

HARI (Hari's Academic Regionals(-minus) Invitational): Live for the Harimoment

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ROUND 11

Tossups

1. **In Oklahoma, the Sacred Followers attempted a virgin sacrifice to appease one of these things. The death of Edward VII sparked a 1910 panic against one of things, which was fueled by Camille Flammarion's erroneous claim that it would release cyanogen into the atmosphere. To assist soldiers at the Siege of Belgrade, Calixtus III excommunicated one of these things in 1456. A mixture of apple sauce and (*) phenobarbital was drunk by members of the Heaven's Gate cult after they viewed one of these things. Harold Godwinson's fear that a "long-haired" one of these objects would cause his downfall is depicted in the Bayeux Tapestry. For 10 points, name these celestial objects, one of which named after Edmond Halley portended bad things.**

ANSWER: comets [accept Halley's Comet or Hale-Bopp Comet]

<European History, Parameswaran>

2. **These objects often cause subjects to perform repetitive movements in contingency checking. Subjects are anesthetized and a red dot is placed on them in a procedure involving these objects invented by Gordon Gallup. V. S. Ramachandran invented a "box" utilized in a form of physical therapy named for these objects used to treat phantom limb pain. Giacomo Rizzolatti observed the f5 field in the macaque motor cortex to discover a type of (*) cell named for these objects that fire both when performing an action and observing someone else performing an action. Magpies and dolphins have passed a test of self-awareness that involves recognizing themselves in these objects. For 10 points, name these objects that show a reflection of oneself.**

ANSWER: mirrors [or looking-glasses; accept reflections; accept mirror box or mirror therapy; accept mirror neurons]

<Social Science, Chen>

3. **This author tells of a "poor devil" whose "french ragout" and "fricasse" is "trash" after idolizing a meal with an "honest, plump face." A poem by this author ponders what happens if "a body kiss a body" while a "seldom dry" girl named Jenny carries her petticoat through a field. The speaker describes picking "gowans" with a friend after invoking a "cup o' kindness" in a poem by this author of (*) "Comin Thro' the Rye," who called a certain food "chieftain o' the puddin' race" in another poem. One poem by this author opens "should auld acquaintance be forgot / and never brought to mind," and is often sung at New Year's celebrations. For 10 points, name this poet of "Auld Lang Syne," a national icon of Scotland.**

ANSWER: Robert Burns (The first line is "Address to a Haggis".)

<Non-Epic Poetry, Schwartz>

4. Ben Foster won a competition to perform as this character in a 2012 concert series that began at the O2 Arena. Recent performances have changed one of this character's lines from "you hold every card" in a song that climaxes with him singing a high G5. This character is accused of leading a "howling mob of blockheads on the street" by Annas in a song that concludes by declaring that "[this character] Must Die". This character's name is sung on the notes B-G-sharp-E, up to C-sharp-A-E, before being asked (*) "who are you? What have you sacrificed?" in a song in which he is told that "Israel in 4 BC had no mass communication." For 10 points, name this character who is crucified after Judas performs the song "Superstar" in an Andrew Lloyd Webber musical.

ANSWER: Jesus Christ [accept Jesus *Christ Superstar*]

<Other Fine Arts, Ah Now>

5. In Poinsot's construction, this quantity traces out a path on the invariable plane called the herpolhode. The partial derivative of the Lagrangian with respect to this quantity is equal to angular momentum along its axis. Reference frames with changing values for this quantity give rise to Euler forces. Two times mass times the cross product of velocity and this quantity equals the (*) Coriolis force vector. In uniform circular motion, the radius times the square of this quantity is equal to centripetal acceleration. This quantity is equal to angular momentum divided by moment of inertia. A lowercase omega symbolizes, for 10 points, what quantity measured in units radians per second that represents how quickly an object is spinning?

