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### Tossups:

1. A triad consisting of tumors of this organ, immunodeficiency, and hypo-gamma-globulin-emia occurs in Good syndrome. The epithelial cells of this organ arise from the ventral wings of the third pharyngeal pouch. A transcription factor almost exclusively expressed in this organ is mutated in APS type 1, in which patients have disruption of multiple endocrine glands and chronic candida infection. This organ is located in the anterior superior mediastinum, and masses in this organ are associated with (\*) myasthenia gravis. Type 4 epithelial reticular cells in this organ are organized into Hassall's corpuscles. One class of cells developed in this organ go through a double-positive stage before expressing either CD4 or CD8. For 10 points, name this organ in the chest responsible for controlling the development of T cells.

ANSWER: thymus

2. One book by this author describes a recent trend among prisoners of stripping nude in the courtroom. A couple in that novel by this author has their suicide message to their son cut off by an answering machine, and the husband's ashes are thrown into an outhouse by his sister, whom he raped. In that book by this author, which contains excerpts from *The Ashley Book of Knots*, Jack Buggit tells the protagonist to put a car wreck on the front page of the newspaper every day whether one happens or not, and miraculously returns to life after drowning. This author who described (\*) Quoy's return to Newfoundland wrote a story about two men who never talk about or during sex, due to the taboos about homosexuality in the West. For 10 points, name this author of *The Shipping News* who wrote about Jack Twist and Ennis del Mar in "Brokeback Mountain."

ANSWER: Annie Proulx

3. A scene by this director begins with the main character walking in from a snowstorm with nametags attached to gifts. While filming that movie, this director once stuck a note below his camera reminding himself "Remember, this is a comedy." The protagonist of that film by this director, which was originally titled *The Beautiful Confusion*, has a conversation with a man who quotes the catechism to him in a spa steam room and builds a circus from the set of a (\*) rocket ship. In another of this director's films, a leviathan is found by a group of partygoers including Emma and Steiner; that film features a features a shot of Anita Ekberg stepping out of a fountain in a black dress. A semi-autobiographical film about a creatively stalled science fiction director named Guido was created by, for 10 points, what Italian director of *La Dolce Vita* and *8½*?

ANSWER: Federico Fellini

4. In October 2016, a town in this state decided by a margin of 6 votes to change its name to Utqiagvik [oot-GHAR-vik]. It's not California, but almost all citizens in its town of Whittier live in a single massive apartment building called the Begich Towers. KLM Flight 867 was caught in a volcanic plume from this state's Mount Redoubt, which is part of a chain of peaks that include the Islands of the Four Mountains and the Rat Islands. Zinc ore from the Red Dog Mine in this state's (\*) Brooks Range is shipped via ports on the Chukchi Sea. This state's national parks include the Gates of the Arctic and Katmai, which is across a strait from Kodiak Island. For 10 points each, name this state that contains Denali National Park, the site of Mt. McKinley.

ANSWER: State of Alaska

5. Antonio Bosio compiled a book examining religious burials conducted in this city, which were actually made in volcanic ash outside city walls due to a prohibition on burials within this city. A balanced view of Christ is presented in a "Tome" sent by a bishop from this city to the council of Chalcedon; that man from here was supposedly aided by a miraculous appearance from St. Paul in convincing a foreign leader to not pursue a marriage proposal. During the (\*) *saeculum obscurum*, offices based out of this city were influenced by the Theophylact family, a period also called the Pornocracy. A prophecy by Jesus connects the name of a man called Kephass with a "rock" on which an organization based in this city would be built. This city's underground contains the Catacombs of Saint Callixtus. For 10 points, name this city whose first bishop was St. Peter, the first pope.

