

**Chicago Open 2013: No Subtext, Just Tacos.**

**Packet by Jonathan Magin, Stephen Liu, Billy Busse, and Evan Adams**

**Edited by Matt Bollinger, Libo Zeng, Sriram Pendyala, Dennis Loo, Sinan Ulusoy, and Kevin Koai, with invaluable contributions by Matt Jackson**

1. Shortly *after* this battle, the losing side lost again when a stag ran through their longbowmen's camp, causing them to reveal their position prematurely and get slaughtered in a cavalry charge. William de la Pole, the Duke of Suffolk, became co-commander of one side after the Earl of Salisbury was mortally wounded in an assault on a gatehouse known as Les Tourelles. This battle was followed shortly by John Talbot's capture at the Battle of (\*) Patay. The Scotsman John Stewart of Darnley was killed in an unsuccessful attempt to keep supplies from the attackers at this battle at a skirmish near Rouvray known as the Battle of the Herrings. The defenders at this battle were led by Jean de Dunois and included La Hire and Gilles de Rais. This battle was fought due to the central city's control of the Loire River and was followed shortly by the coronation of Charles VII in Reims. For 10 points, name this English siege attempt during the Hundred Years War which was lifted by Joan of Arc.

ANSWER: Siege of Orleans [or the Battle of Beaugency on the first clue, if anyone says that]

2. This character tells two others throw twenty dollars into the river, instructions which are ignored by the funeral director West but followed by the old retiree Holloway. Her cat is reincarnated when its grave is anointed with the blood of a man who is killed by his mother Ruby. Her housekeeper, "Black Mary," helps her prepare and dress a corpse. This character fashions a boat out of a bill of sale, and uses it to send Solly Two Kings on a mystical journey to the City of Bones. She owns the house at (\*) 1839 Wylie, which Old Joe and Sterling try to protect from the real estate developer Harmond Wilks. This character dies at the age of 366 in *King Hedley II*. For 10 points, name this ancient mystic who appears or is mentioned in *Radio Golf*, *Two Trains Running*, *Gem of the Ocean*, and other plays by August Wilson.

ANSWER: Aunt Ester Tyler

3. A semiempirical equation for this quantity states that it is proportional to temperature to the 1.75 divided by the pressure. A method of calculating this quantity for liquids introduces a solvent association parameter, which is approximately 2.6 for water. In a tokamak, the existence of banana orbits around a torus gives rise to the neoclassical form of this quantity, which is 10 to 100 times larger than its classical form. The method of Fuller and the Wilke-Chang equation are used to calculate this quantity, which (\*) kinetic theory predicts is proportional to the product of the mean velocity and the mean free path, or alternately, the product of Boltzmann's constant, temperature, and mobility. This quantity is set proportional to the square of the step size divided by the time between steps when modeling the phenomenon it describes as a random walk. For 10 points, name this mass analogue of the thermal conductivity, which equals the ratio of the mass flux to the concentration gradient by Fick's law.

ANSWER: diffusion coefficient [or mass diffusivity or diffusion constant]

4. A gray obelisk symbolizing eternity towers beside Glory as the title hero flies toward her in this artist's *Bellerophon on Pegasus*. In another of his paintings, a fanfare of Egyptians is shown gathered at a dock to welcome Marc Antony. That work is part of a series painted for the Palazzo Labia. One of this man's later works shows Ancient Castile personified with a tower on a cliffside and Gibraltar symbolized by the Pillars of Hercules as Mercury crowns the title allegory of royalty. This artist's most famous series includes depictions of the wedding of (\*) Frederick Barbarossa, as well as images of America sitting on a crocodile and Europe seated on a pedestal beside a reclining Balthasar Neumann, who designed the building in which that series is housed. For 10 points, name this Venetian artist behind *The Apotheosis of Spain* and *Apollo and the Continents*, one of his frescos for the Würzburg Residenz.

ANSWER: Giovanni Battista Tiepolo

5. This model can be improved by introducing a quantity equal to minus the derivative of the log of the frequency with respect to the log of the volume, a quantity known as the Gruneisen parameter. Calculating the exact solution provided by this model requires integrating  $e$  to the  $x$  times  $x$  to the fourth power divided by the square of the quantity  $e$  to the  $x$  minus 1, where  $x$  is equal to Planck's constant times thermodynamic beta times the maximum frequency. An integral over a cubic volume in phase space taken in this model is replaced with an integral over an octant of a sphere in an approximation named for the same man. It assumes that phonons obey a linear dispersion relation, and that the minimum wavelength is twice the interatomic spacing of the lattice. At low temperatures, the aforementioned (\*) heat-capacity integral reduces to a temperature-cubed dependence, and at high temperatures it recapitulates the Dulong-Petit Law. For 10 points, name this model for the heat capacity of a solid named for the Dutch scientist who names a unit of electric dipole moment.  
ANSWER: Debye model

