

**Eisenhower Memorial Tournament 2017: Dunning-Kruger? I Hardly Know ‘Er!**

**Questions by Vasa Clarke, Ryan Humphrey, Alex Damisch, Jacob O’Rourke, Gabe Guedes, Charles Hang, and Alex Dzurick**

**Packet 1: Tossups**

1. With spin, this quantity names a transfer method for flipping the active elements of a magnetic random access memory system. When multiple coplanar forces act on a body, the algebraic sum of this quantity for each force was proven to equal the value of this quantity for the resultant vector by Varignon’s theorem. The effect of this property on a magnetic field is predicted by the Landau-Lifshitz-Gilbert equation. For a (\*) dipole in an electric field, this quantity equals the product of the electric field, the charge, the displacement, and sine of theta. Defined as the time derivative of angular momentum, this quantity also equals the cross product of force and the lever arm. For 10 points, name this rotational analogue of force.

ANSWER: torque [or moment or “moment of Force”] <RH, Physics>

2. In 1974, Arthur Fiedler conducted the Boston Pops for this work’s first Fourth of July performance in America. In this work, a tambourine accompanies an English horn playing the melody from the folksong “At the Gate,” or *U Vorot* [“OOH vah-ROTE”]. This work begins with cellos playing a modified version of the first tone of the Troparion of the (\*) Holy Cross. The composer of this piece noted that the bells at the end of this piece should be “struck in a manner of celebratory singing”; the score also famously calls for the French national anthem, “La Marseillaise” [“la mar-say-EZ”], to be interrupted by “the instrument used...to represent cannon fire.” For 10 points, name this Tchaikovsky overture that celebrates Russia’s defeat over Napoleon in its title year.

ANSWER: *The* 1812 Overture [or *The* Year 1812, *festival overture in Eb major, Op. 49*] <AWD, Music>

3. A novel from this country contains an encounter with a one-armed peasant who chopped off his arm right before passing out due to a snakebite, thus saving his life. That novel from this country sees a traveler ask an old man if he has gone the wrong way, only to be told that “the road is not wrong, it is the traveler who is wrong.” God appears in the form of a green frog in that novel from this country inspired by a misdiagnosis of (\*) lung cancer. A short story from this country ends with the line “Save the Children” after its protagonist begins seeing the line “Eat People” in the classics he is studying. For 10 points, name this country home to the author of the novel *Soul Mountain* as well as the author of the short story “Diary of a Madman,” Gao Xingjian [“gow shing-jahn”] and Lu Xun [“loo shring”], respectively.

ANSWER: People’s Republic of China [or Zhonghua Renmin Gongheguo] <CH, World/Other Lit>

4. This leader sent disabled or homeless children to children’s homes in places like Cighic and Siret. As a result of this leader’s Decree 770, women who gave birth to ten or more children were declared “heroine mothers.” In this leader’s final speech, a crowd taunted him by chanting “Timisoara,” in reference to a recent uprising. This man urged for an intensification of socialist ideology in a 1971 speech that was named the (\*) July Theses. This man succeeded Gheorghe Gheorghiu-Dej as the head of his country’s Communist Party, and he employed the Securitate secret police. This man and his wife Elena were executed on live TV on Christmas Day 1989 after attempting to flee the country. For 10 points, name this dictator who led Romania from 1967 to 1989.

ANSWER: Nicolae Ceausescu <JO, European History>

5. Because this man’s co-ruler refused to punish some relatives who had committed murder, this man refused to punish the assassins of that co-ruler. During an event orchestrated by this man, participants shouted “Talasius!” shortly before this man fought and killed a king named Acron. After this man disappeared, it was revealed that this man had been transformed into the god (\*) Quirinus. This man, whose successor was Numa Pompilius, committed murder after the loser of a birdwatching contest jumped over a trench. After this man’s mother, a Vestal Virgin named Rhea Silvia, gave birth, this man and his brother were raised by a she-wolf. For 10 points, name this hero, the twin brother of Remus who notably founded the city of Rome.