ANSWER: angular velocity [or angular speed; or rotational velocity; prompt on omega; do not prompt on partial answers]

<Physics, Liu>

6. Buddhaghosa analogized obtaining this concept to examining the soil, roots and trunk of a tree. The Diamond Realm and Womb Realm are each home to five figures most commonly named for this concept, its namesake "Buddhas" and "Kings" respectively. A dialogue between the Buddha and Subhuti illustrates how this concept is like a "vajra" that "cuts through illusion." This concept is achieved after "virtue" and "mind" in Theravada Threefold Training, and is likened to (*) understanding the true nature of *sunyata* in Mahayana Buddhism. The Heart and Diamond Sutras are part of a collection of Buddhist texts titled for the "Perfection of" this concept. The Sanskrit word *prajna* refers to — for 10 points — what quality possessed by someone with knowledge of suffering?

ANSWER: wisdom [accept word forms like wise; or intelligence; accept prajna or panna before mentioned; prompt on knowledge or brightness by asking for the more common English translation before "knowledge" is read]

<Religion, Parameswaran>

7. This substance is the primary substance in which an enzyme called bile salt-stimulated lipase is found. A mutation in the MCM6 gene can lead to an inability to process a molecule in this substance; that mutation can be tested for in infants by measuring stool pH. This substance's lack of specificity has led to it largely being replaced as a blocking agent by bovine serum albumin in Western blotting procedures. (*) Colostrum is an IgA antibody-rich variety of this substance. The "let-down" reflex, which is triggered by prolactin and oxytocin, causes the release of this substance. The consumption of this substance can cause indigestion in people with lactose intolerance. For 10 points, name this substance used by mammals to feed their infant offspring.

ANSWER: milk [accept breast milk; accept cow milk; prompt on dairy]

<Biology, Schwartz>

8. Henry O'Reilly was accused of imitating this technology in a court case which established that patents are only valid if the holders could explain the process used to obtain the result. Alfred Vail supervised the piloting of this technology in Baltimore. The *SS Great Eastern* helped complete one project that used this technology. The American invention of this technology occurred years after William Cooke and Charles (*) Wheatstone had developed it in Great Britain. Cyrus West Field spearheaded the expansion of this technology by laying the first

Transatlantic cables. One inventor quipped "What hath God wrought?" while demonstrating this technology. For 10 points, Samuel Morse invented what technology used to transmit messages long distance?

ANSWER: **telegraphy**

<American History, Nageswaran>

9. **Near the beginning of this play's final act, one character wearing a black mask drags in another wearing "Italian costume." A character in this non-Oscar Wilde play accuses another of neglecting her "most sacred duties" of being a wife and mother. A reversal occurs in Act III of this play after a maid brings a letter, prompting one character to shout "I am saved!" A character in this play says that she doesn't (*) "believe any longer in wonderful things happening" after giving back her wedding ring and keys and calling her house a "playroom." One character in this play burns a bond note with a forged signature that was sent by Krogstad.** For 10 points, name this Henrik Ibsen play that ends with Nora Helmer slamming the door on her husband.

ANSWER: A ***Doll's House*** [or *Et dukkehjem*; accept A ***Doll House***]

<Drama, Zhang>

10. **The oldest one of these locations is home to the Swilcan Bridge, a stone arch popular for commemorative photos. A "Trail" of these locations across Alabama is named for Robert Trent Jones, a designer of these locations. Legal battles allowed a man to keep 80-foot flagpoles installed at two of these locations in Aberdeenshire and Palm Beach. They're not hotels, but (*) Trump's tax returns showed losses of more than 300 million dollars from these locations. These locations combined in the U.S. use more than 2 billion gallons of water per day. St. Andrews, Scotland is home to the earliest of these locations, which were known as links.** For 10 points, fairway and rough are sections of what grounds for a certain sport often played at country clubs?

ANSWER: **golf courses** [accept **links** before mentioned; prompt on **country clubs** before mentioned]

<Other, Zhang>

11. **One character in this story repeatedly assures "Rome wasn't built in a day" in response to the lack of career advancement of another character. After asking the man sitting across from him for a match, a character in this story notices a "NO SMOKING" sign above. In this story, a character is told about his grandmother, a member of the Godhigh family. A woman in this story debates whether she should wear her (*) purple hat or not, and later angers another woman by offering a shiny penny to her African American son. The shock from that incident led to that character dying of a stroke on the way home.** For 10 points, name this short story in a collection of the same name by Flannery O'Connor which focuses on Julian's embarrassment about his racist mother.

