

Harvard Fall Tournament VII

Finals 2

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1. This author wrote a novel in which the mortician Mr. Joyboy and Dennis Barlow compete for the hand of Aimee Thanatogenos. In another novel, this author of *The Loved One* wrote of Margot Beste-Chetwynde's engagement to Paul Pennyfeather. This author created Tony Last, who travels to the Amazon to escape his cheating wife Brenda. His most famous novel features the powerful Marchmain family as well as the alcoholic Sebastian Flyte. For 10 points, name this Catholic English novelist who wrote *A Handful of Dust* and created the character Charles Ryder in his novel *Brideshead Revisited*.

ANSWER: Arthur Evelyn (St. John) **Waugh**

2. After a series of defeats this man signed the treaties of Wareham and Exeter. This man blew on the blowing stone to summon his troops before his victory in the Battle of Ashdown and had his life biographed by the bishop Asser. He built a series of fortresses called "burhs" and signed the Treaty of Wedmore with a man he defeated at the Battle of Edington, also called the Battle of Ethandun. That victory over the Great Heathen Army led by Guthrum helped confine a certain group to East Anglia and parts of Mercia, called the Danelaw. For 10 points, name this king of Wessex who pushed back the Viking occupation of England, the only ruler of England known as "the Great".

ANSWER: **Alfred** the Great

3. These particles are found in cosmic rays, where the anomalously large fraction observed by PAMELA in 2008 has led scientists to speculate a primary source other than the interstellar medium. Applications of these particles include a namesake emission tomography that detects the gamma rays they emit upon annihilation. Discovered by Anderson in 1932, one of these particles and a neutrino are among the products of beta positive decay and Dirac theorized their existence as negative energy solutions to his namesake equation. For 10 points, name these positively-charged fermions, antiparticles of electrons.

ANSWER: **positron** [Accept **beta plus** until beta is mentioned.]

4. In one novel by this author, the necrophiliac Lester Ballard preys on members of a nearby town. In another novel, Gene Harrogate has sex with watermelons, and the protagonist lives on a boat in the Tennessee river. In addition to *Child of God* and *Suttree*, this author wrote a novel in which Judge Holden torments the Glanton Gang and The Kid. This man also created a bounty hunter named Anton Chigurh who hunts down a man who unwittingly took money from drug dealers. For 10 points, name this novelist who wrote about characters like John Grady Cole and Llewellyn Moss in books like *Blood Meridian*, *All the Pretty Horses*, and *No Country for Old Men*.

ANSWER Cormac (Charles) **McCarthy**

5. In response to this group's actions, patriarch Kirill I commented, "The Devil has laughed at all of us," and a professed supporter of this group was arrested for defacing a wooden Christ statue with a chainsaw. Other supporters were arrested following the disruption of a service at Cologne Cathedral. This group was central to the alleged beating of chess grandmaster Garry Kasparov, and two of its members, who cite influences such as Cockney Rejects and the 4-Skins, had previously been associated with the anarchist art collective Voyna. Its members were sentenced to two years in prison following a conviction for "hooliganism." For 10 points, name this all-female Russian punk band.

ANSWER: **Pussy Riot**

6. Because of the presence of parallel octaves in one of its sections, this work was believed to originally be a violin solo by Peter Williams. A less famous work of the same title is named for its Dorian mode, and current copies of this work come from transcriptions of Johannes Ringk. It begins with a diminished seventh chord which ends in D major, and this piece itself is written in D minor. This piece is the first played in Disney's Fantasia, and its catalogue number is BWV 565. For 10 points, name this work for the organ made up of two parts, the second of which is in a form in which the subject is played imitatively in multiple voices, written by Johann Sebastian Bach.

