Harvard Fall Tournament X
Edited by Raynor Kuang and Robert Chu
Questions by Raynor Kuang, Robert Chu, Jason Park, Sriram Pendyala, Roger Jin, Erik Owen, Harrison Li, Mark Arildsen, Vimal Konduri, Adam Frim, and Jonah Philion
And with thanks to Will Holub-Moorman, MIT Quiz Bowl, and various playtesters

Round 10

Tossups

1. The sura titled after this man describes the death of his unfaithful son Yam and his eventual arrival at Mt. Judi. This man was the 3rd of the 25 Islamic prophets, and he was the first to discover the pleasures of wine, leading to an episode in which he was found naked by his sons. This man's sons included Japheth and (*) Shem, and he imposed the Curse of Ham. A rainbow appeared as the sign of his covenant with God, and his most famous episode ended on Mt. Ararat. This man released a dove after earlier building a structure 300 cubits long. For 10 points, name this Biblical figure who survived 40 days of a worldwide flood.
ANSWER: **Noah**

2. Much of this man's anti-Socialist legislation relied on the support of the Center Party. This man brokered the Gastein Convention after the Second Schleswig War. Count Vincent Benedetti delivered a message actually created by this man, and he had the (*) May Laws implemented to supervise Catholic clergy as part of his Kulturkampf. This man's editing of the Ems Dispatch led to war with France, and he advocated greater military spending in his "Blood and Iron" speech, which foreshadowed his campaign for German unification. For 10 points, name this Prussian politician, the first chancellor of the German Empire.
ANSWER: Otto von **Bismarck** (or Otto Eduard Leopold, Prince of **Bismarck**)

3. This deity turns look to around in a statue partially titled *Callipyge*, or "of the beautiful buttocks." A tree trunk supports a dolphin and cherubs in a sculpture of this deity named after the Medici family. Although it predates this deity's existence by more than 20,000 years, a paleolithic figurine is named after this (*) goddess "of Willendorf." A Greek peasant discovered a sculpture of this woman in 1820 that is now on permanent display in the Louvre; that depiction of this goddess is notably missing her arms. For 10 points, name this Roman goddess, a sculpture of whom is titled of "[her] *de Milo*."
ANSWER: **Venus** (accept **Venus** *Callipyge*; accept **Venus** *de' Medici*; accept **Venus** *de Milo*; accept **Venus** of Willendorf; accept **Aphrodite** in place of **Venus** throughout)

4. Two women in this play give their husbands rings that those husbands must never give away, which the husbands naturally give away. One character in this play exclaims, "My daughter! My ducats ["duck-its"]!" after his daughter Jessica elopes with Lorenzo, and at a later time asks if a (*) wronged person is not allowed to have revenge. Bassanio correctly picks a casket of lead in this play to marry a character who later disguises herself as a lawyer and gives the "quality of mercy" speech. In this play Portia helps rescue Antonio, who owes a pound of flesh to a moneylender. For 10 points, name this Shakespeare play that includes Shylock the Jew.
ANSWER: The **Merchant of Venice**

5. **The cofactor biotin is present in enzymes that bind and transfer this molecule, and along with hydrogen, this compound is a product of the water-gas shift reaction. This compound's supercritical form can be used for decaffeination, and its (*)** liquid form can only be produced at pressures above 520 kilo-pascals. This gas dissolves in water to create a weak diprotic acid, making it a leading cause of ocean acidification. With water, this gas is the main byproduct of complete combustion, and its solid form naturally sublimes at room temperature. For 10 points, name this greenhouse gas whose solid form is known as dry ice.
ANSWER: __carbon dioxide__ (accept __CO_2__)

6. **The G-I-M mechanism led to the prediction of one type of these particles, and these particles were first directly confirmed by deep inelastic scattering at SLAC in 1968. These particles were proposed to explain flavor SU(3), and a 2015 experiment found bound states of (*)** five of these particles. These particles were proposed by George Zweig and Murray Gell-Mann. and they combine in twos and threes to form mesons or baryons. These particles are subject to color confinement, and they have strange, charm, top, bottom, up, and down varieties. For 10 points, name these fermions that are found within protons and neutrons.
ANSWER: __quark__s (do not accept or prompt on larger groupings like "fermions" or "hadrons" or "mesons" or "baryons")