ANSWER: Rome [or Roma]

6. After refusing to dismiss several liberal economics professors, Homer Rainey was fired as president of this state's flagship state university and unsuccessfully ran against Beauford Jester for its governor in 1946. Another governor of this state, Pappy O'Daniel, rose to fame hawking biscuits on a radio show and supported the "Regulars" of this state against FDR in 1944. A man who campaigned across this state in a helicopter won a victory over Coke Stevenson due to doctored results from Jim Wells and (\*) Bexar Counties in this state's 1948 Senate election. This state's Railroad Commission took over regulating its oil fields after discoveries at places like Spindletop. For 10 points, name this state where fraudulent returns from its Rio Grande Valley counties elected Senator Lyndon Baines Johnson.

ANSWER: Texas

7. This kind of area is often classified into a "dark" region dominated by members of genus *Abies*, and a "light" region dominated by members of genus *Larix*. Norrland terrain, which features several types of hilly land, can often be found in this kind of region, whose namesake type of "vole" is also called the yellow-cheeked vole. This kind of region's characteristic soil is the ashy, gray podsol, which allows for the growth of acid-tolerant plants. In this biome, an uneven temperature distribution, or thermokarst, causes *Picea mariana* species to (\*) tilt at angles. Those so-called "drunken" trees are often seen next to the pine, spruce, and larches that make up this largest subarctic biome. For 10 points, name this biome located at 50 to 70 degrees' north latitude, also called a boreal forest.

ANSWER: taiga [accept boreal forest until read; prompt on forest before read]

8. The narrator of this work argues that it is acceptable to clean one's nails in public and asks the reader to "accept this batch of patchy chapters." One character in this work can't tell an iambus from a trochee but knows finance from reading Adam Smith, and after he receives a passionate love letter in French, he meets its author in a secluded garden and tells her that he is not a good enough person to be her husband. This work's protagonist, who is compared to Childe Harold, is tricked into going into a small gathering which turns out to be the huge (\*) name-day party of Olga's sister, who falls in love with him and gets an extremely condescending letter in return. After killing Lensky in a duel, this work's protagonist returns the love of Tatyana, but she remains faithful to her husband. For 10 points, name this novel in verse by Alexander Pushkin about an eponymous dandy.

ANSWER: Eugene Onegin [or Yevgeniy Onegin]

9. A G major piece in this genre by Joseph Haydn is nicknamed for its *Rondo* finale, which uses left-hand pizzicatos to imitate Hungarian *verbunkos* music and is nicknamed "Gypsy." One of these pieces and *Three Romances* are the only known chamber music by Clara Schumann. A piece in this genre by Tchaikovsky with a *pezzo elegiaco* first movement was subtitled "In Memory of a Great Artist" in reference to Nikolai Rubinstein. Beethoven put many accented chords and extended tremolos in the (\*) *Largo assai ed espressivo* second movement for his fifth work of this type, creating an eerie sound that reminded Carl Czerny [CHAIR-nee] of the ghost of Hamlet's father. Beethoven's seventh piece in this genre was dedicated to his student Archduke Rudolph. For 10 points, name this chamber genre usually scored for violin, cello, and a keyboard instrument.

ANSWER: piano trios [prompt on trios]

10. This kingdom's capital was governed from a castle built where its founder and his two sons supposedly killed a dragon named Wawel [VAH-vul]. The first ruler of this kingdom seized the Ostmark from Gero II, though he was mostly backed by Emperor Henry II thanks to proselytizing. Landed gentry were favored over rebellious *druzyna* by a ruler of this kingdom nicknamed "the Restorer"; that king married a woman named Maria to conclude an alliance with Yaroslav the Wise, who seized this kingdom's lands in (\*) Red Ruthenia. Rulers of this kingdom's Piast dynasty included several kings named Casimir and a man who intervened in a Kievan Rus succession crisis, Boleslaw [boh-leh-swaff] the Brave. It later joined an eastern neighbor in the Union of Lublin under the reign of Jagiello. For 10 points, name this medieval kingdom ruled from Krakow.

