



The Illinois Mathematics and Science Academy of Aurora, IL presents

IMSANITY 4

-ROUND 9-

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Tossups

- (1) One of this composer's works describes the title beings killing an unsuspecting man in his sleep. This man, who is not Franz Liszt, wrote the *Dance of the Gnomes* and the *Fantasia slava*. He was inspired by paintings such as *La Primavera* to compose the *Three Botticelli Pictures*. French horns portray gods blowing conch shells in one of his tone poems, which also depicts a dancing Triton. This composer of the three-suite work(*) *Ancient Airs and Dances* used a buccine in the last section of one work, which uses a recording of a nightingale call in the section *Of the Janiculum*. For ten points, name this Italian composer of the Roman Trilogy, which includes his *Roman Festivals* and *Pines of Rome*.

ANSWER: Ottorino Respighi

- (2) The Ulam Spiral is used to visually represent patterns in these numbers. The polynomial n squared minus n plus forty-one outputs these numbers for the first forty positive integer inputs. When n is this type of number, one less than the factorial of n minus one is divisible by n according to Wilson's Theorem, and a to the n power minus a is divisible by n by(*) Fermat's Little Theorem. Euclid supposed that there were finitely many of these numbers and then multiplied them all and added one to demonstrate their infinitude. The Fundamental Theorem of Arithmetic guarantees unique factorizations into these numbers. For ten points, name these integers whose only proper factor is one.

ANSWER: prime numbers (or primes)

- (3) One inhabitant of this city is Renata, who spends a memorable weekend with Colonel Cantwell in Ernest Hemingway's *Across the River and into the Trees*. Belvidera convinces Jaffier to tell the senate of a conspiracy in a Thomas Otway play titled *[this city] Preserv'd*. A character who was meant to come here develops an obsessive interest in(*) Tadzio and dies in this city. In addition to Gustav von Aschenbach, another inhabitant of this city, Shylock, grants a loan to Antonio with a pound of flesh as collateral. Thomas Mann wrote about a *Death in* - and William Shakespeare wrote about *The Merchant of* -, for ten points, what city?

ANSWER: Venice

- (4) In 2011, Zheng-Tian Lu and physicists at Argonne Laboratory dated the Nubian Aquifer by studying these entities in the groundwater. Frederick Soddy first identified these objects, which Harold Urey used to determine the temperature of paleolithic oceans. The Kinetic [this] Effect states that the presence of these objects in a reaction influences the rate of the reaction. A synonym for this term is(*) “nuclide.” One of these substances was fluorinated and collected using gas centrifugation at Oak Ridge, Tennessee; that radioactive variety is U-235. For ten points, name these varieties of an element’s atoms which contain different numbers of neutrons.

ANSWER: isotopes (prompt on “atom” before mention, accept krypton atoms or radioactive isotopes before “these objects”, accept nuclide before mention)

- (5) This man sent out a volunteer “Blue Division” to fight communism, and he also captured Badajoz. This man fought with Henri-Philippe Petain against Abdel-Krim in the Rif War, but was later demoted to working in Corunna under the government of Manuel Azana. Unfavorable negotiations with Germany prevented him from entering his country into World War II. He was the leader in a conflict where he sided with(*) Emilio Mola and opposed the Popular Front, but he did not try to release Miguel Primo de Rivera from captivity. He united the Carlists with his Falange. For ten points, name this man who led Nationalist forces to victory in the Spanish Civil War.

ANSWER: Francisco Franco y Bahamonde

- (6) One of this author’s characters writes a long, gushing letter about blue hydrangeas, and in another novel, one character hangs a green shawl over the skull of a beast to please both her children. A novel by this author sees the title character marry Marmaduke Bonthrop, ice skate with Sasha, and carry around her poem *The Oak Tree* for several centuries. This author of(*) *Orlando* wrote about the poet Mr. Carmichael, the painter Lily Briscoe, and the Ramsay family in one work, and about Sally Seton, Peter Walsh, and Clarissa in another. For ten points, identify this author of *To the Lighthouse* and *Mrs. Dalloway*.