7. **Though promising to join this expedition, Cinyras faked it with men of clay. The Theban king Thersander was killed near the start of this expedition, when those involved mistakenly fought Telephus. Due to a snake bite that began to stink, the members of this expedition abandoned (*)** Philoctetes on Lemnos before it was complete. Iphigenia was sacrificed to placate Artemis and properly begin this expedition, which was commanded by Agamemnon. A "Catalogue of Ships" by Homer lists the cities and people that joined this expedition. For 10 points name this expedition of troops to a city where a 10 year war would subsequently be fought.
ANSWER: expedition of the Greek forces to __Troy__ (accept replacement of "Achaean" in place of "Greek"; accept "Trojan War" and synonyms in place of "Troy")

8. **The cryogenic version of this technique avoids crystallization while maintaining the true structure of the specimen. One variant of this technique uses uranyl acetate to produce negative stains, while another variant makes use of sputter-coating with gold. Ernst Ruska first developed this technique, and his brother Helmut was the first to visualize (*)** bacteriophages using this technique. The two most common variants of this technique are the scanning and transmission types. For 10 points, name this type of microscopy that uses a beam of the title particles rather than light to closely visualize smaller-than-cellular substances.
ANSWER: __electron microscopy__ (prompt on "microscopy" before mentioned, accept just "electron" afterwards; accept specific types of electron microscopy; accept word forms)

9. **This poem describes hills "rock-ribbed and ancient as the sun," as well as "the sluggish clod, which the rude swain / Turns with his share." This poem tells the addressee to "pierce the Barcan wilderness" and to "list / To Nature's teachings" when "thoughts [...] like a blight" come "over thy spirit." This poem opens (*)** "To him who in the love of Nature holds / Communion with her visible forms," and it ends on a note of reassurance by stating that the addressee "lies down to pleasant dreams" as they enter the afterlife. For 10 points, name this poem by William Cullen Bryant whose Greek title translates as "Meditation upon death."
ANSWER: "__Thanatopsis__"

10. **The world's largest biodiesel plant is located in this nation's western sector of Tuas, and Jurong Island is home to this nation's petrochemical industry. This nation's MRT transit system stops at the Esplanade, home**

to a durian-shaped performing arts center, and the Johor Causeway connects the town of Woodlands in this country to the (*) mainland, though many people enter through this nation's Changi International Airport. For 10 points, name this city-state located off the southern tip of the Malay Peninsula, known for its busy port and stringent laws against chewing gum.
ANSWER: Republic of **Singapore**

11. **Two characters in this novel start a raffle business, and had earlier had extremely fruitful livestock inspired by that couple's love. An orphan who eats earth causes a spell of insomnia in this novel, and one character is the sole survivor of a massacre of strikers. A (*)** beautiful woman in this novel ascends to heaven without a trace, and a man who leads 32 rebellions has 17 sons whom are all killed by the government. This book opens with a character remembering when he first saw ice. For 10 points, name this novel about the many generations of the Buendía family in the town of Macondo, written by Gabriel García Márquez.
ANSWER: ***One Hundred Years of Solitude*** (or ***Cien años de soledad***)

12. **An orange light bulb was hidden in a prop in this film to give it an otherworldly glow, and this film opens with a black title card citing two definitions from American Heritage Dictionary. Chapters in this film such as "The Gold Watch" and "The Diner" are shown out of (*)** chronological order, and this film references *Saturday Night Fever* by showing Vega dancing at Jack Rabbit Slim's. Jules cites Ezekiel in this film by giving two monologues ending "And you will know my name is the Lord," and its title references the cheap novels of the mid-20th century. For 10 points, name this film about two hitmen directed by Quentin Tarantino.
ANSWER: ***Pulp Fiction***

13. **A concept named after this man is formally represented as a 7-tuple with a transition function. This man showed it was undecidable whether a given program would ever terminate, thus "solving" the halting problem. Lambda calculus is equivalent in power to the most powerful (*)** computers according to a thesis this man names with Alonzo Church. A device made up of a "head" moving on an infinite tape is his namesake "machine," and this man suggested testing whether a computer could fake its identity to a human. For 10 points, name this British scientist who helped break the Enigma machine during World War II.
ANSWER: Alan **Turing**