ANSWER: **"Everything That Rises Must Converge"**

<Short Fiction/Other, Nageswaran>

12. **A holder of this office allegedly used a sculpture to defend himself against a break-in and attempted assassination by André Daigne. Another holder of this office resigned after introducing an unpopular Goods and Services Tax but did not move out of its residence, forcing his successor to live at Harrington Lake. An ad that drew attention to one candidate's Bell's palsy failed to prevent the leader of the (*) Progressive Conservative party from being elected to this position. Following negotiations with Robert Bourassa, a holder of this position recognized a province as a "distinct society" by signing the Meech Lake Accords. For 10 points, name this office whose holders include Pierre Trudeau and his son, Justin.**

ANSWER: Prime Minister of Canada (The first and third sentences refer to Jean Chrétien; the second sentence refers to Brian Mulroney and Kim Campbell.)

<World History, Zhang>

13. **In 2012, KECCAK won a NIST competition to become a new standard for producing these values. These values are stored in the nodes of trees named for Ralph Merkle, who also created a function along with Damgård for constructing them. These values are subject to an attack that uses rainbow tables as well as one that exploits the birthday paradox. Families of functions that produce these outputs include whirlpool and (*) SHA. Salts are added to plaintext passwords before being irreversibly converted into one of these values, which are secure due to the low probability of collisions. For 10 points, name these fixed-size strings produced by their namesake type of cryptographic functions, that are analogous to values stored in constant lookup time "tables."**

ANSWER: cryptographic hashes [prompt on passwords before read]

<Other Science, Zhang>

14. **In a book subtitled "Secrets and Silence," Marjorie Wiesenman focuses on a painting by this artist in the Louvre which shows a woman with curls intensely focused on a blue gown. For the fictional painting "Girl in Hyacinth Blue," Susan Vreeland borrowed actual elements from this artist's works, including a red-and-blue Turkish carpet and a hand-drawn map. Tracy (*) Chevalier based a work of fiction around one of this artist's *tronies*, another one of which is his *The Lacemaker*. A woman pours the title substance next to a breadbasket in this artist's *The Milkmaid*. A 1665 painting by this artist depicts a girl wearing a blue turban, brown coat, and the title opulent adornment. For 10 points, name this Dutch artist of *Girl with a Pearl Earring*.**

ANSWER: Johannes Vermeer

<Visual Fine Arts, Parameswaran>

15. **Columns at Çatalhöyük (cat-UL-ho-yook) showed these animals' skulls surrounded by braids of flowers, a motif later used by Romans on Doric columns. These animals were buried *en masse* under a temple in Saqqara. Participants would stand below a perforated board and bathe in the blood of these animals to honor the mother goddess Cybele. The Romans fused (*) Osiris with a heavenly one of these animals into Serapis, and the cult god Mithras was depicted slaying one of them. After one of these animals kills Androgeus, a king forces Athens to send 7 men and women as sacrifices. Due to a curse placed by Poseidon, one of these animals mated with Pasiphaë, the wife of Minos. For 10 points, the minotaur was half-man and half of what animal?**

ANSWER: bulls [accept cows]

<Mythology, Parameswaran>

16. When notating Carnatic talams, the symbol "O" is used for dhrutam, which represents this many beats. This is the number of performers in a typical Korean *pansori* chant. The *danzón* of this number is a popular orchestral piece by Arturo Márquez. Members of a Chinese family of instruments with this many strings have a soundbox covered by snakeskin and have names ending in (*) "hu." This is the number of principal branches of Indian classical music. A Scotch snap rhythm consists of this many notes within a beat. This is the number of countries that consider the folk song *Arirang* as an anthem. For 10 points, give this number of drums in a tabla or bongos.