ANSWER: **Toccata and Fugue in D minor**, BWV 565

7. This author wrote about the son of a brahmin-untouchable couple named Willie Somerset Chandran in two works. In another novel, a president nicknamed The Big Man forces a Muslim shopkeeper named Salim to distribute a book of thoughts titled *Maximes*. Aside from writing *Magic Seeds*, this author created a character whose romantic advances are mistaken for a marriage proposal by Shama. That character was born with an extra finger and is obsessed with the notion of building the title structure. For 10 points, name this Trinidadian author of *A Bend in the River* and *A House for Mr. Biswas*.

ANSWER: Sir V(idiadhara) S(urajsprad) **Naipaul**

8. The congenital variety of this disease can result in bone and joint deformations such as the Higoumenakis Sign, saddle nose, and Clutton's joints. One method of diagnosis introduces bovine cardiolipin to a patient's blood to test for disease specific antibodies and that is the Wassermann test. The first effective treatment for this disease was Salvarsan, which used arsenic and is attributed to Paul Ehrlich, but it has since been superseded by Penicillin. Observed as rashes, chancres, and tumors called gummas depending on stage, this disease is caused by the spirochete bacterium *Treponema pallidum*. For 10 points, name this STD which eventually leads to dementia and aortitis, notoriously studied at the Tuskegee Institute.

ANSWER: **syphilis**

9. One part of this work begins with a saying of the Incomprehensible One, "The creature gazes into openness with all its eyes. But our eyes are as if they were reversed." This series ends "And we, who think of ascending joy, would feel the emotion, that almost dismays us, when a joyful thing falls." The second part of this poetic work begins "every angel is terror." In the first section, the speaker asks his addressee, "Have you remembered Gaspara Stampa sufficiently yet?" This set of poems was written in the Adriatic castle of Princess von Thurn und Taxis, and begins "Who, if I cried out, would hear me among the Angelic Orders?" For 10 points, name this set of poems written by Rainer Maria Rilke.

ANSWER: **Duino Elegies**

10. This thinker studied the effects of economic change on behavioral patterns in the towns of Modjokuto and Tabanan in one work. In another work, he described the *swidden* and *sawah* systems of farming and examined the effect of Dutch rule on Indonesian agricultural productivity. This thinker described his method of ethnography, which attempted to describe the context of behaviors instead of just the behaviors themselves, as "thick description," and wrote that "man is an animal suspended in webs of significance he himself has spun" in a work that outlined his case for symbolic anthropology. For 10 points, name this author of *The Interpretation of Cultures*.

ANSWER: Clifford (James) **Geertz**

11. A system of ten bunkers controlled by forces of this nation were captured in the Battle of Ammunition Hill. The removal of militant groups in Black September was in response to the landing of hijacked planes here in the Dawson's Field Hijackings. Following the Sykes-Picot agreement this country was put under British mandate, and this country, officially called a Hashemite Kingdom, was first ruled by King Abdullah, and later by a man who led it for four decades, King Hussein. Currently lead by Abdullah II, it is home to the ancient rose-red city cut out of rock, Petra, and is located to the east of the West Bank. For 10 points, name this country with capital at Amman.

ANSWER: Kingdom of **Jordan**

12. It's not France, but Frederic de La Harpe served on the Directory of this country after France established a republic here with a constitution written by Peter Ochs. Its neutrality in one war was questioned in the Grimm-Hoffmann Affair and Henri Guisan created a defense system for this nation involving mountain fortresses. Francis I defeated mercenaries from here at the Battle of Marignano, while a theologian from this country participated in the Kappel Wars and debated with Martin Luther at Marburg. That man's doctrine was unified by Heinrich Bullinger and John Calvin, another thinker from here. For 10 points, name this country home to the cantons of Zurich and Geneva.

ANSWER: **Switzerland** [accept **Swiss Confederation**]

13. Problems hindering this event included a locked door that required fitting a young boy through a window as well as the refusal of mayor Ansel Bascom to fully support the cause despite compelling citation of Blackstone laws. Occurring during the visit of a powerful Philadelphia orator and featuring many abolitionists, this event saw intense debate between that speaker and Frederick Douglass over the ninth resolution before its eventual inclusion in the Declaration of Sentiments. For 10 points, name this 1848 convention held in New York organized by Elizabeth Cady Stanton and attended by Lucretia Mott, a crucial event for the women's rights movement.

