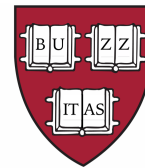


Harvard Fall Tournament XIII

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Finals 2

Tossups

1. **Boron nitride varieties of this structure embedded in ceramic may be the future of rocket engine construction because they are resistant to oxidation and tolerant of high temperatures. A variety of this structure can be synthesized by the HiPco [pronounce as one word] method using high pressure carbon monoxide. This structure can come in armchair, chiral, and zig-zag configurations, and like many similar compounds they are often made with (*) chemical vapor deposition. The carbon type of this structure is a fullerene [“FULL-luh-reen”] equivalent to a rolled-up sheet of graphene. For 10 points, give this allotrope of carbon with a cylindrical structure.**

ANSWER: **nanotubes** (accept carbon **nanotubes** and other specific varieties; prompt on **fullerene** before mention) <K. Li>

2. **Nathaniel Isaacs documented an instance when this man was stabbed during a dance, after which he was treated by H. F. Fynn. This man brutally killed his rival’s mother by feeding her to two jackals. This man banned the planting of crops for a year after the death of his mother Nandi, which led to his assassination by his half-brother (*) Dingane [“din-gah-nay”]. This man’s military innovations included the *iklwa*, a shorter version of the *assegai* spear, and the “buffalo horn” formation. The empire he founded was defeated by the British at Isandlwana, thus cementing their control over South Africa. For 10 points, name this ruler of the Zulu Kingdom.**

ANSWER: **Shaka** <Suh>

3. **Two companies in this industry formed a partnership in October 2017 to avoid anti-dumping duties on the CSeries. Leases made in this industry can be either “wet” or “dry,” and this industry sells products that can be described as “fifth freedom” or (*) “ultra long-haul.” A company in this industry suddenly ceased operations in October 2018, leaving its consumers stranded in foreign countries. That same month, an Indonesian company in this industry was involved in a disaster that killed 189 people traveling from Jakarta to Pangkal Pinang. For 10 points, name this industry whose “Big Three” in the United States include Delta, American, and United.**

ANSWER: **aviation** industry (accept equivalents such as the **airline** industry or **airplane** industry) <Park>

4. **This team hit a two-out, two-run home run in the bottom of the 9th inning to tie the game in two consecutive World Series games, a feat accomplished by Tino Martinez and Scott Brosius. In a widely cited example of “roid rage,” a pitcher for this team threw a piece of a broken bat towards (*) Mike Piazza during a game against the New York Mets in 2000’s so-called “Subway Series.” This team has highest number of World Series championships at 27, the last one of which was won in 2009 with members like Jorge [“HOR-hay”] Posada. For 10 points, name this Major League Baseball team based in the Bronx, a rival of the Boston Red Sox.**

ANSWER: New York **Yankees** (prompt on **New York** until mention) [*Writer’s note*: That pitcher was Roger Clemens.] <Suh>

5. After losing a battle, a ruler of this city suffocated to death after being put under a giant wooden plate on which his captors danced and feasted. Boleslaw ["bo-LEH-swaff"] I the Brave supposedly chipped his sword by striking it against this city's Golden Gate. Nestor's *Primary Chronicle* records that this city was conquered by Oleg of (*) Novgorod. The Varangian Guard was started when a ruler of this city sent 6,000 men to Basil II of the Byzantine Empire. That ruler of this city, Vladimir, was a member of the Rurikid dynasty who converted this city to Christianity via a mass baptism in the Dnieper River. For 10 points, name this capital of Ukraine.

ANSWER: Kiev (accept Kievan Rus) <Suh>

6. A character with this profession tells Louise after a suicide that no one can "know what goes on in a single human heart," and another is offered a gun and a knife by a dying American he had traveled five hours to see. That character with this profession fathered Brigida with Maria and is given brandy by a (*) lieutenant before his execution. Major Scobie discusses his affair with a character of this profession in *The Heart of the Matter*, and another is betrayed by a "mestizo" in Mexico, where his profession is outlawed. For 10 points, describe this profession of the "whiskey" protagonist of Graham Greene's *The Power and the Glory*, one of his Catholic novels.