ANSWER: Kingdom of Poland [or Polska; or Polonia]

11. A character in this work claims that his greenhouse is made out of "spit and faith" and praises a simple life with tea and books. During breakfast, another character is scandalized by a description of her bread as succulent, saying "You shouldn't say that word to a married woman!" One man in this play tells the

protagonist “Don’t let them tell you what to do!” while another asks him about the “blessed Oliver Plunkett” in an (\*) interrogation that includes the question, “Why did the chicken cross the road?” The main character of this play bangs violently on a drum and rapes Lulu after the lights go out during a game of Blind Man’s Bluff. He is then taken away by Goldberg and McCann from an event planned by boarding-house owner Meg. For 10 points, name this Harold Pinter play in which Stanley Webber ostensibly celebrates the title event.

ANSWER: *The Birthday Party*

12. This thinker wrote about a hyper-assimilated man who is by turns 150 percent German, Viennese, and French before realizing he has actually been an American all along, and said that a certain group of people should not be parvenus but accept their role as the pariah. This author of “We Refugees” wrote that no punishment was enough to deter repeating a crime, since any act recorded in the “history of mankind” remains a potentiality. This author distinguished between secular (\*) anti-semitism and religious “Jew-hatred” in the first part of a work that also analyzed imperialism and the breakdown of the nation-state. In another work about a man’s “thoughtlessness,” this thinker moved from a theory of “radical” to “banal” evil. For 10 points, name this author of *Eichmann in Jerusalem* who compared Nazism and Stalinism in *The Origins of Totalitarianism*.

ANSWER: Hannah Arendt

13. In biochemistry, the sulfate of this cation is commonly used for protein precipitation, and its persulfate is used as a polymerization catalyst to make polyacrylamide gels. Species in which all of the hydrogen atoms in this ion are replaced by alkyl groups are commonly used as phase transfer catalysts. Glutamate dehydrogenase splits glutamate into alpha-ketoglutarate and this ion, which is then used to create (\*) carbamoyl phosphate in the urea cycle. This polyatomic cation is isoelectronic with methane, and its chloride notably dissolves endothermically in water. This ion is grouped with the alkali metals in the solubility rules because most salts it forms are soluble in water. For 10 points, name this cation with formula  $\text{NH}_4^+$  plus.

ANSWER: ammonium [do NOT accept “ammonia”; accept NH4 before mention]

14. This man’s body was burnt on a pyre by his freedman Philip. He was proclaimed a perfect commander because he had military knowledge, excellence, prestige, and luck in a speech by Cicero. One of his rivals quipped that “the enemy would have won if they had a commander who was a winner” instead of this man. Lucullus objected to losing his Asiatic command to this man. He worked with Quintus Caecilius Metellus Pius to put down the revolt of (\*) Sertorius. This victor at Dyrrachium was assigned Hispania at the Lucca conference. He was given extraordinary powers by the *Lex Gabinia* to hunt down Cilician pirates. Pothinus convinced Ptolemy XIII to betray this man in Egypt and send his head to a rival who had beaten him at the battle of Pharsalus. For 10 points, name this Roman who was part of the First Triumvirate along with Crassus and Julius Caesar.

ANSWER: Pompey the Great [or Gnaeus Pompeius Magnus]

15. An object like one of these things creates a geometric pattern on the surface of superfluid helium-3 called a boojum. The first solution to the Yang-Mills field equations with a vector potential proportional to one over  $r$  was an example of this. These things are equivalent to dyons with (\*) zero electric charge. According to the Dirac quantization condition, this particle implies that all electric charge is universally quantized as a multiple of two pi. Along with the flatness and horizon problem, cosmic inflation was posed to solve the problem of the low abundance of these things. If this particle were to exist, then the divergence of a magnetic field would be nonzero. For 10 points, name this hypothetical elementary particle whose existence would violate Gauss’s law of magnetism.