ANSWER: **Seneca Falls** Convention

14. The volume of a unit sphere in a dimension that is one of these numbers can be written as pi to the k over k factorial. The function  $2x$  over the quantity  $x$  minus 1 squared generates these numbers, which are an ideal in the natural numbers. The word describing these numbers also names permutations with positive signature. An unproven statement regarding them is that all but one of them can be written as the sum of two primes. That statement is Goldbach's conjecture. They share their name with functions for which  $f$  of negative  $x$  equals  $f$  of  $x$ , and when written in binary this kind of number ends in a 0. For 10 points, identify this set of numbers including 0, 2, 4, 6, and 8, the opposite of odd numbers.

ANSWER: **even** numbers

15. The palladium-catalyzed Heck Reaction involves the coupling of an aryl triflate or halide with one of these types of compounds. These compounds react with carbenes and carbenoid reagents, such as the Simmons-Smith reagent, in cyclopropanations. These compounds are synthesized through the reaction of ylides of phosphines or phosphonate esters with ketones and aldehydes; that is the Wittig reaction. Conjugated forms of these compounds are sometimes colored due to delocalized pi electron networks. They can be synthesized through the dehydration of alcohols, and examples include butadiene and ethylene. For 10 points, name these organic compounds that include double bonds between carbon atoms.

ANSWER: **alkenes** [Accept **olefins**.]

16. This thinker invented the idea that it is better to acquit a thousand guilty persons than put a single innocent one to death. Influenced by neo-Platonists, he believed that it was only possible to describe God through what he was not, his so called negative theology. In this thinker's most famous work, he deals with the 613 laws of Moses, called the mitzvot, and argues against the anthropomorphism of God. That work was written in letter form to Rabbi Joseph Ben Judah. For 10 points, name this man who wrote commentaries on the Mishnah and *The Guide for the Perplexed*, a medieval Jewish philosopher.

ANSWER: Moses **Maimonides** or **Moses ben Maimon** or **Rambam**

17. Dropping a stone into still water demonstrates how these concepts become sensible after they arise from an initial emptiness and later return to that emptiness. The unity and ultimate nature of these concepts are espoused in a certain martial arts style that involves the interrelations of attack and defense. Shown as either broken or solid lines in the trigrams and hexagrams of the I Ching, these concepts can also stand for passivity and aggression, male

and female, and other dualities manifested through these cosmic principles. For 10 points, name these dual concepts prevalent in Chinese religion, often symbolized with a circle broken into two halves, one white and the other black.  
ANSWER: **Yin** and **Yang** [Prompt on partial.]

18. According to the *Poetic Edda*, Helgi Hjorvarthsson married one of these figures named Svava, while another story in the same text tells of how Volund and his brothers found and married three of them in the Wolfdales. The most famous of these figures was imprisoned in a wall of fire by Odin for killing too many warriors, but was rescued by a hero acting on the behalf of Gunther in exchange for Guthrun's hand in marriage. That hero was Siegfried, the hero of the Volsung Saga. In addition to Brynhilda, these figures included those who carried the bodies of fallen warriors to Valhalla. For 10 points, name these winged warrior women in Norse mythology.  
ANSWER: **valkyries**

19. Parts of this work were originally written into its composer's *Konzertstück*, including a piano section in the second scene in which one character is thrown into a cell by Charlatan. It takes place at the Shrovetide Fair and contains a "Dance of the Wet Nurses" in addition to a dance of a peasant with his bear. One oft recurring musical element in this work consists of simultaneous C Major and F-sharp major chords located a tritone apart, creating a dissonant chord symbolizing the main character. That character loves a beautiful ballerina but is stabbed at the end of this work by the Moor. For 10 points, identify this ballet about a Russian puppet, written by Igor Stravinsky.  
ANSWER: ***Petrushka***

