

TOSSUPS

1. Laryngeals and the sound represented by this letter of the Latin alphabet were deleted in Szemerényi's (seh-meh-"RAIN"-yee's) law. This letter represents the sound that has the highest amplitudes at the highest frequencies on a spectrogram. A sound change in Romance languages added a prosthetic "e" before word-initial clusters of "[this letter]-impurum" plus a stop. P-I-E roots may have a prefix called "[this letter]-mobile." This letter represents the sound that is the only English exception to the Sonority Sequencing Principle, and the only fricative phoneme in most theories of Proto-Indo-European. In Italian, this prefix forms opposites and comes from the Latin "ex." This letter names the abstract syntactic structure that exists after movement takes place on D-structure. It represents a voiceless alveolar fricative, whose voiced counterpart is "z." English once used a "long" variant of this letter resembling lowercase "f." For 10 points, name this letter used to form most plurals in English.

ANSWER: s [accept s-impurum or s-impura or impure s; accept s-mobile; accept S-structure]

2. Kazlauskas' rule describes the kinetics when a substance with this property reacts with a lip-ase. Sterically similar compounds such as ammonium bi-tartrate and ammonium bi-malate form a three-component crystal exhibiting a "quasi" form of this property. Crystals with this property are denser than those without this property, according to Wallach's rule. Thalidomide becomes teratogenic when it acquires this property *in vivo*. Mosher's acid is an example of a derivatizing agent that can separate a substance with this property into its individual components, in a process known as resolution. Biological samples can have their age estimated by quantifying the extent to which amino acids have acquired this property. Solutions with this property are optically inactive. For 10 points, name this property of a chemical mixture in which both enantiomers are present in equal amounts.

ANSWER: racemic [accept racemization or racemate or the property of being a racemic mixture prompt on achiral]

3. In this novel, a man hits on the protagonist at a concert after insisting that she translate the Italian lyrics of a song for him. The protagonist of this novel visits a poor, widowed school friend who now sells needlework through her nurse, since rheumatic fever has made her unable to walk. This novel opens by describing how a character never reads except to look at his own page in the *Baronetage of England*. In a pivotal scene in this novel, a woman hits her head on the pavement after jumping down some stairs at Lyme Regis Cobb. After financial troubles force her family to rent Kellynch Hall to the Crofts, the protagonist of this novel goes to Bath with Lady Russell and her vain father Sir Walter. For 10 points, Captain Wentworth eventually marries Anne Elliot in what novel, the last written by Jane Austen?

ANSWER: Persuasion

4. Novella d'Andria took over her father's job in this city, but apparently worked from behind a curtain because of her beauty. Enzo of Sardinia spent over twenty years imprisoned in a cage in one of this city's palaces after its forces captured him at the Battle of Fossalta, which also allowed this city to abolish serfdom via the Liber Paradisus. Mondino de Luzzi introduced the practice of public dissections and wrote his *Anathomia* while in this city. A concordat named for this city superseded the Pragmatic Sanction of Bourges (BORJ) and allowed French kings to appoint bishops. Bulgarus and Martinus were among this city's "Four Doctors," glossators who interpreted the rediscovered Code of Justinian. This city lost a brief conflict that began with soldiers from Modena raiding this city's well, called the War of the Oaken Bucket. The *Digest* was used at an institution in this city, where the trivium and quadrivium were first regularly presented. For 10 points, the first medieval university was founded in what Italian city?

ANSWER: Bologna (boh-LOHN-yah)

5. At the climax of a story by this author, the protagonist hides outside while a man looks for a match in the dark, then flees for a Chinaberry tree after he cries out like a “maddened chimpanzee.” This author wrote a story in which a man who always throws his pay under the door to his newly-wed wife finds her in bed with the owner of an ice cream parlor named Otis D. Slemmons, who had impressed her with his fake gold coins. In another of her stories, Sykes takes up with Bertha and tries to scare his wife, the washerwoman Delia Jones, by bringing home a snake, but it bites him instead. This author of “The Gilded Six-Bits” and “Sweat” also wrote a novel set in Florida in which the protagonist’s second husband is the mayor of Eatonville, Jody Starks. For 10 points, name this African-American woman who created Janie Crawford in *Their Eyes Were Watching God*.

