

Chicago Open 2015

Packet by Sizzling Stakhanovite Cycle of Memetics (Mirza Ahmed, Sam Bailey, Trevor Davis, and Jasper Lee)

1. One of this author's title characters washes herself in a river in order to undo her recent baptism, and is taken in as a child by an itinerant woman named Doll. Greenpeace sued this author for writing that it withheld information about the Sellafield plutonium processing plant in her book *Mother Country*. This author defended John Calvin against modern misreadings in her essay collection *The Death of Adam*, and wrote a novel in which (*) Helen abandons her two daughters by driving into a lake. Jack Boughton returns to his hometown in her second novel, which was published twenty-four years after her novel in which Sylvie attempts to raise Ruth and Lucille in the town of Fingerbone. Her 2014 novel *Lila* provides the backstory for the wife of her recurring character John Ames, a Congregationalist minister in a small town in Iowa. For 10 points, For 10 points, name this American author of the novels *Housekeeping* and *Gilead*.

ANSWER: Marilynne Robinson

2. An important temple of this faith contains an oak tree next to a bench called the Aeropagus of the Elders. Male members of this religion always reincarnate as males, and ipso facto with women, and members of this religion believe their past selves have signed the Pact of Time Custodian. The primary scripture of this faith can be read in three different layers of understanding, called the *zahir*, *batin*, and *anagege*. One of this religion's sacred sites is the tomb of Moses' father-in-law (*) Jethro. 80% of the adherents of this faith are considered *juhhal*, or ignorant ones, and do not have access to several of its texts, traditionally including the Epistles of Wisdom. A five pointed star with red, blue, yellow, green, and white arms is an important icon in this religion, which venerates the Caliph al-Hakim. For ten points, name this Near Eastern monotheistic religion, with followers in Syria, Lebanon, Israel, and Jordan.

ANSWER: Druze

3. Molecules that have undergone this process can be separated from those that haven't by titanium dioxide chromatography. Invitrogen Pro-Q Diamond and Tymora's pIMAGO reagents are used to stain molecules that have undergone this process on two-dimensional SDS-PAGE. Domains that bind to molecules that have undergone this process include BRCT, Polo-Box, and 14-3-3. In plant two-component sensors, this process unusually occurs on histidine residues, and the PTB and (*) SH2 domains also bind to residues that have undergone it. A common way of determining its occurrence is radioactive labelling with an isotope of weight 32. It usually occurs on serine, threonine, and tyrosine residues, using an ATP donor. For 10 points, name this post-translational modification carried out by kinases, in which serine, threonine, and tyrosine residues acquire a PO4 group.

ANSWER: phosphorylation

4. A law code from this city which supported the legality of personally owned units of elite soldiers called *buccellarii* was the *Codex Euricianus*. A ruler of this city proclaimed Avitus as Roman emperor before Ricimer defeated him at Placentia. This city was the capital of a kingdom founded by Wallia and most notably ruled by Euric, but it was captured shortly after defeat at Vouillé. This city was home to the bishop and former troubadour Folquet de Marseille, and Saint Dominic established the first community of his namesake order here. Joan, the heiress of this city, was wed to a brother of Louis IX by the terms of the 1229 Treaty of Paris. Clovis captured this city from the Visigoths, (*) who made it their first capital. The elder Simon de Montfort was killed while besieging this city. A ruler of this city built the castle Mons Peregrinus after capturing Tripoli, and that man refused the crown of Jerusalem and feuded with Bohemond during the First Crusade. A center of the Cathar heresy, this city became the capital of Languedoc after Septimania merged with its namesake county. For 10 points, name this city of southwestern France, ruled by several counts named Raymond.