14. **Members of this group were tortured using the "five techniques" after being captured in Operation Demetrius. One member of this organization won an election as a member of the Anti-H Block Party, named for his cell block in Maze Prison. This group placed a bomb inside a fishing boat that killed the last (*)** Viceroy of India, Lord Mountbatten, and a member of this organization named Bobby Sands became a martyr after dying during a hunger strike. This paramilitary group disarmed after the Good Friday Agreement was signed in Belfast. For 10 points, name this terrorist organization that fought against British rule during the Troubles.
ANSWER: Provisional **Irish Republican Army** (or **IRA**; do not accept or prompt on "Official Irish Republican Army" or "Red Irish Republican Army")

15. **Among the many duets this artist recorded with Tammi Terrell are "The Onion Song" and "You're All I Need to Get By." This artist lamented "fish full of mercury" in the song "Mercy, Mercy, Me (The Ecology)." This musician pleaded "don't punish me with brutality" and sang (*)** "there's too many of you crying" in the protest song "What's Going On." This artist released a sensual song stating "let's get down tonight," and one of his songs states that "no matter how far [...] I'll be there in a hurry." For 10 points, name this Motown artist and R&B legend who sang "Sexual Healing" and "Ain't No Mountain High Enough."
ANSWER: Marvin **Gaye** (or Marvin Pentz **Gay**, Jr.)

16. **In one work by this man, a woman calls two characters "leopard-face" and "hyena-face" while singing about being married at the edge of the sea. In that same work by this man, Adela defiantly wears a green dress but kills herself after believing Pepe el Romano is dead. In another work by this man, Death and the (*)** Moon make two speeches, after which Leonardo and the Groom kill each other in the woods following the title event. This member of the Generation of '27 included the play *Yerma* in his "Rural Trilogy." For 10 points, name this Spanish playwright who also wrote *The House of Bernarda Alba* and *Blood Wedding*.
ANSWER: Federico Garcia **Lorca** (accept **Garcia Lorca**)

17. **During this conflict a series of assaults were made on the "Hedgehog" formation as part of Operation Kadesh, which occurred in parallel to Operation Musketeer. This conflict began after one leader used the codeword "de Lesseps" in a speech. Canadian Prime Minister (*)** Lester Pearson won a Nobel Peace Prize for brokering peace to this conflict whose mismanagement led to Anthony Eden's resignation. This conflict began after the U.S. pulled funding for the Aswan High Dam. For 10 points, name this conflict sparked by Gamal Abdel Nasser's nationalization of the waterway connecting the Mediterranean and Red Seas.
ANSWER: **Suez** (Canal) Crisis (accept **Tripartite Aggression**)

18. **This musician titled one composition after his drug dealer, "Moose the Mooche**." A chord progression named after this man is prominently used in his "Blues for Alice." Max Roach played drums in this man's namesake quintet, and he was backed by a classical orchestra on an album titled after him *with Strings*. This musician used Ray Noble's song (*)** "Cherokee" as inspiration for his own piece, "Ko-ko." This jazz musician wrote the songs "Billy's Bounce" and "Ornithology," and he recorded the standard "Yardbird Suite." For 10 points, name this alto saxophonist, a founder of bebop who was nicknamed "Bird."
ANSWER: Charlie **Parker** (accept "Yardbird" or "Bird" before "Yardbird" is read; prompt afterward)

19. **In one book this thinker considered a "Robinson Crusoe" type figure who had been isolated from birth, and in the same book he claimed that if a lion learned how to speak, humans would not be able to understand it. Lectures by this thinker were compiled in the (*)** *Blue and Brown Books*, and he articulated the "picture theory of language." This thinker conceived the "beetle in a box" thought experiment to reject private languages. For 10 points, name this philosopher who considered "language games" in books like *Tractatus Logico-Philosophicus* and *Philosophical Investigations*.
ANSWER: Ludwig **Wittgenstein**