ANSWER: Zora Neale **Hurston**

6. An advocate of this style wrote that buildings should have no unnecessary features and that ornament should only enrich a building’s construction in the two “great rules” of design he put forth in the book *Contrasts*. The term “streaky bacon style” was used to deride red brick buildings of this movement, which was advocated by the Camden Society and its journal, *The Ecclesiologist* (eh-KLEEZ-ee-“ologist”). The best-known room of an early building in this style is a picture gallery with crimson walls and a papier-mache fan vault ceiling. A memorial in this style consists of an ornate pavilion over a gold statue of a prince and was designed by the architect of the St. Pancras Hotel, George Gilbert Scott. This movement is exemplified by Augustus Pugin’s work on the Houses of Parliament and by Eugène Viollet-le-Duc’s (ooh-ZHEN vee-oh-LAY-le-dook’s) fanciful restorations. This movement is so named because it was inspired by the style Abbot Suger (soo-zhay) used for the Basilica of St. Denis (sahn-dah-NEE). For 10 points, name this architectural movement, which adapted elements such as flying buttresses from a namesake medieval architecture style.

ANSWER: **Gothic Revival** [or **neo-Gothic**; or **Victorian Gothic**; prompt on **Gothic**, **Christian**, or **Pointed** architecture]

7. While on strike to protest the Edict of Discipline, members of these groups were awoken in the middle of the night by musketeers who gave them the options of returning to work or going into exile. The king harangued the largest of these groups by stating that the “rights and interests of the nation” were inseparable from himself in the “Flagellation” speech. The disbanding of one of these groups prompted a day of riots named for the roof tiles that protesters threw at soldiers. A member of one of these institutions, Louis La Chalotais (shah-loh-TAY), was accused of sending threatening letters to the king and was arrested with five of its other members during the Brittany Affair. These institutions were abolished by a “triumvirate” of ministers led by Chancellor Maupeou (moh-POO). These institutions sparked and name the first stage of the Fronde, and were typically composed of twelve magistrates from the nobility of the robe. For 10 points, name these courts that often resisted royal power in pre-Revolution France.

ANSWER: **parlements** (pah-r-lay-mawnt(s)) [accept **parliaments**]

8. This ceremony once included an “oath of vengeance,” in which participants promised to pray for God to “avenge the blood of the prophets upon this nation.” This ceremony also once included hand gestures accompanying an oath that graphically described a series of physical punishments called “the penalty” that was inflicted on those who revealed secrets. This ceremony involves watching a dramatic reenactment of the creation and fall of Adam and Eve. Gestures in this ceremony include knocking at the “veil” and a handshake known as the “patriarchal grip,” or “Sure Sign of the Nail.” After taking part in this ceremony, which was first administered in the upper room of the Red Brick Store in Nauvoo (NOH-voo), participants wear “temple garments,” which are a kind of underwear. For 10 points, name this Mormon ceremony in which participants receive instruction on the plan of salvation leading to the return to the presence of God.

ANSWER: temple **endowment**

9. An activity of this kind originating in a Scottish funeral rite is the basis of John Tavener's *A Celtic Requiem*. This type of activity titles György Kurtág's (YURJ KOOR-tahg's) still-expanding eight-volume set of tiny pieces for piano solo or duet. Witold Lutosławski (VEE-told loo-toh-SWAHV-skee) first used "aleatoric counterpoint" in a chamber piece titled for Venetian ones. For his *Petite Suite*, Bizet orchestrated five out of twelve pieces from a suite for piano duet titled for these activities. Nijinsky choreographed a ballet to Debussy's final orchestral piece, a "danced poem" titled for these activities. Coupled instruments playing fixed intervals apart appear in the second movement of Bartók's *Concerto for Orchestra*, described as one of these activities "of Pairs." For 10 points, name this type of activity that titles Debussy's *Jeux* (zhooz), which depicts examples such as hide-and-seek.

ANSWER: games [accept children's games or street games or Venetian games; accept "Game of Pairs"; accept Jeux *venitiens* or Jeux *d'enfants* or Jeux until "*Jeux*" is read]

10. A hyper-modified nucleo-base involved in RNA polymerase II termination, known as "base J," was first identified in a member of this genus. A disease caused by a member of this genus can be diagnosed from the presence of cardio-megaly accompanied by apical atrophy. In a dramatic example of RNA editing, mitochondrial mRNAs in this organism are first synthesized entirely lacking uracils. DFMO, a suicide inhibitor of ornithine de-carboxyl-ase, is an effective treatment for a disease caused by members of this genus. These pathogens avoid the host immune system by periodically alternating their surface antigens with variant surface glyco-proteins. A disease caused by a member of this genus begins with the appearance of swollen lymph nodes on the back of the neck, known as Winterbottom's sign. Members of this genus include species *brucei* ("bruce"-ee) and *cruzi* ("cruise"-ee). For 10 points, name this genus whose members cause Chagas disease and African sleeping sickness.