20. One painting by this artist depicts a ghostly baboon perched between the branches of a tree in front of a fence. Literature-inspired triptychs by this painter include one with bound figures in bedrooms based on Eliot's *Sweeney Agonistes*. The death of this artist's lover George Dyer led him to paint the *Black Triptychs*, and long necked creatures with open mouths and contorted bodies appear in front of a red background in this man's *Three Studies for Figures at the Base of a Crucifixion*. In addition to painting hanging lumps of bloody meat, this man borrowed from Velazquez for a depiction of Innocent X. For 10 points, name this Irish artist of the *Screaming Popes* series.  
ANSWER: Francis **Bacon**

#### Bonuses

1. Answer the following questions about organic chemistry. For 10 points each:

[10] Name these organic compounds which are characterized by a hydroxyl functional group. Examples include ethanol and retinol.

ANSWER: **alcohols**

[10] These organic compounds can be formed by the Schmidt reaction, or just by the reaction of carboxylic acids or acyl chlorides with amines. They contain a bond between a carbon in a carbonyl group, and an adjacent nitrogen atom.

ANSWER: **amides**

[10] This reaction in organic chemistry between ketones and aldehydes proceeds through a famous enol or enolate intermediate, which is formed by the tautomerization of the carbonyl group. Variants include reactions named for Michael and Claisen.

ANSWER: **aldol** reaction/condensation

2. Suppiluliuma ruled this empire at its greatest extent, while Muwatalli II led it during one famous battle on the Orontes River. For 10 points each:

[10] Name this empire who spoke the extinct Nesite language and whose capital was located at Hattusa. This empire was based in Anatolia.

ANSWER: **Hittite** Empire

[10] The Hittite Empire may have been weakened by invasions of these peoples. These peoples of somewhat uncertain origin invaded Egypt during the reign of Ramses III and included the Sherden, Meshwesh, and Tjekker.

ANSWER: **Sea Peoples**

[10] Some of the Sea Peoples are hypothesized to have become from this island formerly ruled by the the Minoans. Arthur Evans excavated the city of Knossos on this island.

ANSWER: **Crete**

3. A section of one musical work by this man is set at a memorial to the all-black regiment led by Colonel Shaw in the Civil War. For 10 points each:

[10] Name this American composer who included the sections “The St. Gaudens in Boston Common” and “The Housatonic at Stockbridge” in his *Three Places in New England*.

ANSWER: Charles (Edward) **Ives**

[10] This piano work by Ives without barlines in many places contains sections named after various transcendentalists, including Emerson, Hawthorne, and Thoreau.

ANSWER: **Concord** Sonata [Accept Piano Sonata No. 2.]

[10] This Ives composition, described as having “three layers,” consists of a woodwind quartet, trumpet, and string quartet, and is the first of the “Two Contemplations” along with *Central Park in the Dark*.

ANSWER: *The Unanswered Question*

4. While DNA is mostly stored as chromatin, it condenses into chromosomes in time for cell division. For 10 points each:

[10] Name this phase in meiosis where homologous chromosomes join into tetrads in preparation for lining up along the metaphase plate.

ANSWER: **prophase I** [Prompt on “prophase.”]

[10] Prophase I is key in genetic diversity due to this process, in which pieces of homologous chromosomes are intentionally broken off and swapped.

ANSWER: **crossing over**

[10] The point of contact between two homologous non-sister chromatids in crossing over is known by this name. These constructs are more common if two genes are farther apart on a chromosome.

ANSWER: **chiasmata**

5. Diphthongs occur when two of these are placed in a row and there are rhotic and gliding varieties of these letters. For 10 points each:

[10] Name these letters contrasted with consonants.

ANSWER: **vowels**

[10] The Great Vowel Shift produced the difference between modern English and this language, which Chaucer wrote in. It was displaced by the Chancery Standard, which became popular near London.

ANSWER: **Middle English**

[10] Another concept in linguistics is this law describing the shift of stop consonants from Indo-European to Germanic. Its formulator was better known for folk tales.