20. **John D. Lee was a follower of this group who promised safe passage to settlers in the Baker-Fancher party; instead, the settlers were killed by members of this group. This group founded a state that took its name from a word meaning "honeybee," and this group perpetrated the (*)** Mountain Meadows Massacre. This group was forced to flee from a town called Nauvoo after their leader was killed by a mob in nearby Carthage, Illinois. The State of Deseret was governed by these people and included much of modern-day Utah. For 10 points, name this religious group whose early leaders included Joseph Smith and Brigham Young.
ANSWER: **Mormons** (accept the Church of Jesus Christ of **Latter-day Saints**; accept **LDS**)

21. **For a World's Exposition, this man constructed a metal Egg of Columbus. This man claimed an electric generator he built had caused an earthquake in New York, and he attempted to send Transatlantic signals by constructing the Wardenclyffe Tower. This scientist theorized a "Teleforce" that was essentially a (*)** death ray, and he names the SI unit of magnetic flux density. Visible electric shocks are displayed with this man's namesake coil, and he used a transformer to utilize the safer and more energy efficient alternating current. For 10 points, name this Serbian-American scientist who feuded with Thomas Edison in the War of the Currents.
ANSWER: Nikola **Tesla**
Bonuses

1. The central limit theorem states that as the sample size increases, the distribution of sample means approaches this distribution. For 10 points each:
[10] Name this distribution shaped like a bell. The empirical rule states that events within 2 standard deviations of the mean occur roughly 95% of the time under this distribution.
ANSWER: **normal** (or **Gaussian** distribution)
[10] This score is calculated using the normal distribution, and it represents the number of standard deviations a value is above the mean. It's also called the standard score.
ANSWER: **z**-score
[10] For a normal distribution, this statistical metric has value 0 or 3, depending on the convention. It is formally defined using the fourth standardized moment, and is often described as measuring the "peakedness" of a distribution.
ANSWER: **kurtosis**

2. Fabrizio del Dongo dresses up as a hussar in this book allowing him to fight at the Battle of Waterloo. For 10 points each:
[10] Name this novel in which Fabrizio escapes from the Farnese Tower with his lover Clelia Conti, before ultimately retiring to the title monastery.
ANSWER: The *Charterhouse of Parma* (or La *Chartreuse de Parme*)
[10] *The Charterhouse of Parma* was written by Stendhal, who also wrote about Julien Sorel in this colorfully titled novel. It chronicles Julian's rise through society and various flings with women like Mathilde de la Mole and Madame de Rênal.
ANSWER: The *Red and the Black*: A Chronicle of the 19th Century (accept "scarlet" in place of "red;" accept *Le Rouge et le Noir*: Chronique du XIXe siècle)
[10] This fate befalls Julian at the end of *The Red and the Black*. Dickens's *A Tale of Two Cities* spends considerable time discussing this manner of death and the French device used to execute it.
ANSWER: **beheading** (accept equivalents like **decapitation** or **guillotining**; accept word forms; prompt on less specific answers like "killing" or "execution")

3. The score for this ballet features one of the first uses of the celesta in classical music. For 10 points each:
[10] Name this Tchaikovsky ballet in which Clara is given the title toy, which comes to life and leads her to a land ruled by the Sugar Plum Fairy. It is often performed around Christmas-time.
ANSWER: The *Nutcracker*
[10] Credit for choreographing the original version of *The Nutcracker* is usually assigned to either this man or his student Lev Ivanov. This legendary choreographer served as ballet master of the Russian Imperial Theatre from 1871 to 1903.
ANSWER: Marius (Ivanovich) **Petipa**
[10] Mikhail Baryshnikov choreographed a production of *The Nutcracker* for the American Ballet Theatre, which performs at this institution physically located in the Lincoln Center.
ANSWER: **Met**ropolitan Opera House (or "the **Met**")

4. To quote Mel Brooks, "Tragedy is when I cut my finger. Comedy is when you fall in a sewer and die." For 10 points each:

[10] This silent movie star portrayed his "Little Tramp" character as perpetually poor and abused. He satirized Hitler in his *The Great Dictator*.
ANSWER: Charlie **Chaplin**
[10] This actor has refused to release his *The Day the Clown Cried*, a film about a clown in a concentration camp. His more upbeat films include *The Nutty Professor*.
ANSWER: Jerry **Lewis**
[10] This actor performs a pitiful Dracula musical while getting over a breakup in *Forgetting Sarah Marshall*. He also played Marshall on *How I Met Your Mother*.
ANSWER: Jason **Segel**

