MHC Class II complexes bind to the CD4 receptors on the “helper” form of these immune cells, whose name indicates that they develop in the thymus.

ANSWER: T-cells [or T-lymphocytes]

[10] Analysis of MHC complexes in patients with various disorders can be used to find disease associations in this subfield of genetics. Gene knockout and site-directed mutagenesis are commonly used techniques in this field of genetics, which entails starting with a protein, identifying its underlying DNA sequence, then inducing mutations and observing the resulting phenotypes.

ANSWER: reverse genetics [accept reverse immunogenetics; prompt on immunogenetics]

<SY Biology>



7. Hans Egede became a missionary on this landmass after going there in search of a lost colony. For 10 points each:  
[10] Name this icy landmass, the site of vanished Eastern and Western settlements. Those Norse settlements were founded by Erik the Red, who gave this island its name in hopes of attracting settlers from Iceland.

ANSWER: **Greenland** [accept **Grønland** or **Kalaallit Nunaat**]

[10] Ivar Bardarson dubiously blames the destruction of the Western settlement on an attack by people identified by this term. The Norse used this term to refer to the Inuit, and later the peoples they encountered in Vinland.

ANSWER: **skrælings** [or **skrælingi**; or **skrælingar**]

[10] Some Norse settlers of Greenland moved to North American settlements, such as the one at this archaeological site in northern Newfoundland.

ANSWER: L' **Anse aux Meadows** ("LAN-see meadows")

<JB European History>

8. This Turkish preacher moved to Saylorsburg, Pennsylvania in 1999 after the release of a video in which he seemingly instructed his followers to infiltrate political institutions. For 10 points each:

[10] Name this man who heads an Islamic religious movement known as Hizmet, or "service." After he was accused of being involved in the 2016 Turkish coup attempt, his supporters were targeted by a series of purges.

ANSWER: Fethullah **Gülen**

[10] The 2016 Turkish coup attempt targeted the government of this president of Turkey, a former Islamist mayor of Istanbul who has been criticized for taking up residence in Ak Saray, a newly constructed presidential palace.

ANSWER: Recep Tayyip **Erdoğan** ("AIR-doe-won")

[10] Erdoğan had previously accused Gülen and his supporters of usurping power during a 2013 corruption investigation, which saw the arrests of several relatives of politicians from this ruling Turkish political party.

ANSWER: **Justice and Development** Party [or **AKP** or **AK** Party or **Adalet ve Kalkınma** Partisi]

<WC Other (Current Events)>

9. This character tries to get a man's attention in French, German, and Italian after the man picks up a scrap of paper and reads the words "Lickspittle – Capitalist – Lackeys – of Imperialism." For 10 points each:

[10] Name this world leader who is spied on by Henry Carr as he plans to sneak back into his home nation, first by finding a deaf-mute Swede who resembles him and wearing a blonde wig while travelling in England and Holland.

ANSWER: Vladimir Ilyich **Lenin** [or Vladimir Ilyich **Ulyanov**]

[10] Lenin, Tristan Tzara, and James Joyce are all characters in this author's play *Travesties*. This author also wrote about two fringe characters from *Hamlet* in *Rosencrantz and Guildenstern are Dead*.

ANSWER: Tom **Stoppard** [or Tomáš **Straussler**]

[10] The action of *Travesties* takes place in this country. The author of the novels *I'm Not Stiller* and *Homo Faber*, Max Frisch, founded the Olten literary group in this country.

ANSWER: **Switzerland** [or **Suisse**; or **Schweiz**]

<AP European Literature>

10. A thirty-foot tall sculpture of one of these animals that contains 26 marble eggs is titled *Maman*. For 10 points each:

[10] Name this animal frequently sculpted by Louise Bourgeois, which, with “the Mistress and the Tangerine,” titles a documentary about her work. Odilon Redon painted these animals with smiling and crying human faces.

ANSWER: spiders

[10] An early series of paintings by Bourgeois depicts figures of this type with houses for heads. A Guerilla Girls poster asks whether women need to be in this state to get into the Met, and Duchamp painted a figure of this sort “descending a staircase.”