ANSWER: Toulouse [or Tolosa]

5. This philosophic concept is held to be a fundamental category in the radical, "practicalist" account of Stephen Hetherington. A paper that heavily draws on the linguistic work of Lauri Karttunen argues that this concept is a practical mode of presentation applied to propositions called "ways". That 2001 paper titled for this concept is by Jason Stanley and Timothy Williamson. Another analysis of this concept argues that a clown who trips on purpose exhibits no extra mental process when contrasted with a clumsy man. In their separate replies to Frank Jackson, Laurence Nemirow and David Lewis each argue that this is what Mary (*)

acquires when she leaves her room. This concept is argued to consist of multi-track dispositions in a work which uses an infinite regress to show that intelligent action can't always be preceded by the consideration of a proposition. The refutation of that "intellectualist legend" is used to argue that this first title concept is distinct from the second title concept in chapter 2 of Gilbert Ryle's *Concept of Mind*. For 10 points, name this philosophical concept that may or may not be a specific kind of knowing that.

ANSWER: knowing how [or knowledge how; prompt on "knowledge" or "knowing"; prompt on "abilities"; prompt on "dispositions"]

6. A servant in this text complains about leaving his “sweet life and swine-keeping” before his heart is cut out. In this text, Kostbera interprets a dream of an eagle splashing her with blood as a sign not to send her husband to war. A messenger in it changes a warning written on some runes to encourage a pair of brothers to attend a dinner where they will be murdered. A character in this text plays a harp with his feet to avoid being eaten in a pit of snakes. Two children in this text are tested by having to open a bag of flour containing snakes, and by having threads sewn into their arms and (*) ripped out. The title character is conceived when his mother eats a magic apple delivered by a giantess and becomes pregnant for six years. Honey is smeared on the face of a hero of this work to save him from a shapeshifting she-wolf. One character in this work pulls a sword from the tree Barnstokk, while another kills the dragon Fafnir. For 10 points, name this Norse saga about an ill-fated family that includes Sigurd and Sigmund.

ANSWER: Volsung saga [prompt on “Poetic Edda”]

7. A passage in this novel claims “Because we don’t know when we will die, we think of life as an inexhaustible well,” then asks “How many more times will you watch the full moon rise? Perhaps twenty. And yet it all seems limitless.” A racist Englishwoman in this novel claims that Spain is run by Jews who are only pretending to be Catholic, and sleeps at night with her passport-stealing son. Smail tells one of its characters a story about three girls who die after journeying to the wilderness in order to drink tea there. That character accepts a car ride to (*) Boussif from Eric Lyle and his mother, while his wife instead takes the train and sleeps with her travelling companion, Tunner. In its second section, “The Earth’s Sharp Edge,” that wife wanders into the desert and is forcibly wed to the camel driver Belqassim after her husband dies of typhoid. For 10 points, name this novel in which Port and Kit Moresby meet disaster while traveling in the Sahara, written by Paul Bowles.

ANSWER: *The Sheltering Sky*

8. This man's half-brother was implicated in a scandal involving a monopoly on gold and silver thread, which also involved his brother-in-law Giles Mompesson. This man rose to power after his predecessor's wife, Frances Howard, was implicated in the poisoning of Thomas Overbury. This man used the recently revived practice of parliamentary impeachment to bring down the lord treasurer, Lionel Cranfield, Earl of Middlesex, though later parliaments would twice be dissolved to avoid this man's own impeachment. This successor of Robert Carr, Earl of Somerset (*) as royal favorite personally led disastrous expeditions to Ile de Re and Cadiz while fighting simultaneous wars with France and Spain. John Felton assassinated this man before he could lead a second attempt to relieve La Rochelle. This man travelled incognito to Spain in an unsuccessful attempt to arrange a marriage between the English heir and the Infanta Maria, though he later arranged a match with Henrietta Maria of France. For 10 points, name this royal favorite who controlled power in 1620's England under first James I and then Charles I.

ANSWER: George Villiers, 1st Duke of Buckingham [accept either]

9. A composer from this country declared that “repetition and variation can be replaced by the notion of constant rebirth” and used that philosophy in the first of a series of chamber pieces called *Soli*. That composer from here scored his second symphony with odd percussion instruments such as a partly-submerged gourd, butterfly cocoons, and deer hooves. A composer from this country divided tones into quarters and up to sixteenths in his microtonal theory dubbed “The Thirteenth Sound.” An orchestral piece by a composer from here depicts the ritualistic (*) killing of a snake. While living in this country, Conlon Nancarrow wrote his *Studies for Player Piano*. A popular waltz from this country is “Over the Waves,” and other composers from here wrote *Sinfonia India* and *Sensemayá*. For 10 points, name this home country of Julian Carrillo, Silvestre Revueltas, and Carlos Chávez, which was also the birthplace of ensembles such as mariachi bands.