5. Answer the following about the music of Gustav Holst, for 10 points each:
[10] This is the first movement of Holst's most famous work, *The Planets*. It begins with strings playing repeated G's, followed by bassoons and horns playing the sequence "G-D-D flat."
ANSWER: "**Mars**, the Bringer of War"
[10] This work, originally titled the *Suite in C*, opens with a "Jig" that switches between 6/8 and 9/8 time. It was written while Holst was music director at the namesake girl's school.
ANSWER: *St. Paul's* Suite
[10] Among Holst's final works is a collection of eight of these pieces. An obnoxiously overplayed one of these pieces in D major was written by Johann Pachelbel.
ANSWER: **canon**s (accept **Canon** in D)

6. The text of this speech references a woman who was verbally abused after refusing to allow two black men to use her telephone to call their boss. For 10 points each:
[10] Name this virulently anti-immigration address, delivered in 1968 by Enoch Powell. As a result of this speech, Powell would lose his position as Shadow Secretary of State for Defence.
ANSWER: "**Rivers of Blood**"
[10] The "Rivers of Blood" speech received widespread support from Britons, helping this party pull off a surprise victory in the 1970 general election. Subsequent Cabinet members from this party included Margaret Thatcher.
ANSWER: **Conservative** and Unionist Party (or **Tory**)
[10] After delivering the "Rivers of Blood" speech, Enoch Powell went on to oppose reform of this legislative chamber. Members of this body can be either "Temporal" or "Spiritual," and life peers are automatically entitled to a seat in it.
ANSWER: House of **Lords**

7. Name some things related to the Fireside Poets, for 10 points each:
[10] This prominent member perpetuated the myth of a midnight ride in his poem "Paul Revere's Ride," and he wrote an epic about an Iroquois leader in *The Song of Hiawatha*.
ANSWER: Henry Wadsworth **Longfellow**
[10] The Fireside Poet Oliver Wendell Holmes, Sr. wrote this poem about the *USS Constitution* that begins "Aye tear her tattered ensign down."
ANSWER: "**Old Ironsides**"
[10] A member of the Fireside Poets with this surname satirized his fellow poets in *A Fable for Critics*. A later poet with this surname wrote "I myself am hell" in his poem "Skunk Hour."
ANSWER: **Lowell** (accept James Russell **Lowell** or Robert **Lowell**; *Ed's note: GO LOWELL HOUSE*)

8. The final act of this play begins with the king entering onstage in a flying chariot. For 10 points each:

[10] Name this play. Disaster strikes its main character after she loses a ring in a river, although all ends well after the king is taken on a tour of Heaven by Indra.
ANSWER: The *Recognition of Shakuntala* (or *Abhijnanashakuntalam*; or *The Sign of Shakuntala*; or basically any translation about **realizing that a person is Shakuntala**; accept **Sakuntala** for **Shakuntala**)
[10] *The Recognition of Shakuntala* is a work by Kalidasa, who also wrote a play titled for the *Messenger* of these inanimate objects. These weather phenomena also title an Aristophanes play in which Strepsiades burns down Socrates' Thinkery.
ANSWER: **cloud**s (accept The **Cloud** Messenger; accept The **Clouds**)
[10] Kalidasa wrote *The Recognition of Shakuntala* and *The Cloud Messenger* in this ancient language originating from the Indian subcontinent. Many important Hindu texts like the Vedas were written in this language.
ANSWER: **Sanskrit**

9. These diagrams can be used to determine the stereochemistry of an E2 reaction. For 10 points each:
[10] Name these constructs used to visualize organic compounds. They usually depict the view looking directly down a carbon-carbon bond, with the front carbon shown as a dot and the back carbon as a circle.
ANSWER: **Newman projection**s
[10] Newman projections are helpful for visualizing the anti, gauche, and eclipsed isomers of this organic compound. This simple unbranched hydrocarbon has one more carbon than propane.
ANSWER: n-**butane** (prompt on "C_4H_{10}"; do not accept "isobutane")
[10] Butane is most stable when it is anti and the bulky methyl groups have this angle to each other. This is the angle in linear compounds.
ANSWER **180** degrees

