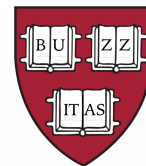


## Harvard Fall Tournament XII

Edited by Raynor Kuang

Questions by Raynor Kuang, Jiho Park, Robert Chu, Alex Cohen, Michael Yue, Erik Owen, Jonathan Suh, Roger Jin, Michael Horton, Sriram Pendyala, and Josh Xiong



Round 12

Tossups

1. **This man first noted the potential use for laughing gas as an anesthetic. This scientist passed enough current through a thin strip of platinum to make it glow, thus being the first to create incandescent light from electricity, and he suggested using sacrificial anodes to protect the copper bottoms of ships in the (\*) Royal Navy. This man used electrolysis to isolate strontium, calcium, potassium, and sodium, and he acted as a mentor to Michael Faraday. This scientist invented a namesake safety lamp for coal mines. For 10 points, name this English chemist who discovered the elementality of iodine and chlorine.**

ANSWER: Sir Humphry Davy <Pendyala>

2. **In one film by this director, the protagonist meets two characters both named Sara and played by the same actress. Marianne travels with her father-in-law Professor Isak Borg as he takes a road trip to Lund to receive an honorary degree in this man's film (\*) *Wild Strawberries*. This man directed a film that ends with a performance of the Dance of Death and is set during the plague ravaged Middle Ages. The crusader Antonius Block plays a game of chess with Death in this man's most famous film, which is named for a reference from the Book of Revelation. For 10 points, name this Swedish director of *The Seventh Seal*.**

ANSWER: Ingmar Bergman <Owen/Jin>

3. **Just outside this city, three employees of the Peoples Grocery were lynched in 1892. To encourage blacks to vote in this city, poll taxes were paid for by E.H. Crump's political machine. A speech given in this city called for a boycott of Wonder Bread and ends with the speaker saying "Mine eyes have seen the coming of the glory of the Lord." A man who visited this city during a (\*) sanitation strike and gave the "I've Been to the Mountaintop" speech was assassinated while at this city's Lorraine Motel by James Earl Ray. For 10 points, name this Tennessee city where Martin Luther King was killed.**

ANSWER: Memphis <Chu>

4. **In one of this author's plays, a character who didn't fix a chimney is tortured by "helpers and servants" and closes his doors to "younger people." A 2017 Broadway play by Lucas Hnath was a sequel to one of this man's plays whose protagonist has the first "serious conversation" in eight years. One of this writer's characters dances the tarantella to prevent her husband from finding a letter from (\*) Krogstad. This man wrote the play *The Master Builder*, and Dr. Rank declares his love for one of his characters who chooses to leave her husband Torvald. For 10 points, name this Norwegian playwright who created Nora Helmer in *A Doll's House*.**

ANSWER: Henrik Ibsen <Yue>

5. **It's not Stockholm or Boston, but some of this city's train stations are marked by the letter "T" in a circle. This city's monorail system was decommissioned in 2013, and this city's Central Railway station is located between its suburbs of Haymarket and Surry Hills. TrainLink service connects this city to Dungog and (\*) Wollongong. The T1 Northern and North Shore Line crosses this city's Harbour Bridge, and the Circular Quay ["key"] station provides access to this city's Royal Botanic Gardens and its iconic Opera House. For 10 points, name this state capital of New South Wales, the most populous city in Australia and Oceania.**

ANSWER: Sydney <Park>

6. The protagonist of one novel by this author is stolen from his family and raised by Gypsies before crossing Africa and living as a pirate in the Arabian Sea; that novel by this man is *Captain Singleton*. In one of his novels, the protagonist's mother escapes execution by "pleading her belly," and the protagonist marries her half-brother while living as a (\*) conwoman in colonial America. In the most famous novel by this author of *Moll Flanders*, a man stranded on a desert island meets a companion that he christens Friday. For 10 points, name this founder of the English novel and author of *Robinson Crusoe*.

ANSWER: Daniel Defoe <Cohen>

7. The contest form of this phenomenon is modeled by the Beverton-Holt equation, and its scramble form is associated with polygyny. It's not predation, but the Lotka-Volterra equations model this phenomenon using the logistic equation for population growth. George Gause proposed this phenomenon's namesake (\*) exclusion principle, and it can occur between different species or within a species. Organisms physically exclude others from accessing a particular resource in one form of this phenomenon. For 10 points, give this term for the interaction between organisms that vie for a limited resource like food or water.