ANSWER: Mexico

10. The contribution of this interaction is given by the non-zero frequency term when summing over dielectric constants at imaginary frequencies with the McLachlan equation. For objects with large radii of curvature, the strength of this interaction can be calculated in relation to its strength for planar surfaces by using the Derjaguin approximation. A correction for this interaction in three-body problems is given by the Axilrod-Teller potential. The finite speed of light causes a retardation effect in this interaction which is described in Lifshitz theory, and on macroscopic scales it is the major component of the Hamaker constant. (*) This force is the most significant component of a total force that also includes components named for Keesom and Debye. The strength of this force is proportional to polarizability and inversely proportional to the sixth power of distance, accounting for the attractive term in the Lennard-Jones potential. For 10 points, name this weak intermolecular interaction caused by instantaneous induced dipoles, one of the van der Waals forces.

ANSWER: London dispersion forces [prompt on "van der Waals forces"; antiprompt on "Casimir-Polder force", accept "induced-dipole forces" or a description such as "forces between instantaneously induced dipoles" before mention]

11. During one battle in this conflict, Joseph Trumpeldor was shot in the stomach. One side in this conflict demanded the disbanding of a government headed by Atassi. This war was partly triggered by coordinated revolts by the Dandashi tribe, Subhi Barakat, and Ibrahim Hananu, and this war merged with a revolt led by al-Ali. This war ended when defense minister Yusuf al-Azma refused to give up led his troops to a crushing loss at the Battle of (*) Mayasalun. Henry Gouraud commanded forces on one side of this war, which started after Faisal ibn Husain declared a kingdom in defiance of the terms of the San Remo Conference. After this war, the losing nation was subsequently divided into several client states as part of a namesake mandate with Lebanon. For 10 points, name this conflict between a European power and a nation later ruled by Alawites.

ANSWER: Franco-Syrian war [or anything that mentions France and Syria were fighting; do not accept Druze revolt, accept Alawite Revolt, prompt on "Syrian Revolt"]

12. Algorithms for the continuous setting of this problem include OLOP and HOO. Garivier and Cappe used Kullback-Leibler divergence to create an optimal, non-parametric algorithm for this problem. Exponential weighting is used in the Exp3 algorithm for this problem's adversarial setting. Lai and Robbins proved that no algorithm can have better than $\log(n)$ performance for this problem. An algorithm for this problem is used as a subroutine in UCT Monte Carlo tree search. Auer and Cesa-Bianchi designed an algorithm for this problem's stochastic setting that tracks upper confidence bounds on a set of sampled random variables. This is the simplest problem in which algorithms must make a tradeoff (*) between exploration and exploitation, with the goal of minimizing regret. In this online machine learning problem, an agent repeatedly chooses from a set of actions, each of which generates a noisy reward. For 10 points, name this problem which is named for its resemblance to slot machines.

ANSWER: multi-armed bandit problem [accept more specific answers that include "continuous", "adversarial", or "stochastic"]

13. Susan Athey and Guido Imbens generalized this technique to scenarios where groups can respond to differently to the same policy. Marianne Bertrand and others examined studies that used it and found OLS estimates of the standard errors were misleadingly precise when serial correlation was an issue. It can be treated as fixed-effects estimation with aggregate data. A common problem with this technique is with bias that results from participation being based on outcomes prior to the intervention, a phenomenon known as the Ashenfelter dip. (*) Studies using it frequently rely on laws changing in some states but not others, and then comparing the change in the trends to estimate the effect of the treatment free of state- or time-omitted variable bias. For 10 points, name this econometric technique that compares the change in a treated sample over time to the change in a control sample.