10. This hashtag first went viral on Twitter after the trial of George Zimmerman resulted in his acquittal. For 10 points each:
[10] Name this nationwide movement established to protest police violence against African Americans. In response, some people replaced a key word with "all" instead.
ANSWER: #**blacklivesmatter**
[10] The Black Lives Matter movement returned to the national stage amid protests that took place in this city following the shooting of Michael Brown by police officer Darren Wilson.
ANSWER: **Ferguson**, Missouri
[10] The broader criminal justice reform movement has sought to aid the reintegration of released convicts into society by pushing employers to adopt this hiring policy. Obama introduced it by executive order for federal employees.
ANSWER: **ban the box**

11. Zeus may have been born in the Psychro Cave on this island. For 10 points each:
[10] Name this island where Minos built an intricate labyrinth to house the Minotaur.
ANSWER: **Crete**
[10] The Paximadia islands just south of Crete are claimed as one birthplace for this pair of gods. Leto was mother to these gods, and in one story, one of these gods tricked the other into killing Orion.
ANSWER: **Artemis** and **Apollo** (prompt on partial answer)
[10] This giant automaton protected Crete until Medea killed him by dislodging a nail in this figure's ankle that plugged the golden ichor in his body.
ANSWER: **Talos**

12. This city's namesake Second Defenestration saw several Catholic officials thrown out of the window of its namesake Castle. For 10 points each:

[10] Name this city, whose "Spring" in 1968 saw its country attempt to liberalize, but was met with a Warsaw Pact invasion.
ANSWER: **Prague** (or **Praha**)
[10] This Slovak politician led Czechoslovakia during the attempted liberalizations of the Prague Spring.
ANSWER: Alexander **Dubček** ["DOOB-check"]
[10] The first Defenestration of Prague occurred when followers of this theologian killed seven members of Prague's City Council. This Bohemian theologian was burned at the stake in 1415 after the Council of Constance.
ANSWER: Jan **Hus**

13. If these devices are "thin," an approximation can be made involving the radii of curvature. For 10 points each:
[10] Name these optic devices that allow light to pass through. They are frequently found in microscopes and telescopes.
ANSWER: **lens**es
[10] This property measures how strongly a lens converges or diverges light. A virtual image is created if the observer stands closer than this quantity for a convex lens.
ANSWER: **focal length** (or **f**)
[10] This man invented his own eyepiece made of two convex lenses. He also names a principle along with Fresnel that helps explain the wavefronts in diffraction.
ANSWER: Christiaan **Huygens**

14. After his mother Nandi died, Shaka ordered that cows in this kingdom be slaughtered so their calves would understand the feeling of losing a mother. For 10 points each:
[10] Name this African kingdom. A violent period known as *mfecane*, or "the crushing," coincided with their rise under the leadership of Shaka.
ANSWER: **Zulu** Kingdom (accept **Zulu** Empire or **Zulu**land)
[10] One important reform carried out by Shaka was the replacement of the *assegai* with the *iklwa*. Both were examples of this type of object commonly used by Zulu warriors.
ANSWER: **spear** (accept equivalents like **javelin** or **polearm**)
[10] This later king and half-nephew of Shaka led the Zulus in their war against the British Empire, which included a major victory at the Battle of Isandlwana.
ANSWER: **Cetshwayo** kaMpande (accept close-sounding equivalents like **Cetawayo**, **Cetewayo**, **Cetywajo**, **Ketchwayo**, etc.)

15. The author of this book explicitly based it upon "fairy stories." For 10 points each:
[10] Name this book. In one episode from this book, the main characters trick a group of trolls into turning to stone.
ANSWER: *The **Hobbit**, or There and Back Again*
[10] *The Hobbit* is a work by this British fantasy author, who expanded the *Hobbit* universe with the *The Lord of the Rings* trilogy and *The Silmarillion*.
ANSWER: J(ohn) R(onald) R(euel) **Tolkien**
[10] Tolkien wrote the essay "The Monsters and the Critics," which concerns this work. John Gardner's most famous book is written from the perspective of an antagonist in this work.
ANSWER: ***Beowulf***