ANSWER: two

<Auditory Fine Arts, Zhang>

17. Stone's representation theorem states that categories of algebras described by this word are dual to categories of Stone spaces. Algebras of this name contain two binary operations and a unary operation that satisfies Huntington's axiom. This word describes a ring in which all elements are idempotent. Expressions named for this word can be simplified using a Karnaugh map. Those expressions named for this proper (*) adjective can be written in disjunctive or conjunctive normal form, the latter of which is used in most satisfiability problems. A branch of algebra with this name uses De Morgan's laws and truth tables. For 10 points, a British mathematician names what system of logic where the only values are true and false?

ANSWER: Boolean [accept Boolean algebra, Boolean ring, Boolean expression, or Boolean logic]

<Math, Zhang>

18. Following this battle, the loser's ambassador quipped that "While a missing arm cannot be replaced, a shaved beard grows back quicker." Prior to this battle, its losers had paraded around the flayed skin of Marcantonio Bragadin on an ox. Pius V created the Feast of Our Lady of Victory after hearing news of this battle's result, and he had earlier encouraged its eventual victors to avenge the massacre of (*) Famagusta. Among those who fought in this battle was Miguel de Cervantes, who lost his left arm at it. The incompetence of Andrea Doria's nephew led one side at this battle open to a flank, but they still defeated Ali Pasha's forces at it. For 10 points, name this battle which saw the Holy League defeat the Ottoman navy in 1571.

ANSWER: Battle of Lepanto

<European History, Parameswaran>

19. A character with this occupation discovers the meaning of his name while he deliriously imagines living with his ancestors in Africa. A character with this profession tells his apprentice "they truly beat me" before deciding to repay Pedrico for bringing him the newspaper. Ma Kilman fails to heal a persistent wound belonging to a member of this profession named (*) Philoctete. Achille and Hector work in this profession in Derek Walcott's epic poem *Omeros*. A character with this profession breaks an 84-day streak of bad luck only for his marlin to be eaten by sharks on the way back to Cuba. For 10 points, name this profession of Santiago in the Hemingway novella *The Old Man and the Sea*.

ANSWER: fisherman [accept fishing; prompt on sailor]

<Long Fiction, Schwartz>

20. **The claim that events with this property are causally complete is central to an argument proposed by Norman Malcolm called the exclusion problem. States with this property are *supervenied upon* in a supervenience relation popularized by Jaegwon Kim. Philosophical zombies are identical to humans with respect to these properties. The question of whether a (*) color scientist who knew everything about these properties of an object would gain information from perception of that object is the subject of the knowledge argument. The question of how these types of properties give rise to qualia leads to the hard problem of consciousness. Materialism claims that all entities consist entirely of these properties. For 10 points, Cartesian dualism contrasts mental phenomena with what other phenomena?**

ANSWER: **physical** properties [or **physical** entities; or **physical** phenomena; accept **material** properties before "materialism"; accept referring to the **body**; prompt on P]

<Philosophy, Chen>

Bonuses

1. Answer the following about the role of dogs in Aztec myths, for 10 points each:

[10e] The dog-headed god Xolotl (**shoh-LOTTLE**) acted as a psychopomp by accompanying souls to one of these places called Mictlan, similar to Charon in Greek myth. Xolotl inspired the tradition of good dogs being buried with their masters to accompany them in this place after death.

ANSWER: **underworld** [accept **Hell**; prompt on afterlife]

[10m] Dogs were created when this god attached the heads of two flood survivors to their rears. This god lost a foot while fighting the crocodile Cipactli and was often associated with smoking mirrors.

ANSWER: **Tezcatlipoca**

[10h] Itzcuintli (**its-KWIN-tee**), who represented dogs, was one of the 20 trecenas that divided one of these entities. The Aztec New Fire Ceremony was held whenever two of these entities aligned.