ANSWER: differences-in-differences [or diff-in-diff; or DID; or untreated control group design with independent prettest and posttest samples; prompt on "fixed-effects"]

14. Georges Vantongerloo used this material to create his abstract sculpture *Construction of Volume Relations*. Most of Louise Nevelson's assemblages, such as *Sky Cathedral*, consist of found objects made from

this material. In Germany, this was the primary medium of artists like Michael Pacher and Veit Stoss. The Church of St. James in Rothenburg displays an altar made from this substance, which contains a relic of the blood of Jesus. This material was used to create *The Holy Blood Altar*, the masterpiece of Tilman (*)

Riemenschneider, as well as many smaller decorative works by Grinling Gibbons. Donatello used this medium for his late sculpture of St. John the Baptist, as well as his *Penitent Magdalene*. A print created from an artwork made of this material depicts a man holding a balance and an emaciated man riding an emaciated horse. For 10 points, name this material of Durer's *Four Horsemen of the Apocalypse*, as well as many traditional African masks.

ANSWER: **wood** [or clear equivalents]

15. In this play, the title character's aunt places a pin to note that a chamomile vendor has come around for the fortieth time. A disabled schoolteacher in this play is the author of a play called *Jephtha's Daughter* and is abused by his students, who do not listen to his lecture on harmony. A character who briefly appears at the beginning of Act 2 of this play proclaims himself "a man of this century" and a positivist, while also mourning the death of Marcel Renault. The protagonist of this play discusses the current culture with a trio of girls called the Manolas, and later with the two Ayolas. A "Señor X" (*) attempts to court the protagonist of this play, who spends most of the play waiting for the Nephew to return to her. This "Poem of Granada at the Turn of the Century" uses the metaphor of a flower that turns from red to white in a single day to represent the title character's woes through the turn of the twentieth century. For 10 points, name this play by Federico Garcia Lorca, in which the title woman never marries.

ANSWER: **Doña Rosita the Spinster**, or *The Language of Flowers* [or **Doña Rosita la Soltera**, o *el Lenguaje de las Flores*]

16. A book by this thinker has a chapter on Claudia Brugman's dissertation on the connected but distinct uses of the word "over." That book also uses Brent Berlin's research in folk biology to show there is a "basic-level" in taxonomic hierarchies that is neither at the top nor bottom. He cited a theorem of Hilary Putnam to show any model theoretic notion of meaning is always indeterminate in a book that advances Eleanor Rosch's prototype theory rather than classical categories as a way of organization concepts. In books on American politics, he has claimed Americans think of the nation as a (*) family, with conservatives viewing it as a "strict father" and liberals as a "nurturant parent." This author of *Moral Politics* and Mark Johnson argued thought was always connected to concrete concepts in *Metaphors We Live By*, and another book by him takes its title from items in an Aboriginal noun class. For 10 points, name this author of *Women, Fire, and Dangerous Things*.

ANSWER: George **Lakoff**

17. This man wears a bright yellow dress and brandishes a stick at a man holding a lantern in a painting by Johann Zoffany. In a portrait by Angelica Kauffmann, this man clutches the chair he is sitting backwards on. This man's wife reaches over him to grab a feather pen in a portrait that he refused, leading the painter to damage the painting. In a different painting, a woman in pink painted in the style of Correggio smiles at the viewer while pulling this man, while he laughs at a woman in blue painted in the style of Guido Reni. In another painting, he raises his right hand with palm out towards the viewer while sitting on a bed in a battle tent, portraying a moment when his (*) character awakens from nightmares of ghosts. Joshua Reynolds depicted [*This Man*] *Between Tragedy and Comedy*, while William Hogarth portrayed him as the title character in the last act of Shakespeare's *Richard III*. For 10 points, name this English actor, the subject of many eighteenth century portraits.

ANSWER: David **Garrick** [prompt on Sir **John Brute**; prompt on **Richard III** until mentioned]

18. Public support for this law was based on reports by the prosecutor Clifford Roe and a series of articles by George Kibbe Turner. This law was quickly drafted after Edwin W. Sims claimed to have evidence of a national organization run by the so-called "Big Chief," although that evidence never materialized. *Hoke v. U.S.* upheld the constitutionality of this law, which was amended in 1978 to become gender-neutral. A Supreme Court case involving this law used the "plain meaning rule" to convict Drew (*) Caminetti. Stanley Finch mobilized the Bureau of Investigation to enforce this act, which was supported by groups like the American Vigilance Committee. In *Cleveland v. U.S.*, the Supreme Court found that this act applied to people practicing polygamy. Named for an Illinois Congressman, it was used to convict Frank Lloyd Wright, Chuck Berry, and Jack Johnson. For 10 points, name this 1910 law which attempted to combat white slavery by prohibiting the interstate transport of "any woman or girl for the purpose of prostitution."