6. One of these figures named Tugarin flew on paper wings, which his enemy destroyed by praying for rain. Apollonius of Rhodes writes of a race of these figures whom Jason meets on the same island as the Doliones. Another of these figures, the oldest of the *bogatyrs* and a native of the Holy Mountains, blows his strength into Ilya Muromets as he dies; that one is named Svyatogor. Hecate used a sword, lance, and torch to kill one of these figures named Klytios in a scene depicted on the (\*) Pergamon Altar. One of these figures had to be dragged out of Pallene in order to be killed and was named Alcioneus, while one named Porphyryon was killed by a thunderbolt while trying to rape Hera. Those deaths occurred during a war between these figures and the gods, who required the aid of Heracles. For 10 points, name these enormous humanoid creatures.  
ANSWER: giants [or Gigantes]

7. This author lampooned Hester Lynch Piozzi as Mrs. de Malthe in his satirical pastiche *Modern Novel Writing*. His other satires include biographies of fictional painters such as Watersouchy, Blunderbussiana, and Aldrovandus Magnus. One of this author's novels includes a scene in which a crowd of people kick a gluttonous Indian like a soccer ball until he falls into a chasm, where the title character sacrifices fifty young boys. This author constructed Fonthill Abbey to house his massive art collection, and wrote a book in which Carathis encourages the wickedness of her son, whose heart begins burning with an eternal flame after accompanying (\*) Nouronihar into a subterranean abyss. He is best known for that book, whose main character rules Samarah and journeys to find Iblis. For 10 points, name this British author who fictionalized the life of an Abbasid caliph in his Gothic novel *Vathek*.  
ANSWER: William Beckford

8. Jeff Malpas analyzed this philosopher's concept of place in a book about his "topology." In *What Computers Can't Do*, Hubert Dreyfus applied this philosopher's arguments about the impossibility of representing meaning through predicate logic to criticize attempts to produce strong AI by manipulating formal symbols. In 1987, Victor Farias wrote a book attacking the ideas of this philosopher. Adorno charged that this philosopher's language mystifies and conceals existing (\*) ideologies in a book accusing him of using "jargon." This philosopher's later works discuss the oneness of the earth, the sky, divinities, and mortals as the "fourfold." He discussed how a person's self is neutered by "Das Man," or "the they," in a book that uses the example of a hammer to explain his concept of "readiness to hand." For 10 points, name this German philosopher who considered the meaning of existence as *dasein* in his book *Being and Time*.  
ANSWER: Martin Heidegger

9. The longest holder of this position was Elihu Washburne, who was appointed to it by Grant after his eleven day term as Secretary of State. Lewis Cass resigned this post after his screed against the "right of search" in the Quintuple Treaty was undercut by the Webster-Ashburton Treaty. Sargent Shriver held this job for two years before running for vice president in 1972. Robert Livingston was serving in this role when he helped Robert Fulton design the North River Steamboat. While in this role from 1816 to 1823, Albert (\*) Gallatin assisted Richard Rush in negotiating the Treaty of 1818. Thomas Jefferson wrote his "Head and Heart" letter to Maria Cosway while holding this position. After Charles Cotesworth Pinckney was named to this position in 1796, he was joined in a commission by John Marshall and Elbridge Gerry and shaken down for bribes. For 10 points, name this diplomatic post first held by Benjamin Franklin.  
ANSWER: United States Ambassador to France [or equivalents such as envoy, minister, etc]

10. A shot in this film pans over rolling hills with the caption “The Promised Land took a step backwards.” During a vacation to the beach, this film’s central characters run about gathering trash left behind in the woods. In another scene, a woman jumps into a river to express her distress as another character praises Baudelaire’s misogyny, and later on justifies her infidelity on her wedding night by stating that “Albert equals Gilberte.” A major character in this film has a daughter named Sabine, and fears accidentally killing his (\*) friend while fighting for Austria in World War I. He and the friend had earlier gone to the Adriatic to view a statue with a mysterious smile, which they associate with a woman with whom they both fall in love. It ends with the cremation of two central characters after that woman, Catherine, drives her car off a bridge. For 10 points, name this film about two best friends directed by Francois Truffaut.

ANSWER: Jules et Jim

11. In a novel set in this city, Asya’s tattoo-parlor running mother Zeliha refuses to tell her the identity of her father--that Elif Safak novel is titled the “Bastard of” this city. A journey on foot from London to this city is recounted in *A Time of Gifts* and *Between the Woods and the Water* by Patrick Leigh Fermor. Travelogues by Gerard de Nerval and Gustave Flaubert are discussed in a book about this city that defines a “life-affirming” melancholy called (\*) *huzun*. Candide marries a newly-ugly Cunegonde after voyaging to this city, where Candide decides to “cultivate [his] garden” at the end of the novel. This city is the setting for a novel narrated at times by a horse, a coin, and the devil, in which Black romances Shekure while investigating three miniaturists for murder. For 10 points, name this setting of *My Name is Red*, a novel by Turkish author Orhan Pamuk.

ANSWER: Istanbul [or Constantinople; or Byzantium]

12. One of this molecule’s receptors forms a complex with TAK1, TAB, and IRAK1. This molecule is in the same family as lymphotoxin-alpha. This molecule’s active form is a homotrimer attached to either a p55 or p75 receptor. While it isn’t Fas, this molecule’s receptor forms a complex with TRADD, which causes IKK to phosphorylate I-kappa-B, causing the transport of (\*) NF-kappa-B into the nucleus. That same complex containing this molecule’s receptor can also activate caspase 8, triggering apoptosis. Inhibitors of this molecule include etanercept, adalimumab, and infliximab, which can be used to treat diseases such as psoriasis, Crohn’s disease, and rheumatoid arthritis. For 10 points, name this cytokine involved in inflammation that was originally named for its ability to induce hemorrhagic cell death in mice tumors.

