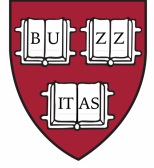


Harvard Fall Tournament XIII

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Round 8

Tossups

1. **A consequence of this law is that the phase velocity of a photon can be less than the speed of light. In many anisotropic materials, the extraordinary photons do not follow this law. When the light being observed is monochromatic, this law can be expressed with ratios of wavelengths. Fermat derived this law using his (*) principle of least time, and a typical method for finding Brewster's angle applies this law. By substituting a value of 90, this law can be used to find the critical angle for total internal reflection. For 10 points, name this law which equates the ratio of sines of the angles of incidence and refraction to the ratio of the indices of refraction.**

ANSWER: Snell's law (accept Snellius' law) <K. Li>

2. **In this book, a woman disguises herself as a prostitute and has a child with her father-in-law, and that man's oldest brother loses his birthright by sleeping with his father's maid. A man in this book miraculously multiplies his uncle's flock with poplar tree branches, and that man earlier dreams of a (*) ladder extending from the earth to heaven. A cherubim and a flaming sword guard a location in this book, whose first chapter repeats the phrase "God saw that it was good," while its second describes two people eating from the Tree of the Knowledge of Good and Evil. For 10 points, name this first book of the Bible that includes the Creation narrative.**

ANSWER: Book of Genesis (I guess prompt on the Bible until mention) <Suh>

3. **Schools that study this discipline can be divided into the "freshwater" and the "saltwater" camps. The most prestigious American award in this field is the John Bates Clark Medal. A newspaper named for this discipline was founded to advocate for the repeal of the Corn Laws. This discipline's most popular introductory textbooks are written by (*) Greg Mankiw ["MAN-kew"]. A group of scholars of this discipline who worked under Augusto Pinochet ["PEE-no-shay"] was called the Chicago Boys. For 10 points, name this "dismal science" studied by men like John Maynard Keynes, often divided into "micro" and "macro" sub-categories.**

ANSWER: economics (accept economist; accept *The Economist*; accept any sub-disciplines of economics) <Suh>

4. **This author wrote a work often considered the origin of the phrase "all good things must come to an end." That work by this non-Shakespearean author traces the story of two tragic lovers during the Trojan War and is called *Troilus and Criseyde*. This author walks through a glass temple accompanied by an eagle in *The* (*) *House of Fame*, and he wrote about Arcite and Palamon warring over Princess Emily in one story. In one of his works, the Tabard Inn houses a "sundry folk" including a reeve, a parson, a miller, a cook, and a knight as they travel to the shrine of Thomas Becket. For 10 points, name this author of *The Canterbury Tales*.**

ANSWER: Geoffrey Chaucer <Cohen>

5. The ISCA ["I-S-C-A"] is developing a human-scented cologne to spray on these animals to divert mosquitos from humans, a product known as "Trojan"-this animal. A protein derived from these animals is used to reduce background noise in applications involving antibody binding and is an albumin named BSA ["B-S-A"]. An (*) "encephalopathy" disease caused by prions is named for these animals. Testosterone was first isolated from the testicles of these mammals which have a four-compartment stomach to accommodate the poorly digestible plants in their diet. For 10 points, name this livestock, subject to a "mad" disease and that makes the noise "moo."

ANSWER: cattle (accept cow, bovine, or bull) <K. Li>

6. This ruler survived an assassination attempt because her train was traveling at unusually slow speeds and did not derail when it hit a large wooden log; that attempt is the Lithgow Plot. This ruler was once awoken from her sleep when Michael Fagan illicitly entered her chambers. This ruler described a particularly difficult year of her reign as her (*) "*annus horribilis*," during which one of her residences caught on fire on her wedding anniversary. This ruler received public backlash in 1997 for not flying a flag at half-mast after the death of her daughter-in-law, Princess Diana. For 10 points, name this current Queen of the United Kingdom.

ANSWER: Elizabeth II (prompt on Elizabeth; do NOT accept or prompt on "Elizabeth I") <Suh>

7. This figure is flanked by Tyche ["TYE-kee"] and Herakles in a sculpture at the Hadda site in Gandhara. Aniconic depictions of this figure used empty footprints, and shikhara towers and a "diamond throne" are located at a site integral to this figure. The 128 meter Spring Temple statue depicts this figure, and mummified human remains were found (*) nestled inside a sculpture of this figure. This figure is often shown holding his hands in *mudras* ["MOO-dras"]. A new statue of this figure in the Bamiyan valley was discovered after the Taliban blew up several similar statues sculpted into a cliffside. For 10 points, give this religious figure often depicted in a seated lotus position in zen garden statues.