Answer: **Mann** Act [or **White-Slave Traffic** Act before mention of “white slavery”]

19. Navarro et al modified one procedure to create this substance by adding really pure sodium acetylacetonate as a complexing agent. Molecular beacons consisting of DNA loops attached to this substance have better discrimination versus those using naked DNA partly due to this substance’s ability to quench fluorescence. The original synthesis of this substance used small amounts of citric acid as a reducing agent and is named for Turkevich. Attaching Sigma-Aldrich has modified this substance to make it “spiky” to create a series of “urchins”, and they are commonly sold in a solution of citrate and proprietary surfactant. Faulk and Taylor used secondary antibodies conjugated with this substance to detect salmonella antigens, and those secondary antibodies are commonly used stains in (*) electron microscopy. The peak SPR wavelength of this substance increases from 515 nm to 570 nanometers as their diameter is increased, and a common synthesis of this material forms a red solution because of a nanowire intermediate; that synthesis involves adding a reducing agent to chlorauric acid. For 10 points, name this suspension of spherical particles of a certain metal valuable metal.
ANSWER: **colloidal gold** [or **gold nanoparticles**; prompt on “gold”]

20. In “Some Character Types Met With in Psychoanalytic Work,” Freud admitted that he was unable to determine “what broke” this character, who had seemed “forged from the toughest metal.” An essay named for this character attacks A.C. Bradley’s style of criticism, which treated characters as real people rather than literary devices. That essay was written by L.C. Knights, and its title mockingly asks “How many children had [this character]?” This character observes “Tis safer to be that which we destroy / Than by destruction dwell in doubtful joy” before being told “We have (*) scorched the snake, not killed it.” In this character’s first scene, she exclaims “I feel now the future in the instant” after reading a letter, but fears that its author is “too full of the milk of human kindness / to catch the nearest way.” In that scene, she asks “murdering ministers” to fill her breasts with gall and wishes to be “unsexed.” For 10 points, name this Shakespeare character who cries “Out, damned spot!” during her sleepwalking scene.
ANSWER: **Lady Macbeth** [do not accept or prompt on “Macbeth”]

1. Louis Anquetin and Emile Bernard pioneered this style in paintings like the former's *Avenue de Clichy* and *Le Faucher*. For 10 points each:

[10] Name this style of painting, beloved by the Pont-Aven painters and the Nabis, which is characterized by dark lines dividing broad, flat areas of color. Its name comes from a technique for working enamel.

ANSWER: **cloisonnism** [prompt on "synthetism"]

[10] Paul Gauguin adapted the cloissonist style for religious paintings such as one a Christ of this color hanging on the cross as Breton women surround him in prayer. Vincent van Gogh painted a house of this color where he stayed in Arles.

ANSWER: **yellow** [or **jaune**]

[10] This member of Les Nabis rejected the symbolist attitudes of the rest of the group but maintained the cloissonist obsession with color for his brightly lit interiors such as *Nude in the Bath*, although like Edouard Vuillard, his colors were more subdued.

ANSWER: Pierre **Bonnard**

2. This man was tried for apostasy for claiming Muslims had forged much ancient poetry in his book *On Pre-Islamic Poetry*. For 10 points each:

[10] Name this blind writer and education minister who described his impoverished upbringing in *An Egyptian Childhood*.

ANSWER: Taha **Husayn**

[10] Husayn's dissertation stressed the importance of Egypt to the work of this author of the *Muqaddimah*.

ANSWER: **Ibn Khaldun**

[10] Husayn also wrote about this Egyptian "prince of poets," who was one of the first to use rhymed verse in modern Arabic plays. He often included Egyptian nationalist themes in his plays, which include *The Death of Cleopatra* and *Qambeez*.