ANSWER: (Adeline) Virginia Woolf

- (7) The Shapley-Shubik index is computed by counting these objects in which each voter is pivotal. These objects are the elements of finite symmetric groups. One of these functions which is equal to its own inverse is called an involution and one with no fixed point is called a derangement. This term is used for one-to-one correspondence from a set to itself. The number of these objects involving^(*) k elements from an n element set is computed as n factorial divided by n minus k factorial. For ten points, identify this combinatorial function which counts the ways to select k objects from n in which order matters, contrasted with combinations.

ANSWER: permutations

- (8) The Hyksos king Apepi said he only worshiped this god, and among his consorts were Anata and Astarte. This god pursued his sister-in-law in the form of a bull, but his failure produced desert plants. This “Lord of the Northern Sky” protected Ra from Apep on his barge. This god was castrated by his nephew, whose eye this god removed. This god was tricked into^(*) losing a boat race by the son of a figure whom this deity had chopped into fourteen pieces and thrown into a river in a coffin. A rival and uncle of Horus, for ten points, name this Egyptian god of chaos and storms who killed Osiris.

ANSWER: Seth (accept Sutekh, Setech, or Sutech)

- (9) This campaign was introduced in a speech declaring that “Those millions cannot and shall not hope in vain” delivered at the Commonwealth Club of San Francisco. This campaign was supported by Adolf Berle and Raymond Moley. Charles Evans Hughes was a swing voter in upholding legislation for this campaign, but he later opposed this program in *Schechter Poultry Corp. v. U.S.* The gold standard was abandoned with this program, under which the^(*) FDIC was created. Three million men worked in this program’s Civilian Conservation Corps. For ten points, name this program aimed at revitalizing America during the Great Depression during the presidency of Franklin D. Roosevelt.

ANSWER: New Deal (accept 1932 presidential campaign of Franklin Delano Roosevelt before “legislation”)

- (10) A series of experiments conducted in May 1995 at Rice University investigated the oxidation, density, and intelligence of these entities. In 2010, Kansas State University professor Mark Haub lost 27 pounds on a diet named for these objects. In *Ghostbusters*, Dr. Egon Spengler used a theoretical six-hundred pound example of this object to explain unusual amounts of psychokinetic energy. The Griffin family travelled to Natick seeking a factory producing this food after a(*) nuclear holocaust on *Family Guy*. This product was not sold from November 2012 to May 2013 due to the bankruptcy of Hostess. For ten points, name this “golden sponge cake with creamy filling”.

ANSWER: Twinkies

- (11) One character created by this author trades a ring for help not dying in childbirth, and her daughter, Lynn, named after the father’s first wife, suffers the same fate of dying in childbirth. Paulina elaborately delivered a bed to the mistress of her husband and later married her butler Frederick Williams, and in that novel, Nivea saved her husband’s life by reading books by “An anonymous lady.” This author created Eliza Sommers in(*) *Daughter of Fortune* and Aurora del Valle in *Portrait in Sepia*. Another novel included the telepathic Clara and the green-haired Alba. For ten points, identify this Chilean author of *The House of the Spirits*.

ANSWER: Isabel Allende

- (12) In one shot of this film, a flight attendant uses grip shoes to invert herself before entering the pilot’s cabin; that flight takes Dr. Floyd to investigate TMA-1. Just before this film’s intermission, one character reads two men’s lips through a circular pod window, and after it, that character kills one of those men replacing the AE-35 device. A scene cut matches a thrown bone to a satellite to the music of(*) *The Blue Danube*, and the final scene features a cut from a black monolith to a star child observing Earth to the theme of *Thus Spoke Zarathustra*. For ten points, identify this film by Arthur C. Clarke and Stanley Kubrick in which the Jupiter mission is compromised by HAL 9000.

ANSWER: 2001: A Space Odyssey

- (13) One artist from this movement created a sculpture with a stuffed goat entitled *Monogram*, one of his combines. Another artist from this movement worked with his wife Coosje van Bruggen to create large replicas of everyday objects in works like *Knife Ship I* and *Spoonbridge and Cherry*. In addition to(*) Robert Rauschenberg and Claes Oldenburg, one artist in this movement used Benday dots to depict a fighter plane shooting a missile in *Whaam!*. For ten points, identify this 20th century art movement whose practitioners included Roy Lichtenstein and an artist known for his paintings of Marilyn Monroe and Campbell Soup Cans, Andy Warhol.