ANSWER: the Buddha (accept either or both underlined parts of Siddhartha Gautama; accept specific incarnations of buddhas such as Amitābha) <Kuang>

8. System F refers to an extension of the lambda calculus that utilizes these features. Overloading refers to writing a function that takes arguments that differ in this feature, and functional languages get their classification from the use of functions as atomic examples of these features. These features can be converted between each other using (*) casting, and Java is static because a user must explicitly declare this feature for every variable. Some examples of these features include enums and bignums, and "true" and "false" are typically the only values for the bool example. For 10 points, name these categories of data such as int, float, and char.

ANSWER: data types <Horton>

9. In a story by this author, a fourteen-year-old girl is promised by Ulises that they'll live off diamonds smuggled inside oranges, and in another story by this author, a person initially covered in jellyfish tentacles and seaweed is given the name Esteban. This author of "Innocent Eréndira" and a story about the (*) "handsomest man" wrote a book in which Remedios the Beauty ascends to heaven and a child with a pig's tail is devoured by ants. This author's most famous novel opens with Colonel Aureliano Buendia reminiscing about ice and facing a firing squad in the town of Macondo. For 10 points, name this author of *One Hundred Years of Solitude*.

ANSWER: Gabriel García Márquez (gently prompt on Márquez and tell the player that the surname involves two names) <Cohen>

10. A news network's premature announcement of victory during a battle in this war led commanders of one side to threaten to sue the network. A cruiser that was formerly the *USS Phoenix* was sunk during this war. In this war, a bay became known as "bomb alley" due to repeated attacks by low-flying bombers. The tabloid headline (*) "Gotcha" highlighted the torpedoing of the *General Belgrano* during this war. Prince Andrew saw active service during this war, which temporarily raised the popularity of Margaret Thatcher. For ten points, name this war fought between Argentina and the United Kingdom over the namesake islands.

ANSWER: Falklands War (or the Falklands Crisis; accept Malvinas War; accept South Atlantic War) <Huang>

11. The original props for these objects were created from old Graflex press camera flash battery packs. A rare technique for using these items is called Vaapad. Maz Kanata unsuccessfully tried to give away one of these objects found in her vault. Kyber crystals powered these objects, one of which was first introduced as "an (*) elegant weapon for a more civilized age." Samuel L. Jackson specifically requested to use a purple one of these objects. A deleted scene showed Luke Skywalker building one of these objects that emitted a green glow. For 10 points, name this laser sword-weapon wielded by Jedis and Siths in the *Star Wars* universe.

ANSWER: lightsaber <Suh>

12. The narrative action and the "mysteries" of a story by this author are analyzed using paradigms such as a "proairetic code" in Roland Barthes' ["barts"] book *S/Z*. In a novel by this author, a man wanders into a curio shop and is given a piece of skin inscribed with Arabic that shrinks as it grants wishes. This author of *Sarrasine* and "The (*) Wild Ass's Skin" created characters like Horace Bianchon ["be-yawn-SHOWN"] and Eugène de Rastignac, who appear in a shared set of books that also includes *Eugénie Grandet* ["you-zhen-EE gron-DAY"] and *Old Goriot*. For 10 points, name this author of the novel cycle *The Human Comedy*.

ANSWER: Honoré de Balzac <Cohen>

13. One of this composer's orchestral works begins with a high F-E-D-C-sharp motif, and his string quartet has a 5/8 finale and an A-minor second movement that begins *pizzicato*. This composer used a Michel Fokine scenario for a ballet with a "Sunrise," "Pantomime," and "Bacchanale," his *Daphnis et Chloe*, and he wrote the movements (*) "Scarbo" and "Ondine" for the piano suite *Gaspard de la nuit*. This composer of *Rapsodie espagnole* wrote a pavane dedicated to the Princesse de Polignac as well as a work for Ida Rubinstein alternating two melodies over a two-bar snare drum ostinato. For 10 points, name this French composer of *Boléro*.