ANSWER: **Grimm**'s Law

6. This artist's *The Bohemian* shows a gypsy girl with a violin seated on the banks of the Seine with Notre Dame de Paris in the background. For 10 points each:

[10] Name this French academic painter of the realist movement who showed a faun being pulled into a pool by a bunch of nude women in his *Nymphs and Satyr*.

ANSWER: William-Adolphe **Bouguereau**

[10] Bouguereau included a merman blowing a conch shell in his version of this mythological scene. Botticelli showed this scene with the titular goddess riding on a scallop shell, about to be clothed with a pink cloth.

ANSWER: the **birth of Venus**

[10] Bouguereau showed this writer and his guide watching as a naked man in Hell bites another man's throat. He was also shown crossing the Styx on a boat by Delacroix and riding on the back of Geryon by Gustave Dore.

ANSWER: **Dante** Alighieri

7. After he was unable to substantiate his claims, this man was censured by his fellow Senators in 1954. For 10 points each:

[10] Name this Wisconsin Senator whose accusatory interrogation tactics of suspected communists were revealed in a televised series of hearings in 1954.

ANSWER: Joseph **McCarthy**

[10] The McCarthy hearings were preceded by those of this Congressional committee, which included an inquiry into Communist influence in the entertainment industry

ANSWER: **H**ouse **U**n-American **A**ctivities **C**ommittee

[10] This chief counsel for McCarthy was instrumental in the trial and conviction of Soviet spies Julius and Ethel Rosenberg.

ANSWER: Roy (Marcus) **Cohn**

8. The title character of this novel is paired with objects like a fat thumb, a clean old man, a party dress, and a dismal swamp. For 10 points each:

[10] Name this novel, whose title character answers letters from "Broad Shoulders," "Sick-of-it-all" and "Desperate" as he writes advice for Mr. Shrike of the New York Post Dispatch. This novel is named for his pseudonym.

ANSWER: **Miss Lonelyhearts**

[10] This author of *Miss Lonelyhearts* wrote *The Dream Life of Balso Snell* and a novel in which Tod Hackett and Homer Simpson try their hardest to win Faye Greener in Hollywood, *The Day of the Locust*.

ANSWER: Nathanael **West** [Accept Nathan von Wallenstein **Weinstein**.]

[10] Nathanael West was a contemporary of this other American novelist who had an affair with Anais Nin and got pretty sexual in works like *Tropic of Capricorn* and *Tropic of Cancer*, which had a famous obscenity trial.

ANSWER: Henry (Valentine) **Miller**

9. In the case of a large number of massive particles in a potential, the Ehrenfest theorem reduces to this law of classical mechanics. For 10 points each:

[10] Name this law that states that force is equal to the time derivative of momentum, or, in the case of constant mass, that force equals mass times acceleration.

ANSWER: **Newton's Second** Law of Motion [Accept logical equivalents.]

[10] The Ehrenfest model is one way of describing this phenomenon, the random motion of particles from areas of high concentration to areas of low concentration.

ANSWER: **diffusion**

[10] The Ehrenfest paradox occurs for a rotating "rigid" cylinder due to this consequence of special relativity. This phenomenon is often considered along with time dilation and uses a namesake factor symbolized by gamma.

ANSWER: **Lorentz**-Fitzgerald contraction [Accept **Lorentz** factor.]

10. In one scene in this play, a whole troupe of actors emerge from a single barrel after an attack by pirates. For 10 points each:

[10] Name this play, in which the two title characters play the question game with tennis scores and constantly flip coins before they die by a trick of Prince Hamlet's after being sent by Claudius to have Hamlet killed in England.

ANSWER: **Rosencrantz and Guildenstern are Dead**

[10] *Rosencrantz and Guildenstern are Dead* was written by this British playwright, who wrote *The Real Thing* and a play which covers action in both 1993 and 1809, *Arcadia*.

ANSWER: Tom **Stoppard**

[10] Another British playwright, Harold Pinter, wrote this play in which Goldberg and McCann take Stanley Webber to see Moby. It centers on the titular event thrown for Stanley by Meg.