ANSWER: Pop Art

- (14) A defect in the phosphotransferase enzyme in this organelle results in inclusion-cell disease, and this organelle is also affected by various disorders that affect glycosylation. A site of proteoglycan production, this organelle transfers a sulfur from PAPS to target molecules and also manufactures sphingolipids and pectins. Proteins bound for lysosomes are marked with(*) mannose 6-phosphate by this organelle. Sometimes called dictyosomes in plant cells, this organelle transports cisternae from its cis to its trans face. For ten points, name this organelle that functions in packaging and processing proteins destined for secretion.

ANSWER: Golgi apparatus or body or structure

- (15) When asked about economics, this leader claimed that it was “for donkeys,” and this man lamented the fact that “the purpose of all these sacrifices was to have less expensive melons.” This man was sentenced to house arrest after the Movement of 15 Khordad. This man attacked the White Revolution and defended the Ulema in his Ashura Speech, and on exile in France, this man wrote the book *Islamic Government*. This man fought an(*) eight-year war with his country’s western neighbor, and he issued a fatwa against Salman Rushdie. For ten points, name this leader responsible for capturing an American embassy during the Iran Revolution and who was succeeded by Ali Hosseini Khamenei.

ANSWER: Ayatollah Khomeini (or Grand Ayatollah Imam Ruhollah Moosavi Khomeini)

- (16) **Joseph Smith** claimed that this figure gave him the keys “to the kingdom,” and in the town of Sharon, this figure healed the bedridden Aeneas. This figure escaped from King Herod’s jail with help from an angel. He defended Jesus by cutting off the ear of a Roman soldier. Jesus called him “you of little faith” when he failed to walk on water, and gave him his common name because he was the(*) rock on which the church would be built. This brother of Andrew was crucified on an upside-down cross, and he denied knowing Jesus three times. For ten points, name this apostle who is commonly acknowledged as the first pope.

ANSWER: Saint Simon Peter the Apostle (do not prompt on “Simon”)

- (17) **General George Crook** could not attend this battle due to being held up at the Battle of the Rosebud. Major Marcus Reno’s troops were saved by the arrival of reinforcements under Captain Benteen at this battle, but the losing side got stuck at Minneconjou Ford. Commanders of the winning side included Gall and White Bull. The losing commander at this battle was knocked off his horse by(*) Buffalo Calf Road Woman. For ten points, name this 1876 battle which saw the 7th Cavalry demolished by a larger Indian force under Sitting Bull, known as “Custer’s Last Stand”.

ANSWER: Battle of Little Bighorn (accept Battle of Greasy Grass Creek)

- (18) This process occurs in the **Tore Supra**. The triple product evaluates the conditions for the ignition of this process, which occurs in structures that have magnetic or inertial confinement and are subject to the Lawson criterion. One limitation to this process is the energy required to overcome the Coulomb barrier. Lithium burning is one form of this process, another form of which involves the(*) formation of deuterium and release of a gamma ray. In addition to the proton-proton chain and CNO cycle, this process comes in a hypothetical cold variety. For ten points, name this process of the formation of a larger nucleus from smaller ones, contrasted with fission.

ANSWER: nuclear fusion

- (19) In one novel by this author, Dallas inadvertently arranges a meeting between his father and his father's ex-lover, and in another, Mrs. Haffen sells Bertha Dorset's letters to the protagonist, who doesn't return them to Simon Rosedale. Lawrence Seldon comes to propose to the recently-overdosed-on-sleeping-pills(*) Lily Bart in one novel, and in another, May Welland shortens her engagement, preventing Newland Archer from running off with Countess Olenska. Her most famous novel saw the title character and Mattie Silver crippled in a sledding accident. For ten points, identify this author of *The House of Mirth*, *The Age of Innocence*, and *Ethan Frome*.

ANSWER: Edith Wharton (or Edith Newbold Jones)

- (20) Ida Bauer and Emma Eckstein were notable subjects of studies of this state. This state corresponds to low values of input-output and modulation in the AIM model, a refinement of the activation-synthesis model. Reverse learning theory likens these entities to cleaning operations in computers, and Joe Griffon hypothesized the(*) expectation fulfillment theory of them. Their superficial part is called their "manifest" content and their meaning is known as their "latent" content. These entities provide the "royal road to the unconscious". For ten points, name these entities interpreted by Sigmund Freud and which occur during REM sleep.