ANSWER: Romulus <VC, Myth>

6. An uncommon stereochemical result in reactions following this mechanism is explained by Saul Winstein's concept of intimate ion pairs. For ambident nucleophiles, this is the reaction mechanism followed by the *more* [emphasize] electronegative atom, according to Kornblum's rule. This is the mechanism followed by reactions involving benzyl or allyl triflates. Experimentally, reactions with this mechanism proceed faster at (\*) tertiary carbons than at secondary carbons. This mechanism typical works best in polar, protic solvents, such as ethanol or water, since those solutions speed up solvolysis in this mechanism's rate-determining step. Reactions with this mechanism are best run with weak nucleophiles, and they produce a mixture of retention and inversion products. For 10 points, name this nucleophilic substitution mechanism in which a carbocation intermediate is produced.

ANSWER: SN1 mechanism [or unimolecular substitution reaction/mechanism] <RH, Chemistry>

7. An adaptation of this novel which was quoted at the Nuremberg Trials urged the Germans to live with "hearts open to every fruitful source of wonder, great through understanding and love." A woman surnamed Buff who inspired one of this novel's characters confronts its author in that adaptation, the novel *The Beloved Returns* by Thomas Mann. A satire of this novel by Friedrich Nicolai in which some bullets are replaced with chicken blood led to a poetic depiction of Nicolai (\*) defecating on the grave of this novel's protagonist. The death of this novel's protagonist and his burial under a linden tree led to a wave of copycat suicides in Europe. For 10 points, name this novel whose protagonist kills himself out of love for Lotte, which was written by Johann Wolfgang von Goethe.

ANSWER: *The Sorrows of Young Werther* [or *Die Leiden des jungen Werthers*] <CH, European Lit>

8. According to a book written about the creation of *this musical work*, its opening notes were inspired by a sound file called "Door Wood Squeak." The title character of this work is called an "arrogant, loud-mouthed bother" by his eventual rival in another song. In this work, the main character's wife and sister-and-law recount different versions of meeting him in the songs (\*) "Helpless" and "Satisfied," respectively. This musical's song "Guns and Ships" includes a stanza with a pace of 6.3 words per second and is rapped by Lafayette. The title character of this musical expresses his desire to make a name for himself in the song "My Shot." For 10 points, name this musical written by and originally starring Lin-Manuel Miranda about the first Treasury Secretary of the United States.

ANSWER: Hamilton: *An American Musical* <AWD, Trash/Other>

9. This leader briefly employed the American soldier Homer Lea as chief of staff. This leader was forced to flee a territory for the United States after plotting with allies at the Penang conference. A manifesto issued by this leader and Adolf Joffe pledged Soviet support for this leader's country and the cooperation of the local (\*) Communist Party. The qualities of nationalism, democracy, and livelihood were espoused by this leader's Three Principles of the People. This leader clashed with the Beiyang Government despite ceding power to their leader, Yuan Shikai. This man's successor within his party lost a civil war and fled to Taiwan. For 10 points, name this early leader of the Republic of China who founded the Kuomintang.

ANSWER: Sun Yat-sen [or Sun Deming; or Sun Wen; or Sun Dixiang; or Sun Rixin; or Nakayama Sho; or Sun Zhong-shan] <VC, History>

10. This country engaged in the "Great Marriage Debate" after its leader encouraged men to marry highly educated women. This country's government has a matchmaking office called the Social Development Unit which is intended to reverse the declining birth rates caused by its earlier "Stop at Two" family planning policy. This country was founded after being expelled by Tunku Abdul Rahman from a Federation that also included (\*) Sabah and Sarawak. High pay for government officials to prevent corruption and the use of caning were among the measures used to take this country "from the Third World to the First World in a single generation" by its leader Lee Kuan Yew. For 10 points, name this wealthy city-state on the tip of Malaysia.