ANSWER: Trypanosoma [or trypanosomes]

11. This man faced unrest from his 125 Russian Jewish employees after purchasing machines invented by James Bonsack. This man's company was targeted by Lucy Gaston's campaign against "coffin nails." Masked opponents of this man's company destroyed warehouses in Hopkinsville after capturing the town, and were known as the Silent Brigade, or the Night Riders. A power company named for this man had its practice of restricting black employees to working in its "labor department" based on IQ tests struck down in a landmark 1971 Supreme Court case. Vigilante farmers opposed this man's company in the Black Patch Wars. A 1911 Supreme Court case split this man's company into four competitors, and he donated much of his fortune to Trinity College, which changed its name to honor his family. For 10 points, name this tobacco magnate, the "father of the modern cigarette" and namesake of a university in Durham, North Carolina.

ANSWER: James Buchanan Duke

12. In the Lambda-CDM model, the accelerating expansion of the universe begins at a scale factor equal to this function of omega-sub-matter over two omega-sub-lambda. The radius of a Strömgren sphere is proportional to this function of ionizing photon emission rate over recombination rate. The ratio of the cosmic neutrino background temperature to the CMB temperature is this function of four-elevenths. A white dwarf's ordinary and relativistic polytropic equations of state differ by a factor of this function of density; therefore, in the limit of low mass, the radius of a white dwarf is inversely proportional to this function of its mass. Applying this operation to both sides of Kepler's third law gives an orbit's semi-major axis in terms of this function of the square of its period. For 10 points, name this operation that, after dividing by four-thirds pi, is used to find the radius of a sphere of known volume.

ANSWER: cube root [or taking (something) to the one-thirds power]

13. In a story from this country, a young man bursts a blood vessel after being stripped and tied to a table by a crowd that has gathered to watch the killing of 49 steers. A book from this country decries the historical uses of the color red before describing a general's policy of whipping or executing people who didn't wear the correct red ribbons. A leader of this country was criticized in the short story "The Slaughter House." A book from this country devotes its last chapter to the life of Jose Aldao, a bloodthirsty priest who becomes a brigadier general, after describing how its main character is shot by an outlaw while traveling in a carriage with his secretary. That book argues that this country must choose civilization over barbarism, as personified by the title "Tiger of the Plains," a villainous *caudillo* ("cow"-DEE-yoh). For 10 points, name this country home to Esteban Echeverría (AY-chay-veh-REE-uh) and Domingo Sarmiento, whose book *Facundo* features its gauchos.

ANSWER: **Argentina** [or the **Argentine** Republic; or Republica **Argentina**]

14. This condition appears as an adjective in the title of a book that rejects the so-called "domestic analogy" and suggests the possibility of a "neo-medievalist" system of "overlapping structures." A thinker identified "Lockean" and "Kantian" as two of three cultures of this condition. The argument that, despite this condition, a society with "common rules and institutions" exists is made in Hedley Bull's best-known book, which informed the theories of the English School. This condition is a "permissive cause" of war according to a "level of analysis" called the "third image" that is advocated in a 1959 book. This condition gives rise to the security dilemma and results in a "self-help" system. A 1992 article by Constructivist thinker Alexander Wendt is titled for the claim that this condition is what states make of it. In *Man, the State, and War*, Kenneth Waltz uses this term to refer to the absence of a higher sovereign in the international system. For 10 points, identify this condition of government-less disorder.

ANSWER: **anarchy** [accept "**Anarchy** is What States Make of It"]

15. These particles experience gravitationally induced quantum interference in the C·O·W experiment or when "bouncing" off mirrors at ultracold temperatures. One property of these particles may be empirically determined by measuring the difference in Larmor precession frequency when the applied electric field is either parallel or antiparallel to the applied magnetic field. The physical units "dollars" and "cents" are defined in terms of another property of these particles that is typically computed using the six factor formula. The Institut Laue-Langevin (LAU-uh LAHN-zheh-vahn) has established an upper limit of three times 10 to the minus 26 e-centimeters for their electric dipole moment. An energy of one mega-electron-volt is the cutoff value for whether these particles are considered "fast" or "slow." For 10 points, name these particles made of two down quarks and an up quark that are "moderated" in nuclear fission reactors.