ANSWER: dreams or dreaming (prompt on "sleep")

- (21) He wrote that Islam is a "patchwork of Jewish, Christian, and heathen beliefs" in *On War Against the Turks*, and he compared the titular group to fools and to Plato in the section *Their Self-Righteous Boasting* of his work *The Jews and Their Lies*. This man cried out to St. Anne after nearly dying in a thunderstorm. This man was given an ultimatum to recant in the(*) papal bull *Exsurge Domine*, and this critic of Johann Tetzel noted that "Here I Stand. I can do no other." at the Diet of Worms. For ten points, name this theologian from Wittenberg whose 95 Theses started the Protestant Reformation.

ANSWER: Martin Luther

Bonuses

- (1) Reggie Jackson pulled his hamstring performing this action, but his A's won the 1972 World Series without him. For ten points each:
 [10] Name this play performed by Jonathan Villar of the Astros on July 2013. It was also performed by Bryce Harper in May 2012 after Cole Hamels hit him with a pitch, and this play often results from a botched squeeze attempt.
ANSWER: stealing home plate (accept equivalents, prompt on a partial answer)
 [10] This former Detroit Tiger nicknamed the "Georgia Peach" holds both the record for the most steals of home in a season, with 8, and in a career, with 54.
ANSWER: Tyrus "Ty" Cobb
 [10] This first African-American in Major League Baseball stole home in revenge for being hit by a pitch in his 1947 rookie season. He also stole home in the first game of the 1955 World Series.
ANSWER: Jack "Jackie" Robinson
- (2) In one of his works, Bernard Kornblum helps smuggle the protagonist and a golem out of German-occupied Prague. For ten points each:
 [10] Identify this author who wrote about the comic book writers Sam and Jozef in *The Amazing Adventures of Kavalier and Clay*.
ANSWER: Michael Chabon
 [10] Chabon wrote about a Jewish state founded in Sitka, Alaska in a novel named for a policemen's union described by this adjective. Speakers of this language are usually Ashkenazi Jews, especially those from Germany.
ANSWER: Yiddish (or Idish)
 [10] This American Nobel laureate wrote the first edition of most of his books in Yiddish. He wrote the children's story *The Golem*, but is better known for novels like *The Magician of Lublin* and short stories like *Gimpel the Fool*.
ANSWER: Isaac Bashevis Singer (or Yitzchak Bashevis Zinger)
- (3) 3C 273 is one of these objects able to be seen via small telescope. For ten points each:
 [10] Name these cosmic objects that surround massive black holes in young galaxies. They are fed by accretion disks and emit large amounts of radiation.
ANSWER: quasar (accept blazars, accept quasi-stellar radio sources BUT DO NOT reveal this alternate answer unless it is given)
 [10] Quasars have similar properties to these types of galaxies, which have observable lobes and plumes. These galaxies emit their namesake form of radiation with longer wavelengths than microwaves.
ANSWER: radio galaxies
 [10] Radio galaxies produce X-rays via the "inverse" type of this process, which allows for relativistic electrons to interact with photons and move them to higher energy levels.
ANSWER: Compton scattering (or Compton process)