ANSWER: Catholic priests (accept Father Rank or the whiskey priest) <Yue>

7. A number named after this man was proved to be prime by the Coppersmith-Howgrave-Graham method. Evaluating this man's namesake polynomials at x equals 2 yields the Pell numbers. This man names an algebraic identity with Brahmagupta describing the product of sums of two squares. A (*) ratio associated with this man is a root of the quadratic $x^2 - x - 1$; taking the limit of ratios of consecutive numbers named after this man yields that golden ratio. This man devised a recursive sequence to model the growth of a population of rabbits. For 10 points, name this mathematician whose namesake sequence begins 1, 1, 2, 3, 5.

ANSWER: Fibonacci (accept Leonardo of Pisa; prompt on Leonardo) <R. Li>

8. A work by this composer includes a coloratura aria which is notable for hitting the E-flat above high C three times. That operetta by this composer was based on a Lillian Hellman book that was rewritten by Hugh Wheeler. This composer scored *On the Waterfront*, and the aria (*) "Glitter and Be Gay" appears in his English-language operetta *Candide*. Officer Krupke interrupts a pantomimed, finger-snapping dance off that opens a musical by this composer; that musical by this composer contains a song about "Maria" and depicts the conflict between the Sharks and Jets. For 10 points, name this composer of *West Side Story*.

ANSWER: Leonard Bernstein <Magee>

9. A function named for this scientist is equal to the divergence of r -hat over $4\pi r^2$ and scales as a function of one over the scaling factor. This scientist names an equation which uses a basis of matrices with anticommutators proportional to the four-by-four identity matrix that forms a Clifford algebra. Inner products are depicted with (*) bras and kets in this scientist's namesake notation, and he explained negative energy states using holes in his namesake sea to represent positrons. Everywhere but at the origin, this man's namesake delta function has a value of zero. For 10 points, name this physicist who predicted the existence of antimatter.

ANSWER: Paul Dirac <Yue>

10. A poem in this language says that a certain person has "sunk in sleep" and is titled "Elegy for John Donne." A formalist theorist writing in this language analyzed the concept of "defamiliarization," and a member of the Acmeist ["AKH-mee-ist"] school produced the poem *Requiem* in this language. An "epigram" by (*) Odip Mandelstam uses this language to criticize a dictator, and a poet writing in this language invented a poetic form with masculine and feminine rhymes. A sonnet form was used for a verse novel in this language in which Lensky duels the title character over Tatyana. For 10 points, give this language used by Alexander Pushkin.

ANSWER: Russian (accept word forms) <Levine>

11. **This figure hijacked Black God’s creation plans by blowing stars from a pouch onto the sky to form the Milky Way. The star Arcturus was formed when this figure threw one of his eyeballs too high into the sky. The First Man and Woman left for the Fourth World after this figure stole the children of the Water Buffalo. Under this figure’s influence, (*) Changing Bear pretended to comb her brothers’ hair before killing them. This figure created plants from a little ball of mud that two ducks found. This figure also known as “Old Man” shares many characteristics with Raven. For 10 points, name this canine trickster figure found in North American myths.**
ANSWER: Coyote <Suh>

12. **A characteristic of these people is described as a “rationalization of the conduct of life in the world” in one work. Richard Baxter’s analyses of these people are cited in a book claiming that these people’s loss of magic led to pessimistic individualism. Four forms of these people’s asceticism is analyzed in a work that discusses these people’s “idea of the (*) calling” giving a “moral justification for worldly activity.” That justification of these people promotes a construct with a “steel-hard casing,” the iron cage of capitalism. For 10 points, name these people whose work ethic partially titles a landmark Max Weber work that contrasts their economic success with Catholics.**
ANSWER: Protestants (accept *The Protestant Ethic and the Spirit of Capitalism*; anti-prompt [ask for less specific] on Calvinists or Puritans; prompt on capitalists with “What is the specific title characteristic of these capitalists?”; prompt on Christians) <Yue>