ANSWER: competition (accept word forms like competitive exclusion principle) <Park>

8. The Amber Room was gifted to the ruling family here and housed at the nearby Catherine Palace. This city was built in the same location as the captured fortress of Nyenschantz, and a monarch was killed in this city by a bomb thrown at his carriage. The Decembrist Uprising against (\*) Nicholas I began in this city, and it was built by Swedish prisoners captured during the Great Northern War. This city was founded by a monarch known as "the Great," who made it his "Window to Europe" during his modernization of Russia. For 10 points, name this city that was known as Leningrad during the Soviet era.

ANSWER: Saint Petersburg (or Petrograd; accept Leningrad before read) <Kuang>

9. A Midwestern one of these places is the setting of Jane Smiley's novel *Moo*. After speaking about the "Merrie England," the title character begins an epic rant in one of these places in Kingsley Amis's book *Lucky Jim*, and before moving to his sister's farm, David Lurie works at one of these places in (\*) J.M. Coetzee's *Disgrace*. In *Death of a Salesman*, Biff Loman is unable to enter one of these institutions despite the help of Bernard, and a "Writers' Workshop" is located in Iowa at one of these institutions. For 10 points, name these institutions, one of which is the Great Gatsby's supposed alma mater "Oggsford."

ANSWER: universities (or schools; or campuses; accept campus novel; accept any specific school) <Kuang>

10. This thinker argued that what differentiates people from animals is man's capacity for perfectibility in a book distinguishing between natural and moral sources for the title concept. A book by this thinker describes a servant who steals a ribbon and frames a young girl. He's not (\*) Augustine, but he wrote a set of *Confessions*, as well as some *Discourses on Inequality*. This thinker posited the idea of a solitary, irrational "natural man," and he wrote in a work arguing against divine right that "Man is born free; everywhere he is in chains." For 10 points, name this French Enlightenment thinker who wrote *Confessions* and *The Social Contract*.

Answer: Jean-Jacques Rousseau <Jin>

11. A television character with this first name is sung a song whose lyrics consists of the phrase "you take my breath away." In Jared Hess's first feature film, a character with this first name is called a "fat lard" before being ordered to eat some ham, and an actress with this first name was the youngest person to ever receive the Mark Twain Prize. The (\*) llama from *Napoleon Dynamite* has this name, as does the oldest daughter of the Belchers family in *Bob's Burgers*. A woman with this first name produced *The Unbreakable Kimmy Schmidt*, wrote for *Mean Girls*, and acted in *30 Rock*. For 10 points, give this first name of a comedian with the last name Fey.

ANSWER: Tina (accept Tina the llama, Tina Belcher, or Tina Fey) <Cohen>

12. A hadith collected by al-Bukhari notes that performing this act is a “shield” against evil. The *fidyah* must be paid for a failure to perform this act, and this act is *preceded* by the *suhur*. Performing this act to its truest requirements is notably complicated in the (\*) polar regions, and a long period requiring this act is ended by the feast of the Eid al-Fitr. This act is known as *sawm* as one of the Five Pillars, and it’s required during daylight of the ninth month of the Islamic calendar. This behavior is performed throughout Ramadan. For 10 points, describe this act of abstaining from physical intimacy, food, or drink.

ANSWER: fasting <Kuang>

13. Films by one member of this art movement include the Westerns satire *Lonesome Cowboys* and an eight-hour shot of the Empire State Building. A brown-painted sock and parachute were included in a “combine” from this movement made by Robert Rauschenberg, and a text blurb made of (\*) Ben-Day dots yells out “Whaam!” in a Roy Lichtenstein painting from this movement. Notable works in this movement included silk screens of celebrities like Jacqueline Kennedy and several paintings of Campbell’s Soup Cans. Andy Warhol was part of, for 10 points, what art movement that borrowed heavily from mass culture?