ANSWER: magnetic monopole

16. One character with this first name refuses to give another person a key to her office for access to a copy machine and gets a passport from the hypocritical Brandt Vermeulen. Another character with this first name embroiders mythical animals onto a tablecloth; that character’s body does not decay after death but disintegrates after being kissed. This is the first name of the initial fiancée of (\*) Esteban Trueba, who dies after drinking poisoned brandy meant for her father; that green-haired woman is the sister of Clara del Valle. Another character with this name is raised with a boy called Baasie and brings messages to her mother Cathy in prison while trying to escape the shadow of her anti-apartheid activist father Lionel. For 10 points, give this name of a character in Isabel Allende’s *House of the Spirits* and the protagonist of Nadine Gordimer’s *Burger’s Daughter*.

ANSWER: Rosa [or Rosa del Valle; or Rosa Burger]

17. In one story, this figure makes a medicine for Erec, and a text purportedly written by this self-declared “governor of the waves” relates the tale of Piers the Fierce. This figure, who taught mathematics to Moronoe, Mazoe, and Thiten, fights for the attentions of Hector de Maris and Berengier against Sebile. By creating a golden ship, this figure causes a man to interfere in the feud of Damas and Ontzlake. The maid Rucedon helps a man escape from this figure, who (\*) traps him in Cart Castle until he chooses between her and two other women. This figure feuds with a woman who caught her having an affair with Guiomar, and she tricks Accolon into fighting his ruler with his own sword. This wife of King Urien and sister of Morgause transports her brother to Avalon after his death. For 10 points, name this enchantress, the enemy and half-sister of King Arthur.

ANSWER: Morgan le Fay [or Morgana or Morgane]

18. A former head of this country’s intelligence agency was castrated and dragged through the streets by a truck before his execution. Despite the 1967 split of this country’s People’s Democratic Party into factions, foreign influence brought together the Khalq faction here. Foreign air and land coordination of a coup against the Arg palace in this country helped install its president Nur Muhammad (\*) Taraki. That event in this country, the Saur Revolution, sparked a decade-long conflict which prompted Jimmy Carter to call for the boycott of the Olympics. Foreign militants who were given U.S. money and Stinger missiles by Operation Cyclone to fight in this country during an occupation were called *mujahideen*. For 10 points, name this still war-torn country which was occupied during the 1980s by the Soviet Union and where the Taliban took over in the 1990s.

ANSWER: (Islamic Republic of) Afghanistan

19. Dean Spade and Craig Willse have argued that legitimizing this practice creates anti-black discrimination due to perceived lower rates of it among African-Americans. Roland Barthes claimed that the ‘truth’ of this practice redeems “the social diseases of the bourgeoisie” and “consecrates” the world of the petit-bourgeois. In Sunni Islam, traditional *sharia*-related prohibitions are skirted by a “traveller’s” variety of this practice, though Sunnis often criticize Shias for a similarly lax variety of it called (\*) *mut’ah*. In common law, this practice traditionally led to “coverture,” a subsuming of legal rights by one of its parties. The Nuer transfer a cow during a ‘ghost’ form of this practice which is also widespread in China. State-level bans on a specific variety of this practice were overturned by *Obergefell v. Hodges*. For 10 points, name this practice that can be reversed by divorce.

ANSWER: marriage

20. A painting by this artist of a woman in a dark blue-green dress was arranged into a “triptych” by Frederick Leyland, who also commissioned this artist’s painting *Monna Rosa*. A sycamore tree serves as a seat for a woman whose hand rests on a book and grasps a honeysuckle in a painting by this artist; that painting’s model, Jane Morris, also appears in this artist’s *Proserpine*. This painter of *The Day Dream* was inspired by (\*) *La Vita Nuova* to create a painting showing his wife, Elizabeth Siddal, in Paradise. This artist depicted a woman with child-angels in heaven in an illustration of his most famous poem, whose title character is shown looking down at her lover on Earth. For 10 points, identify this leader of the Pre-Raphaelite Brotherhood who painted *Beata Beatrix* and *The Blessed Damsel*.