- (4) Bodhisattvas try to help people reach this state. For ten points each:
 [10] Name this destination of Buddhists that means “becoming extinguished” in Sanskrit. The Buddha is in an “unlocated” form of this state.
ANSWER: nirvana
 [10] Both nirvana and moksha are a liberation from this cycle of rebirth. The incorporeal body exists in this state until it is released.
ANSWER: samsara
 [10] Unlike Hindus, Buddhists do not believe in the everlasting soul. This is the Buddhist concept of “not-self” used to help adherents not cling to personal things.
ANSWER: anatta (accept anatman)
- (5) This general defeated the Cimbri and the Teutones, invading Germanic tribes, and he was exiled during the Social War. For ten points each:
 [10] Name this Roman politician who served as consul seven times and was opposed by his main rival Sulla.
ANSWER: Gaius Marius
 [10] Marius’s tribune, Lucius Appuleius Saturninus, supported the agrarian reforms proposed by these tribunes. Popular among the poor, these brothers both lost their lives.
ANSWER: Tiberius Gracchus and Gaius Gracchus (accept in either order, accept, Gracchus brothers or Gracchi brothers, prompt on “Gracchus”)
 [10] The Gracchus brothers were of this group of Romans which consisted of the average free man. They are often contrasted with the wealthier, noble patricians.
ANSWER: plebeians
- (6) His last recorded poem read “Sick on my journey / Only my dreams will wander / These desolate moors.” For ten points each:
 [10] Identify this Japanese poet who wrote “An old pond / A frog jumps in / The sound of water” and *The Narrow Road to the Deep North*.
ANSWER: Matsuo Basho
 [10] Basho wrote primarily this kind of seventeen “syllable” poem usually on a natural theme, where the first line has 5 syllables, the second line has 7, and the third line has 5.
ANSWER: Haiku (or Hokku)
 [10] This other kind of Japanese poem has a 5-7-5-7-7 syllable scheme. The *Manyoshuu* consists of over 4,000 examples of this poetry form.
ANSWER: Tanka

- (7) The title figure's armor reflects the brilliant gold and red clothing surrounding him. For ten points each:
- [10] Identify this painting of a group of black-clad men witnessing the ascension of the titular figure into Paradise. The artist's son clings to the vestment of Saint Stephen below some heavenly clouds.
- ANSWER:** The Burial of the Count of Orgaz
- [10] This artist of *The Burial of the Count of Orgaz* depicted a group of men fending off snakes in *Laocoon* in addition a bridge crossing the Tagus River in his landscape *View of Toledo*.
- ANSWER:** El Greco (or Doménikos Theotokópoulos)
- [10] Picasso's *Les Femmes d'Alger* may have been inspired by this other El Greco work, which depicts Saint John in blue raising his hands while winged figures hand out yellow and green robes.
- ANSWER:** The Opening of the Fifth Seal (or The Vision of Saint John)
- (8) Frederick Sanger won the 1958 Nobel Prize in Chemistry for his work in determining the amino acid sequence of this protein. For ten points each:
- [10] Name this peptide hormone that works antagonistically to glucagon by inducing glucose uptake by muscle and fat tissue in the body.
- ANSWER:** insulin
- [10] Insulin and glucagon are both released by specialized cells in the islets of Langerhans, which are a part of this organ. This organ functions as both an exocrine and endocrine gland.
- ANSWER:** pancreas
- [10] The pancreas releases enzymes such as trypsinogen and amylases important in chemical digestion into this part of the small intestine, the shortest but most dense with microvilli.
- ANSWER:** duodenum
- (9) The flags of African countries are very significant, at least according to The Onion's *Our Dumb World* Atlas. For ten points each:
- [10] The Onion claims that the sun in this country's flag represents the "Savage Slaughter of over 800,000 Lives," referring to the 1990's civil war in this country between the Hutu and Tutsi after the death of Juvenal Habyarimana.
- ANSWER:** Republic of Rwanda
- [10] The Onion claims that the flag of this country is "currently on fire." Two Blackhawk helicopters were destroyed during a failed attempt to capture Mohammed Farah Aidid in this country's capital of Mogadishu.
- ANSWER:** Federal Republic of Somalia
- [10] This country used to have a flag, according to the Onion. The Allies took this country from Vichy France in Operation Ironclad, and Hitler proposed this country as a place to send Jews.
- ANSWER:** Republic of Madagascar