ANSWER: **calendars** [accept solar **calendars** or lunar **calendars**; accept equivalent answers about objects that **keep track of time**; prompt on cycles or time or other similar answers by asking "what entities were used to keep track of those?"] (The New Fire Ceremony happened every 52 years, when both the solar and lunar calendars aligned)

<Mythology, Nageswaran>

2. In this analytical technique, a linearly ramped potential is applied to a working electrode connected to a counter electrode and a reference electrode. For 10 points each:

[10h] Name this analytical technique commonly used to evaluate the chemical reversibility of redox reactions.

ANSWER: **cyclic voltammetry** [prompt on voltammetry, do not accept other varieties of voltammetry]

[10e] One reason for chemical irreversibility of a redox reaction is this phenomenon, where insoluble solid chemical species settle out of solution.

ANSWER: **precipitation**

[10m] This quantity for a chemical reaction can be determined in cyclic voltammetry by averaging the anode and cathode peak values for this quantity. This quantity can also be computed using the Nernst equation.

ANSWER: **reduction potential** [prompt on cell potential or E]

<Chemistry, Tong>

3. The only Republican Senator to vote against invading this country was Lincoln Chafee. For 10 points each:

[10e] Name this country, whose leader, Saddam Hussein, was accused of harboring weapons of mass destruction. Barack Obama withdrew all troops from this country in late 2011.

ANSWER: Republic of **Iraq**

[10h] This Illinois congressman introduced the resolution to invade Iraq. This former Speaker of the House was arrested in 2015 due to false statements regarding the cover-up of his sexual abuse of young boys.

ANSWER: John Dennis **Hastert**

[10m] This Secretary of State held up a mock vial of anthrax to illustrate the claims of WMDs in front of the U.N. This man had earlier served as Chairman of the Joint Chiefs of Staff under George H.W. Bush.

ANSWER: Colin Luther **Powell**

<American History, Nageswaran>

4. This animal is heard by a soldier who is ordered to kill a man with a baseball bat. For 10 points each:

[10h] Name this animal whose "mechanical cry" is only heard by a few characters in a 1997 novel titled after it.

May Kasahara addresses the protagonist of that novel with the name of this animal.

ANSWER: the **Wind-Up Bird** [prompt on bird]

[10e] The Wind-Up Bird titles a "Chronicle" by this contemporary Japanese author about Toru Okada and his wife Kumiko. Other novels by this author include *Kafka on the Shore* and *Norwegian Wood*.

ANSWER: Haruki **Murakami**

[10m] The works of Haruki Murakami also heavily feature these animals, one of which named Noboru Wataya is lost at the beginning of *The Wind-Up Bird Chronicle*. Nakata also searches for these animals in *Kafka on the Shore*.

ANSWER: **cats**

<Long Fiction, Martin>

5. Answer the following about religious ownership of newspapers, for 10 points each:

[10m] Members of this movement founded the pro-Trump *Epoch Times* to report on its persecution, which included an organ harvesting scheme detailed by the Kilgour-Matas Report.

ANSWER: **Falun Gong** or **Falun Dafa**

[10h] This religious leader founded the *Washington Times*, which was owned by his News World Communication company. Donald Trump spoke at a 9/11 event hosted by the movement founded by this "True Father."

ANSWER: Sun Myung **Moon**

[10e] In 2016, the *Deseret News*, a paper owned by this church, broke its political neutrality by discouraging voting for Trump. This church has also had an on-and-off relationship with the *Salt Lake Tribune*.

ANSWER: **Mormon** Church [accept Church of Jesus Christ of **Latter-day Saints** or **LDS** Church]

<Current Events, Nageswaran>

6. This character is confused after the schoolteacher tells his pupils to separate descriptions of her animal and human characteristics. For 10 points each:

[10m] Name this character. This character's daughter Denver is initially suspicious towards the reappearance of Paul D in her life at the beginning of a novel.

ANSWER: **Sethe**

[10e] Sethe appears in this Toni Morrison novel. This novel is named for the child Sethe kills to save from slavecatchers, only for the same child to seemingly reappear years later.

ANSWER: **Beloved**

[10h] When reflecting on Sweet Home, Sethe is unable to forgive herself for first remembering these things' beauty rather than the dead children. Amy notes that the scars on Sethe's back resembles one of these things.