ANSWER: Republic of Singapore <CH, Misc./Other History>

11. **Members of this school were mentored by William Dyce, who painted *Le Mort D'Arthur* for a certain government building. One co-founder of this artistic school painted a woman holding a pomegranate from which she has taken one bite in *Proserpine*. Another member of this school painted a woman with long red hair in a small boat with three candles on it; that painting is (\*) *The Lady of Shalott*. This artistic group published a journal, *The Germ*, for only four issues. Elizabeth Siddal modeled for a painting by a member of this group that depicts woman with her palms upward floating lifelessly in a brook, *Ophelia*. For 10 points, name this group of British Academy painters that attempted to reverse a certain Italian painter's influence on art, which included William Holman Hunt, John Everett Millais, and Dante Gabriel Rossetti.**

ANSWER: Pre-Raphaelite Brotherhood [prompt on "PRB"] <AWD, Painting>

12. **The  $k^{\text{th}}$  symmetric function of these quantities is defined as the sum of their products taken  $k$  at a time. These mathematical entities must possess negative real parts according to one condition of Lyapunov's first theorem. The dimension of the subspace A matrix is invertible if and only if these values do not equal zero. The sum of these values for an  $n \times n$  [ $n$  by  $n$ ] matrix is equal to the (\*) trace. These values, which are only defined for square matrices, are usually written as  $\lambda$  in an equation that finds the roots of a characteristic polynomial. For a triangular matrix, these values are found on the matrix's main diagonal. For 10 points, name these special scalars in mathematics, which are used to find eigenvectors.**

ANSWER: eigenvalues <AWD, Other Science>

13. **This man addressed Ebenezer Thayer in a letter named for the "Instructions" of his home town. A house that this man owned as the Ambassador to the Netherlands was the first American-owned embassy on foreign soil. This man offered economic assistance to the Haitian Revolution of Toussaint L'Ouverture. The Direct Tax this man signed led to the rebellion of John (\*) Fries. This author of the *Braintree Instructions* declared that "facts are stubborn things" while defending Thomas Preston and the other British soldiers involved in the Boston Massacre. In an attempt to quell criticism, this President signed the Alien and Sedition Acts. For 10 points, name this second President of the United States.**

ANSWER: John Adams [prompt on "Adams"; do NOT accept or prompt on "John Q. Adams" or "John Quincy Adams," as that is his son] <JO, American History>

14. **According to one theory, these things can be caused by primary or secondary inducers that result in the activation of somatic states. One theory about these things identifies an automatic appraisal mechanism by which they occur and was created by a theorist who identified their "basic" types as those that are characterized by distinctive universal signals. In addition to those theories of Antonio Damasio and Paul Ekman, Robert Plutchik created a (\*) wheel diagram of these things that shows the ways in which they can combine into dyads to form new ones. One theory of these things says they are equivalent to the psychological arousal one receives from external events and was proposed by William James and Carl Lange. For 10 points, name these reactions associated with the amygdala that include disgust and fear.**

ANSWER: emotions <GG, Social Science>

15. **An adaptation of this play by Colley Cibber includes the line "Off with his head; so much for Buckingham." One character in this play insults another by calling her a "elvish-marked, abortive, rooting hog;" that character later teaches the mother of this play's protagonist to curse him. This play's protagonist is visited by a series of ghosts who all tell him to "Despair and die," after which he notes "Alack, I (\*) love myself," after which he changes his mind and says "alas, I rather hate myself." This play's protagonist describes himself as "determined to prove a villain" in a speech which begins "Now is the winter of our discontent." For 10 points, name this William Shakespeare play about the title hunchbacked king who dies at the Battle of Bosworth Field, thus ending the Wars of the Roses.**

ANSWER: Richard III <CH, British Lit>

16. St. Augustine said that this *specific feature* “signifies the courageous” and “distinguishes the grown men, the earnest, the active,” and St. Cyprian of Carthage said that lapsed Christians are wont to remove them. In 2 Samuel, David sends the Ammonites a servant, who the Ammonites degrade by cutting their garments in the middle and cutting this feature in half. In one hadith, Muhammad says to let this thing (\*) grow and to not emulate Jews. Leviticus 19:27 says to not round or mar the corners of this feature, which Orthodox Jews interpret by having *pivot*, or sidelocks. After years of petitions by observant Sikhs, in January of 2017 the U.S. Army permitted this feature as long it was kept under 2 inches long. For 10 points, name this facial hair worn on the chin.  
ANSWER: beards [DO NOT accept or prompt on just “hair” since that implies head hair, prompt on “facial hair” before mention] <AWD, Religion>