ANSWER: Maurice Ravel <Yue>

14. A mayor of a city in this state once mistakenly said that the police are "there to preserve disorder." The vaudeville scene of a city in this state gave rise to a phrase asking if a given product will "play" well to mainstream America. An 1886 Supreme Court decision that created the Interstate Commerce Commission involved this state and (*) Wabash County. A speech by a future president given in this state's capital contended that a house divided against itself cannot stand. Mrs. O'Leary's cow apocryphally knocked over a lantern and started a "great fire" in a city in this state. For 10 points, name this state with cities like Peoria and Chicago.

ANSWER: Illinois (prompt on IL) [*Writer's note*: The phrase is "Will it play in Peoria?"] <Suh>

15. Ella Watson stands in front of one of these objects in a photo by Gordon Parks that satirizes *American Gothic* using a mop and broom. The so-called "gung-ho" photo led to confusion over whether a photo prominently featuring one of these objects was staged; ten years after that photo was taken, Ira Hayes (*) died of alcoholism. A man angry about desegregation busing in Boston wields one of these objects as a spear in a photo depicting its "soiling." Joe Rosenthal won a Pulitzer for photographing one of these objects being moved on Mount Suribachi during World War Two. For 10 points, give this object that was famously "raised" on Iwo Jima.

ANSWER: the flag of the United States of America (accept equivalents like the American flag; accept *The Soiling of Old Glory*; prompt on partial answer; prompt on flagpole) <Chu>

16. **One of these incidents in 1977 was caused in part by a MPAIAC [read as individual letters] terrorist attack. The SCATANA [pronounce as one word] plan commenced as a result of a series of these events. The deadliest of these incidents occurred on Tenerife [“teh-nuh-REEF”] in 1977. Congressman Larry McDonald died in one of these events. Muammar Gaddafi accepted responsibility for one of these events that occurred over (*) Lockerbie, Scotland. A 2009 one of these events in the Hudson River resulted in no deaths, as depicted in the film *Sully*. For 10 points, identify these incidents in which a vehicle such as a Boeing 747 is incapacitated or destroyed mid-operation, often with fatal results.**

ANSWER: airplane crashes (accept airplane explosions, air disasters, aerial disasters, aviation accidents or synonyms; prompt on partial answer; prompt on hijacking or terrorist attacks; I guess prompt on explosions) <Suh>

17. **A character in this work with a “scholarly look” briefly reminisces about his time as a gospel singer and undertaker to a woman whose claims of “injuring an organ” goes unnoticed. A filling station owner in this work laments “everything is getting terrible” after declaring this short story’s title phrase; that character’s name is (*) Red Sammy. Near the end of this story, John Wesley and his father Bailey are shot by Hiram and Bobby Lee, who are accomplices of an escaped killer with “silver-rimmed spectacles.” For 10 points, name this short story that ends with the Misfit murdering the Grandmother, a work by Flannery O’Connor.**

ANSWER: “A Good Man is Hard to Find” <R. Li>

18. **When offered any riches in the world, this mythological figure instead asks for three steps of land. A form of this deity appears riding a white horse and carrying a flaming sword. In the form of the beautiful woman Mohini, this deity convinces demons to return an elixir of immortality. In another form, this god serves as a (*) charioteer that gives advice to the archer Arjuna. In addition to Krishna, avatars of this god include the fish Matsya and the hero Rama. For 10 points, name this wife of Lakshmi, the four-armed blue-skinned preserver god of Hindu belief.**

ANSWER: Vishnu (prompt on Vamana before “form”) <Duffy>

19. **Rice is particularly prone to accumulating this element because it confuses inorganic forms of this element with silicate and phosphate. Water laced with this element is responsible for causing Blackfoot disease in Taiwan as well as the “largest mass poisoning of a population in history” in Bangladesh. The oxyanion of this element can interfere with (*) respiration because it lies below phosphorus on the periodic table and can mimic phosphate. This element is an n-type dopant and is combined with gallium in a common semiconductor. For 10 points, name this element, once called “king of poisons,” with symbol As [“A-S”].**

ANSWER: arsenic <K. Li>

20. **A part of this island was once ruled by the “white rajas” of the Brooke family, and this island’s Crocker Range National Park is a critical habitat for several of its endangered species. This island’s Dayak people live in a state whose capital is the port of Kuching. That state borders the state of (*) Sabah on this island. This island’s Sarawak State is a critical orangutan habitat. A country located on this island is ruled by Sultan Hassanal Bolkiah, one of the richest men in the world, and another country that shares this island officially calls it Kalimantan. For 10 points, name this island shared by Malaysia, Brunei, and Indonesia.**