ANSWER: Tumor Necrosis Factor alpha [or cachectin or cachexin, AFTER the word “etanercept” is read, do NOT prompt or accept on “tnf-beta,” but accept it beforehand]

13. A meeting that resolved a crisis regarding this doctrine was chaired by Johannes Bogerman. Proponents of this doctrine often cite Romans 9, which discusses the hardening of the Pharaoh. The time at which the subject of this doctrine first occurred is the difference between supralapsarianism and infralapsarianism. Equal ultimacy is a symmetrical form of this doctrine. This doctrine, along with original sin, was the subject of a famous debate between Augustine and Pelagius. A dispute over this doctrine was resolved at the Synod of (\*) Dort, where a “conditional” form of this doctrine was put forth by Arminius. For 10 points, name this doctrine put forth in *Institutes of the Christian Religion* by John Calvin which states God has already determined who will be damned and who will be saved.

ANSWER: predestination

14. Mark-Anthony Turnage recently composed a violin concerto consisting of a mambo, a blues, and one of these dances, and one of these is the finale of John Corigliano’s *Gazebo Dances*. The finale of Rachmaninoff’s second suite for two pianos is one of these dances. Saint-Saens composed one for flute, clarinet, and orchestra, and the finale of his second piano concerto is often described as one, though its time signature of 2/2 is atypical for this type of dance. Wieniawski wrote a violin showpiece named for a scherzo and one of these dances. One of these immediately precedes the Dance of the Sugar Plum Fairy in Tchaikovsky’s *The Nutcracker*. Chopin’s only piece of this type, opus 43, was inspired by (\*) Rossini’s song “La Danza.” These dances are typically in a fast 6/8, such as the one that serves as the finale of Schubert’s “Death and the Maiden” string quartet. For 10 points, name these folk dances from Southern Italy named because their frenetic movements were thought to cure people bitten by spiders.

ANSWER: tarantellas [or tarantelles]

15. A paper subtitled “Wild 3-adic exercises” by Christophe Breuil, Brian Conrad, Fred Diamond, and Richard Taylor proved a landmark theorem involving a feature of these objects. The problem of determining whether a square-free positive integer is a congruent number is equivalent to determining whether one of these mathematical objects has a positive rank. If one of these objects is defined over the rationals, it is necessarily a finitely generated Abelian group according to Mordell’s theorem. They can be used to perform prime factorization in the Lenstra method, and to test whether a number is prime using the Atkin-Morain algorithm. (\*) Provided a “point at infinity” is added, any straight line drawn through two points on one of these objects must pass through a third point on it. The modularity theorem that relates these objects over the field of rationals to modular forms used to be known as the Taniyama-Shimura conjecture. These objects are described by the equation  $y^2 = x^3 + Ax + B$ . For 10 points, name these curves that were famously used by Andrew Wiles to prove Fermat’s Last Theorem.

ANSWER: elliptic curves [“curve” unnecessary after spoken, prompt on “modular forms” in the first sentence]

16. This city is overlooked by a tower known as the Miguelete, and its cathedral contains one of the major extant candidates for the Holy Grail, the santo cáliz. Daily firework barrages called mescleta and the building and burning of small monuments are features of the Falles, a yearly festival which honors Saint Joseph in this city. Its neighboring town of Bunol is the site of an annual food fight known as La Tomatina. This city commissioned (\*) Santiago Calatrava and Felix Candela to plan and build its cultural district, the City of Arts and Sciences. This city is the birthplace of paella. Its official languages are Spanish and a namesake dialect of Catalan. It is bisected by the Turia River, which flows into the Mediterranean Sea at this city’s namesake gulf. For 10 points, name this third-largest city in Spain, which shares its name with a community college in Florida.

ANSWER: Valencia

17. This leader established a “day of solidarity” in which men went to the market and performed household chores to help them understand the daily plight of women. At the 1987 Organization of African Unity Summit, he delivered a speech urging fellow heads of states not to repay any debts to Western countries. He symbolically rode in a beat-up Renault 5 instead of a Mercedes, ordered millions of trees to be planted on the Sahel, and saw his country attacked by Mali in the 1985 Agacher Strip War. After overthrowing Jean-Baptiste Ouédraogo in a 1983 coup, he installed a socialist regime until he was assassinated by agents of (\*) Blaise Compaore. For 10 points, name this radical often called “Africa’s Che Guevara,” who changed his country’s name from Upper Volta to Burkina Faso.