17. A protagonist from this city cherishes a memory of being shot in the shoulder during the Korean War and is Binx Bolling, the protagonist of *The Moviegoer*. Walker Percy, that novel’s author, helped publish a novel about a man in this city who complains about his pyloric valve and evokes the goddess Fortuna as part of his fascination with Boethius’ *Consolation of Philosophy*. Another character moves to this city after losing a job as a (\*) teacher as well as Belle Rive plantation and is later assaulted by Stanley Kowalski. For 10 points, name this city home to Ignatius J. Reilly, the protagonist of John Kennedy Toole’s *Confederacy of Dunces*, as well as Blanche Dubois from *A Streetcar Named Desire*.  
ANSWER: New Orleans <CH, American Lit>

18. This mountain range is home to an extinct volcano which is hilariously named “Mount Pissis.” Subranges of this mountain range are reunited in the Pasto Knot. The world’s highest statue of Christ the Redeemer was built in this mountain range to commemorate the successful resolution of a border dispute. The Gate of the Sun is located at the (\*) Tiwanaku archaeological site, which is located in the foothills of this mountain range. This mountain range was created by the eastern movement of the Nazca Plate. Most speakers of the Quechua language live near this mountain range, where Lake Titicaca and the silver mines of Potosí are located. For 10 points, name this mountain range which stretches across the western edge of South America.  
ANSWER: Andes [or Andean Mountains; or Cordillera de los Andes] <VC, Geography>

19. One film by this director features a scene in which two women walk in opposite directions wearing Pan Am and TWA flight bags on their heads. That film by this non-Scorsese director uses close-ups of bubbles swirling in a coffee cup as the narrator claims that “when I speak, I limit the world.” This director of *2 or 3 Things I Know About Her* and frequent collaborator with (\*) Anna Karina created a film that ends with a man running jaggedly down a street as he is shot from behind by cops. That film by this director pioneered a technique in which cuts between shots do not preserve continuity and focuses on a Humphrey Bogart-imitating man who kills a policeman after stealing a car. For 10 points, name this French New Wave filmmaker and frequent user of jump cuts who directed *Breathless*.  
ANSWER: Jean-Luc Godard <GG, Other Art>

20. Deregulated activity of one protein in this enzyme family can be triggered by a “chimeric” Bcr protein, and deregulation of that one of these enzymes named for Abelson is a key sign of chronic myelo-genous leukemia. Another member of this family of enzymes becomes constitutively active in its viral form due to the loss of its C-terminal residues, and the non-viral form of that enzyme from this family is encoded for by the (\*) SRC gene. A different one of these enzymes ultimately catalyzes the downstream dimerization of STAT transcription factors and is named for its nearly-identical transfer domains. In a classic feedback loop, the serine-threo-nine residues on one variety of these enzymes is phosphorylated by their MAP3 variety. For 10 points, name these enzymes that function in the transfer of phosphate groups.  
ANSWER: kinases [accept Abl kinases, Src kinases, any form of MAP kinase, (receptor/non-receptor)-tyrosine kinases, or serine-threonine kinases] <RH, Biology>

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**Packet 1: Bonuses**

1. This figure grasps a curtain and holds a mask of George Washington in one painting by SOTS artists Komar and Melamid. For 10 points each,

[10] Name this man who wears a black trench coat and stands alone in a park in a portrait by Isaak Brodsky. This man is also seen giving a speech to rally workers in another work by that same artist.

ANSWER: Vladimir Lenin

[10] A bust of Vladimir Lenin and the phrase “study and learn” feature prominently in this American artist’s *The Russian Schoolroom*. Four men escort a young Ruby Bridges in this artist’s *The Problem We All Live With*.