ANSWER: Borneo (accept Kalimantan before mention) <Myers>

21. **In one scene from this novel, the protagonist enjoys a hamburger at a remote roadside diner but is shocked to find that the man behind the counter is philosopher Hugh Akston. After the protagonist's sister-in-law commits suicide, the protagonist of this novel and her (*) steel magnate lover go to dinner, where they see a message written by Francisco d'Anconia, a childhood friend of protagonist Dagny Taggart. Railway worker John Galt attempts a revolution in this book and delivers a 70-page speech in which he outlines the author's principles of Objectivism. For 10 points, name this novel by Ayn Rand.**

ANSWER: *Atlas Shrugged* <Cohen>

Bonuses

1. This man's will seems to exclude Thomas Quiney, a son-in-law by way of his second daughter with Anne Hathaway. For 10 points each:

[10] Name this British playwright, whose works appeared in quarto before being collected in the First and Second Folios. He was born in Stratford-upon-Avon and wrote for the Lord Chamberlain's Men at the Globe Theatre.

ANSWER: William **Shakespeare**

[10] This author described the lack of opportunities that Shakespeare's fictional sister, who shares her name with his second daughter Judith, had in her essay describing the need for a space for women writers, *A Room of One's Own*.

ANSWER: Virginia **Woolf**

[10] In one novel's chapter "Scylla and Charybdis," this character "proves by algebra that Hamlet's grandson is Shakespeare's grandfather" and proposes that Shakespeare's wife cheated on him with his brothers before Buck Mulligan interrupts him.

ANSWER: Stephen **Dedalus** <Yue>

2. According to Marius Petipa's original scenario, this character dances after Prince Coqueluche in a second-act *Pas de deux* ["pah duh douh"] of a 1892 ballet. For 10 points each:

[10] Name this character who dances with a Cavalier before appearing in a scene notably featuring the celesta. This character rules the Land of Sweets in a certain Pyotr Tchaikovsky ballet.

ANSWER: the **Sugar-Plum Fairy** (prompt on partial answer)

[10] The Sugar-Plum Fairy appears in this ballet adapted from an E. T. A. Hoffmann story, which is customarily performed at Christmas time.

ANSWER: *The **Nutcracker***

[10] This other fairy changes Carabosse's curse into 100 years of slumber in Tchaikovsky's *Sleeping Beauty*. She was played by Marie Petipa in the original cast.

ANSWER: the **Lilac** Fairy <Yue>

3. This man made his cinematic debut with a single line of dialogue in the romantic comedy *Mystic Pizza*. For 10 points each:

[10] Name this American actor who starred in films such as *The Martian*, *The Departed*, and the *Bourne* series.

ANSWER: Matt **Damon**

[10] Damon played the socially awkward but talented pickpocket Linus Caldwell in this 2001 Steven Soderbergh remake of a 1960 Rat Pack film of the same name.

ANSWER: ***Ocean's Eleven***

[10] *Bourne Supremacy* and *Bourne Ultimatum* featured heavy use of this cinematographic technique in which video is intentionally shot in an unstable manner to give the appearance of the camera being hand-held.

ANSWER: **shaky camera** (or **jerky camera**; or **queasy cam**; or **run-and-gun**; or **free camera**) <Suh>

4. Taking the limit as the Reynolds number goes to 0 in equations partially named for this scientist results in his namesake “creeping” flow. For 10 points each,

[10] Name this Irish scientist that names a set of unsolved equations describing fluid flow along with a Frenchman.

ANSWER: Sir George **Stokes**, 1st Baronet

[10] By Stokes’s law, the drag force in Stokes flow is directly proportional to this quantity, a measure of a fluid’s resistance to flow.

ANSWER: **viscosity** (accept dynamic or kinematic **viscosity**)

[10] Under Stokes flow, the Laplacian of this quantity, defined as the curl of the flow velocity and denoted with a lowercase omega, is zero. This quantity’s namesake equation can be derived from the Navier–Stokes equation for angular momentum conservation.

ANSWER: **vorticity** <Yue>

5. This ruler survived the Fronde as a child. For 10 points each:

[10] Name this “Sun King” whose policy of the *dragonnades* [“drah-goh-nods”] virtually destroyed Huguenot presence in France.