ANSWER: Thomas Sankara

18. One of these poems begins by comically insulting a tree whose fall nearly killed their author. John Dryden’s translation of one of these poems includes the line “Happy the man, and happy he alone, / He who can call today his own.” The last book of these poems includes one which notes that brave men lived before Agamemnon, while the fourteenth one in the first book of them is addressed to a ship which may represent the ship of state. Another of these poems describes how a kid will be (\*) sacrificed to the fountain of Bandusia. A third of these poems advises Licinius to follow the golden mean, and begins “Rectius vives.” The third book of them ends with one that declares “I have made a monument more lasting than bronze,” and begins with six poems that praise the peace brought by Augustus. For 10 points, name these lyric poems, the source of the lines “dulce est decorum est pro patria mori” and “carpe diem.”

ANSWER: the Odes of Horace [or the Odes of Quintus Horatius Flaccus; or the Carmina of Horace; or Horatian Odes; prompt on partial answer]

19. Benjamin Barber criticized this book in his essay “The Philosopher Despot.” Martha Nussbaum’s review of this book argued that its author’s dogmatic allegiance to the Socratic tradition is in fact anti-Socratic. This book argues that scholars fleeing Nazi Germany brought Nietzsche’s ideas to America, where Nietzsche’s philosophy mutated into “Nihilism, American Style.” One of its sections describes how a 13-year-old boy turns into “a pubescent child whose body throbs with orgasmic rhythms” while (\*) listening to rock music, which this book condemns for appealing to sexual desire instead of *eros*. This book was published along with a foreword by Saul Bellow, who encouraged its author to write it and fictionalized him as the main character of *Ravelstein*. It helped launch the “canon wars” in the academy after it was published in 1987. For 10 points, name this book that attacked the rise of relativism in American universities, written by Allan Bloom.

ANSWER: The Closing of the American Mind

20. This man gave one speech which advised his listeners to “draw the sword and throw away the scabbard.” This artillery hero at Chapultepec became famous after maneuvering against three small armies under Nathaniel Banks, John C. Fremont, and Irvin McDowell in a series of engagements at Kernstown, Port Republic, Front Royal, and Winchester. Nicknamed Old Blue Light for his Presbyterianism, this general was infamous for simply memorizing and reciting textbooks instead of lecturing as a professor at (\*) VMI. His lateness at Mechanicsville and sluggishness at Gaines’ Mill and White Oak swamp led to historical debate about the cause of his poor performance at the Seven Days, with most attributing it to fatigue from the march from the Shenandoah Valley Campaign. As a newly created Corps Commander, his forces faced the brunt of Burnside’s attack at Fredericksburg. For 10 points, name this Confederate Civil War general who died of friendly fire at Chancellorsville.

ANSWER: Thomas Jonathan “Stonewall” Jackson

21. The Supreme Court required that these amounts be included as income even though they do not derive from labor or capital in the *Glenshaw Glass* case. Justice Stevens claimed “the nuance eludes me” in his dissent in *Philip Morris USA v. Williams*, which created a complex framework that governed their permissibility. *Exxon v. Peters* suggested using a one-to-one ratio in determining a cap on them for maritime cases under federal common law, while the case *State Farm v. Campbell* created the more widely known constitutional (\*) soft cap ratio of ten-to-one. The unavailability of this remedy at contract causes some plaintiffs to adopt tortious interference theories instead. Plaintiffs are generally only awarded these in the face of particularly egregious conduct. Tort reform laws often cap this remedy at a specific ratio of compensatory damages. For 10 points, name this remedy which aims to punish the defendant for its conduct.

ANSWER: punitive damages

22. Part of the evidence for this was uncovered when Thomas Browne discovered a bag containing £600 of gold along with ciphered letters whose key was found under a doormat at Howard House. John Hawkins infiltrated the organization of this planned event, after which the ambassador Guerau de Espes was expelled. The Flemish agent Charles Baillie was arrested at Dover and eventually testified the truth behind letters written by the Bishop of Ross, a primary planner of this event. Caused in part by the recent papal bull (\*) *Regnans in Excelsis*, this conspiracy took place shortly after the Northern Rebellion and saw support from Philip II and Pius V. It resulted in the death of the Duke of Norfolk, who had hoped to marry Mary Stuart following this event. For 10 points, name this event that preceded the Babington and Throckmorton Plots in seeking to assassinate Elizabeth I, organized by a Florentine banker.

ANSWER: Ridolfi Plot

1. His play *The Conquest of Mexico* includes the stage direction for “limbs, cuirasses, heads, and bellies [to] fall down from all levels of the stage set. For 10 points each:

[10] Name this Surrealist author of *The Theatre and Its Double*, who wrote that theater ought to deliver to “the heart and senses that sort of concrete sting or bite which accompanies all real sensations.”

ANSWER: Antonin **Artaud** [or Antoine **Artaud**]

[10] In this 1920 play by Artaud about a young couple in an apocalyptic world, the title fluid splashes across the stage when a man bites an enormous hand that has seized his body.

ANSWER: **Jet of Blood** [or **Jet de Sang**]

[10] The term “surrealism” may have been first used in a Guillaume Apollinaire play about the “breasts” of this prophet who narrates part of *The Waste Land*.

ANSWER: **Tiresias**

2. The zinc-finger *Slug* gene in *Xenopus* has been used to study development of this tissue, whose migration is facilitated by Sox9. For 10 points each:

[10] Name these embryonic cells which give rise to both cartilage and the adrenal medulla and lie between the ectoderm and developing neural tube.