16. This event ended at Camp O'Donnell. For 10 points each:

[10] Name this event, in which Japanese troops led by Masaharu Homma forcibly marched prisoners of war across the island of Luzon. Homma was later executed for his role in this event.
ANSWER: **Bataan Death March** (prompt on partial answer)
[10] The Bataan Death March occurred in this present-day country. Douglas MacArthur vowed "I shall return" after fleeing this Asian island country.
ANSWER: Republic of the **Philippines**
[10] MacArthur's reinvasion of the island prompted the Battle of Leyte Gulf, which featured a cameo appearance by this Japanese battleship that had earlier appeared at the Battle of Midway. Along with its sister ship the *Musashi*, this ship was the largest battleship ever constructed.
ANSWER: *Yamato*

17. The most famous examples of these enzymes include HindIII and EcoRI. For 10 points each:
[10] Name this class of proteins that cleave DNA at specific sequences. The 1978 Nobel Prize in Physiology was awarded to Hamilton, Arber, and Nathans for discovering them.
ANSWER: **restriction** enzymes
[10] In RFLP analysis, DNA is fragmented with restriction enzymes and organized by size using this technique. This technique can be carried out in agarose or polyacrylamide.
ANSWER: **gel electrophoresis** (prompt on just "electrophoresis")
[10] While restriction enzymes can recognize only one sequence, this system can recognize multiple sequences, depending on its guide RNA. This system is part of the prokaryotic immune system, and can be used in selective gene editing.
ANSWER: **CRISPR/Cas** system (prompt on just "CRISPR" or "Cas")

18. In one painting of this title, blood squirts diagonally out of one of the title character's necks as the maid Abra calmly observes the scene on the right. For 10 points each:
[10] Give this title of two paintings depicting a biblical heroine grabbing the hair of and decapitating an Assyrian General. One of those paintings was done by Artemisia Gentileschi.
ANSWER: *Judith Beheading Holofernes*
[10] *Judith Beheading Holofernes* was painted by this eccentric Baroque painter known for his dramatic use of chiaroscuro in works such as *St. Jerome Writing* and the *Calling of St. Matthew*.
ANSWER: Michelangelo Merisi da **Caravaggio**
[10] Caravaggio painted two versions of *David with the Head of Goliath*, which both notably were painted in this fashion. Rembrandt notably painted many of this genre of works, some showing the subject with a beret.
ANSWER: **self-portrait**s (accept synonyms like "the artist painted himself"; prompt on just "portrait")

19. "In the beginning was the Word"--name these holy texts, for 10 points each:
[10] One printing of this translation of the Bible infamously said "thou shalt commit adultery." This translation was authorized in 1611 by its namesake English monarch.
ANSWER: **King James** Version (or **KJV**)
[10] Though not collected in a single text, these sayings of Muhammad are regarded as sacred. With the Quran, they form the basis of religious law.
ANSWER: **hadith** (accept a**hadith**)
[10] The Kebra Negast is a major work in this Caribbean religion. The groups of this religion are called mansions, and adherents follow a diet called ital.
ANSWER: **Rasta**farianism (accept word forms)

20. Maximizing this quantity for a consumer under a given budget constraint gives the optimal consumption bundle. For 10 points each:

[10] Name this quantity. It can be defined as the satisfaction derived from consuming a good.

ANSWER: **utility**

[10] These curves connect consumption bundles with equal utility. Their name comes from the fact that the consumer has no preference for different consumption bundles along one of these curves.

ANSWER: **indifference** curves

[10] The concept of the indifference curve was developed by this economist, who also names a "box" used to represent the allocation of two goods between two consumers in general equilibrium theory.

ANSWER: Francis Ysidro **Edgeworth**

21. One character in this novel has "Big Thinks" that are compared to sermons. For 10 points each:

[10] Name this novel in which Edward Prendick meets various Beast Folk created by Montgomery and his master.

ANSWER: *The **Island of Doctor Moreau***

[10] In this other book by the author of *The Island of Doctor Moreau*, Griffin experiments with optics and achieves the title state before being killed by a mob.

ANSWER: *The **Invisible Man***

[10] *The Island of Doctor Moreau* and *The Invisible Man* are books by this author, whose other science-fiction novels include *The Time Machine* and *The War of the Worlds*.

ANSWER: H(erbert) G(eorge) **Wells**