ANSWER: **Louis XIV** (or **Louis the Great**)

[10] Louis also issued the Edict of Fontainebleau which revoked this earlier edict that gave religious freedom to the Huguenots.

ANSWER: Edict of **Nantes** [“nahnt”]

[10] Under Louis’ reign, France fought this war in which they overran much of the Spanish Netherlands but were forced to give back most of the gains in the Treaty of Aix-la-Chapelle [“eks-la-sha-PEL”] of 1668.

ANSWER: War of **Devolution** <Suh>

6. This character knows the “refined monster” that is watery-eyed *ennui* according to one poem. For 10 points each:

[10] Name this addressee of a poem which opens by describing “folly, error, sin, and avarice” and asserts that “Trismegist / Incessantly lulls our enchanted minds” and “the Devil holds the strings which move us.”

ANSWER: the hypocrite **reader** (accept **lecteur**; accept “To the **Reader**” or “Au **Lecteur**”)

[10] “To the Reader” is the preface to this Symbolist poetry collection which is divided into sections like “Wine,” “Revolt,” and “Spleen and Ideal.”

ANSWER: *The **Flowers of Evil*** (accept *Les **Fleurs du Mal***)

[10] Charles Baudelaire’s *The Flowers of Evil* addresses one of these creatures as “you who, like the stab of a knife, / Entered my plaintive heart.” Bram Stoker’s character Dracula is a famous example of one of these creatures.

ANSWER: **vampires** (accept “The **Vampire**”) <Yue>

7. This technique is notably used throughout an aria in which the soloist asks, “who can deny me comfort in my torment?” For 10 points each:

[10] Name this vocal technique in which the same note is rapidly repeated, used as part of the *genere concitato* to highlight agitation and named after that style’s developer.

ANSWER: **Monteverdi trillo** (prompt on partial answer; prompt on goat’s trill)

[10] Monteverdi wrote nine books of these secular vocal works, the eighth of which features his explanation of the *genere concitato*. These works often featured word-painting, and Monteverdi introduced *basso continuo* to them.

ANSWER: **madrigals**

[10] The *genere concitato* was used in the eighth book of madrigals to depict these generic events in opposition to “love,” which was also depicted in Tchaikovsky’s *1812 Overture* and Beethoven’s work *Wellington’s Victory*.

ANSWER: **war** (accept **battles** or equivalents) <Yue>

8. One of this man's guardians, Osbern, was killed in this man's room while he was asleep. For 10 points each:
[10] Name this man who later landed his forces at Pevensey before winning the Battle of Hastings against Harold Godwinson.

ANSWER: **William I** of England (or **William the Conqueror**; or **William the Bastard**; accept **William II of Normandy**; prompt on partial answer)

[10] William was originally the Duke of Normandy, a region that was first given to these people by Charles III of France in 911. These people attacked the Lindisfarne Abbey in 793.

ANSWER: **Vikings**

[10] This civil war broke out after William's grandson, William Adelin, died in the White Ship disaster. During this time, when "Christ and his saints were asleep," Stephen of Blois waged war against Empress Matilda.

ANSWER: The **Anarchy** <Suh>

9. For 10 points each, answer the following about the geography of the Kumbh Mela pilgrimage.

[10] The city of Allahabad, one of the main destinations of Kumbh Mela, is located in this most populous Indian state. Under British rule, it was known as the United Provinces.

ANSWER: **Uttar Pradesh**

[10] In Kumbh Mela, pilgrims bathe in this sacred river in Hinduism. This river joins with the Brahmaputra to form a very large delta in Bangladesh.

ANSWER: **Ganges** (accept **Ganga**)

[10] A non-universally-recognized Kumbh Mela site is this holy city on the Ganges in Uttar Pradesh, formerly known as Benares.

ANSWER: **Varanasi** <Myers>

10. Scientists are still not quite sure if these things count as living. For 10 points each:

[10] Name these tiny bundles of genetic material surrounded by a protein capsid which must hijack a host cell's machinery to reproduce. They cause the flu and colds.

ANSWER: **viruses**

[10] This process provides viral immunity for eukaryotes just as the CRISPR ["**CRIS-per**"] system does in prokaryotes. During this process, miRNA and siRNA prevent a complementary strand of mRNA from being translated into product.

ANSWER: **RNA interference** (or **RNAi**)

[10] RNAi was discovered in this microscopic model organism, a transparent nematode that was the first multicellular organism to have its genome sequenced.