ANSWER: **neutrons**

16. One of this province's "ten strange wonders" is a food with an infamously complex name that requires 58 strokes to write. This home of *biang biang* noodles contains the Zhoo Mausoleum, for which an emperor commissioned a set of six stone reliefs depicting his favorite warhorses. This province contains the Forest of Stelae (STEE-lee), a collection of artifacts that includes the Nestorian Stele. Its capital has a street named Huimin Jie (hway-min jee-eh), which is named after the Muslim Huí and located near its namesake Grand Mosque. High levels of mercury can be found in the soil near a tomb in this province, where farmers digging a well inadvertently discovered Qin Shi Huang's (chin shur hwahng's) Terracotta Army. Its capital was named Chang'an when it was the seat of the Han and Tang Dynasties. For 10 points, name this province located in central China that contains Xi'an (shee-ahn).

ANSWER: **Shaanxi** (shan-shee)

17. These concepts title a Philip Fisher intellectual history which discusses their “abolition of privacy.” An oft-quoted passage claims that each of these things is “an original existence... and contains not any representative quality, which renders it a copy of any other existence,” meaning that it is sensible to prefer “the destruction of the whole world to the scratching of [one’s] finger.” Chapter 6 of *Leviathan* presents a list of these concepts and describes them as “the interior beginnings of voluntary motions.” These things are indirect if they arise from a “double relation of impressions and ideas,” and direct if they are directly caused by pain or pleasure. These things can be “calm” or “violent,” and are classified as impressions caused by reflection. The second book of *A Treatise of Human Nature* is titled “of” these phenomena, and argues that since these things are responsible for all motivations, “reason is, and ought only to be the slave of” these things. For 10 points, name these phenomena, similar to emotions, discussed by David Hume.

ANSWER: **passions** [or *The Vehement **Passions***; prompt on emotions or similar answers]

18. The sister of this novel’s protagonist wears a locket with a portrait of her dead first husband, which she later replaces with a capsule of poison. Jewish characters in this novel include the bank director Fischel, whose daughter Gerda joins a group of Christian nationalists, and Rachel, who has an affair with the African page boy Soliman while working as a maid for Diotima. A character in this novel exclaims “this murderer is musical!” after seeing a prostitute-murdering rapist named Moosbrugger. This novel is divided into the volumes *A Sort of Introduction*, *Pseudoreality Prevails*, and *Into the Millennium (the Criminals)*. Walter’s wife Clarisse wants to have a child with this novel’s protagonist, a mathematician who is put in charge of the Collateral Campaign to honor Emperor Franz Josef’s 70-year reign. For 10 points, name this massive unfinished novel about Ulrich, written by Robert Musil.

ANSWER: *The **Man Without Qualities*** [or *Der **Mann ohne Eigenschaften***]

19. An artist with this given name painted a set of Lucretius-inspired panels depicting animals fleeing from cavemen and forest fires. An artist with this first name painted a bent-over man in briefs pulling his undershirt over his head in the background of a painting of John pouring water directly onto a chalk-white Jesus. An artist of this name who allegedly subsisted on a diet of boiled eggs painted two women playing bizarre instruments and a man standing on the back of a tusked sea monster in his *Perseus Freeing Andromeda*. Four men, including a lance-bearing figure without legs, sleep in a painting by an artist of this given name that Aldous Huxley called “the greatest picture in the world.” That artist with this first name worked for the Montefeltro family in Urbino, a fact sometimes used to identify the three figures conversing in the right foreground of one painting. That artist with this given name painted Christ holding a flag and kneeling on his tomb in *The Resurrection*, and Christ tied to a pillar in *The Flagellation*. For 10 points, give this name of Renaissance artists surnamed di Cosimo and della Francesca.

ANSWER: **Piero** [or **Piero** della Francesca; or **Piero** di Cosimo]

20. This country announced the “Buy British Last” embargo after conducting a “dawn raid” on the London Stock Exchange to take over Guthrie, a company that owned 200,000 acres of plantations in this country. After a Scots Guards platoon massacred unarmed civilians in this country, the first “winning hearts and minds” strategy was introduced here by Gerald Templer. In this modern-day country, squatter communities were relocated to barbed wire-ringed New Villages via the Briggs Plan. An affirmative action policy for this country’s indigenous people was implemented by the New Economic Policy after race riots on May 13, 1969. This country’s Communist party fought the British from 1948 to 1960, a conflict dubbed an “Emergency” for insurance purposes. Dr. Mahathir bin Mohamad led this country, the site of racial conflict between the *bumiputera* (boo-mee-poo-teh-rah) and ethnic Chinese. For 10 points, name this country north of Singapore.