ANSWER: Pop art <Jin>

14. One holder of this title employed the mercenary Sir John Hawkwood in a conflict against Florence known as the War of the Eight Saints. Following the issuance of the *Unam Sanctam* by one holder of this title and the urging of Philip the Fair, a holder of this title moved to France, beginning a (\*) “Babylonian Captivity” as this title resided instead in Avignon. During the “Western Schism” several “anti-” holders of this title appeared, and Joseph Ratzinger held this title until 2013, when the holder of this position resigned for the first time in 600 years. For 10 points, give this title of the Bishop of Rome, currently held by Francis I.

ANSWER: popes (accept Bishop of Rome until read; accept pontiff; accept Vicar of Jesus Christ) <Horton>

15. D’Alembert’s paradox concerns a set of conditions in which this force is zero. One type of this force arising from the boundary layer around an object is known as skin friction. The magnitude of this force is given by six pi times the product of velocity, radius, and viscosity for small spherical particles. At high (\*) Reynolds numbers, this force depends on velocity squared, and at low Reynolds number, this force is proportional to velocity and can be calculated via Stokes’ law. Terminal velocity is reached when this force equals the force of gravity. For 10 points, name this force which opposes the motion of an object in a fluid.

ANSWER: drag <Xiong>

16. A Frenchman named Pascal Payet has performed this type of action several times using the same type of vehicle. *Monopoly* sets with a red dot over the “Free Parking” space and structures named for “Tom,” “Dick,” and “Harry” have been used for this action. Benito Mussolini achieved this type of action through the (\*) Gran Sasso Raid, and American POWs performed a “Great” one of these during World War II. Two people who tried to perform this action in 1962 using a makeshift raft are presumed to have drowned in San Francisco Bay. For 10 points, name this action by which one might illegally leave Alcatraz.

ANSWER: escaping from prison (or breaking out of prison; accept jail or captivity or prison camp or prisoner of war camp in place of prison; prompt on verbs like escaping by asking “From where?”; accept specific places people are escaping from; *Ed’s note*: it was a helicopter that Payet used, of all things) <Chu>

17. A cult named for this figure celebrated the consumption of Dionysus by the Titans and his subsequent rebirth. This figure's wife died after being lustfully pursued by Aristaeus and stepping on a snake, and he was crucial to helping the Argonauts navigate safely past the (\*) Sirens. After failing his most famous task, this figure was ripped to shreds by the Maenads, and he was the son of the epic muse Calliope. Against the command of Hades, this figure fatefully looked back as he was leaving the Underworld. For 10 points, name this Greek musician who failed to rescue his wife Eurydice ["yur-IH-dih-see"] from the underworld.

ANSWER: Orpheus <Horton>

18. One composer from this modern day country wrote a piano sonata he refused to play due to its evil nature, a work preceding his "White Mass" sonata. The D-major second string quartet of a composer from this country contains a famed nocturne, and that composer also wrote a tone poem depicting the "Steppes of Central Asia." The last symphony of a composer from this country has a "limping" (\*) 5/4 waltz and is nicknamed the *Pathétique*. A composer from this country quoted "La Marseillaise" and employed cannon fire to depict the invasion of Napoleon in his *1812 Overture*. For 10 points, give this home of Pyotr Ilyich Tchaikovsky.

ANSWER: Russian Federation (*the unnamed composers are Scriabin and Borodin*) <Yue>

19. This name is given to a sequence of rational numbers whose first few terms are one, one-half, one-sixth, zero, negative one-thirtieth, zero, and one-forty-second. An equation named after Euler and a physicist with this surname can be used to calculate the deflection of a beam given its weight per unit length. A distribution with this name is a (\*) binomial distribution with only one trial, and sets a random variable to one with probability  $p$ , and to 0 otherwise. A Swiss scientist with this surname names a statement explaining why pressure drops as fluid flow accelerates. For 10 points, give this name of a "principle" often invoked to explain lift.

ANSWER: Bernoulli <Pendyala>

20. In one of this author's stories, a character feels "ecstatically...sleepy" after receiving a wristwatch. Sergeant X meets the young girl Esmé before being sent off to Germany in one of his stories, and one of his characters kiss a girl's wet foot after describing animals that eat up to 78 of a certain (\*) fruit in a story included in the collection *Nine Stories*. Seymour Glass abruptly shoots himself in this writer's "A Perfect Day for Bananafish," and in his most famous book, the protagonist leaves Pencey Prep and visits a merry-go-round with his sister Phoebe. For 10 points, name this writer who created Holden Caulfield in *The Catcher in the Rye*.