ANSWER: *The **Birthday Party***

11. A civil war in this kingdom was won by Henry of Trastámara with the aid of Bertrand du Guesclin, and a future conflict over its succession saw Joanna la Beltraneja fight for the crown. For 10 points each:

[10] Name this medieval Spanish kingdom whose Queen Isabella joined it to another kingdom through her marriage to Ferdinand of Aragon.

ANSWER: Kingdom of **Castile**

[10] This king of Castile issued a law code called *Las Siete Partidas* and wrote a book of Galician poetry called the *Cantigas de Santa Maria*. He also awarded the University of Salamanca with its official title and generally promoted learning.

ANSWER: **Alfonso X** of Castile [Accept **Alfonso el Sabio** and **Alfonso the Wise**.]

[10] Alfonso's great grandfather, Alfonso VIII, joined with Sancho of Navarre and Peter of Aragon at this decisive 1212 battle of the early Reconquista, in which Christian forces crushed the Almohads.

ANSWER: Battle of **Las Navas de Tolosa**

12. After waking for the first time, this figure stayed inside his mother's womb for thirty years as she drifted in the ocean and created the world. For 10 points each:

[10] Name this old Finnish bard who convinced Ilmarinen to forge the *sampo*. He also won a singing contest against Joukahainen, through which he won the right to marry Aino.

ANSWER: **Vainamoinen**

[10] Vainamoinen needed the *sampo* forged so he could marry the daughter of this witch, who ruled over Pohjola.

ANSWER: **Louhi**

[10] Vainamoinen and Louhi both appear as characters in this Finnish national epic compiled by Elias Lönnrot.

ANSWER: *The **Kalevala***

13. As a young prince, this man won a pyrrhic victory at the Battle of St. Jakob an der Birs during the Old Zurich War, and had earlier participated in the Praguerie Revolt against his father. For 10 points each:

[10] Name this French king, often called the Universal Spider, who succeeded Charles VII.

ANSWER: **Louis XI** [Prompt on "Louis the Spider."]

[10] This Duke of Burgundy was one of Louis' regional rivals until he was killed at the Battle of Nancy in 1477. His father Philip the Good founded the Order of the Golden Fleece.

ANSWER: **Charles the Bold** [Accept **Charles I** or **Charles Martin**.]

[10] Louis fought against this alliance of nobles led by Francis II of Brittany and assisted by Charles the Bold. Despite a victory at the Battle of Montlhéry and the revolt of Liege, it failed to achieve much.

ANSWER: **League of the Public Weal** [Accept La **ligue du Bien public**.]

14. Paul Gonsalves famously performed a wild saxophone solo between two halves of a work composed by this man, a performance that helped revitalize this man's career. For 10 points each:

[10] Identify this composer of *Black and Tan Fantasy* in addition to the aforementioned *Diminuendo and Crescendo in Blue*.

ANSWER: Edward Kennedy "Duke" **Ellington**

[10] Duke Ellington played this instrument that has 52 white keys and 36 black keys that can come in "grand" and "upright" varieties.

ANSWER: **piano**

[10] This other pianist compiled many of his works in the albums *Genius of Modern Music* and composed the jazz standards "Straight, No Chaser" and "Round Midnight."

ANSWER: Thelonius **Monk**

15. Answer the following about Abraham, patriarch of both the Jewish and Arab peoples. For 10 points each:

[10] Abraham destroyed the idols of his people but saved the largest ones because they represented this deity. He then built the Kaaba in Mecca as the “house” of this deity.

ANSWER: **Allah** [Prompt on “God” or any other names for the Abrahamic God.]

[10] While Genesis states that God commanded Abraham to sacrifice Isaac, the Qur'an alternatively holds that this older son of Abraham by Hagar was actually the near-sacrifice.

ANSWER: **Ishmael** [Accept **Isma'il**.]