13. **A chapter of this organization whose members called themselves “blackfriars” included a man nicknamed “God’s Banker.” Leo Taxil wrote the *Memoirs of an Ex-Palladist* under the pseudonym Diana Vaughan, a fictitious member of this organization. Edward VII was once the Grand Master of this organization’s United Grand (*) Lodge of England. The disappearance of William Morgan, a former member of this organization, catalyzed the formation of the first third party in American history, which was named anti-[this organization]. For 10 points, give this collective name of fraternal organizations originally started by people who work in stonemasonry.**
ANSWER: Freemasonry (or Masonry; accept Freemasons or Masons; accept Anti-Masonic Party; anti-prompt [ask for less specific] on Propaganda Due or P2; definitely do NOT accept or prompt on “the Illuminati”) <Suh>

14. **A character in this novel runs an inn with her husband at Cross Slope, where they drug their guests and sometimes make buns out of their flesh to serve to patrons. A character in this novel is nicknamed “Golden Haired Hound” and captures a steed known as the Jade Lion; that steed in this novel was originally to be presented to Chao Gai, the leader of a (*) group that feuds with the Song dynasty. This book was written by Shi Nai’an, and it portrays a rebellious group called the “stars of destiny” who oppose a corrupt government official. For 10 points, name this book about a group of 108 outlaws, a member of the Four Great Classical Novels of China.**
ANSWER: *The Water Margin* (accept any of *Outlaws of the Marsh*, *Tale of the Marshes*, *All Men Are Brothers*, *Men of the Marshes*, or *The Marshes of Mount Liang*; accept *Shuǐhǔ Zhuàn*) <Cohen>

15. **Notes from meetings with an early leader of this religion were published as *Paris Talks* by Sara Blomfield. This religion’s founder wrote the *Epistle to the Son of the Wolf* to an early persecutor of this religion. This religion teaches the “three onenesses” of God, humanity, and religion. A man known by an epithet meaning (*) “Gate” is considered to be a forerunner of this religion. The Ridván is 12-day festival celebrating the declaration of this religion’s founder that he was a Manifestation of God. This religion’s Universal House of Justice is located on Mount Carmel in Israel. For 10 points, name this religion founded by Bahá’u’lláh [“ba-ha-ul-LAH”].**
ANSWER: Bahá’í <Suh>

16. **The most common point mutation results from hydrolysis of this functional group; that mutation converts a 5-methylcytosine into thymine. Epinephrine is synthesized from norepinephrine by methylating this functional group. A compound named for this functional group is produced by mast cells and has vasodilatory ["vay-zo-dye-lah-toh-ree"] properties which are responsible for some physical symptoms of (*) allergies; that compound's precursor is its acid form histidine. Lysine has a positive charge at physiological pH because of the nitrogen that's at the center of this functional group. For 10 points, name this functional group whose "acid" variant is the building block of proteins.**

ANSWER: amine (accept amino group; accept amino acid; do NOT accept or prompt on "imine") <K. Li>

17. **It's not Rome, but a sculpture on display in this city depicts Jesus rising out of a collection of grotesquely branching tendrils and is Pericle Fazzini's *The Resurrection*. A coat of arms made up of three bees was incorporated into a bronze canopy located in a church in this city. A work currently in this city includes a self-portrait of the artist as St. (*) Bartholomew holding his flayed skin. One of four "rooms" named for a Renaissance artist in this city shows Plato and Aristotle at the top of a staircase. Raphael's *The School of Athens* currently hangs in, for 10 points, what city where Michelangelo painted *The Last Judgment* in the Sistine Chapel?**

ANSWER: The Vatican City (or the Holy See; do NOT accept or prompt on "Rome") <Chu>