ANSWER: nude [or equivalents of being naked or not wearing clothes]

[10] This artist photographed Bourgeois carrying her phallus-shaped sculpture *Fillette*. The exhibit *The Perfect Moment* controversially included this man’s black-and-white photographs of homoerotic sadomasochism.

ANSWER: Robert Mapplethorpe

<JB Painting>

11. On her first tour of Britain, this book’s author was presented with 26 volumes containing half a million signatures of British women. For 10 points each:

[10] Name this novel that encouraged resistance to the Fugitive Slave Act and prompted Lincoln to call its author, Harriet Beecher Stowe, “the little lady who made this big war.”

ANSWER: Uncle Tom’s Cabin

[10] Stowe referred to this president as an “arch-traitor” for his dislike of abolition. Jefferson Davis created the United States Camel Corps while serving as Secretary of War for this first of the “doughface” presidents.

ANSWER: Franklin Pierce

[10] Stowe was derided as a “yankee housewife” by this author, whose widely-read tract *The Impending Crisis in the South* criticized slavery because it prevented the advancement of poor whites.

ANSWER: Hinton Rowan Helper

<JH American History>

12. Using this construct, any pure state can be represented as cosine of theta over two times ket zero plus  $e$  to the  $i$  phi times sine theta over two times ket 1. For 10 points each:

[10] Name this construct that can be used to represent the possible states of a qubit. Pure states lie on its surface, while mixed states lie inside it and can be represented in terms of density operators.

ANSWER: Bloch sphere

[10] Qubits have this many distinct quantum states. Population inversion can *never* occur in a system with this many states since the rate of stimulated emission is always higher than the rate of pumping.

ANSWER: two [or 2]

[10] Stimulated emission is the basis of operation of these devices, which produce a coherent and monochromatic beam of light.

ANSWER: lasers

<SR Physics>

13. This creature is sometimes conflated with the nymph Adrasteia. For 10 points each:

[10] Name this goat-nymph who raised the infant Zeus while he was in hiding from Cronus. After Zeus accidentally broke off her horn, he turned it into the Cornucopia, which was always full of whatever food its owner desired.

ANSWER: Amalthea [or Amaltheia]

[10] Amalthea lived in the Psychro cave in the side of Mount Ida on this island home to the Palace of Knossos.

ANSWER: Crete [or Kriti]

[10] This mythographer described Amalthea as a Libyan princess who owned a horn-shaped piece of land. This Sicilian author described Greek myth in Book IV of his massive *Bibliotheca historica*.

ANSWER: Diodorus Siculus [or Diodorus of Sicily]

<AP Mythology>

14. This poem says that a certain monument “sticks like a fishbone / in the city’s throat.” For 10 points each:

[10] Name this poem set at “The old South Boston Aquarium” that sees the narrator reflect on a monument to Colonel Robert Gould Shaw.

ANSWER: “For the Union Dead”

[10] This poet of “For the Union Dead” describes the title creatures as searching “in the moonlight for a bite to eat” in his poem “Skunk Hour.”

ANSWER: Robert Lowell

[10] Lowell dedicated “Skunk Hour” to fellow poet Elizabeth Bishop after she dedicated this poem to him. This poem describes “frail, illegal fire balloons... climbing the mountain height, / rising toward a saint / still honored in these parts.”

ANSWER: “The Armadillo”

<ES American Literature>

15. The Polish slave and translator Albertus Bobovius compared this institution to a monastery. For 10 points each:

[10] Name this institution located in the Topkapı palace whose guards were led by the Chief Black Eunuch. Holders of the title of *valide*, such as Roxelana, were at the top of this institution’s hierarchy.

ANSWER: Imperial Harem of the Ottoman Empire [or the Seraglio]

[10] Besides housing the harem and the Ottoman sultans, Topkapı palace was home to the quarters of these elite soldiers, who were usually Christian boys taken through the devşirme system.

ANSWER: Janissaries

[10] Mustafa the Mad was confined in a part of the harem known as the “Cage” while his nephew of this name ruled. Another sultan of this name won the Siege of Bursa and legendarily had a dream in which a tree sprouted from his navel.

ANSWER: Osman [or Osman II; or Osman Gazi]

<JB World History>

16. Holmes and Rahe's SRRS questionnaire involves ranking major life events according to how much of this phenomenon they caused. For 10 points each:

[10] Name this phenomenon modeled as the three stages of alarm, resistance, and exhaustion in Hans Selye's General Adaptation Syndrome. This phenomenon with acute and chronic varieties is a response to an outside stimulus, such as a threat.