ANSWER: Jerome David Salinger <Yue>

21. Efrain Palermo discovered a monolith on this object that is located next to Limtoc crater. An unsuccessful mission to this object included the Living Interplanetary Flight Experiment, and the ESA is planning a sample-return mission to this object called Phootprint. This object's transit across the Sun was captured by the (\*) *Opportunity* rover. This object's orbit lies below the synchronous orbit radius, and it is thought to be a rubble pile. This object's largest crater is Stickney Crater, and it completes its orbit in 7 hours and 39 minutes. For 10 points, name this innermost moon of Mars, which is usually contrasted with Deimos.

ANSWER: Phobos <Park>

## Bonuses

1. Dwight Eisenhower predicted that this conflict would “absorb our troops by divisions.” For 10 points each:

[10] Name this conflict that ended with the Fall of Saigon, the removal of US troops, and the communist reunification of a certain Asian nation.

ANSWER: **Vietnam** War (accept **Second Indochina** War; prompt on partial answer)

[10] This surprise military offensive launched by the North Vietnamese military and the Viet Cong began on the Vietnamese New Year in 1968 and temporarily set the United States back.

ANSWER: **Tet** Offensive

[10] This man commanded American forces in Vietnam from 1964 to 1968. Later, he unsuccessfully sued the television network CBS for libel.

ANSWER: William **Westmoreland** <Suh>

2. This work asserts that emulation and advertising causes increased consumer needs, termed the “dependence effect.” For 10 points each:

[10] Name this book originally titled “Why the Poor are Poor.” It contains such chapters as “The Bill Collector Cometh” and “The Paramount Position of Production” and popularized the term “conventional wisdom.”

ANSWER: *The **Affluent Society***

[10] This Canadian-American economist wrote *The Affluent Society*. He explored the nature of “technostructures” in American society in his book *The New Industrial State*.

ANSWER: John Kenneth **Galbraith**

[10] A contemporary of Galbraith was C. Wright Mills, who notably described this subgroup of the American working class in a book of the same name. This group usually works in an office environment and is contrasted with the more manual “blue” variety.

ANSWER: **white collar** (prompt on partial answer) <Yue>

3. During this campaign, an inconsequential skirmish at the Luding Bridge somehow became a major propaganda victory for one side. For 10 points each:

[10] Name this arduous retreat undertaken from 1934 to 1935 by the Chinese Communist Party after the Jiangxi Soviet was surrounded by Nationalist forces.

ANSWER: **Long March** (or **Changzheng**)

[10] This man’s leadership during the Long March gained him immense support among Chinese Communists. He would oversee the Great Leap Forward and Cultural Revolution as leader of the PRC from 1949 to 1976.

ANSWER: **Mao** Zedong (or **Mao** Tse-tung; or Chairman **Mao**; or **Mao** Zhuxi)

[10] This American journalist tagged along with the Communists on the Long March, using interviews with Mao and other Communist leaders as the basis for his book *Red Star Over China*.

ANSWER: Edgar (Parks) **Snow** <Chu>

4. This style's origins are in Gregorian chant and organum purum of the Middle Ages. For 10 points each:

[10] Name this genre of music with a name that literally means "in the chapel." It was recently made popular by TV shows like *The Sing-Off* and the group The Pentatonix.

ANSWER: a cappella

[10] This a cappella group was featured in Spike Lee's TV show *Do It A Cappella* singing "Zombie Jamboree." They were also featured on the TV show *Where in the World is Carmen Sandiego?*

ANSWER: Rockapella

[10] A subset of a cappella is this salon-named genre in which a group of four singers create close harmonies. "Goodbye, My Coney Island Baby" is a song from this genre, and Homer Simpson once performed in this genre as part of the B-Flats.

ANSWER: barbershop quartet <Horton>

5. This character carries a Colt .44 and a copy of Don Quixote. For 10 points each:

[10] Name this character who's nicknamed the "Indiana General" after joining a Mexican army. He meets Harriet Winslow and is eventually killed by General Arroyo.

ANSWER: Ambrose Bierce (accept the Old Gringo)

[10] This Mexican author fictionalized the last days of Ambrose Bierce in his book *The Old Gringo*. He also detailed the last days of a Mexican revolutionary and tycoon in his novel *The Death of Artemio Cruz*.