ANSWER: Dante Gabriel Rossetti [prompt on Rossetti]

**Bonuses:**

1. By Sjon's novel *The Whispering Muse* features a splinter of this ship that still carries some of its mythic power. For 10 points each:

[10] Name this boat which carried heroes like Jason, Heracles, Atalanta, and Bellerophon on their quest to find the Golden Fleece. It had a magical talking piece of wood for its prow.

ANSWER: the Argo

[10] The Golden Fleece first appeared to save this boy and his sister Helle from a human sacrifice orchestrated by their stepmother Ino. The golden ram carried him to Colchis, after which he sacrificed it.

ANSWER: Phrixus

[10] The Argo landed among these people led by King Cyzicus. They accidentally fought against the Argonauts because it was too dark to see them, and forgot to tell them about the giant Gegenes living nearby.

ANSWER: Doliones

2. A fallacy named for this group says that technological development always leads to higher unemployment. For 10 points each:

[10] Name these people, British workers who participated in uprisings from 1811 to 1816 in which they broke machines. Their name now colloquially refers to anyone who is afraid of or against new technologies.

ANSWER: Luddites [or the Luddite fallacy]

[10] Luddites often broke these specific machines. They include a "Jacquard" type with punched cards on which the first computer was based.

ANSWER: mechanised loom [or stocking frames; or knitting machines]

[10] This series of riots was named after a fictional hard-working person put out of work by industrialization. Its fictional namesake sent threatening letters to magistrates calling them "Parson Justasses" and the "Blackguard Enemies of the People."

ANSWER: Swing Riots [or Captain Swing]

3. A darker version of this house in Canberra was designed by Ashton Raggatt MacDougall and is known as the "Southern Hemisphere shadow." For 10 points each:

[10] Name this modernist house in Poissy. This house has a lower level with a curved side for cars to pull up to below a main floor that is supported by *piloti*.

ANSWER: Villa Savoye

[10] The Villa Savoye was designed by this author of "Towards a New Architecture" who planned the city of Chandigarh; more bizarrely, he carried his wife's vertebrae around after she died.

ANSWER: Le Corbusier [or Charles-Edouard Jeanneret]

[10] This 26-meter tall sheet metal sculpture in Chandigarh was designed by Corbusier. It was intended as a "sign of peace and of reconciliation," and is named after a motif that recurs in Corbusier's works.

ANSWER: Open Hand Monument

4. Codenamed Operation Urgent Fury, this action annoyed Margaret Thatcher because it involved a member of the Commonwealth. For 10 points each:

[10] Name this action initiated on October 25, 1983 by Ronald Reagan after the murder of Maurice Bishop, which concluded with the restoration of democracy under Herbert Blaize in 1984.

ANSWER: United States Invasion of Grenada [or clear knowledge equivalents]

[10] This Marxist-Leninist organization came to power in Grenada before the US invasion. After the assassination of Bishop, this party's new leader became Hudson Austin, who surrendered to American forces.

ANSWER: New Jewel Movement [or New Joint Endeavor for Welfare, Education, and Liberation]

[10] Issues experienced during the operation were addressed in an act co-authored by this Senator from Arizona and Bill Nichols. He lost the presidency to Lyndon B. Johnson in 1964.

ANSWER: Barry Morris Goldwater

5. This book calls Kant the "great Chinaman of Konigsberg," and compares him to the "sleepy faculty" of opium. For 10 points each:

[10] Name this polemical work subtitled *Prelude to a Philosophy of the Future*, which criticizes the "prejudices" of previous moral philosophers and "unegoistic morality." It ends with the epode "From High Mountains."

ANSWER: *Beyond Good and Evil*

[10] *Beyond Good and Evil* is by this German philosopher, who had previously discussed the “will to power” in *The Gay Science*.

ANSWER: Friedrich Nietzsche

[10] *The Gay Science* discusses this idea, the possibility of which Nietzsche describes as “the most burdensome thought.” He claimed that to come to peace with this idea requires *amor fati*, the “love of fate,” as well as freedom from morality and the abolition of the “will.”