ANSWER: Norman Rockwell

[10] A controversial image of Vladimir Lenin resulted in the destruction of this artist’s colossal work, *Man at the Crossroads*. This husband of Frida Kahlo also created the 27-part *Detroit Industry* murals.

ANSWER: Diego Rivera <RH, Painting>

2. A leader of this group named Bambatha led an unsuccessful rebellion against the British in the colony of Natal. For 10 points each:

[10] Name this South African group who had earlier fought the British at the Battle of Rorke’s Drift.

ANSWER: Zulu [or amaZulu]

[10] Long before Bambatha’s rebellion, the Zulu were led by this king who transformed Zulu tactics by developing the “buffalo horn” formation. He was probably assassinated on the orders of Dingane.

ANSWER: Shaka kaSenzangakhona

[10] During Bambatha’s rebellion, Mahatma Gandhi offered to raise men to help the British fight the Zulus. Gandhi’s unit served in this non-combat capacity. A general description is acceptable.

ANSWER: ambulance corps [or “stretcher-bearers”; or any obvious equivalent suggesting that they were medics, transported the wounded, etc.] <VC, World History>

3. The necessity of the “manly act” is a theme in this author’s first two novels, *Jürg Reinhart* and *An Answer from the Silence*. For 10 points each:

[10] Name this author who wrote about an UNESCO engineer whose faith in the rational is shattered in *Homo Faber*.

ANSWER: Max Rudolf Frisch

[10] Max Frisch was from this country home to playwright Friedrich Dürrenmatt which is also the setting of a novel about Hans Castorp.

ANSWER: Switzerland [or Swiss Confederation]

[10] Another Swiss author was this novelist who wrote *Steppenwolf* and *Siddhartha*.

ANSWER: Hermann Karl Hesse <CH, European Lit>

4. This thinker reiterated five criteria from the penultimate chapter of his best-known work in the essay “Objectivity, Value Judgment, and Theory Choice”. For 10 points each,

[10] Name this thinker who introduced the concept of “paradigm shifts” to explain the central theory of his best-known work. He also engaged in some notable debates with Michael Polanyi.

ANSWER: Thomas Kuhn

[10] That aforementioned work by Kuhn is named for the “structure” of revolutions in this general academic discipline. Francis Bacon advocated for this discipline’s eponymous “method” in *Novum Organum*.

ANSWER: science [or word forms like “scientific” or *The Structure of Scientific Revolutions*]

[10] In that work, Kuhn also introduced the concept of “normal science” and this other two-word process to dispute Karl Popper’s notion of “revolutionary science”. Kuhn argues that scientists spend most of their time engaging in this process.

ANSWER: puzzle-solving <RH, Philosophy>

5. Certain diseases cause cells to take on a so-called “owl’s eye” appearance. For ten points each, name some things about those diseases.

[10] Perhaps the best-known case of cells taking on an owl’s eye appearance can be seen in the typically bi-lobed nuclei of Reed-Sternberg cells, the presence of which is highly indicative of this type of blood-cell cancer.

ANSWER: **Hodgkin’s lymphoma** [prompt on “lymphoma”, do not accept or prompt on “non-Hodgkin’s lymphoma” or any type of leukemia]

[10] The only known viral cause of an owl’s eye appearance in cells can be seen in the basophils of those infected with cyto·megalo·virus, a member of this viral family. This viral family also includes the Mono-causing Epstein-Barr virus and the cold sore-inducing “simplex” virus.

ANSWER: **Herpes** virus [or **Herpesviridae**]

[10] An owl’s eye appearance can also be seen when examining the trophozoites of this species of intestinal parasite under a microscope. These an·aerobic, diplo·monad proto·zoans cause violent diarrhea and flattened intestinal villi in those infected with them.