18. **This man is savagely attacked in the memoir *Leaving the Doll's House* by his ex-wife Claire Bloom. This author penned an open letter to Wikipedia to dispute that Anatole ["ah-na-toll"] Broyard inspired his character of Coleman Silk, and Newark resident Dawn undergoes plastic surgery after her daughter blows up the Old Rimrock post office in one of his novels narrated by (*) Nathan Zuckerman. This author wrote an infamous scene involving liver and a libidinous character who monologues to psychoanalyst Doctor Spielvogel. For 10 points, name this novelist who passed in May 2018, the author of *American Pastoral* and *Portnoy's Complaint*.**

ANSWER: Philip Milton Roth <Yue/Kuang>

19. **Synonyms acceptable. A popular Peter Maxwell Davies piano piece is titled "[this word] to Stromness." This title names an E-flat-major piano work beginning with a descending horn call, a repetition of which ends in C-flat major. A 3/8 *Adagio* coda ends the two-part finale of a work with this title beginning with descending F-sharp-minor arpeggios. This word, written in German above the first three notes of a namesake (*) Beethoven piano sonata, titles an F-sharp-minor symphony ending with the oboes, horns, and double bass snuffing out candles and leaving the stage in order. For 10 points, give this nickname of Haydn's 45th symphony.**

ANSWER: farewell (accept "Farewell to Stromness," "Les adieux," *The Farewells*, the *Farewell Symphony*, "Lebewohl," "Das Lebewohl," and any answer indicating departure or goodbye) <Yue>

20. **A standoff between this nation and Germany ended when a cyclone wrecked all the warships in Apia harbor. This nation's 1871 military expedition to Korea called Shinmiyangyo ["SHEEN-mee-yang-yo"] was a diplomatic failure. A general from this country pretended to be a captive of the Macabebes to capture an enemy leader. The (*) Bayonet Constitution was passed by a group of businessmen from this country. This country suppressed the Moro Rebellion and captured Emilio Aguinaldo to subjugate the Philippines. Since 1899, this nation has maintained a naval base at Pearl Harbor. For 10 points, name this country that annexed Hawaii.**

ANSWER: United States of America (accept either underlined portion; accept abbreviations like U.S.A.) <Suh>

21. The *yakhchal* was developed to store a form of this commodity. Diodorus Siculus praised the Nabatean Kingdom for their ability to transport this commodity. The ancient Iranians developed the *qanat* system to manage and transport this resource. Barays were used in the Khmer Empire to store this resource, while the Egyptians developed the (*) *shaduf* to transport this resource. Pont du Gard is a bridge that transported this resource. Clocks powered by this substance were given to Charlemagne by Harun al-Rashid. This resource can be moved upwards by Archimedes' screw. For 10 points, name this resource that the Romans moved via aqueducts.
ANSWER: water (prompt on ice) <Suh>

Bonuses

1. This dynasty was the first in China to establish a permanent standing navy. For 10 points each:

[10] Name this first Chinese dynasty to print paper money. It experienced a “Southern” period when it moved to Hangzhou under pressure from the northern Jin dynasty.

ANSWER: **Song** dynasty (accept Southern **Song**)

[10] This conservative scholar-official of the Song dynasty wrote the *Comprehensive Mirror in Aid of Governance*, which was a universal history of China. This man opposed Wang Anshi’s reforms.

ANSWER: **Sima Guang** (both parts required; prompt on partial answer; or **Junshi**)

[10] The Song, much like dynasties before it, maintained a state monopoly on this resource. During the Han dynasty, the regent Huo Guang invited scholars to have economic policy debates on this resource and iron.

ANSWER: **salt** (accept Discourses on **Salt** and Iron) <Suh>

2. This photograph was first exhibited at its artist’s Gallery 291. For 10 points each:

[10] Name this photograph that shows several men and women in the lower-class portion of a steamer. Its use of a balcony and walkway to divide the picture into geometric shapes has been hailed as a proto-Cubist design.

ANSWER: *The **Steerage***

[10] *The Steerage* is a photograph by Alfred Stieglitz, who was married to this New Mexican painter. Many of her artworks depict relics of the desert, like cow skulls and vibrant flowers.