ANSWER: Carlos Fuentes Macias

[10] Bierce was a veteran of this war. His story "An Occurrence at Owl Creek Bridge" depicts a man hallucinating his escape back to his plantation as he is executed by hanging during this war.

ANSWER: American Civil War <Yue>

6. Robert Indiana's LOVE sculpture was made in this color. For 10 points each:

[10] Name this primary color. Piet Mondrian used it along with the other primary colors blue and yellow to show moving traffic in his *Broadway Boogie-Woogie*.

ANSWER: red (accept any obvious shades of red, but not things like "orange")

[10] This Post-Impressionist showed a dining room table being set in his *The Dessert: Harmony in Red*. One version of his *The Dance* shows red figures holding hands over a blue background.

ANSWER: Henri Matisse

[10] This modern sculptor frequently uses intense shades of red. He created a massive, silvery reflected sculpture called *Cloud Gate*, affectionately known as the *Bean*, that resides in Chicago.

ANSWER: Sir Anish Kapoor <Kuang>

7. This practice was the focus of the Supreme Court cases *Davis v. Bandemer* and *Shaw v. Reno*. For 10 points each:

[10] *Gill v. Whitford* concerns the legality of this political practice, which come in partisan and racial forms. This practice occurs when electoral districts are manipulated to disproportionately favor one political party.

ANSWER: gerrymandering (accept word forms; do not prompt or accept "redistricting" or "reapportionment")

[10] The aforementioned case challenges the 2011 redistricting plan for this state's lower house. Scott Walker's Passage of Act 10 in this state triggered a series of recall elections.

ANSWER: Wisconsin

[10] Nicholas Stephanopoulos and Eric McGhee devised this measurement to quantify the impact of partisan gerrymandering. The number of "wasted votes" is the basis of this mathematical standard.

ANSWER: efficiency gap <Park>

8. In some cases of glaucoma, damage to this structure is caused by elevated intraocular pressure. For 10 points each:

[10] Name this structure responsible for transmitting visual information to the brain. The blind spot corresponds to the location where this structure passes through the optic disc.

ANSWER: **optic nerve**

[10] The optic nerve receives impulses from ganglion cells located in this light-sensitive region of the eye. This tissue is home to photoreceptor cells like rods and cones.

ANSWER: **retina**

[10] The two optic nerves cross at the optic chiasma, which is adjacent to the supraoptic nucleus of this structure. Its parvocellular neurosecretory cells produce the hormones TRH and CRH.

ANSWER: **hypothalamus** <Park>

9. Thomas Dorsey was so influential in the early development of this musical genre that any new piece written for it was called a “dorsey.” For 10 points each:

[10] Name this musical genre. The Fairfield Four and the Blind Birds of Alabama are some influential performers of this genre, whose standards include Clara Ward’s “How I Got Over.”

ANSWER: **gospel** music (accept Southern **gospel** music; prompt on **Christian** music)

[10] The Fisk Jubilee Singers made the first recording of a gospel spiritual in which a “sweet” one of these vehicles is told to “swing low... coming for to carry me home.”

ANSWER: **chariot** (accept “Swing Low, Sweet **Chariot**”)

[10] Choirs performing gospel songs often use this antiphonal technique popular across African music. In this technique, the leader of the choir sings a statement, to which the entire choir replies in unison.

ANSWER: **call and response** <Chu>

10. Humans live brief lives because they descend from Sakuya-hime, a goddess of these things. For 10 points each:

[10] Name these plants. Hyacinthus, Adonis, and Narcissus were all transformed into beautiful examples of these plants upon their death.

ANSWER: **flowers** (accept specific species)

[10] In the mythology of this place, the magician Math creates the beautiful Blodeuwedd out of flowers. The *Mabinogion* contains the core mythology of this country in Great Britain.

ANSWER: **Wales**

[10] The hibiscus flower is sacred to Hindu deity of time and destruction, who otherwise wears a much less nice necklace of human heads. She’s an aspect of Durga, and she was worshipped by the Thuggee.