ANSWER: Ahmed **Shawqi**

3. Answer some questions about the very rare disease fibrodysplasia ossificans progressiva, a disease caused by mutations in ALK2, for 10 points each:

[10] FOP is a disease in which an excess of this tissue grows. This tissue is maintained by the equilibrium between osteoblasts and osteoclasts.

ANSWER: **Bone**

[10] In FOP, these cells are driven to differentiate into bone by activating ALK2 mutations. A peptide named for these cells is the strongest vasoconstrictor in humans, and these cells also secrete nitric oxide.

ANSWER: **endothelial** cells

[10] The de novo production of endothelial cells is a key part of this process of new blood vessel generation, which unlike angiogenesis occurs without any previous blood vessels to use as launching points.

ANSWER: **vasculogenesis**

4. After the Civil War, this general served as president of the Southern Historical Society and popularized the Lost Cause theory. For 10 points each:

[10] Name this Confederate general, Robert E. Lee's "bad old man," who was decisively defeated in the Shenandoah Valley campaign.

ANSWER: Jubal Anderson **Early**

[10] Early was defeated in the Shenandoah by this Union cavalry officer. While conducting a raid on Richmond, his troops killed J.E.B. Stuart at Yellow Tavern.

ANSWER: Philip Henry **Sheridan**

[10] As a military commander during reconstruction, Sheridan removed James Throckmorton from this office and replacing him with Elisha Pease. Pease was himself succeeded in this office by radical republican Edmund Davis.

ANSWER: **Governor of Texas**

5. An experiment studying this effect ran Turkish-sounding words in Michigan student newspapers and then sent questionnaires asking students to rank how pleasing each word was. For 10 points each:

[10] Name this psychological phenomenon where people develop a preference for something only because they are more familiar with it.

ANSWER: mere-exposure effect

[10] This Michigan psychologist conducted seminal research on the mere-exposure effect. He argued that the presence of onlookers leads to an increase in arousal, which improves performance on easy tasks and interferes with performance on hard tasks, in his research on social facilitation.

ANSWER: Robert Zajonc

[10] Zajonc created a stir in the 1970s by arguing that children born later in a family have a lower level of this variable, which can be measured by the Stanford-Binet test.

ANSWER: IQ [prompt on intelligence]

6. After being sent to the McLean Asylum, this author claimed to be the Second Coming, and began writing sonnets in the voice of the spirit inhabiting him. For 10 points each:

[10] Name this 19th century American poet, who described “the spot where our first parents dwelt” in “The Garden,” one of his many intensely religious sonnets.

ANSWER: Jones Very

[10] Ralph Waldo Emerson favorably reviewed Very’s poems in this Transcendentalist journal, which was published from 1840 and 1844. It was edited by Margaret Fuller.

ANSWER: *The* Dial

[10] After publishing “The Great Lawsuit” in *The Dial*, Fuller expanded it into this book-length essay, which argues that marriage should be a union of equals. After it was published, Hawthorne parodied Fuller as Zenobia in *The Blithedale Romance*.

ANSWER: Woman in the Nineteenth Century

7. Thibaw was the last monarch of this Southeast Asian dynasty, prior to annexation by the British. For 10 points each:

[10] Alaungpaya was the first king of this last dynasty of Burma, which ended with the exiling of Thibaw to Ratnagiri, India after the Third Anglo-Burmese War.

Answer: Konbaung Dynasty

[10] This is the name given to the legislative assembly of the Konbaung Dynasty. In 2011, a modern bicameral parliament was constituted in Burma, with chambers named Amyotha and Pyithu *this*.

Answer: Hluttaw

[10] Widely revered as the architect of modern Burma, this leader was assassinated six months before Burmese independence by a group led by former Prime Minister U Saw. His daughter’s a notable democratic campaigner.

Answer: Aung San

8. The Principles and Purposes are a central document of this faith, which was edited in 1984 to account for neopagan sources of knowledge. For 10 points each:

[10] Name this fairly liberal branch of Christianity that is symbolized by a flaming chalice. Adherents are often said to believe in at most one god.