ANSWER: **Malaysia**

TB. These functions can be rescaled using Schmidt semi-normalization. The standard proof of Unsöld's theorem relies on these functions' namesake addition theorem. Applying the spin raising and lowering operators to these functions gives their "spin-weighted" variety, which can be used to find multipole solutions of Maxwell's equations in a source-free region. The Slater integral of the product of three of these functions is proportional to the product of two Wigner three- j symbols. The simplest of these functions equals the square root of one over four pi. They are the eigenfunctions of the L -squared and L -sub- z operators. To within a normalization factor, the product of one of these functions and an associated Laguerre polynomial gives the wavefunction of the hydrogen atom. For 10 points, identify these functions denoted Y -sub- l -super- m that solve the angular part of Laplace's equation in their namesake coordinate system.

ANSWER: **spherical harmonics** [accept associated **Legendre polynomials** or regular **solid harmonics** or irregular **solid harmonics** before "addition", but do not accept or prompt on any of those answers thereafter; prompt on **harmonic** functions]

1. One of these structures is regulated by formation of a two-three terminator structure when the synthesis of the leader peptide is stalled. For 10 points each:

[10] Name these structures used to regulate simultaneous synthesis of multiple related proteins or enzymes, such as the *lac* example found in *E. coli*.

ANSWER: **operons**

[10] The kai-ABC operon regulates these processes in cyanobacteria. In *Neurospora*, the ambient temperature regulates their length by changing whether the shorter or longer version of the *frq* ("f-r-q") protein is synthesized.

ANSWER: **circadian rhythms**

[10] Another model operon found in *E. coli* regulates the degradation of this five-carbon sugar. A common inducible expression system in *E. coli* uses this molecule to activate transcription at the P-BAD promoter.

ANSWER: **arabinose** [or **pectinose**]

2. The first effort to sequester the federal budget was instituted by an act named for this senator, Warren Rudman, and Fritz Hollings. For 10 points each:

[10] Name this Texas senator, the first namesake of a 1999 act that overturned part of the Glass-Steagall Act, which he sponsored with Jim Leach and Thomas Bliley.

ANSWER: Phil **Gramm** [or William Philip **Gramm**]

[10] Gramm led the effort to pass the Commodity Futures Modernization Act, which included a loophole that exempted this company from regulation of its energy trading. Many executives of this Houston energy company were tried for fraud after a 2001 scandal.

ANSWER: **Enron** Corporation

[10] Gramm pushed through the Commodity Futures Modernization Act despite the 1998 failure of this hedge fund, which traded derivatives based on the model of its founders Myron Scholes and Robert Merton. It had to be bailed out by a multi-bank coalition organized by the Federal Reserve.

ANSWER: **LTCM** [or **Long-Term Capital Management** L.P.]

3. A poet of this surname instructed the reader to climb another flight of steps in his poem "On the Stork Tower." For 10 points each:

[10] Give this surname of a poet who collaborated with Pei Di (PAY DEE) on the *Wheel River Collection*, which includes his poem featured in a book about "19 Ways of Looking at" him by Eliot Weinberger and Octavio Paz.

ANSWER: **Wang** [or **Wang** Wei; or **Wang** Zhihuan]

[10] That poem by Wang Wei is this short piece, whose myriad translations usually describe a lonely mountain scene and sunlight shining on moss in the title forest.

ANSWER: "**Deer Park**" [or "**Lu Zhai**"; or "**Deer Enclosure**"; or anything similar such as "**Deer Fence**"]

[10] A third Tang dynasty poet named Wang, Wang Xizhi (SHEE-JUH), wrote a preface to a collection created through a game in which poets selected by chance had to compose a poem or consume this substance. Li Bai, also known as Li Po, wrote several poems about consuming this substance and looking at the moon.

ANSWER: **wine** [prompt on **alcohol**]

4. In Buddhism, the twelve *ayatanas* consist of six organs of these things, in addition to their corresponding objects, while in Jainism, *jivas*, or beings, are classified by the number of these things that they possess. For 10 points each:
[10] Name these faculties, whose aforementioned associated organs in Buddhism are the eye, ear, nose, tongue, body and mind.

ANSWER: **senses**

[10] Some adherents of this religious practice are trained to unlock within themselves a group of super-sensory organs known as *Lataif-e-sitta*, or “The Six Subtleties.”

ANSWER: **Sufism** [prompt on **Islam**]

[10] In Buddhist thought, physical sensation is one of the five elements that make up an individual's mental and physical existence. Those five elements are referred to by this Sanskrit term that means “aggregate” or “heap.”

ANSWER: **skandhas**

5. Feminist approaches to this field of study include the “standpoint theory” developed in part by Sandra Harding. For 10 points each:

[10] Name this subject. *Billy Budd* is analyzed as a fantasy of gay genocide in an Eve Sedgwick book titled for this subject “of the closet.”