- (10) A point accelerated along this curve by gravity will reach the bottom in the same amount of time regardless of where it begins. For ten points each:
- [10] Identify this curve traced out by a point on the rim of a circle as the circle rolls along a line. It solves the tautochrone [READ: “TAWT-o-krohn”] and brachistochrone [READ: “bra-KISS-tah-krohn”] problems, the latter of which seeks the curve that gravity will pull a point along the fastest.
ANSWER: cycloid
- [10] A point on the rim of a circle rolling inside a larger circle will trace out a line segment if the ratio of smaller-to-larger radii equals this value.
ANSWER: one half (accept equivalents)
- [10] When a parabola is rolled along a line, its focus traces out this shape, the graph of the hyperbolic cosine function.
ANSWER: catenary
- (11) After this river enters Bangladesh, it is known as the Jamuna and joins with the Padma river. For ten points each:
- [10] Name this major Asian river, which forms in Tibet in the world’s deepest and largest canyon, the Yarlung Tsangpo.
ANSWER: Brahmaputra
- [10] The Brahmaputra is one of the major rivers that form the Ganges River Delta, which empties into this body of water located southeast of India. This body is the largest bay in the world, stretching south to Sri Lanka and Sumatra.
ANSWER: Bay of Bengal
- [10] The Surma and Kushiya rivers join in Chandpur to form this other river, which joins the Jamuna and Padma in Bangladesh before emptying into the Bay of Bengal.
ANSWER: Meghna
- (12) This politician conceded land to Denmark under the London Protocol, but later won those provinces back in the Second War of Schleswig. For ten points each:
- [10] Name this unifier of Germany, who said that the “the great questions of the time will not be resolved by speeches and majority decisions” but by instead “iron and blood.”
ANSWER: Otto von Bismarck
- [10] Otto von Bismarck published the Ems Dispatch, which sparked this conflict. It saw France losing Alsace and Lorraine and the removal of Napoleon III.
ANSWER: Franco-Prussian War (also accept Franco-German War or the 1870 War)
- [10] Otto von Bismarck also passed these laws during the anti-Catholic campaign known as Kulturkampf. Later supplemented by the “Breadbasket Law,” they gave the government more influence in the church’s training of priests.
ANSWER: May Laws (also accept Falk Laws)

- (13) In one work named *[this] for Scandal*, Sir Oliver pretends to be Mr. Premium and Mr. Stanley, and Lady Sneerwell is highly involved with Peter Teazle and Joseph and Charles Surface. For ten points each:
- [10] Identify this institution whose version “for wives” titles a work by Molière in which Horace and Agnes fall in love, despite Arnolphe’s grooming Agnes. Aristophanes wrote of one run by Sophocles called The Thinkery in *The Clouds*.
ANSWER: School (or École)
- [10] The author of *School for Scandal* wrote this play in which Jack Absolute pretends to be Ensign Beverley and courts Lydia Languish in two separate ways.
ANSWER: The Rivals
- [10] *The Rivals* and *The School for Scandal* were both works by this Irish playwright, who wrote a play in which Mr. Puff invites Sir Fretful Plagiary, Dangle, and Sneer to a rehearsal called *The Critic*.
ANSWER: Richard Brinsley (Butler) Sheridan
- (14) This term refers to the energy difference between the valence and conduction bands. For ten points each:
- [10] Name this term that refers to the energy needed to free an outer shell electron so that it becomes a free carrier of charge.
ANSWER: band gap
- [10] These materials generally have a very large band gap, which explains their non-conducting nature. Examples of these materials are rubber and glass.
ANSWER: insulator
- [10] This term describes the energy level where there is a fifty percent chance of finding an electron. This point lies within the band gap of an insulator, while it lies in one of the two bands of metals and semimetals.
ANSWER: Fermi level
- (15) This deity once threatened to “bring up the dead to eat the living so that the dead will outnumber the living”. For ten points each:
- [10] Name this goddess who had sixty diseases thrown at her by Namtar while descending to the Underworld. This Babylonian goddess of fertility and sex made her father, Anu, send the Bull of Heaven down on earth.
ANSWER: Ishtar (accept Innana)
- [10] Ishtar sent the Bull of Heaven down after she was rejected by this mythical King of Uruk, who was two-thirds god and one-third man. Along with Enkidu, he killed the beast Humbaba in his namesake epic.
ANSWER: Gilgamesh (accept Bilgames)
- [10] Ishtar was married to this vegetation god. In the place of Ishtar, this analogue of Adonis spends half of each year in the underworld.
ANSWER: Tammuz