ANSWER: **Kali** (*Ed’s note: yes, she’s the goddess from the second Indiana Jones movie*) <Owen>

11. The first updated research on this process since Greco-Roman antiquity was done by Ibn al-Nafis. For 10 points each:

[10] Name this anatomical process that was first fully understood by William Harvey, who published his study of cardiac physiology *De Motu Cordis*. Previous thought had believed “natural” and “vital” systems coordinated the distribution of heat through this process.

ANSWER: **circulation** of blood

[10] Before Harvey, much of the popular thought on physiology was based on the work of this Roman physician. This physician built on the work of Hippocrates, and he popularized the theory of the humors.

ANSWER: **Galen**

[10] The theory of humors proposed that the body relied on four major substances: blood, phlegm, and these two other substances. Name both.

ANSWER: **black and yellow bile** (prompt on just **bile**; accept either order) <Kuang>

12. In this book, a woman who is clothed with the sun gives birth to a son and then hides in a place in the desert for 1,260 days. For 10 points each:

[10] Name this book attributed to John of Patmos. It contains a description of the Whore of Babylon, who represents the “mother of prostitutes and of earth's abominations.”

ANSWER: Book of **Revelation** (accept **Apocalypse** of John; do not accept or prompt on “Revelations”)

[10] Most manuscripts of Revelation consider this three-digit number to be the Number of the Beast.

ANSWER: **666**

[10] In Revelation 2, Jesus asks the church in this city in Central Asia to repent of having abandoned its “first love.” Another work addressed to the church in this city writes that people are saved “by grace through faith.”

ANSWER: **Ephesus** (accept Epistle to the **Ephesians** and other word forms) <Suh>

13. For 10 points each, name the following about a family whose members exerted huge influence over English literature:

[10] This woman's novels include *Shirley* and *Villette*, though she's most famous for a novel in which Bertha Mason sets a fire in the house of Edward Rochester to the horror of the title governess.

ANSWER: **Charlotte Bronte** (prompt on just last name)

[10] This novel by Emily Bronte follows successive generations of the Earnshaw and Linton families. In it, Heathcliff and Catherine fall tempestuously in love.

ANSWER: ***Wuthering Heights***

[10] Though Anne Bronte is the youngest and least canonical of the Bronte sisters, she's most famous for writing this novel centering on Helen Graham and Gilbert Markham. It's considered one of the first feminist novels.

ANSWER: ***The Tenant of Wildfell Hall*** <Cohen>

14. One essay by this writer declares that “to be great is to be misunderstood” and that “A foolish consistency is the hobgoblin of little minds.” For 10 points each:

[10] Name this American writer, a transcendentalist who wrote the essay “The Over-Soul.” If it helps, the name of his son is the same as his middle name – Waldo.

ANSWER: Ralph Waldo **Emerson**

[10] This Emerson essay urges people to follow their own instincts and ideas. It was published in 1841 as part of the collection *Essays: First Series*.

ANSWER: “**Self-Reliance**”

[10] In this poem by Emerson, written in quatrains, the speaker and title character asserts he is “the doubter and the doubt.” This poem is notable for reflecting the transcendental tendency to accept non-Western philosophy.

ANSWER: “**Brahma**” <Cohen>

15. For a gas expanding against a constant external pressure, this value is proportional to the negative change in volume. For 10 points each:

[10] Name this quantity in classical mechanics representing the force performed upon an object. It has units of force times distance.

ANSWER: **work** (or uppercase **W**)

[10] A force field has this property if the work done is independent of the actual path taken and only the starting and ending points matter. A vector field with this property has a vanishing curl everywhere.

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

[10] This quantity is the amount of work that can be extracted from a closed system at constant volume and temperature. It achieves a minimum value at isochoric chemical equilibrium.

ANSWER: **Helmholtz free energy** (prompt on just “**free energy**”) <Pendyala>



16. According to Marco Polo, initiates to this secret order would be drugged and taken to a “secret garden of paradise.” For 10 points each:

[10] Give this more common name of the Nizari Ismailis, which has come to refer to a specific type of trained killer. They once left a dagger at the bedside of Seljuk Sultan Sanjar which stopped him from attacking this sect.

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

[10] The Assassins were led by this shadowy figure who once snuck into Saladin’s tent to threaten him to leave the order alone or be killed. His real name was Rashid ad-Din Sinan.