ANSWER: Unitarian Universalism [or UU]

[10] Norbert Capek developed this celebration common in UU churches, in which the title objects are placed into a bowl and then distributed out among the congregants.

ANSWER: Flower communion or Flower celebration

[10] The “Our Whole Lives” program is the UU church’s educational approach to this topic. The TMHS is a Catholic document designed to approach this topic.

ANSWER: sex [reasonable equivalents ok]

9. Hadwiger's conjecture postulates that the complete graph with k vertices is one of these things for every graph with chromatic number k. For 10 points each:

[10] Name this term from graph theory for a graph that can be formed from another graph using only the operations of edge deletion, vertex deletion, and edge contraction.

ANSWER: graph minor

[10] A graph has this property if and only if it has neither K_5 nor $K_{3,3}$ as minors according to Wagner's theorem. Kuratowski's theorem also concerns this property, which describes graphs that can be drawn without edges crossing.

ANSWER: **planarity**

[10] According to this theorem, the graph minor relation is a well-quasi-ordering on the set of finite graphs. This means that many properties such as planarity must be characterized by a set of forbidden minors.

ANSWER: **Robertson-Seymour** theorem

10. The abdication of Ulrika Eleonora began this country's 18th century Age of Liberty, as the parliament gained increased power under the new king Frederick of Hesse. For 10 points each:

[10] Name this country where the Hats party governed under the leadership of Count Arvid Bernhard Horn, previously a favorite of Charles XII.

ANSWER: **Sweden**

[10] The Age of Liberty was ended by this king, who seized power from the parliament in 1772. Ruling as an enlightened despot, he established freedom of the press and religious toleration before being assassinated by dissident nobles in 1792.

ANSWER: **Gustav III**

[10] Gustav III launched a 1788 war in an attempt to regain Finnish territory from Russia, but his efforts were thwarted by this conspiracy of Swedish officers who contacted Catherine the Great directly to ask for peace.

ANSWER: **Anjala** League [or **Anjala** conspiracy]

11. The use of non-polluting solvents is a key part of green chemistry. Name some green solvents for 10 points each:

[10] This molecule in its supercritical state can dissolve and remove caffeine from coffee. Oceans of this substance in supercritical state is believed to have existed on Venus, and are responsible for that planet's greenhouse effect.

Answer: **Carbon dioxide** or **CO₂**

[10] An aqueous form of this compound is commonly used in green oxidation reactions. This compound is commonly produced industrially via the anthraquinone process.

Answer: **hydrogen peroxide** [or **H₂O₂**]

[10] One way to reduce pollution from organic solvents is to produce them by biological fermentation methods i.

The use of *Clostridium butylicum* to produce these three common solvents was pioneered by Chaim Weizmann, later the first President of Israel.

Answer: **Acetone, butanol and ethanol** [accept **ABE fermentation**]

12. Lucy Honeychurch is forced to visit Santa Croce without one of these objects after Miss Lavish takes it away. For 10 points each:

[10] Name these objects. They were allegedly used in planning an air raid that attacked cities like Norwich, Exeter, and Canterbury.

ANSWER: **Baedeker** travel guides

[10] This man probably did not use Baedeker in his trek from the Hook of Holland to Istanbul in 1933. He described his trip in *A Time of Gifts* and *Between the Woods and the Water*.

ANSWER: Patrick Leigh **Fermor**

[10] Rather than a travel guide, Fermor carried odes by Horace and this anthology edited by Arthur Quiller-Couch. In *The Great War and Modern Memory*, Paul Fussell cites it as an influence on poets like Sassoon and even anonymous soldier songs like "The Bells of Hell."

ANSWER: *The* **Oxford Book of English Verse**

13. This work compares the current state of moral philosophy to what science would look like if it was revived from manuscripts after a period where science was banned. For 10 points each:

[10] Name this 1981 work of ethics which denounces the "emotivist" doctrine that moral judgments are simply expressions of preference. It critiques Enlightenment morality and argues for a return to Aristotelian ethics.