ANSWER: **Caenorhabditis elegans** (needs both underlined parts) <K. Li>

11. Digital obsolescence caused by rapid evolution of the computer industry threatens the future of data recall. For 10 points each:

[10] Name this Microsoft program used to create and edit text documents. Files created from the 1.0 version of this program cannot be opened by the 16.0 version that comes with Office 2016.

ANSWER: Microsoft **Word**

[10] Similar to obsolescence, this phenomenon also causes data to become irretrievable. It results from the gradual breakdown of physical storage media, such as when CDs become scratched.

ANSWER: **data rot** (or **data degradation**)

[10] This primitive storage media can quite literally rot. These paper devices, which hold information in the pattern of their holes, were rendered obsolete by magnetic tape in the 1960s.

ANSWER: **punch cards** <K. Li>

12. When Harry Truman first became president in this year, Eleanor Roosevelt asked, “Is there anything we can do for you? For you are the one in trouble now!” For 10 points each:

[10] Name this year that marked the end of World War II when Truman detonated two atomic bombs over Hiroshima and Nagasaki.

ANSWER: **1945** (prompt on 45)

[10] During his acceptance speech at the 1948 Democratic National Convention, Truman attacked the inefficiency of the Congress with this two-word phrase.

ANSWER: “**Do Nothing** Congress”

[10] Truman had a sign on his desk with this phrase that expressed his understanding that the President had to accept the ultimate responsibility for the decisions of his administration.

ANSWER: “The **buck stops here**” <Suh>

13. An oil painting by this man shows a constellation of eight stars in the top-left corner as well as a god arriving on Naxos in a chariot drawn by two cheetahs. For 10 points each:

[10] Name this painter of *Bacchus and Ariadne*. More famously, he also painted the *Venus of Urbino*.

ANSWER: **Titian** (accept either underlined portion of **Tiziano Vecellio**)

[10] *Bacchus and Ariadne* features one of these animals staring at a boy satyr. Another of these animals shown in the background of *Venus of Urbino* symbolizes fidelity.

ANSWER: **dogs** (accept specific **dog** breeds, like **King Charles Spaniels**)

[10] This contemporary and teacher of Titian painted *The Tempest*, which features a man on the left side observing a half-naked woman suckling her baby in an unusual position.

ANSWER: **Giorgione** (or **Giorgio** Barbarelli da Castelfranco) <Suh>

14. For 10 points each, answer some questions about historical efforts to build canals.

[10] This Roman emperor made the first attempt to build the Corinth Canal, but his plans were abandoned soon after his death. Legend says this man played the fiddle while Rome burned, though this is probably untrue.

ANSWER: **Nero**

[10] Major portions of China’s Grand Canal were connected into a continuous structure for the first time during this dynasty, the predecessor of the Tang dynasty. This dynasty decisively lost the Battle of Salsu to Goguryeo

[“GO-goo-ryo”].

ANSWER: **Sui** [“soo”] dynasty

[10] Ancient Egyptians built canals to bypass these shallow, white water rapid portions of the Nile River. It’s not a dam, but the first of the six major ones of these structures is in Aswan.

ANSWER: **cataracts** <Suh>

15. Answer some questions about authors naming their characters after other authors. For 10 points each:

[10] First, name this country, the setting of a Carlos Fuentes novel in which Ambrose Bierce is depicted as the title *Old Gringo*. Bierce notably is told to shoot a bullet through a silver coin of this country’s currency, the *peso*.

ANSWER: **Mexico**

[10] This popular Japanese author wrote of fifteen-year-old Kafka Tamura, who has an alter ego named Crow, and Mr. Nakata, who can talk to cats, in *Kafka on the Shore*. He wrote *Norwegian Wood* and *The Wind-Up Bird Chronicle*.

ANSWER: Haruki **Murakami**

[10] This Bengali-American is named after an author because his father had indicated his location in a train accident by dropping a page of that author’s works. *The Namesake* ends with this character picking up his namesake’s works.

ANSWER: **Gogol** Ganguli (prompt on **Nikhil** or **Ganguli**) <Yue>

16. These events occur in between periods of “puzzle-solving” and “normalcy” and will change a set of “exemplars” according to one work. For 10 points each:

[10] Name these events that cause the titular revolutions in Thomas Kuhn’s *magnum opus*, which are exemplified by the Copernican Revolution and the discovery of atomic theory.