ANSWER: **neural crest** cells

[10] One of several proteins that can cause neural crest cells to undergo an epithelial-mesenchymal transition belongs to this family, which contains multiple EGF repeats and is cleaved in the Golgi by gamma-secretase. In mammals, their ligands include *delta-like* and *jagged*.

ANSWER: **Notch** proteins/family

[10] This neural-crest derived congenital disorder occurs when the 3rd and 4th pharyngeal pouches do not develop properly. Affected children present cardiac abnormalities like Tetralogy of Fallot, as well as cleft palate and hypocalcemia.

ANSWER: **DiGeorge** syndrome

3. This polity came under the rule of the Franconian Hohenzollerns in 1415, after which it eventually came to dominate the Duchy of Prussia. For 10 points each:

[10] Name this polity corresponding to a modern German state surrounding Berlin. It lends its name to a famous neoclassical Gate in that city.

ANSWER: Margraviate of **Brandenburg** [Also accept March of **Brandenburg** or Electorate of **Brandenburg**.]

[10] This first Margrave of Brandenburg was a notable participant in the Wendish Crusade who feuded with Henry the Lion, to whom he lost the Duchy of Saxony.

ANSWER: **Albert the Bear** [or **Albert I**]

[10] The last Wittelsbach elector of Brandenburg was deposed by this 14th-century Holy Roman Emperor. This son of John of Luxembourg used Paris as a model in building the New Town in his capital and power base of Prague.

ANSWER: **Charles IV**

[10] Name this game from *It's Always Sunny in Philadelphia* which has been won 18 times in a row by the Golden Geese and which is also known as the “Game of Games.”

ANSWER: **Chardee MacDennis**

[10] Marsh-gammon, a drinking game, is played with a Candy Land board and Twister wheel by Marshall Eriksen and Ted Mosby on this CBS sitcom.

ANSWER: **How I Met Your Mother**

[10] This drinking game from Fox's *The New Girl* involves avoiding lava and begins when someone yells “1, 2, 3, 4, JFK.”

ANSWER: **True American**

5. This policy was created in a 1922 opinion by Oliver Wendell Holmes on the grounds that “personal effort, not related to production, is not a subject of commerce.” For 10 points each:

[10] Name this policy that, despite the erosion of its commerce rationale, was upheld in *Toolson v. New York Yankees* and *Flood v. Kuhn* and is in effect to this day.

ANSWER: Major League **Baseball antitrust exemption** [accept any answers that demonstrate knowledge that baseball leagues are not subject to antitrust laws]

[10] Non-baseball sport leagues have similar antitrust protections because of the labor exemption in this 1914 act, which beefed up the Sherman Antitrust Act. Its Section 7 governs mergers.

ANSWER: **Clayton** Antitrust Act

[10] The insurance industry also has antitrust immunity, thanks to legislation sponsored by Homer Ferguson and this longtime Democratic senator from Nevada, known for hating commies.

ANSWER: Patrick Anthony **McCarran**

6. The Museo di Capodimonte in Naples contains an altarpiece by this painter that depicts Robert of Anjou about to be crowned by his bishop brother. For 10 points each:

[10] Name this creator of *The Altar of St. Louis of Toulouse* and a notable *Maesta* in his hometown. He was thought to have been a student of Duccio and frequent collaborator with his brother-in-law Lippo Memmi.

ANSWER: Simone **Martini**

[10] Simone Martini was from this Tuscan city, for which Jacopo della Quercia created the large *Fonte Gaia*. Its school of art in the early Renaissance was a rival to Giotto’s Florentine school.

ANSWER: **Siena**

[10] Martini's last days were spent working on frescos for this building in southern France. Fellow Sienese painter Matteo Giovanetti painted its Saint-Martial and Saint-Jean chapels. Its original design by Pierre Poisson was expanded by Jean de Louvres.

ANSWER: **Palais des Papes** [Also accept anything indicating the **Pope**'s residence at **Avignon**.]

7. When depicted as a male, this god was married to Uke Mochi, and in some stories he was murdered by Tsukuyomi instead of Uke Mochi dying at the hands of Susanoo. For 10 points each:

[10] Name this androgynous *kami* of rice and agriculture who often took the form of a fox.

ANSWER: **Inari**

[10] In one story, Inari changes into one of these creatures in order to scare a wealthy man into sharing his money with some poor villagers. The tricksters Iktomi and Anansi also took this form.

ANSWER: **spiders**

[10] This legendary samurai was once saved from some spider goblins by his friend Watanabe. While disguised as a boy he befriended Benkei the Swordsman, who died with him after he was betrayed by Minamoto no Yoritomo.

ANSWER: **Raiko**

8. This phenomenon occurs in a cone directed forward parallel to the motion of the particle causing it. For 10 points each:

[10] Name this form of electromagnetic radiation emitted when charged particles are accelerated in a curved manner, which can be created using undulators and wigglers.

ANSWER: **synchrotron** radiation

[10] The power emitted by relativistic synchrotron radiation is proportional to this quantity for the particle raised to the fourth power. This quantity is equal to the hyperbolic cosine of the rapidity.