- (16) Some supporters of this movement were called scalawags. For ten points each:
[10] Names this period that saw efforts to empower African-Americans after the Civil War. It saw the presence of carpetbaggers, and it ended with the advent of Jim Crow laws.
ANSWER: Reconstruction
[10] During Reconstruction, this government agency was created to help former slaves, and as part of its aid it sold confiscated land to Southerners. It did not, however, give former slaves the forty acres and a mule they had been promised.
ANSWER: Freedmen's Bureau (accept Bureau of Refugees, Freedmen, and Abandoned Lands)
[10] The promise of forty acres and a mule had been made as Special Field Orders, No. 15 by this General during his March to the Sea.
ANSWER: William Tecumseh Sherman
- (17) This thinker expounded upon Aristotle's notion of God as the "Unmoved Mover" as part of his *Quinque Viae*. For 10 points each:
[10] Identify this theologian and student of Albert Magnus who published five reasons for the existence of God in his *Summa Theologica*.
ANSWER: Thomas Aquinas
[10] Thomas Aquinas was one the forefront thinkers of this school, whose central tenants revolved around combining Christian and ancient Aristotelian thought. William of Ockham was a member of this school.
ANSWER: scholasticism
[10] In his *Summa Theologica*, Aquinas referred to this other thinker as "The Commentator." Aquinas's "media via" position lies in between this thinker's and Avicenna's theory of spontaneous generation.
ANSWER: Averroes or Ibn Rushd
- (18) Answer the following about depictions of Elizabeth I in literature for ten points each:
[10] This author dedicated his epic poem *The Faerie Queene* to Elizabeth I.
ANSWER: Edmund Spenser
[10] This author wrote about Robert Dudley's marriage to Amy Robsart, which he must keep secret to gain more power from Queen Elizabeth, in his novel *Kenilworth*.
ANSWER: Sir Walter Scott
[10] This author wrote about Queen Elizabeth's meeting with the title character and her relations with Mortimer in his play *Mary Stuart*. A more famous play by this author was about the brothers Karl and Franz Moor.
ANSWER: (Johann Cristoph) Friedrich von Schiller

- (19) This constant for its namesake type of reaction lacks a denominator because the sole reactant is in the solid phase. For ten points each:
 [10] Name this type of equilibrium constant used to calculate the extent to which an insoluble solid dissolves in water. The natural log of this quantity times negative RT gives the standard Gibbs free energy change of solvation.
ANSWER: solubility product or K_{sp} (do NOT accept word forms like “solubility constant”)
 [10] The definition of the solubility product as an equilibrium constant implies this effect, which states that adding a salt containing ions found in the insoluble solid will cause the insoluble solid to precipitate.
ANSWER: common-ion effect
 [10] The common-ion effect is a special case of this rule, named after a French scientist, which states that any change in the concentration, pressure, or temperature of a system will be counteracted by a shift in the equilibrium.
ANSWER: Le Chatelier’s Principle
- (20) The title character of this opera sings the aria *Vissi d’ arte* and jumps off the Castel Sant’Angelo to her death. For ten points each:
 [10] Name this opera about the execution of the title character’s lover Mario Cavaradossi, which also sees the title character stab Scarpia.
ANSWER: Tosca
 [10] Tosca is an opera by this Italian composer, whose other works include *La Bohème* and an opera about Prince Calaf’s attempts to marry the titular Chinese princess, *Turandot*.
ANSWER: Giacomo Puccini
 [10] In the final act of *Turandot*, Prince Calaf sings this aria in response to princess Turandot’s heralds calling out “Cosi comanda Turandot”.
ANSWER: Nessun Dorma (or None shall sleep)
- (21) In this novel, Shrella says that Nettlinger probably still wants to kill him, despite Nettlinger’s insistence “I’m a democrat. A democrat by conviction.” For ten points each:
 [10] Identify this novel which takes place at the Prince Heinrich Hotel on September 6, 1958. In this novel, Robert Faehmel is performing his daily routine while also celebrating his father’s 80th birthday.
ANSWER: Billiards at Half-Past Nine (or Billard um Halb Zehn)
 [10] *Billiards at Half-Past Nine* was written by this German author of *Group Portrait with Lady* and *The Lost Honor of Katharina Blum*.
ANSWER: Heinrich (Theodor) Böll
 [10] Böll was a leader of the Rubble Literature movement following this war. Böll’s first novel, *The Train was on Time*, followed a soldier in this war as he is shipped to the eastern front. On the trip, the soldier prays for a girl with memorable eyes and for the “Jews whom his people are murdering”.
ANSWER: World War II