ANSWER: **paradigm shifts** (prompt on but do NOT reveal scientific revolutions)

[10] Kuhn’s analysis of paradigm shifts is a prominent theory in the philosophy of this generic field of knowledge with subjects like physics and chemistry, defined by falsifiable experiments according to Karl Popper.

ANSWER: **science**

[10] This early pioneer of the scientific method described four idols that impede proper inductive reasoning in *Novum Organum*, and described a logical system that tried to replace Aristotle’s *Organon*.

ANSWER: Sir Francis **Bacon** <Yue>

17. The innermost building of these complexes is called a *honden*. For 10 points each:

[10] Name these places of worship, the main religious sites in the indigenous animistic religion of Japan.

Answer: **Shinto shrines** (or **Shinto temples**; accept *jinga*; prompt on only temple or shrine)

[10] The entrance into sacred territory associated with a shrine is frequently demarcated using one of these things. These gates are often painted over in a vermilion red paint.

Answer: **torii** [“TOH-ree”]

[10] The holiest site in shinto is this shrine. It is rebuilt every 20 years in a ritualistic renewal process, and it currently exists in its 62nd iteration. Supposedly, this site houses the Sacred Mirror.

Answer: **Ise Shrine** (or **Ise Grand Shrine**; or **Ise Jingu**) <Gioia>

18. The protagonist of this novel remembers a “night she was like the little tottering... child who of a sudden realizes its powers” before sensing “the hum of bees and the musky odor of pinks.” For 10 points each:

[10] Name this novel, in which Edna Pontellier becomes friends with Mademoiselle Reisz and drowns herself after a relationship with Robert Lebrun.

ANSWER: *The **Awakening***

[10] The author of *The Awakening*, Kate Chopin, was from this Southern state. Her story “At the ‘Cadian Ball” concerns the Cajun population in this state, and *The Awakening* is partially set in its city of New Orleans.

ANSWER: **Louisiana**

[10] Edna’s kiss with this man is “a flaming torch that kindled desire” which caused her to feel “as if a mist had been lifted from her eyes.” Despite his “dreadful reputation,” Edna has an affair with him in Robert’s absence.

ANSWER: **Alcée Arabin** (accept either underlined part) <Yue>

19. Determining chemical structures is difficult. For 10 points each:

[10] Name this technique which can detect spin flips in atoms with an odd atomic mass. The results of this technique are reported in terms of chemical shift.

ANSWER: **Nuclear magnetic resonance** spectroscopy (or **NMR**)

[10] It’s not carbon-13, but this particle names the most common type of NMR. This positively charged particle is the hydrogen nucleus.

ANSWER: **proton** NMR (accept **H¹** NMR)

[10] This compound is used in a namesake “shake” to confirm the presence of exchangeable protons such as in alcohols or amines during proton NMR. This compound is used in nuclear reactors because it is better at slowing down neutrons than its non-deuterated counterpart.

ANSWER: **heavy water** (accept **deuterium oxide**; accept **D₂O**) <K. Li>

20. This goddess emerged fully formed out of the forehead of Zeus. For 10 points each:

[10] Name this Greek goddess of wisdom. She bested Poseidon to be the guardian of a certain city by gifting the first-ever olive tree to the city. Her favorites included Odysseus.

ANSWER: **Athena** (or **Athene**; or **Pallas**; prompt on **Minerva**)

[10] This Titaness was the mother of Athena. After Zeus impregnated her, he convinced her to turn into a fly and then swallowed her whole.

ANSWER: **Metis**

[10] This early king of Athens was born when Athena wiped away the semen of Hephaestus from her thigh. When this man was a baby, Athena put him in a box and gave him to the daughters of Cecrops, who died after opening the box against Athena's orders.

ANSWER: **Erichthonius** <Suh>

21. The architect Mulciber designed this place. For 10 points each:

[10] Name this capital of Hell that was supposedly built in about an hour at the suggestion of Mammon after the fall of Lucifer and his followers.

ANSWER: **Pandæmonium** (prompt on **Hell** until mention)

[10] Pandæmonium is depicted in this fictional John Milton epic about "man's first disobedience."

ANSWER: **Paradise Lost**

[10] This seraph denounces Lucifer and his followers for their rebellion. In his annotations on *Paradise Lost*, Isaac Asimov theorized that this angelic character was in fact a representation of Milton himself.

ANSWER: **Abdiel** <Suh>