ANSWER: Georgia **O’Keefe**

[10] Stieglitz depicted several of these features in his *Equivalents* series. The development of panchromatic photographic emulsion allowed Stieglitz to photograph these features effectively.

Answer: **clouds** <Gioia>

3. The discovery of this effect led to the establishment of the von Klitzing constant for resistance. For 10 points each:

[10] Name this quantum mechanical effect in which a namesake conductance is quantized in terms of integer or fractional multiples of elementary charge squared over Planck’s constant.

ANSWER: **quantum Hall effect** (do NOT accept or prompt on “Hall effect”)

[10] The existence of levels named for Lev Landau determines whether the quantum Hall effect is anomalous. Landau also developed the theory of this phenomenon, in which fluids below a critical temperature have zero viscosity.

ANSWER: **superfluidity** (accept word forms)

[10] In the Hall effect, a difference in this quantity is produced perpendicular to the electric current and applied magnetic field. This quantity is current time resistance by Ohm’s law.

ANSWER: **voltage** (prompt on electric **potential difference**) <Yue>

4. In this poem, a character “cursed the commonplace / and eyed a khaki suit with loathing.” For 10 points each:

[10] Name this poem concerning the title resident of Tilbury Town, a “child of scorn” who was “born too late” and mourned “Romance” and “Art.”

ANSWER: “**Miniver Cheevy**”

[10] This poet of “Miniver Cheevy” also wrote of a “gentleman from sole to crown” who “one calm summer night / went home and put a bullet through his head,” Richard Cory.

ANSWER: Edwin Arlington **Robinson**

[10] Climbing a hill and drinking out of a jug, this other resident of Tilbury Town sings “For auld lang syne” to himself “amid the silver loneliness / of night” in his title poem, which describes the town.

ANSWER: Eben **Flood** (accept Mr. **Flood** or “Mr. **Flood**’s Party”) <Yue>

5. The Inquisition did not allow this man to title one of his works *Dialogue on the Ebb and Flow of the Sea*. For 10 points each:

[10] Identify this author who wrote a work in which Salviati and Simplicio engage in an intellectual debate.

ANSWER: **Galileo Galilei** (accept either underlined portion)

[10] Galileo built upon the work of this earlier Polish astronomer who suggested a heliocentric worldview in his *On the Revolutions of the Heavenly Spheres*.

ANSWER: Nicolaus **Copernicus**

[10] An early supporter of Copernicus was this Dominican friar, who was unfortunately burned at the stake in 1600.

ANSWER: Giordano **Bruno** (or Filippo **Bruno**) <Suh>

6. A practitioner of this school of Buddhism promulgated the idea of *shikantaza*, meaning “silent illumination.” For 10 points each:

[10] Name this school of Mahayana Buddhism. Some members of this school of Buddhism have pondered questions such as “What is the sound of one hand clapping?”

ANSWER: **Zen** Buddhism

[10] After spending five years in China in order to find a more authentic form of Buddhism, this Zen master broke from the Tendai school in the mid-13th century to found the Soto school.

ANSWER: **Dogen**

[10] Dogen often quoted this work in his writings. This text is named a flower that symbolizes purity, and this text offers the example of a father successfully rescuing his children from a fire by promising them toy carts.

ANSWER: **Lotus Sutra** <Suh>

7. A theorem concerning this activity applies under assumptions of independence of irrelevant alternatives, non-dictatorship, and universality. For 10 points each:

[10] Identify this individual activity, the subject of an impossibility theorem by Kenneth Arrow proving that there is no consistent way of generating community-wide preferences from individual ones.

ANSWER: **voting** (accept word forms; accept **elections** I suppose)

[10] The criteria of monotonicity and citizen sovereignty were replaced in a later version of the theorem by an assumption of this condition named for an Italian economist, in which no one can be made better off without making at least one person worse off.

ANSWER: **Pareto efficiency** (or **Pareto optimality**)

[10] The condition of Pareto optimality in Arrow’s impossibility theorem was removed by economist Amartya Sen, who also notably related this concept to individual freedom in a landmark 1999 book. One metric for this quantity takes into account life expectancy, education, and per capita income.