ANSWER: **trees** [accept **sycamores**; accept **chokecherry** tree]

<Long Fiction, Nageswaran>

7. The period-luminosity relationship for the pulsation of Cepheid variables reliably measures galactic distances. For 10 points each:

[10h] The accepted mechanism for Cepheid variable pulsation is named for this quantity. It is inversely proportional to the seven-halves power of temperature by Kramer's law.

ANSWER: **opacity** [prompt on kappa mechanism]

[10e] The differences in opacity of the ionization states of this element drives pulsation in Cepheid variables. This element is the second lightest element.

ANSWER: **helium**

[10m] The variability of Beta Cephei stars is due to the increase in opacity of this element at about 200,000 (**two hundred thousand**) kelvin. Onset of the endothermic fusion of this element causes it to undergo a supernova, since the 56 isotope of this element is highly stable.

ANSWER: **iron** [or **Fe**]

<Other Science, Tong>

8. This philosopher wrote a book whose two halves correspond to the aesthetic and ethical modes. For 10 points each:

[10e] Name this author, who used the pseudonym Victor Eremita to serve as editor of his book *Either/Or*.

ANSWER: Søren **Kierkegaard**

[10h] Victor Eremita gives a speech about how women awaken the consciousness of immortality in men at a banquet similar to Plato's *Symposium* in this Kierkegaard book. This book adds the religious mode to the aesthetic and ethical to complete the three types of the title concepts.

ANSWER: **Stages on Life's Way** [or **Stadier Pa Livets Vej**]

[10m] In *Fear and Trembling*, Kierkegaard allows for this type of "suspension of the ethical" under faith. This is the name of an argument for the existence of God based on designs in nature.

ANSWER: **teleological** [accept "**teleological** suspension of the ethical" or **teleological** argument]

<Philosophy, Zhang>

9. One of these people named Eunus claimed to receive visions from the goddess Atargatis. For 10 points each:

[10m] Name these people, who were termed *vernae* if they were born in the *domus*. These people would be forced to stand on *catasta* at a location near the Temple of Castor.

ANSWER: Roman **slaves**

[10e] This former gladiator led forces against Rome during the Third Servile War. Crassus crucified 6,000 of this leader's followers on the Via Appia following the Third Servile War.

ANSWER: **Spartacus**

[10h] According to Strabo, slave trading became rife on this island after the Romans captured it from Perseus of Macedon and made it a free port. Athenian executions would not take place until a sacred ship returned to this island.

ANSWER: **Delos**

<Ancient/Other History, Parameswaran>

10. The subject of a painting by this artist holds a paper reading "Give me alms." For 10 points each:

[10h] Name this Spanish artist best known for *The Clubfoot*, a painting depicting a beggar child in a cloudy landscape. This follower of Caravaggio led the Cabal of Naples.

ANSWER: Jusepe de **Ribera** [accept José de **Ribera**, accept Josep de **Ribera**, accept Lo **Spagnoletto**]

[10m] Ribera and other Spanish Baroque painters were known for using this technique. This technique, a stark contrast between light and dark, is considered an extreme version of *chiaroscuro*.

ANSWER: **tenebrism**

[10e] Ribera was also proficient at this printmaking technique in which the artist cuts grooves into a metal plate in order to fill them with ink. *Melencolia I* ("one") is among Albrecht Dürer's works in this technique.

ANSWER: **engraving**

<Visual Fine Arts, Martin>

11. On the June 1971 cover of Stern magazine, twenty-four German women declared that they had undergone this procedure. For 10 points each:

[10e] Name this procedure, which 343 French women declared they had undergone earlier that year. In the U.S., this procedure was legalized by the *Roe v. Wade* decision.

ANSWER: **abortion**

[10h] While serving as Minister of Health, this politician introduced the law that legalized abortion in France. During the Algerian War, she gave legal counsel to women who had been raped by soldiers.