ANSWER: **Giardia** lamblia <RH, Biology>

6. Adherents to this god use sacred vibhuti ash to mark themselves with a symbol of three horizontal lines known as tripundra. For 10 points each:

[10] Name this Hindu god who receives devotions from twelve traditional Jyo·tir·linga temples located across India.

ANSWER: **Shiva**

[10] The tripundra symbol is marked on this body part. Normal depictions of the “third eye” show it located on this part of the human body.

ANSWER: **forehead** [or obvious equivalents; prompt on “head” or “face”]

[10] Having three eyes would be unusual, but Shiva also has a blue neck and throat resulting from his drinking of this substance, the poison that was created during the churning of the ocean.

ANSWER: **halahala** [or **kalakuta**] <VC, Myth>

7. Name some works that were subject to notable performances by the Leeds Festival Chorus. For 10 points each,

[10] Perhaps the most well-known performance by the chorus was their 1931 premiere of this oratorio. That orchestration of this work featured some available brass bands from an earlier performance of Berlioz’s requiem, and saw some members of the chorus object to singing the word “concubine” in this work.

ANSWER: **Belshazzar’s feast** [by William Walton]

[10] The 1910 Leeds festival was notable for featuring the premiere of this symphony by Ralph Vaughan-Williams. This symphony sets several poems by Walt Whitman to music, and its final movement is “The Explorers.”

ANSWER: A **Sea Symphony** [or Vaughan-Williams’ **1st symphony**]

[10] In 2016, the Leeds Festival chorus featured in a notable performance of this symphony by Gustav Mahler. This work sets the hymn “Veni, Creator, Spiritus” to music, and is named for the large size of its orchestration.

ANSWER: Gustav Mahler’s **Symphony of a Thousand** [or **Mahler’s 8<sup>th</sup>** symphony] <RH, Music>

8. A king of this country wrote the Third of May Constitution, which was opposed by nobles in the Targowica Confederation. For 10 points each:

[10] Name this country, whose nobility could use the liberum veto as part of its “Golden Freedoms.” This country joined in a commonwealth with Lithuania in the Union of Lublin.

ANSWER: **Poland** [or the Republic of **Poland**; or Rzeczpospolita **Polska**]

[10] If a member of the nobility served in this Polish parliament, they could simply shout “I forbid” and end a session of it.

ANSWER: **Sejm**

[10] The Polish “Golden Age” occurred during the reigns of Sigismund I and Sigismund II, the last two rulers of this dynasty. This dynasty was founded when its namesake married Queen Jadwiga of Poland.

ANSWER: **Jagiellonian** Dynasty <JO, European History>

9. Two potassium ions, four atoms of iodine, and one atom of this element comprise Nessler's reagent. For 10 points each,

[10] Name this element whose sulfate facilitates the conversion of alkynes into ketones under acidic conditions. In another reaction, this element's nitrate and nitric acid convert benzene to picric acid.

ANSWER: mercury [prompt on "quicksilver"] (The second reaction is the Wolffenstein-Böters reaction)

[10] The oxy-mercuration-reduction reaction notably follows this rule, named for a Russian chemist, which states that the hydroxyl group in the reaction will be added to the more substituted carbon.

ANSWER: Markovnikov's rule

[10] The similar, alk-oxy-mercuration-de-mercuration reaction takes place in an alcohol solvent instead of in water, and ultimately produces one of these compounds. The solvent THF is a cyclic example of one of these compounds.

ANSWER: ether [prompt on "furans"] <RH, Chemistry>

10. One author from this state stated that it "and the Mississippi have made a deeper impression on me than any other part of the world." For 10 points each:

[10] Name this state whose town of Hannibal was home to Mark Twain.

ANSWER: Missouri

[10] The author of that quote was this poet who included *East Coker* and *Little Gidding* as two of his *Four Quartets*.

ANSWER: T. S. Eliot [or Thomas Stearns Eliot]

[10] Another author from Missouri was this poet who described an "armored animal" as a "miniature artist engineer" in "The Pangolin." She noted of a certain genre that "I, too, dislike it" in another poem.