ANSWER: human **development** (accept economic **development**; accept **Development as Freedom**) <Yue>

8. For 10 points each, name these actors who broke the fourth wall by playing themselves on the big screen:

[10] This superhero constantly references how he is played by Ryan Reynolds, and in the end credits to a recent R-rated sequel, he kills Ryan Reynolds before the actor takes on the role of Green Lantern.

ANSWER: **Deadpool**

[10] This actor is killed in *Zombieland* when he jokingly pretends to be a zombie during the apocalypse. When this lead actor of *Ghostbusters* and *Lost in Translation* is asked, “Do you have any regrets?” he responds, “Maybe *Garfield*.”

ANSWER: Bill **Murray**

[10] People can enter this actor’s mind for 15 minutes before being dumped by the New Jersey Turnpike in a 1999 film. When he enters his own mind, this actor encounters several copies of himself incessantly repeating his last name.

ANSWER: John **Malkovich** (accept *Being John Malkovich*) <Yue>

9. For 10 points each, answer some questions about female composers in the 19th and early 20th centuries:

[10] In addition to being a composer, Clara Schumann also had an illustrious career performing this instrument. She premiered many works by Brahms and her husband Robert throughout her 61-year career playing it, and did not approve of Franz Liszt's playing style for it.

ANSWER: **piano**

[10] This composer was the subject of an F-minor sixth string quartet titled for her "Requiem." She wrote several *Songs for the Piano* just as her brother wrote *Songs Without Words* for piano.

ANSWER: **Fanny Mendelssohn** (prompt on partial answer; accept Fanny **Hensel**)

[10] Lili Boulanger was the first female winner of this prestigious French award for her cantata *Faust et Hélène*.

Berlioz won this composition award after submitting several cantatas of his own, and Ravel famously never won it.

ANSWER: Grand **Prix de Rome** (prompt on **Prix**) <Yue>

10. In 2012, Shinichi Mochizuki used Inter-Universal Teichmüller theory to develop a proof of this conjecture that was so confusing that it was called "a theorem in Kyoto but a conjecture everywhere else." For 10 points each:

[10] Name this conjecture declared unsolved by Scholze and Stix in 2018. It implies that if two positive integers are composed of large powers of primes, then their sum usually is not divisible by large powers of primes.

ANSWER: **abc** conjecture (accept **Oesterlé–Masser** conjecture with names in either order)

[10] The *abc* conjecture would prove a generalization of this mathematician's "Last Theorem" concerning the impossibility of triples satisfying " a to the n plus b to the n equals c to the n " for n greater than 2.

ANSWER: Pierre de **Fermat**

[10] The *abc* conjecture was formulated in response to the Szpiro conjecture about these curves of the form " y squared equals x cubed plus a x plus b ." They have nothing to do with the closed conic section of a similar name whose arc length has no closed-form solution.

ANSWER: **elliptic** curves <Yue>

11. John C. Frémont covertly encouraged the rebellion that eventually formed this state. For 10 points each:

[10] Name this state which existed as an unrecognized nation for 25 days in 1846. It seceded from Mexico in the Bear Flag Revolt and experienced a gold rush in 1848.

ANSWER: Republic of **California**

[10] This unrecognized provisional state led by Brigham Young existed for nearly two years. Its name derives from the word for "honeybee" in the Book of Mormon.

ANSWER: State of **Deseret**

[10] This bioregion in the Pacific Northwest has intermittently experienced secessionist movements. Its proposed flag, the "Doug flag," was created in 1994.

ANSWER: **Cascadia** <Suh>

12. Near the end of this novel, the main character realizes that Isabella Thorpe's "professions of attachment were now as disgusting as her excuses were empty, and her demands impudent." For 10 points each:

[10] Name this Jane Austen novel titled for a gloomy estate. The imaginative Catherine Morland falls in love with Henry Tilney and briefly believes his father has murdered his wife while visiting said estate.