ANSWER: stress

[10] In response to acute stress, a physiological reaction prepares the body to either face or avoid the threat, a response known by these two rhyming verbs.

ANSWER: fight or flight

[10] This psychologist's ABC model of emotional reactions describes how people appraise their own stress. This man, who isn't Aaron Beck, introduced a type of therapy that focuses on disputing irrational beliefs and replacing them with more effective ones.

ANSWER: Albert Ellis

<JB Social Science>

17. In one instance, this action takes place while the protagonist pastes a poster of Rita Hayworth on a wall during his first day on his new job. For 10 points each:

[10] Name this action that is perpetrated by Antonio Ricci after a football match between Roma and Modena in a film by Vittorio de Sica.

ANSWER: stealing a bicycle [or equivalents in place of "steal" and "bicycle"]

[10] Sergio Leone, who began his career as an assistant to de Sica during the production of *Bicycle Thieves*, later directed many films in the "Spaghetti" type of this genre, such as *The Good, The Bad, and The Ugly*.

ANSWER: westerns

[10] In order to pay for a new bicycle in *Bicycle Thieves*, Antonio's wife Maria sells these items of hers at the pawn shop, where an employee has to climb to the top of an enormous shelf of these items to deposit hers.

ANSWER: bedsheets [or bedding; or blankets]

<AP Other Arts (Film)>

18. In the late 20th century, there was a race among organic chemists to successfully obtain taxol via this process. For 10 points each:

[10] Name this process that took over 150 years for chemists to successfully complete for quinine. This term is used to refer to the organic synthesis of a complex molecule from simple, commercially available precursors.

ANSWER: total synthesis

[10] Total synthesis attempts often employ this strategy, in which individual pieces of a complex molecule are formed independently, then joined in a later step. This strategy generally involves less steps than linear synthesis, thus leading to higher percentage yields.

ANSWER: convergent synthesis

[10] The field of organic synthesis was kicked off in 1828 when Friedrich Wöhler ("VER-ler") demonstrated that this compound can be formed from inorganic precursors. This compound, which contains two amine groups bonded to a carbonyl, is biosynthesized in a namesake cycle for removing nitrogenous wastes from the human body.

ANSWER: urea [or carbamide]

<SR Chemistry>

19. The Pombaline architecture style developed in the aftermath of this event. For 10 points each:

[10] Name this event that occurred on All Saints' Day in 1755. It destroyed Ribeira Palace and led King Joseph I to develop claustrophobia for the rest of his life.

ANSWER: 1755 Great **Lisbon Earthquake** [or **Sismo** de **Lisboa** de 1755; or **Terramoto** de **Lisboa** de 1755]

[10] To help reconstruct Portugal's social structure after the earthquake, a queen regent with this name founded the Casa Pia children's educational institution. A later Braganza queen of this name was similarly known as "The Educator."

ANSWER: **Maria** [or **Maria the Pious**; or **Maria the Mad**; or Dona **Maria I**; or **Maria the Good Mother**; or Dona **Maria II**]

[10] After Manuel de Godoy invaded Portugal under Napoleon's instructions, the entire Braganza house fled to this largest Portuguese colony in South America.

ANSWER: **Brazil** [or **Brasil**]

<AP European History>

20. Answer the following about discussions of the ancients and moderns divide in philosophy, for 10 points each.

[10] Leo Strauss claimed that this man was the first "modern" thinker, and dubbed this man's treatise *The Prince* "immoral and irreligious."

ANSWER: Niccolò **Machiavelli**

[10] Benjamin Constant's distinction between the ancient and modern forms of the title concept are cited in this essay. The positive type of this essay's title idea is equivalent to self-determination, and is contrasted with its negative form.

ANSWER: "**Two Concepts of Liberty**" (by Isaiah Berlin)

[10] This thinker contrasted the ancients' rhetorical method and the moderns' pedagogical method in *On the Study Methods of Our Time*. This man claimed that history continually passes through the age of gods, the age of heroes, and the age of humans.

ANSWER: Giambattista **Vico**

<JB Philosophy>