ANSWER: Simone **Veil**

[10m] This European country's Redstockings helped push for expanded abortion rights. In 1989, this country became the first in the world to legally recognize same-sex relationships.

ANSWER: **Denmark**

<European History, Parameswaran>

12. A collection of pieces for this instrument includes many very complex prolation canons, such as one with a tempo ratio of pi to e. For 10 points each:

[10h] Give this instrument for which Conlon Nancarrow wrote 49 studies, including his *Boogie-Woogie Suite*.

ANSWER: **player piano** [or **pianola**; prompt on piano roll or automatic piano]

[10m] This composer cited Nancarrow's player piano compositions as inspiration for parts of his *Century Rolls* and wrote a piece titled *Grand Pianola Music*. This composer also wrote *Shaker Loops* for strings.

ANSWER: John **Adams**

[10e] This composer wrote an *Etude for Pianola* and experimented with using pianolas in his ballet *Les Noces* ("**lay nuss**"). Other ballets by him include *The Rite of Spring* and *The Firebird*.

ANSWER: Igor **Stravinsky**

<Auditory Fine Arts, Berns>

13. The ghost of this animal believes he has found God when he meets the Hussein family's former gardener, Musa. For 10 points each:

[10h] Name this animal which is shot by Kev after crippling Tom "at the Baghdad Zoo" in a play by Rajiv Joseph.

ANSWER: Bengal **tiger** [accept *Bengal Tiger at the Baghdad Zoo*]

[10e] In *Bengal Tiger at the Baghdad Zoo*, Tom tries to retrieve a golden toilet seat and a golden one of these objects belonging to Uday Hussein. A principle named for Chekhov claims that if one of these objects is introduced in the first act, it must be used by the last.

ANSWER: a **gun** [accept Chekhov's **gun**; accept golden **gun**]

[10m] The transitions from even to odd-numbered scenes in Rajiv Joseph's play *Gruesome Playground Injuries* use this technique. It is also used in the Harold Pinter play *Betrayal*, which ends with Jerry and Emma deciding to have an affair.

ANSWER: **reverse chronology** [accept descriptions like "**going back in time**"]

<Drama, Schwartz>

14. After taking a bite into your Korean taco, you vow to travel the world in search of more quality street food. For 10 points each:

[10h] You first patronize Korean-Mexican food trucks inspired by this chef of Kogi BBQ. This man served as a co-producer for the 2014 film *Chef*, which inspired the Netflix series *The Chef Show*.

ANSWER: Roy **Choi**

[10e] You then visit two noodle stalls in this country, which were the first street vendors to be awarded Michelin stars. Food is sold in hawker centers in this Southeast Asian city-state on the southern tip of the Malay Peninsula.

ANSWER: **Singapore**

[10m] In Mumbai, you purchase *vada pav* or *aloo tikki* from food stalls in the street. *Aloo tikki* and *vada pav* are both deep-fried fritters based on this vegetable.

ANSWER: **potatoes**

<Geography, Nageswaran>

15. An now outdated method for this task called Edman degradation involved the reagent phenyl isothiocyanate. For 10 points each:

[10h] Name this task which is now most commonly performed in "top-down" and "bottom-up" approaches using tandem mass spectrometry.

ANSWER: **protein sequencing** [or **peptide sequencing**; prompt on **sequencing** with "sequencing what class of molecules?"]

[10m] Edman degradation is notoriously unable to detect these bonds in a peptide. The enzyme PDI catalyzes the formation of these bonds that form between the two thiol groups of a pair of cysteines.

ANSWER: **disulfide** bonds [accept **disulfide** bridges; prompt on **S-S** or **sulfur-sulfur** bonds]

[10e] Sanger improved on the traditional Edman degradation in order to sequence this protein, for which he won a Nobel. This hormone works with glucagon to control blood sugar and cannot be sufficiently produced in people with type 1 diabetes.

ANSWER: **insulin**

<Biology, Schwartz>

16. The expected value of this quantity of an asset is related to its risk by the capital asset pricing model. For 10 points each:

[10e] Name this quantity, which describes the profit gained on an investment per unit of time. It is often abbreviated ROI.