ANSWER: **Lorentz factor** [prompt on “gamma”]

[10] The angular width of the cone of synchrotron radiation is proportional to the Lorentz factor raised to this power.

ANSWER: **-1** **minus 1**, or **negative 1**, do not accept or prompt on 1]

9. Neptune agrees to leave the title character and his father Ulisse alone in one of his operas, while in another the rightful king of Pontus assassinates Farnace to win his throne. For 10 points each:

[10] Name this Baroque composer of *Telemaco* and *Il Pompeo*, closely associated with the Neapolitan school of opera. He is the father of a composer of 555 keyboard sonatas.

ANSWER: Alessandro Scarlatti [prompt on Scarlatti; do not accept or prompt on “Domenico Scarlatti”]

[10] This composer, like Scarlatti, also wrote an opera about Griselda, but he may be better known for four concerti found in *The Contest Between Harmony and Invention*.

ANSWER: Antonio Vivaldi

[10] In this Scarlatti opera, described previously, a king of Pontus returns to the throne with the help of his wife Issicratea.

ANSWER: *Il* Mitridate Eupatore [or Mithridates Eupator]

10. The complete text of this poem was discovered in 1822 as part of the 10th century *Vercelli Book*. For 10 points each:

[10] Name this Anglo-Saxon poem in which a cross describes how it was forced to take part in the crucifixion of Jesus.

ANSWER: *The* Dream of the Rood

[10] *The Dream of the Rood* was written in this language. Other Anglo-Saxon poetry written in this language includes *The Battle of Maldon* and *Beowulf*.

ANSWER: Old English [prompt on English]

[10] The *Vercelli Book* also includes this author’s poems *The Fates of the Apostles* and *Elene*. He is one of the only Old English authors whose name is known, as he signed his poems *Juliana* and *Christ II*.

ANSWER: Cynewulf

11. This philosopher used the “Floating Man” thought experiment to argue that the soul and the body are separate. For 10 points each:

[10] Identify this author of the *Treatise on the Soul*, an Aristotelian and Neoplatonic philosopher who gave a proof of God’s existence through “radical contingency.”

ANSWER: Avicenna [or Abu ‘Ali al-Husayn ‘Abdallah ibn Sina]

[10] Avicenna may be best-known for compiling a “canon” of this subject commonly used in Western universities until the 18th century.

ANSWER: medicine

[10] Avicenna was strongly influenced by this earlier philosopher, who was known as “second teacher” in the Islamic world for his extensive commentaries on the “first teacher” Aristotle. His reading of Plato’s *Republic* inspired his own treatise on the ideal state, *The Virtuous City*.

ANSWER: Abu al-Nasr al-Farabi [or Alfarabius]

12. This quantity is approximately equal to 2.45 times the radius of the larger body times the ratio of the densities of the larger to the smaller body raised to the  $1/3^{\text{rd}}$  power. For 10 points each:

[10] Name this critical distance at which the satellite of a planet will be torn apart by tidal forces, eventually forming a planetary ring.

ANSWER: Roche limit

[10] Planetary rings can be stabilized by this mechanism, in which satellites located just outside and just inside the ring will apply a gravitational torque to the ring, keeping ring particles from drifting outwards.

ANSWER: shepherding mechanism

[10] This comet, discovered on March 24, 1993, was probably captured by Jupiter around 1970. It passed within Jupiter’s Roche limit in July 1992 and fragmented, eventually colliding with the planet from July 16-22, 1994. Many images of its collision were recorded by the Galileo probe.

ANSWER: Shoemaker-Levy 9 [accept D/1993 F2]



13. Juan Dominguez represented workers of this company in the *Tellez* trial against it. For 10 points each:

[10] Name this multinational corporation, which was sued by Nicaraguan workers for exposing them to the harmful pesticide DBCP.

ANSWER: Dole Food Company, Inc.

[10] Dole's Latin American plantations mainly grow this product. Ed Whitman produced a film called "Why the Kremlin Hates [This Product]" to support the CIA's overthrow of Guatemala on behalf of United Fruit.

ANSWER: bananas

[10] In 2012, this organization signed an agreement with eleven Latin American countries which ended the decades-long "banana wars," which were fought over tariffs on banana exports.

ANSWER: the European Union

14. This man developed his most important theory in a paper that discussed how employees indicate an increased likelihood of qualification by acquiring a college degree. For 10 points each:

[10] Name this economist who pioneered job-market signaling theory in a 1973 paper.

ANSWER: Michael Spence

[10] Signaling is one way to resolve this situation, in which one party knows more than the other party.

ANSWER: information asymmetry

[10] Spence shared the 2001 Nobel with this economist, who wrote about using "screening" to combat information asymmetry. He wrote about income inequality in the US in his 2012 book *The Price of Inequality*.

ANSWER: Joseph Eugene Stiglitz

15. Jeet Thayil wrote about addicts in this city's opium dens in his novel *Narcopolis*. For 10 points each:

[10] Name this city, the setting of Vikram Chandra's novel *Sacred Games* and Manu Joseph's novel *Serious Men*. Rohinton Mistry called it "the city by the sea" in *A Fine Balance*, which follows people living here during the Emergency.