ANSWER: **Northanger Abbey**

[10] *Northanger Abbey* satirizes this genre of fiction, of which Catherine is a voracious reader. Novels in this genre include Horace Walpole's *The Castle of Otranto* and often feature locales with a namesake style of architecture.

ANSWER: **Gothic** fiction (or **Gothic** novels)

[10] Catherine particularly loves this author's Gothic novel *The Mysteries of Udolpho*. *Northanger Abbey* notes that "charming as were all [this author's] works...it was not in them perhaps that human nature...was to be looked for."

ANSWER: Ann **Radcliffe** <Yue>

13. This man has promoted his support for public education with the slogan “yes to scholarships, no to hitmen.” For 10 points each:

[10] Identify this politician and founder of the National Regeneration Movement, or MORENA. He has claimed that “hugs, not bullets” are necessary to resist drug violence in his country.

ANSWER: Andrés Manuel **López Obrador** (prompt on partial answer; accept **AMLO**)

[10] López Obrador is slated to take office as this country’s president in December 2018. In a recent speech, López Obrador asserted that “neither [this country] nor its people will be a piñata of any foreign government.”

ANSWER: **Mexico**

[10] In September 2018, the Peña Nieto administration concluded negotiations on this trade deal. While it has not yet been ratified, this pending trade deal is known as “NAFTA 2.0.”

ANSWER: **United States–Mexico–Canada Agreement** (accept **USMCA**) <R. Li>

14. For 10 points each, answer some questions about the growing field of metal-organic frameworks, or MOFs.

[10] As MOFs are porous with high surface area at the nanoscale, hydrogen gas can be captured by them via this process, in which molecules attach to a solid surface. Don’t confuse it with a very similar term with a one-letter difference.

ANSWER: **adsorption** (anti-prompt [ask for less specific] on **chemisorption** or **physisorption**; do NOT accept “absorption”)

[10] Much research interest has centered on the ability of MOFs to capture this molecule. Because it is a greenhouse gas, there has been a heavy focus on carbon sequestration to reduce its atmospheric concentration.

ANSWER: **carbon dioxide** (or **CO₂**)

[10] Many MOFs exhibit this crystal structure, which has the centers of exactly eight atoms positioned at the corners of a cubic unit cell. This cubic crystal structure has one atom per unit cell.

ANSWER: **simple cubic** (or **primitive cubic**, prompt on **cubic**) <Yue>

15. Let us put on our Sunday best, and go for a stroll in the garden. For 10 points each:

[10] In a short story by this author, German spy Yu Tsun murders Doctor Albert after realizing that his ancestor’s unfinished novel represents the eponymous “garden of forking paths.”

ANSWER: Jorge Luis **Borges**

[10] *The Garden Party* titles a satirical play by Václav Havel, an author from this modern day country who also served as its first president. Another writer from this modern day country wrote a play ending with Alquist handing over the world to Primus and Helena.

ANSWER: **Czech** Republic

[10] Octave Mirbeau’s *The Torture Garden* is a product of the French decadent movement, which also produced the works of the Marquis de Sade and this novel by Joris-Karl Huysman about a man who repudiates society in favor of pleasant artistic pursuit.

ANSWER: **À rebours** (or **Against the Grain**; or **Against Nature**) <R. Li/Kuang>

16. Aëtius of Amida attributed a recipe for perfumed soap to this ruler, while Paul of Aegina preserved alleged instructions of hers for dyeing and curling hair. For 10 points each:

[10] Name this pharaoh of Egypt and the lover of Julius Caesar and Mark Antony who may have committed suicide via snakebite.

ANSWER: **Cleopatra** VII Philopator

[10] Cleopatra was the last ruler of this kingdom based in Egypt. Its namesake was a companion and historian of Alexander the Great.

ANSWER: **Ptolemy** I Soter (accept **Ptolemaic** Kingdom)

[10] Cleopatra gave birth to this son of Julius Caesar who was killed by Octavian following the advice of Arius Didymus, who said “Too many Caesars is not good.”