ANSWER: **epistemology**

[10] Another feminist epistemologist, Susan Bordo, wrote an essay critiquing the “masculinization of thought” caused by this thinker, who she argues made objectivity the main principle of modernity by separating mind and body.

ANSWER: Rene **Descartes**

[10] The term “situated knowledge” was introduced to feminist epistemology by Donna Haraway, who is best known for a “manifesto” named for these figures. Haraway uses these figures as a metaphor for fluidity in opposition to traditional notions of gender.

ANSWER: **cyborgs**

6. A member of this movement defined poetry as “the spontaneous overflow of powerful feelings...recollected in tranquility.” For 10 points each:

[10] Name this literary movement whose ideals are discussed in the preface to *Lyrical Ballads*.

ANSWER: English **Romanticism**

[10] M. H. Abrams wrote a book contrasting the Romantics’ “expressive” theories of art, symbolized by this object, with classical “mimetic” theories symbolized by a mirror.

ANSWER: a **lamp**

[10] This critic sometimes known as the “father of Imagism” argued against the perceived excesses of Romanticism in his essay “Romanticism and Classicism,” which looks forward to the displacement of Romanticism by a “classical revival.”

ANSWER: T. E. **Hulme** [or Thomas Ernest **Hulme**]

7. A group of this nationality established the Little Venice colony in Venezuela, which was decimated by malaria and Indian attacks until its last two leaders were executed by Pedro de Carvajal. For 10 points each:

[10] Name this nationality of a soldier who wrote an account of the cannibalistic Tupinamba people of Brazil, which he gave the catchy title *The True History and Description of a Country of Savages, A Naked and Terrible People, Eaters of Men's Flesh*.

ANSWER: **German** (the soldier is Hans Staden)

[10] The Little Venice colony was a project of the Welser (VEL-zer) family, who like the rival Fugger family, is best known for operating these institutions.

ANSWER: **banks**

[10] Later in unimpressive German colonial efforts in America, this man's representatives leased part of the island of St. Thomas from the Danes. This leader welcomed Huguenots to his lands via the Edict of Potsdam.

ANSWER: **Frederick William** the **Great Elector** [or **Frederick William, Elector** of Brandenburg; accept **Friedrich Wilhelm** for “Frederick William” and prompt either **Friedrich Wilhelm** or **Frederick William** alone]

8. This sculpture has inspired other proposed projects with similar titles, such as a 150-foot tall white horse planned in Ebbsfleet Valley, Kent. For 10 points each:

[10] Name this Antony Gormley steel sculpture of a figure with outstretched airplane wings. It is 66 feet tall and has a wingspan of 177 feet.

ANSWER: *The **Angel of the North***

[10] Gormley's supersized sculpture is in the tradition of this American sculptor, who depicted Confederate generals on the face of Georgia's Stone Mountain before beginning a similar project in South Dakota.

ANSWER: Gutzon **Borglum**

[10] Another artist who was fond of creating big sculptures was Claes Oldenburg, whose works include a fountain in Minneapolis in which a giant depiction of this fruit rests on a giant spoon.

ANSWER: **cherry**

9. Eugene Aserinsky used an EEG on his sleeping son to detect the correlation of these motions with energetic brain activity. For 10 points each:

[10] Name these motions. Rapid motions of this sort characterize a sleep stage in which the muscles relax and vivid dreams occur.

ANSWER: **eye** movements [or **rapid eye movements**; prompt on **REM**]

[10] Francine Shapiro developed a therapy of this name in which patients move their eyes while recalling traumatic events. Joseph Wolpe introduced a "systematic" exposure therapy of this name in which the patient is exposed to gradually increasing amounts of anxiety-triggering stimuli.

ANSWER: **desensitization** [or word forms]

[10] One of the many cognitive tests in which eye movement is a factor is this "inhibitory control" task created by Eriksen and Eriksen. In this task, participants respond to the arrow in the target, which can be surrounded by incongruent stimuli such as arrows pointing in the wrong direction.

ANSWER: Eriksen **flanker** task

10. Yablonovite is a synthetic material that acts as this type of system in three dimensions. For 10 points each:

[10] Name these systems that contain periodic regions of alternating high and low dielectric constant to allow only certain wavelengths of light to propagate. Examples include distributed Bragg reflectors and "holey" optical fibers.

ANSWER: **photonic crystals** [prompt on **crystals**]

[10] Yablonovite has the inverse form of the crystal structure named for this mineral. Its Mohs hardness is 10.

ANSWER: **diamond**

[10] This computational method for solving Maxwell's equations in a photonic crystal consists of transforming the electric and magnetic fields, as well as the dielectric constant, into Fourier series along the reciprocal lattice vector.