ANSWER: **return** on investment [or rate of **return**]

[10m] The CAPM predicts that rate of return has a linear relationship with beta, a measure of this property of an asset. This property is the variability in the price of an asset caused by systemic risk.

ANSWER: **volatility**

[10h] The CAPM, which assumes a single value of beta for an asset, is extended by this model proposed by Stephen Ross. It assumes the rate of return can be written as a linear function of systemic factors, where each factor has its own associated value of beta.

ANSWER: **arbitrage pricing** theory [or **APT**]

<Social Science, Chen>

17. A cyclical poem by this author describes a river as "a willow of crystal; a poplar of water" in both its beginning and end. For 10 points each:

[10e] Name this author of "Sunstone" who described the development of post-colonial Mexican culture in his essay collection *The Labyrinth of Solitude*.

ANSWER: Octavio **Paz**

[10m] Octavio Paz wrote a biography of this early Mexican feminist titled *The Traps of Faith*. This poet and nun sarcastically referred to herself as "the worst of all women" while defending women's education in her *Reply to Sister Filotea*.

ANSWER: Sor **Juana** Inés de la Cruz [or Juana Inés de **Asbaje** y Ramírez de Santillana]

[10h] Sor Juana wrote about a "pyramidal death-born shadow of Earth" in this gigantic poem. It ends with the sun "dispensing their colors to visible things" and "keeping... the World illuminated" so that she can "awake."

ANSWER: "**First Dream**" [or "**Primero sueño**"]

<Non-Epic Poetry, Schwartz>

18. This photographer collected his pictures of the bodybuilder Lisa Lyon in *Lady, Lisa Lyon*. For 10 points each:

[10h] Name this photographer, most often known for his black-and-white photographs of BDSM culture. His exhibition at D.C.'s Corcoran Gallery was the subject of much controversy.

ANSWER: Robert **Mapplethorpe**

[10e] Near the end of his life, Robert Mapplethorpe took a self-portrait with a staff topped by one of these objects. In *memento mori* paintings, these objects serve as reminders of death.

ANSWER: **skulls**

[10m] In one work from *Lady, Lisa Lyon*, she holds one of these animals while sitting naked in a chair. In a Richard Avedon picture, a naked Nastassja Kinski lies on the floor with one of these animals.

ANSWER: **snakes** [accept specific types like **pythons**]

<Other Fine Arts, Parameswaran>

19. You are a particle in a box. Answer some questions about how you disobey classical mechanics, for 10 points each:

[10e] Because your potential energy is zero inside the box, you will have a non-zero value for this quantity. It is classically calculated as "one-half-m-v-squared".

ANSWER: **kinetic** energy

[10m] Even though we don't know where you are, you must exist somewhere since the wavefunction must satisfy this condition. It is satisfied by multiplying the wavefunction by a constant so the magnitude squared over all space is one.

ANSWER: **normalization** condition [accept **normalized** or **normalize** or **normalizing**]

[10h] Because your situation is analogous to an electron in a semiconductor, it can be used to derive this function for each band. This function is multiplied by the Fermi function to give the total number of particles at a given energy.

ANSWER: **density of states** [or **DOS**]

<Physics, Parameswaran>

20. A ruler of this kingdom renounced Christianity due to his unwillingness to abandon polygamy. For 10 points each:

[10m] Name this kingdom, which was ruled by João I and his son Afonso I, who was known as Nzinga Mvemba before he converted to Christianity.

ANSWER: Kingdom of **Kongo**

[10e] Afonso I sent his son Henrique to be a bishop in this country's city of Utica. This modern-day country's city of Carthage became an important stronghold for Christianity in Africa.

ANSWER: Republic of **Tunisia**

[10h] Afonso I was forced to send Congolese slaves to work sugar plantations in this other African colony, where Manuel I had deported 2000 Jews to. Its people now speak a Portuguese creole called forro.

ANSWER: **São Tomé** and Príncipe

<World History, Zhang>