ANSWER: the **Old Man of the Mountain**

[10] The Assassins were eventually eradicated by these people under the leadership of Hulagu Khan. Genghis Khan led these people in a historic sack of Baghdad.

ANSWER: the **Mongols** (accept **Mongol** Empire) <Owen/Kuang>

17. For 10 points each, answer the following questions about astrophysics:

[10] This quantity refers to the amount of time needed for an object to make one complete revolution around another object. For Earth, this quantity is approximately equal to 365.26 solar days.

ANSWER: orbital **period** (or sidereal **period**; do not accept or prompt on other specific types of periods)

[10] This law states the square of the orbital period is proportional to the cube of the orbit’s semi-major axis. This law was also called the “harmonic law” by its formulator.

ANSWER: **Kepler’s third** law (prompt on **Kepler’s laws**)

[10] All orbits have a semi-major axis, since Kepler’s first law implies that all orbits have this shape. This oval-shaped conic section has an eccentricity between 0 and 1, and circles are examples of these shapes with an eccentricity of 0.

ANSWER: **ellipse** <Xiong>

18. Though these tales are written in prose, they share many similarities with the epic poem. For 10 points each:

[10] Name these epic tales from Nordic and German history that often feature stories about vikings. The term for these general chronicles come from the Norse word for “saying.”

ANSWER: **sagas**

[10] Though the majority of sagas were written in Old Norse, they were predominantly written in this modern-day country. Many sagas feature tales of expedition to this place.

ANSWER: **Iceland** (or **Ísland**)

[10] This Icelandic writer and politician wrote several literary works on Norse mythology, like the *Prose Edda* or *Egil’s saga*. You can give either his first name or surname.

ANSWER: **Snorri Sturluson** (accept either) <Cohen>

19. This technique can detect wagging, rocking, and scissoring. For 10 points each:

[10] Name this type of spectroscopy. It uses and is named after the type of light with a wavelength greater than visible light.

ANSWER: **infrared** spectroscopy (or **IR** spectroscopy; accept **vibrational** spectroscopy)

[10] The x-axis of an infrared spectrum is usually given in inverse centimeters, or these units, which are the reciprocal of wavelength. This unit refers to the number of cycles per unit distance.

ANSWER: **wavenumbers** (prompt on lowercase **k**)

[10] A vibrational mode is considered IR active if there is a change in this quantity of a molecule, which is expressed in Debye units. It’s not polarity, but polar molecules have nonzero values for this quantity.

ANSWER: **dipole moment** (prompt on just **dipole** or **moment**) <Park>

20. Answer the following questions about everyone's favorite electronic music pioneer, Brian Eno, for 10 points each:

[10] Perhaps Eno's best known album is the first entry in his *Ambient* series, which consists of four tracks titled "1/1," "2/1," "1/2," and "2/2" and is subtitled *Music for* this kind of place.

ANSWER: **airports** (accept *Ambient 1: Music for Airports*)

[10] Eno's album *Discreet Music* contains two variations on this Baroque piece, whose 1-5-6-3-4-1-4-5 chord progression was used in Vitamin C's "Graduation (Friends Forever)," Green Day's "Basket Case," and countless other pop songs.

ANSWER: Pachelbel's ***Canon in D*** (prompt on Canon)

[10] Eno produced this band's albums *All That You Can't Leave Behind* and *The Joshua Tree*. Members of this band include guitarist The Edge and lead singer Bono.

ANSWER: **U2** <Chu>

21. The first of these works begins with a line often translated as "Who, if I cried out, would hear me among the Angelic Orders?" For 10 points each:

[10] Name this collection of 10 poems that pose weighty existential questions. They were dedicated to Princess Marie von Thurn und Taxis and named for her castle on the Adriatic Sea.

ANSWER: ***Duino Elegies***

[10] The *Duino Elegies* were written by this Modernist poet, whose *Letters to a Young Poet* were published three years after his death from leukemia. He also wrote the *Sonnets to Orpheus*.

ANSWER: Rainer Maria **Rilke**

[10] The *Letters to a Young Poet* can be considered a work in this genre which takes Rilke's assertion that "you must change your life" to heart. *How to Win Friends and Influence People* is a canonical example in this generic genre that places emphasis on personal transformation or lifestyle change.

ANSWER: **self-help** (or **self-improvement**) <Cohen>