ANSWER: Mumbai [or Bombay]

[10] This novel by Salman Rushdie was banned in India for satirizing Mumbai's right-wing political leader Bal Thackeray. It is narrated by Moraes Zogoiby, and its title refers to a story about Boabdil, the last Muslim ruler of Granada.

ANSWER: *The Moor's Last Sigh*

[10] This author included novellas about American travelers to Mumbai in his 2007 book *The Elephanta Suite*. He also wrote the novels *Saint Jack* and *Doctor Slaughter*, and drew on his experience as a Peace Corps volunteer in Malawi to write *The Lower River*.

ANSWER: Paul Theroux

16. This concept is closely related to and sometimes conflated with ta'wil, which is sometimes used to extract hidden knowledge from individual verses. For 10 points each:

[10] Name this concept which can be translated as "to make clear" or "to lift the curtain," which deals with determining the true meaning of the Qur'an.

ANSWER: tafsir

[10] This term, meaning "effort," denotes a form of reasoning used in problems not directly covered in the Q'uran or Hadith. Sunnis hold that the "gates" of this practice are closed.

ANSWER: ijtihad

[10] An often interpreted ayat from the Qur'an is the "Throne Verse," which is contained in this second sura of the Qur'an. This sura contains a story in which Moses and the Israelites sacrifice an animal.

ANSWER: Surat al-Baqarah [or the "Cow Sura"]

17. The Hardanger fiddle is a traditional instrument from this country, and one composer from here is mostly remembered for his piano miniature “Rustle of Spring.” For 10 points each:

[10] Name this home country of Christian Sinding, which also produced a composer who depicted the rising sun in his piece “Morning Mood,” which appeared in incidental music for a play by a writer from this country.

ANSWER: **Norway**

[10] Edvard Grieg published many piano miniatures in his collections of *Lyric Pieces*, including this piece originally titled “The Well-Wishers Are Coming” that commemorates his twenty-fifth anniversary with his wife Nina.

ANSWER: “**Wedding Day at Troldhaugen**” [or “**Bryllupsdag på Troldhaugen**”]

[10] Grieg’s musical career was encouraged by this 19th century Norwegian violinist. He was especially popular in the United States, where, in 1852, he founded an unsuccessful utopian community called New Norway in Pennsylvania.

ANSWER: Ole **Bull**

19. After allying himself with Publius Mucius Scaevola and Appius Claudius, he passed his most famous legislation. For 10 points each:

[10] Name this tribune of the plebs whose passage of the *Lex Sempronia Agraria* helped the poorer classes of Rome acquire land from the ager publicus, resulting in his murder by the *optimates*.

ANSWER: **Tiberius Gracchus**

[10] An earlier result of the class struggles between patricians and plebeians was this 287 B.C. law passed under a namesake dictator. It made the “plebiscites” passed by the Plebeian Assembly binding on the Roman people regardless of the Senate’s approval.

ANSWER: Lex **Hortensia** [or **Hortensian Law**]

[10] This brother-in-law of Tiberius Gracchus was a famous general who won the Siege of Numantia and presided over the final destruction of Carthage.

ANSWER: Publius Cornelius **Scipio Aemilianus** [or Publius Cornelius **Scipio Africanus the Younger**; do not accept or prompt on “Scipio” or “Scipio Africanus”]

19. This thinker defended deconstructionism in his essay “The Critic as Host.” For 10 points each:

[10] Name this American literary critic, the author of *The Ethics of Reading* and *Fiction and Representation*.

ANSWER: J. Hillis **Miller**, Jr.

[10] In 1972, Miller joined the faculty of this university and became part of its namesake school of criticism along with Geoffrey Hartman and Paul de Man. When he’s not defending the Western Canon from imaginary attacks, Harold Bloom teaches there too.

ANSWER: **Yale** University

[10] In the 1970s, Miller publicly debated the merits of deconstructionism with this more traditional critic, who examined Romanticism in his classic study *The Mirror and the Lamp*.

ANSWER: M(eyer) H(oward) **Abrams**

20. This phenomenon’s namesake integral gives rise to bond stability, as it lowers the total energy of a bond and raises the total energy of an antibond. For 10 points each:

[10] Name this quantum mechanical phenomenon which causes repulsion between identical fermions. In certain materials it causes two adjacent electrons with parallel spins to have lower energy than if they had antiparallel spins, thus causing ferromagnetism.

ANSWER: **exchange** interaction

[10] The exchange integrals occupy the off-diagonal terms of this matrix, while the Coulomb integrals minus the total energy lie on the diagonal. This matrix’s determinant set equal to zero to solve for the energy eigenvalues in the Hückel method.

ANSWER: **secular** matrix (or determinant)

[10] The Hückel method applies to molecules with this property, which contain alternating single and double bonds, giving rise to electron delocalization and sometimes resonance. Aromaticity occurs when molecules with this property are cyclic and planar, and obey Huckel’s rule.

ANSWER: **conjugation** [do not accept or prompt on “hyperconjugation”]

21. Name these Italian noble families for 10 points each:

[10] This family displaced the Visconti as rulers of Milan. Its dark-skinned head Ludovico il Moro commissioned Leonardo's *Last Supper*.