This Islamic “Feast of the Sacrifice” at the end of the Hajj is a celebration of Abraham's willingness to sacrifice Isma'il. Its name is similar to a feast celebrating the end of Ramadan.

ANSWER: **Eid al-Adha** [Accept **Id-ul-Zuha** or the **Greater Eid**, prompt on “Bakr-Id.”]

16. Name these branches of philosophy. For 10 points each:

[10] This branch of philosophy considers what is right and wrong, and tries to characterize and systematize how a person can act morally. Aristotle wrote a book on this concept named for his son Nichomachus.

ANSWER: **ethics**

[10] This branch of philosophy attempts to establish general rules for all of existence. David Hume famously wrote that this branch of philosophy should be condemned to the flames.

ANSWER: **metaphysics**

[10] Theodor Adorno famously wrote of this branch of philosophy that “it is self-evident that nothing concerning art is self-evident.” Theorists like John Ruskin and Walter Pater all wrote in this branch of philosophy concerned with art.

ANSWER: **aesthetics**

17. In this novel, Santiago Zavala and Ambrosio meet in a dog pound, where they see a daschund clubbed to death. For 10 points each:

[10] Name this novel in which Zavala protests against the Peruvian government with the activist group Cahuide.

ANSWER: ***Conversation in the Cathedral*** [Accept ***Conversacion en la catedral***.]

[10] This Peruvian author of *Aunt Julia and the Scriptwriter* and *The Time of the Hero* wrote *Conversation in the Cathedral*.

ANSWER: Mario **Vargas Llosa** [Prompt on “Llosa.”]

[10] Although he’s Peruvian, Vargas Llosa set a novel centering around Antonio Conselheiro and the Canudos conflict, *The War of the End of the World*, in this large South American nation also home to Jorge Amado.

ANSWER: Federative Republic of **Brazil** [or Republica Federativa do **Brasil**.]

18. Lagrange’s theorem states that sub-versions of these must have an order dividing the order of the larger one, and elements in Sylow ones are all powers of the same prime p. For 10 points each:

[10] Name these entities with one operation, which satisfy closure under that operation, as well as satisfying associativity, invertibility, and existence of an identity.

ANSWER: **groups**

[10] The set of rotations of one of these forms a group. When one of these puzzles is solved, each of the faces has squares of only one color.

ANSWER: **Rubik’s Cube**

[10] For a given field extension, this group is the group of automorphisms that send the underlying field to itself. As a teenager, the namesake of these groups created a certain theory relating field theory and group theory.

ANSWER: **Galois** groups



19. The Niger and Senegal rivers flow through this country, the economy of which is based on agriculture and fishing. For 10 points each:

[10] Name this West African nation spanning the southwesternmost portion of the Sahara Desert that shares its name with an empire reaching its peak in the 14th century. It is located south of Algeria and east of Mauritania.

ANSWER: Republic of **Mali**

[10] This ancient city was once an administrative center of the namesake region of the extensive Mali Empire and has experienced desertification since that time. The Sankore Mosque is located here.

ANSWER: **Timbuktu**

[10] This modern capital of Mali, located on the floodplain of the Niger river, was estimated to be the fastest-growing city in Africa in 2006.

ANSWER: **Bamako**

20. This word appears in the title of a play in which one character throws an ambassador out of a window. For 10 points each:

[10] Name these experiences. Life is called one of these in the title of a play in which Sigismundo is put in a tower, made a prince, and then put back in the tower. A famous Chinese novel is named for one of these of the Red Chamber.

ANSWER: a **dream**

[10] The aforementioned play *Life is a Dream* was written by this Spanish Golden Age playwright who is notably not Lope de Vega.

ANSWER: Pedro **Calderon** de la Barca (y Barreda Gonzalez de Henao Ruiz de Blasco y Riano)

[10] Calderon wrote this play in which Pedro Crespo attempts to convince the dishonorable Captain Alvaro to wed his daughter Isabel after the captain takes advantage of her.

ANSWER: *The **Mayor of Zalamea** [El **Alcalde de Zalamea**.]*