ANSWER: the eternal recurrence [or the return or die Ewige Wiederkunft]

6. In a passage from the Diamond Sutra, the Buddha explains several forms of perfection to Subhuti while at a monastery near Jetavana, which is one of these places. For 10 points each:

[10] Identify these locations. They lend their name to the majority sect of Theravada Buddhism practiced in Thailand, which emphasizes forms of meditation called *dhutanga* and *kammatthana*.

ANSWER: forests [or groves; or parks; accept Thai Forest Buddhism]

[10] The pillars of Thai Buddhism are ascetic meditation and the study of this central set of ancient Theravada Buddhist scriptures, which were compiled in the 1st century BC.

ANSWER: Tripitaka [or Pali Canon]

[10] Thai law still prohibits these people from taking full monastic vows and becoming *bhikkhunis*, or nuns. Unlike Mahayana traditions, Theravada Buddhism generally discourages these people from joining the *sangha*.

ANSWER: women [or female-identifying persons, etc.]

7. Name some things about statics, for 10 points each:

[10] In statics, these structures consist of two-force members so that they behave overall as single objects. They typically consist of straight members, which only experience pure tension or compression, connected at joints.

ANSWER: truss

[10] When analyzing a truss, one typically assumes it is in this configuration - that is, all the forces and torques at each joint sum to zero.

ANSWER: equilibrium [or static equilibrium]

[10] Forces inside a truss can be calculated by the method of joints, the method of sections, or this graphical method. It involves creating “force polygons” by drawing the vectors at each joint in the proper size and scale.

ANSWER: Cremona diagram

8. For reasons known only to herself, this author used the pseudonym Brent of Bin Bin. For 10 points each:

[10] Name this feminist author of *All That Swagger* who fictionalized herself as Sybylla Melvyn in *My Brilliant Career*.

ANSWER: Miles Franklin

[10] Miles Franklin names a literary prize in this country, which is also home to authors such as Margo Lanagan, Thomas Keneally, and Peter Carey.

ANSWER: Commonwealth of Australia

[10] Most of Carey’s novel *True History of the Kelly Gang* is addressed to this person. After Kelly’s attempts to justify his actions to this character, the narrative is taken over by an author known only “S.C.”

ANSWER: Ned Kelly and Mary Hearn’s daughter [prompt on less specific answers like child; do not accept or prompt on “son”]

9. In this play, a mother wishes her son was a woman so they could sit and sew together and he would not have to leave home and get married. For 10 points each:

[10] Name this play, in which Leonardo Felix runs away with the Bride on the day of her nuptials, only for him and the Groom to kill each other in the woods.

ANSWER: Blood Wedding [or Bodas de sangre]

[10] *Blood Wedding* was written by this Spanish author of *The House of Bernarda Alba* and *Yerma*, which are both part of his *Rural Trilogy*.

ANSWER: Federico Garcia Lorca

[10] Garcia Lorca’s poem “Sleepwalk Ballad” prominently features this color, which he tells “I want you.” The poem describes a woman with flesh and hair of this non-black color standing on a veranda.

ANSWER: green [or verde]

10. This composer's Rosamunde Quartet opens with a quotation from his song "Gretchen at the Spinning Wheel." For 10 points each:

[10] Name this prolific Austrian composer, whose *lieder* include a song cycle based on poems by Wilhelm Muller, as well as *Die Erlkonig*, a setting of a Goethe poem about a man whose child dies in his arms.

ANSWER: Franz **Schubert**

[10] This lied by Schubert starts with slow D minor chords in *pianissimo*; Schubert later adapted it into a quartet whose second movement is a theme and variation on the piano accompaniment of the song.

ANSWER: **Death and the Maiden** [or *Der Tod und das Mädchen*]

[10] This word titles a Schubert lied whose title figure repeatedly asks the question "Where?" Schubert later quoted that lied in a C major piano piece with this name which was transcribed by Franz Liszt for piano and orchestra.