ANSWER: **Caesarion** (or **Ptolemy XV** Philopator Philometor Caesar) <Suh>

17. In one of this artist’s paintings, an armless humanoid with a handlebar mustache faces away from the central swimming pool as another figure drowns. For 10 points each:

[10] Name this Surrealist artist of the aforementioned *Aquis Submersus*, as well as works like *Europe After the Rain II*. He was briefly married to Solomon Guggenheim’s niece Peggy.

ANSWER: Max **Ernst**

[10] In addition to being a Surrealist, Ernst was a founding member of this absurdist art movement. Marcel Duchamp was a member of this movement, whose short and simplistic name may come from the French for “hobbyhorse.”

ANSWER: **Dada**

[10] Ernst used this material to sculpt a chess-inspired piece titled *The King Playing With the Queen*. Rodin sculpted a life-size sculpture partially titled for this material that led to accusations he had cast a living model.

ANSWER: **bronze** <R. Li>

18. For 10 points each, answer some questions about Russian protagonists who are arrested for suspicious reasons.

[10] In this novel, the inhabitant of Cell 404 taps messages to his neighbor, known only as 402, and is interrogated by Gletkin. The protagonist of this book later confesses to plotting against Number One and the Party.

ANSWER: ***Darkness at Noon***

[10] In Arthur Koestler’s *Darkness at Noon*, Number One supposedly represents this head of the Soviet Union. Solzhenitsyn described how this leader perpetuated Lenin’s use of the title institutions in *The Gulag Archipelago*.

ANSWER: Josef **Stalin** (or Ioseb Besarionis dze **Jughashvili**)

[10] This author wrote of Cincinnatus C.’s imprisonment for “gnostical turpitude” in *Invitation to a Beheading*. In contrast, this author wove an erratic tale about a deposed king of Zembla in *Pale Fire*.

ANSWER: Vladimir **Nabokov** <Yue>

19. According to these people, the *qalupalik* were green humanoid creatures who would kidnap little children and take them underwater. For 10 points each:

[10] Name these people who believe in a universal life force called *anirmii* [“ah-neer-nit”].

ANSWER: **Inuit** (I guess accept **Eskimos**, though gently tell them that’s considered pejorative)

[10] This goddess tried to cling onto her father’s boat when he tried to dump her off. He then chopped off her fingers, which transformed into seals, walruses, and whales.

ANSWER: **Sedna**

[10] The Inuit goddess Malina ruled over this domain, which was also the domain of Amaterasu.

ANSWER: **sun** (or **solar** deity) <Suh>

20. For 10 points each, answer some questions about detergents.

[10] Detergent molecules often assemble into this spherical formation with their hydrophobic tails clustered on the inside of the sphere. These aggregate structures can render proteins soluble by sequestering them inside the sphere or among the detergent monomers.

ANSWER: **micelle** ["mye-cell"]

[10] Detergent molecules have this property meaning they possess polar and apolar regions. This property of phospholipids is what allows them to form bilayers.

ANSWER: **amphiphilic** (accept **amphipathic**)

[10] This substance contains namesake acids which are anionic detergents produced by the liver. The detergents in this fluid, which is stored in the gallbladder, aid in the emulsification of lipids.

ANSWER: **bile** <K. Li>

21. For 10 points each, answer these questions regarding political advertisements.

[10] In this ad, a toddler picks petals off the namesake flower before being obliterated by a nuclear explosion. This controversial ad helped President Johnson win reelection over Barry Goldwater in 1964.

ANSWER: **Daisy Girl** (accept **Peace, Little Girl**)

[10] In 1988, the George H. W. Bush campaign featured a mugshot of this convicted murderer in an ad that many accused of appealing to racial tropes. Bush campaign manager Lee Atwater claimed that his goal was to make voters "wonder whether [this man] is Dukakis' running mate."

ANSWER: Willie **Horton**

[10] In this election year, the Swift Boat Veterans for Truth aired a series of ads aiming to tarnish a candidate's military record. Howard Dean was ridiculed for his namesake "scream" after losing the Iowa caucuses in this year.

ANSWER: **2004** <R. Li>