ANSWER: **plane wave expansion** method [or **PWE** method]

11. This country is home to the artist Paa Joe, whose giant "fantasy coffins" are designed in unconventional shapes such as airplanes and running shoes. For 10 points each:

[10] Name this modern-day country whose traditional art forms include a type of intricately patterned textile made by weaving long strips of colorful fabric, called *kente* cloth.

ANSWER: Republic of **Ghana**

[10] This Ghanaian artist is known for emulating the patterns of *kente* cloth in wall hangings such as *Dzese II* and *Flag for a New World Power*, which he makes from copper wire and bottle caps.

ANSWER: El **Anatsui**

[10] Ghanaian artists created *okyeame poma* (aw-CHAY-ah-may po-ma) or "linguist's staffs" for the spokesmen of chiefs. The staffs are made of wood covered in this material, which is made by beating a precious metal into a thin sheet.

ANSWER: **gold leaf** [or **gold foil**]

12. For 10 points each, answer the following about amputated legs in Russian literature.

[10] In this novel by Victor Pelevin, the title character narrowly avoids having his legs amputated at a flight school. This novel's title character is trained for a suicide mission to the Moon, where he will man a supposedly unmanned moonwalker.

ANSWER: **Omon Ra**

[10] Chichikov is nonsensically suspected of being the double-amputee Captain Kopeikin in this novel by Nikolai Gogol.

ANSWER: **Dead Souls** [or **Myortvyjye Dushi**]

[10] The teenager Dyomka eventually decides to have his leg amputated in this novel. It ends with the protagonist writing letters to Dyomka and his love interests Zoya and Vera Gangart.

ANSWER: **Cancer Ward** [or **Rakovy Korpus**; by Aleksandr Solzhenitsyn]

13. Enlil impregnated Ninlil with the god Nergal while disguised as a keeper of one of these objects. For 10 points each:

[10] Name this type of structure that Ishtar had to pass through seven times in order to descend into the underworld.

ANSWER: **gates** [prompt on **entrances** or similar answers]

[10] In the *Epic of Gilgamesh*, two scorpion-people guard the mountain gates of this god, who helps Gilgamesh and Enkidu defeat Humbaba. Sippar and Larsa were the cult centers of this god, who formed a triad with Sin and Ishtar.

ANSWER: **Shamash** [or **Utu**]

[10] This man, the first of the seven Mesopotamian sages, tricked Dumuzi and Gish-zida into letting him through the gate to heaven, where he refused Anu's offer of the food and drink of immortality.

ANSWER: **Adapa** [or **Uan**; or **Oannes**]

14. Answer the following about logicians with something in common, for 10 points each.

[10] Löb's theorem states that, if "a proof of P implies P " is provable, then " P is provable." Löb's theorem is proven using fixed points in a modal logic where this symbol, the "necessity" operator, means "it is provable that."

ANSWER: **box** [or empty **square**]

[10] By the Löwenheim-Skolem theorem, if a first-order theory has infinite models, then it has a model whose domain has this property. Cantor used the diagonalization argument to prove that the reals do not have this property.

ANSWER: **countable** [accept **countably** infinite or **countability** or variants; do not accept or prompt on "infinite" or "infinity"]

[10] The Swedish logician Per Martin-Löf gave an algorithmic definition of this concept. A sequence has this property if there exists a constant such that its finite prefixes are incompressible in terms of that constant.

ANSWER: **randomness** [or Martin-Löf **randomness**]

15. During the Battle of Siffin, this leader's forces supposedly stuck leaves of the Qur'an on their spears, in order to indicate their desire for arbitration with the other side. For 10 points each:

[10] Name this first Umayyad caliph. During his reign, he established the *diwan al-khatam*, which was responsible for the sealing of documents, and the postal service known as the *barid*.

ANSWER: **Muawiyah** I (moo-ah-wee-ah "the first") [or **Muawiyah** ibn Abu Sufyan]

[10] Muawiyah I's opponent at the Battle of Siffin was this Rashidun caliph, who was chosen to succeed Uthman. Following the arbitration that ended the Battle of Siffin, the Kharijites broke off from this leader's forces.

ANSWER: **Ali** ibn Abi Talib

[10] During the arbitration, this man represented Muawiyah I. This man conquered Egypt following the Battle of Heliopolis and established the city of Fustat, which is near modern Cairo.

ANSWER: **'Amr** ibn al-'As

16. This poet wrote a sonnet insisting, “Love can not fill the thickened lung with breath...yet many a man is making friends with death even as I speak, for lack of love alone,” as well as a sonnet asserting “love is not blind” that concludes, “Well I know what is this beauty...I wonder only why they prize it so.” For 10 points each:

[10] Name this poet whose sonnets include “What lips my lips have kissed, and where, and why” and a sequence of four beginning with “Love, though for this you riddle me with darts.”