ANSWER: Marianne Craig Moore <CH, American Lit>

11. This man commissioned the film *Fitna*, which sought to prove that the Qu'ran incited Muslims to violence against those who did not follow its teachings. For 10 points each:

[10] Name this politician and leader of the Party for Freedom, which currently holds the second-most seats in a House of Representatives led by Mark Rutte's People's Party for Freedom and Democracy after a 2017 election.

ANSWER: Geert Wilders

[10] Mark Rutte is the prime minister of this country that has Queen Beatrix as a monarch and whose parliament meets in The Hague.

ANSWER: Netherlands

[10] *Fitna* led to Geert Wilders being sued over the inclusion of one of these things that were published by Danish newspaper *Jyllands-Posten* in 2005 without the permission of their creator Kurt Westergaard.

ANSWER: cartoons of Muhammad [accept equivalents such as images or drawings of Muhammad] <GG, Current Events>

12. Answer some questions about academic content in the webcomic *Saturday Morning Breakfast Cereal*. For 10 points each:

[10] In a recent strip from SMBC, this philosopher is depicted shouting at a prostitute things like "morality is the herd instinct of the individual!" and "I will teach you the Overman!" shortly before he presumably contracts syphilis.

ANSWER: Friedrich Nietzsche

[10] An early comic from SMBC has as its premise that aliens are using humans to create heavy elements. That situation is set against the backdrop of this theoretical concept whereby some isotopes heavier than uranium might have nuclear structures which prevent them from decaying as quickly.

ANSWER: island of stability

[10] SMBC once did a comic on the five stages of learning about this model, which consists of five stages dedicated to explaining the structure of grief. It was proposed in the book *On Death and Dying*.

ANSWER: Kübler-Ross model <VC, Trash/Other>

13. A spring-loaded hammer strikes a crystal with this property in the standard design for electric cigarette lighters. For 10 points each,

[10] Name this property of materials in which an electric potential is generated when a mechanical stress is applied.

ANSWER: **piezoelectric** materials [or **piezoelectricity**]

[10] One use of piezoelectric materials is to create a unique type of these AC devices that step-up or step-down input voltages. The piezoelectric version of these devices utilize acoustic coupling in place of magnetic coupling.

ANSWER: piezoelectric **transformers**

[10] Another use of piezoelectric materials is in the cantilevers, tips, and scanners inherent to this microscopy technique. This technique operates in two imaging modes, the static contact mode and dynamic tapping mode.

ANSWER: **atomic force** microscopy [or **AFM** or **SFM** or scanning force microscopy; prompt on scanning probe microscopy] <RH, Physics>

14. William Travis led the losing side at this battle, where he was killed. For 10 points each:

[10] Name this battle, where Santa Anna's forces captured a San Antonio mission. Davy Crockett and Jim Bowie died at this battle.

ANSWER: Battle of the **Alamo**

[10] The Battle of the Alamo, along with the Massacre at Goliad, was part of the war of independence for this Southern state, which was led by President Sam Houston before the U.S. annexed it.

ANSWER: **Texas** [or the Republic of **Texas**]

[10] This cavalry commander at the Battle of San Jacinto issued the "redback" currency while serving as President of the Republic of Texas.

ANSWER: Mirabeau **Lamar** [or Mirabeau Buonaparte **Lamar**] <JO, American History>

15. Name these things related to the comic novel *Antic Hay*, for 10 points each:

[10] *Antic Hay* was written by this English author of *Crome Yellow* as well as *Brave New World*.

ANSWER: Aldous Leonard **Huxley**

[10] *Antic Hay* features what may be the first mistaken description of a vomitorium as a place to vomit in an allusion to the *Satyricon*, a novel by this Roman author.

ANSWER: Gaius **Petronius** Arbiter

[10] The title of *Antic Hay* comes from *Edward II*, a play by this author who also wrote about a conqueror who dies after burning a Qu'ran in another work.

ANSWER: Christopher **Marlowe** [or Kit **Marlowe**] <CH, British Lit>

16. Name these things about fictional journeys to the moon, for 10 points each:

[10] A journey to the moon appears in *True Stories*, a work by this Roman author which is often considered the first ever work of science fiction.