ANSWER: **Wanderer** [or *Wanderer Fantasy*; or *Wanderer-Fantasie*]

11. In 1819, John Keats decided to write a bunch of odes. For 10 points each:

[10] This most famous ode of his declares that "Beauty is truth, truth beauty" and "Heard melodies are sweet, but those unheard/Are sweeter." It describes an "Attic shape" that is a "bride of quietness."

ANSWER: **Ode on a Grecian Urn**

[10] This ode states that the title figure lives with Beauty, Joy, Pleasure, and Delight. It describes how to fight against its title entity, which can "fall sudden from heaven."

ANSWER: **Ode on Melancholy**

[10] This author gave Keats' "Ode to a Nightingale" a glowing review in *The Indicator*; Keats wrote about "On Receiving a Laurel Crown from" this author of *The Story of Rimini* and *The Feast of the Poets*.

ANSWER: Leigh **Hunt**

12. This art style is exemplified by Hector Guimard's entrances to the Paris Metro, which feature curving green cast-iron patterns. For 10 points each:

[10] Name this art style of the 1890s practiced by artists such as Gustav Klimt and Aubrey Beardsley. It emphasizes organic, curving designs.

ANSWER: **art nouveau** [or *new art*]

[10] This Post-impressionist painter dabbled in the art nouveau style in creating a poster advertising the dancer La Goulue, set in the same place of one of his more famous works, *At the Moulin Rouge*.

ANSWER: Henri de **Toulouse-Lautrec**

[10] The famous "Le Chat Noir" poster was created by this painter. He created other Art Nouveau posters such as "Cocorico" and "Moithu et Doria."

ANSWER: Theophile **Steinlen**

13. The AKS test ground-breakingly checks whether a number belongs to this group of numbers in polynomial time. For 10 points each:

[10] Name this type of numbers, whose Mersenne type is equal to a power of two minus one.

ANSWER: **prime**

[10] A prime  $p$  is this type of prime if  $2p + 1$  is also prime. They are used to produce safe primes for the RSA cryptosystem, and were used by their discoverer to work on Fermat's Last Theorem.

ANSWER: Sophie **Germain** prime

[10] This algorithm is used to find all prime numbers up to a given limit; it works by iteratively labeling all multiples of primes as composite in order to leave the primes themselves behind.

ANSWER: **sieve** of **Eratosthenes**

14. Name some things about crystals, for 10 points each:

[10] These sets of numbers are used to indicate points, families of directions, and families of planes in a crystal. They place bars over a number to represent that it is negative.

ANSWER: **Miller** indices

[10] In this common crystal type used in chromium and iron-alpha metals, one atom lies in the center of the unit cell with another atom touching it on each corner of the unit cell.

ANSWER: **body-centered cubic**

[10] This is the coordination number of a body-centered cubic crystal, in which each atom ideally touches this number of other atoms. This is also the atomic number of oxygen.

ANSWER: **eight**

15. One character in this short story erroneously uses phototropism as evidence that plants can think, and concludes that machines should thus be able to think as well. For 10 points each:

[10] Name this Ambrose Bierce story in which a chess-playing robot kills its creator in a fire.

ANSWER: **"Moxon's Master"**

[10] This chess-titled Faulkner novella features Yoknapatawpha County attorney Gavin Stevens, who "captures his queen" by marrying the Widow Harris.

ANSWER: **Knight's Gambit**

[10] Waverly Jong becomes a national chess champion at the age of nine, but is embarrassed that her mother brags about her, in this Amy Tan novel about the titular society of women who play mahjong.

ANSWER: **The Joy Luck Club**

16. The mechanics of this effect are often compared to a fire hose, which converts pulsatile to fluid flow. For 10 points each:

[10] Name this effect, caused by elastic fibers in the arteries which distend during systole and recoil during diastole, causing the arteries to act as "capacitors of the cardiovascular system" and damp pulse pressure.