ANSWER: Edna St. Vincent **Millay**

[10] One of Millay’s sonnets begins with the speaker telling the addressee “and you as well must die, beloved [*this* substance].” One of the speakers of *The Waste Land* offers to show the reader “fear in a handful of [*this* substance].”

ANSWER: **dust**

[10] Millay wrote a metrically unorthodox sonnet entitled “Sonnet in [*this* meter],” a favorite of Andrew Marvell, who used it for “To His Coy Mistress” and many other poems.

ANSWER: iambic **tetrameter** [prompt on **iambic**; do not accept “trochaic tetrameter” or any other tetrameters; prompt on such answers as four feet per line]

17. While these diagrams can depict both high-spin and low-spin states, Orgel diagrams depict only low-spin states. For 10 points each:

[10] Name these diagrams used to predict the UV, visible and IR transitions of a coordination compound based on its d-electron configuration. They can also be used to predict the splitting energy of complexes.

ANSWER: **Tanabe-Sugano** (tah-nah-bay-su-gah-no) diagrams

[10] Placing electrons into *d* orbitals follows this rule, which states that electrons are placed in orbitals to maximize their spin multiplicity.

ANSWER: **Hund’s** rule

[10] The Tanabe-Sugano diagram for complexes whose *d* electron count is between these two numbers, inclusive, are split into two halves, because complexes with *d* electron counts between these two numbers can have their electrons arranged in either a high-spin or a low-spin configuration. Both are required.

ANSWER: **4** and **7**

18. Rosa Newmarch, Michel Dimitri Calvocoressi, and Gerald Abraham were early musicologists who all wrote surveys of this country’s music. For 10 points each:

[10] Name this country studied in Richard Taruskin’s *Defining [*this* country] Musically*. This country was home to a group of composers known as “The Five” or “The Mighty Handful.”

ANSWER: **Russia**

[10] One of Taruskin’s hallmarks of Russian Romantic music is the use of the flattened submediant, which lies this interval above the tonic, to express erotic desire, as in the aria from *Eugene Onegin* featuring this interval nicknamed for Lensky.

ANSWER: **sixth** [or flat **sixth**; or major **sixth**; or minor **sixth**; or Lensky **sixth**; or **seksta** *Lenskogo*; or **sixthness**; or **sektstovost**’]

[10] This early Soviet musicologist cited the “Lensky sixth” in his “intonation” theory of meaningful expressiveness. He wrote the ballet *The Flames of Paris* and wrote essays under the alias Igor Glebov.

ANSWER: Boris **Asafyev** [prompt on Igor **Glebov**]

19. After her death, this woman’s genitals and brains were pickled by the naturalist George Cuvier. For 10 points each:

[10] Name this woman born in the Dutch Cape Colony, who died in 1815 after several years of being exhibited in England and France, where crowds were fascinated by her large buttocks. Either name or nickname is acceptable.

ANSWER: Saartjie (SAHR-tyee) **Baartman** [or Sara **Baartman**; or the **Hottentot Venus**]

[10] Baartman first appeared in London several years after William Wilberforce pushed for the 1807 passage of an act outlawing this activity in the British empire.

ANSWER: **slave trade** [accept word forms; prompt on **slavery**]

[10] A caricature of Baartman depicts her back to back with this prime minister, who was bizarrely famous for his “broad bottom.” This predecessor of the Duke of Portland succeeded in abolishing the slave trade before the king dismissed his government for supporting Catholic emancipation.

ANSWER: Lord **Grenville** [or William **Grenville**, 1st Baron Grenville]

20. Answer the following about the genre of wordless novels, which typically used woodcuts to tell stories without text, for 10 points each.

[10] Wordless novels grew out of the German part of this broad movement in art and literature, works of which usually distort reality to convey subjectivity and emotion.

ANSWER: **expressionism**

[10] Lynd Ward's wordless novels, such as *God's Man*, inspired this cartoonist's pioneering graphic novel *Contract with God*. He also created the Spirit, a masked crimefighter.

ANSWER: Will **Eisner** [or William Erwin **Eisner**]

[10] Like Max Ernst's wordless novel *A Week of Kindness*, this work by Tom Phillips also repurposes bad Victorian literature. This work consists of W. H. Mallock's novel *A Human Document*, with most of the words painted over to create a new story.

ANSWER: A **Humument**; *A treated Victorian novel* (hyoom-yoo-ment)