ANSWER: **Lucian** of Samosata

[10] *From the Earth to the Moon* and its sequel *Around the Moon* were novels by this science fiction author who also wrote *Around the World in Eighty Days*.

ANSWER: Jules Gabriel **Verne**

[10] Opposition to a lunar expedition is the subject of "Trends," a story by this author who described Hari Seldon and his invention of "psychohistory" in a novel series. He also wrote the short story "Nightfall."

ANSWER: Isaac **Asimov** [or Isaak **Ozimov**] <CH, Misc./Other Lit>

17. A member of this family, Ludwig, was nicknamed the "Oil King" of a certain Russian city. For 10 points each:

[10] Name this family whose members also included Alfred, whose death was erroneously celebrated after Ludwig died. That caused Alfred to establish a series of prizes, including one for Peace, named for this family.

ANSWER: **Nobel**

[10] Ludwig was the "Oil King" of this city in the Russian Empire home to some of Europe's earliest oil fields. Before the First World War, this city was the source of a fifth of the world's oil.

ANSWER: **Baku**

[10] Baku was a center for radicals like this man who said that his "last warm feelings for humanity" died when his wife perished due to Baku's pollution. This man later gained fame leading military operations in Tsaritsyn.

ANSWER: Joseph Vissarionovich **Stalin** [or Ioseb Besarionis dze **Jughashvili**] <CH, Misc./Other History>



18. Florence and the Machine, Justin Bieber, Drake, and Mumford and Sons lost to this artist for the 2011 Grammy for Best New Artist. For 10 points each:

[10] Name this jazz artist. She sings and plays songs like “I Know You Know” and “Black Gold.”

ANSWER: Esperanza **Spalding**

[10] Along with singing, Spalding plays this string instrument, also played by Jaco Pastorius and Charles Mingus.

ANSWER: double **bass** [accept upright **bass** or basically any other modifier, since she plays both acoustic and electric]

[10] On her album *Radio Music Society*, Spalding covered “Endangered Species,” a piece originally by this saxophonist and co-founder of Weather Report with Joe Zawinul.

ANSWER: Wayne **Shorter** <AWD, Other Art>

19. This mythical hero supposedly created the island of Rockall when he threw a pebble into the ocean, possibly during his feud with Benandonner. For 10 points each:

[10] Name this hero, who famously gained power by accidentally eating from the Salmon of Knowledge.

ANSWER: **Finn McCool** [or **Fionn mac Cumhaill**; or **Deimne**]

[10] Finn McCool’s dispute with Benandonner resulted in the creation and later destruction of this structure, which was supposed to serve as a bridge so that Finn could go to Scotland and fight Benandonner.

ANSWER: **Giant’s Causeway** [or **Clochán an Aifir**; or **Clochán na bhFomhórach**]

[10] After realizing that Benandonner was actually bigger than him, Finn McCool disguised himself as one of these things in order to escape. Malevolent spirits would often steal these things and replace them with changelings.

ANSWER: a **baby** [or obvious equivalents related to **human children**] <VC>

20. This structure is always largest at a storm’s top and smallest at the bottom because rising air follows outwardly-sloping isolines along this structure’s wall. For 10 points each,

[10] Name this typically calmest portion of a storm that may resemble an open dome in the stadium effect.

ANSWER: **eye** of a cyclone [accept hurricane or tropical storm/depression in place of cyclone]

[10] This is the effect in which two cyclones orbit one another and intensify as their eyes are drawn closer to one another. This effect is named for a Japanese meteorologist.

ANSWER: **Fujiwhara** effect

[10] For particularly strong cyclones, such as those strengthened by the Fujiwhara effect, meteorologists may find it useful to measure the storm’s intensity with this wind-speed scale. A category one hurricane on the Saffir-Simpson scale is roughly a 12 on this scale.

ANSWER: **Beaufort** scale <RH, Other Science>