ANSWER: **Windkessel** effect

[10] The Windkessel effect diminishes as compliance decreases due to "hardening of the arteries" caused by this disease, which creates a buildup of fatty plaque on arterial walls.

ANSWER: **arteriosclerosis** or **atherosclerosis**

[10] This treatment for arteriosclerosis involves unblocking blood vessels with a metal stent, which is threaded into the artery, inflated by balloon, and then left to keep the artery open.

ANSWER: **angioplasty**

17. A PSA from Penn Quiz Bowl: don't forget to vote! But first answer these questions about election fraud, for 10 points each:

[10] This 19th century American form of electoral fraud may have led to the death of Edgar Allan Poe. It involved kidnapping random people, getting them drunk, and forcing them to vote multiple times in different disguises.

ANSWER: **cooping**

[10] In a 2009 Iranian scandal, this Reformist candidate lost to Mahmoud Ahmadinejad. His supporters wore green ribbons and headscarves and protested his defeat.

ANSWER: Mir-Hossein **Mousavi**

[10] In 2006, Felipe Calderon, a member of the National Action Party, or PAN, narrowly defeated Andres Manuel Lopez Obrador in a contested election in this country previously run by the PRI.

ANSWER: **Mexico** [or **United Mexican States**; or **Estados Unidos Mexicanos**]

18. This leader first rose to prominence as a producer of agitprop in Moldavia. For 10 points each:

[10] Name this chief of staff to Brezhnev who led the USSR through the retaliatory boycott of the 1984 Olympics. During his tenure, his poor health forced Gorbachev to stand in for him at Politburo meetings.

ANSWER: Konstantin Ustinovich **Chernenko**

[10] Chernenko held power during the administration of this American president, who used the term "evil empire" to refer to the Soviet Union and called on Gorbachev to "tear down" the Berlin Wall.

ANSWER: Ronald Wilson **Reagan**

[10] Andropov led the USSR when the Soviet Air Force shot down this passenger airliner in 1983. Georgia Representative Larry McDonald died on this plane, which was shot down near Sakhalin Island.

ANSWER: **Korean Airlines Flight 007** [or **KAL 007**, or **KE 007**; prompt partial answers such as **Korean Air**, **KAL**, **KE**, or **007**]

19. This team was coached to back to back Super Bowl victories in 1972 and 1973 by Don Shula. For 10 points each:

[10] Name this AFC East franchise that wears aqua and orange and whose current players include running back Arian Foster and quarterback Ryan Tannehill.



ANSWER: Miami Dolphins [accept either underlined part]

[10] In 2015 the Dolphins signed this defensive tackle to the largest contract in NFL history for a defensive player. He may be better known for kicking Matt Schaub in the groin and being voted the NFL's dirtiest player.

ANSWER: Ndamukong Suh

[10] Suh's signing led to a Harvard analytics team predicting that the Dolphins would win Super Bowl 50. Instead, they finished last in their division, notably being embarrassed by this Bills backup running back in Week 4.

ANSWER: Karlos Williams

20. This law was spurred by speculation that serial killer David Berkowitz was looking to sign a media deal about his murders, which led to public outrage. For 10 points each:

[10] Name this term that refers to laws forbidding criminals from profiting off of the publicity of their crimes. Recent attempts to enforce them have included cracking down on "murderabilia."

ANSWER: Son of Sam law

[10] Berkowitz committed his murders in this city, where a "broken windows" policy in the 1980s led by William Bratton supposedly led to a drop in crime rates.

ANSWER: New York City [or NYC; or nicknames like the Big Apple]

[10] This nineteenth-century Italian criminologist claimed that criminality was heritable. His "anthropological" view claimed that criminality could be detected through physiological measurements such as bumps on the skull.

ANSWER: Cesare Lombroso [or Ezechia Marco Lombroso]