ANSWER: **Sforza**

[10] This family parleyed the power it gained from its two popes Sixtus IV and Julius II into control over Urbino.

ANSWER: **della Rovere**

[10] This Genoese family headed the Guelf party with the Fieschi family. In the 15th century, it took control of Monaco, which it still rules.

ANSWER: House of **Grimaldi**

22. Popular sites in this park include Weeping Rock, Angels Landing, and the Kolob Canyon. For 10 points each:

[10] Name this national park which is located just west of Bryce Canyon National Park near the town of Springdale.

ANSWER: **Zion** National Park

[10] Bryce Canyon and Zion are located in this US state, which is also the site of Arches National Park.

ANSWER: **Utah**

[10] The most famous arch in Arches National Park is this one, which stands 52 feet tall and is featured on Utah license plates.

ANSWER: **Delicate** Arch

UNUSED Questions:

An existential speech given in this novel describes it as “the typewritten delirium of an idiotic novelist,” leading a group of foreigners led by the bus driver Fyodor Balanovitch to mistake the speaker for a tour guide. Earlier in this novel, the protagonist yells accusations of sexual perversion and kidnapping to get away from Turandot, who owns a parrot that repeats the phrase, “Talk, talk, that's all you can do.” Barbara Wright's translation of this work attempts to preserve intentional misspellings, such as writing Coca-Cola as “cacocalo.” After performing *The Dying Swan* at the Mount of Venus nightclub, the protagonist's uncle Gabriel starts a brawl with the waiters at a restaurant and is saved by his wife Marceline, who is revealed to be a man, confirming that Gabriel is homosexual. This novel ends with the titular protagonist finally riding on the titular Parisian transportation, which had been closed due to a strike. For 10 points, name this work by Raymond Queneau, which was made into a film by Louis Malle.

ANSWER: **Zazie in the Metro**

Part of the evidence for this was uncovered when Thomas Browne discovered a bag containing £600 of gold along with ciphered letters whose key was found under a doormat at Howard House. John Hawkins infiltrated the organization of this planned event, after which the ambassador Guerau de Espes was expelled. The Flemish agent Charles Baillie was arrested at Dover and eventually testified the truth behind letters written by the Bishop of Ross, a primary planner of this event. Caused in part by the recent papal bull *Regnans in Excelsis*, this conspiracy took place shortly after the Northern Rebellion and saw support from Philip II and Pius V. It resulted in the death of the Duke of Norfolk, who had hoped to marry Mary Stuart following this event. For 10 points, name this event that preceded the Babington and Throckmorton Plots in seeking to assassinate Elizabeth I, organized by a Florentine banker.

ANSWER: **Ridolfi** Plot

Answer the following about velocity fields in a fluid for 10 points each:

[10] For some scalar property  $x$  in a fluid, the total time derivative of the scalar is not the same as the partial time derivative of the scalar—to correct this, the material derivative adds to the partial derivative this operation applied to the velocity field and the gradient of the scalar.

ANSWER: dot product [or scalar product, prompt on “dot” alone]

[10] If the vorticity is zero, a fluid can be described as the gradient of a velocity potential. Such flow is referred to as either potential flow or this type of flow, whose name references the fact that the curl of the velocity field is zero everywhere.

ANSWER: irrotational flow

[10] For a flow with this property, a stream function can be defined such that its curl equals the velocity field. Streamlines that a particle will follow when placed in the fluid can then be plotted.

ANSWER: two-dimensional or 2D

This journal has been edited by George Core since 1973, and its distinctive italicized logo on a blue cover was commissioned by its former editor Allen Tate. For 10 points each:

[10] Name this literary journal which, like the *Southern Review* and the *Kenyon Review* was a mainstay of the New Criticism and Southern Agrarian movements.

ANSWER: *The Sewanee Review*

[10] *Sewanee Review* editor Allen Tate may be best known for this poem, which begins “row after row with strict impunity the headstones yield their names to the element.”

ANSWER: “Ode to the Confederate Dead”

[10] *The Southern Review* was founded by Cleanth Brooks and this author, who created the characters Jeremiah Beaumont, Anne Stanton, and Judge Irwin.

ANSWER: Robert Penn Warren

Many of these were said to have settled in the Withered Heath, and a legendary one named Scatha was killed by Fram of the Eotheod. They were depicted on a family heirloom of the House of Hador, a war helm most famously worn at the Battle of Tumhalad, in which the forces of Nargothrond were defeated by an army accompanying one of these entities. The greatest one of these fought against the ship Vingilot in the War of Wrath, and his death resulted in the destruction of Thangorodrim. In addition to Ancalagon the Black, these figures included one that enchanted Nienor to forget her identity, resulting in her marriage to her brother Turin Turambar. The most famous of these characters was responsible for the destruction of Dale and was killed by Bard the Bowman after revealing to a burglar a vulnerability in his chest. That figure had earlier exiled the dwarves of Erebor, causing Thorin Oakenshield to hire Bilbo Baggins to steal the Arkenstone from him. For 10 points, name these fire-breathing monsters created by J. R. R. Tolkien, an example of which is Smaug from *The Hobbit*.

ANSWER: dragons