ANSWER: **After Virtue**

[10] *After Virtue* is by this Scottish Catholic philosopher credited with reviving virtue ethics. He is also the author of *Whose Justice? Which Rationality?*

ANSWER: Alasdair **MacIntyre**

[10] This Jesuit priest preceded MacIntyre as a twentieth century ethicist working in the Thomist tradition. His major works are *Insight: A Study of Human Understanding* and *Method in Theology*.

ANSWER: Bernard **Loneragan**

14. After being asked “Have you ever suffered,” this character asks “Can ye drink from the cup I drink of?” at the end of the novel he appears in. For 10 points each:

For 10 points each:

[10] Name this enigmatic character, who escapes his pursuers by commandeering an elephant from the zoo and then flying off in a hot-air balloon during a novel published in 1908.

ANSWER: Sunday

[10] Sunday is the present of a secret council of anarchists in this novel by G.K. Chesterton, in which Gabriel Syme infiltrates that council only to learn most of the other members are also undercover policemen.

ANSWER: The Man Who Was Thursday

[10] Chesterton also wrote this novel, whose title character, Adam Wayne, rallies his neighborhood against Auberon Quin, an English king who arbitrarily transforms the boroughs of London into medieval city-states as a joke.

ANSWER: The Napoleon of Notting Hill

15. Answer the following about organum, for 10 points each:

[10] The earliest organa were divided into parallel and oblique types; in oblique organum, the organal voice would hold notes to avoid creating this dissonant interval with the principal voice. This interval can be an augmented fourth or a diminished fifth.

ANSWER: tritone

[10] This type of organum originated in Aquitaine, and allows the upper voice to sing multiple decorative notes over long notes held by the tenor, unlike in discant organum.

ANSWER: florid organum [or melismatic organum; or organum duplum; or organum purum]

[10] Organum’s further development can be seen in the *Magnus Liber Organi*, a collection which is often attributed to this composer of the Notre Dame school, a slightly older contemporary of Perotin.

ANSWER: Leonin [or Magister Leoninus or Leonius]

16. An analogous effect to this process occurs in plasmas governed by the magnetohydrodynamics formalism and is named after Kruskal and Schwarzschild. For 10 points each:

[10] Identify this process, an instability that develops when a heavier fluid is supported by a lighter one. In the Kruskal-Schwarzschild process the heavy fluid is the magnetofluid of the plasma.

ANSWER: Rayleigh-Taylor instability [accept either order]

[10] In the Rayleigh-Taylor analysis of MHD, it can be shown that for every mode, the destabilizing density gradient is opposed by a term proportional to the square of the dot product of the equilibrium magnetic field and this quantity.

ANSWER: k or the wavenumber or wavevector

[10] Bernstein, Frieman, Kruskal, and Kulsrud showed that the stability of an MHD system can be demonstrated if it can be shown that no mode exists which reduces this quantity. For a two-body system, this quantity is given by the product of the two masses divided by the distance, times minus the universal gravitational constant.

ANSWER: potential energy [prompt on partial answers]

17. This monster employs a technique from the Homeric Hymn to Hermes when he steals some cattle by dragging them backwards to confuse their owner. For 10 points each:

[10] Name this monster, who lived in a cave in Mount Aventine. Hercules strangled him so hard that his eyes popped out of his head.

ANSWER: Cacus

[10] Hercules obtained those cattle from this son of Chrysoar, who owned the two-headed guard dog Orthrus. Hercules’ was tasked to retrieve this man’s cattle for his tenth labor.

ANSWER: Geryon

[10] Geryon’s mother had this name, which was also held by the mother of Ganymede and a daughter of Achelous who was betrothed to Alcmaeon.

ANSWER: Callirrhoe

18. A series of panels is covered by a tangled mass of cotton-covered wire in this artist’s *Metronomic Irregularity II*. For 10 points each:

[10] Name this artist, who attached a long metal tube to an empty canvas in her sculpture *Hang Up*. She frequently worked with materials like fiberglass and latex, and was called a postminimalist by Robert Pincus-Witten.

ANSWER: Eva Hesse

[10] Hesse's sculpture *Repetition Nineteen* is displayed at this New York City museum on 53rd street, whose collection includes *Christina's World* and Matisse's *The Dance*. It hosted a major Picasso retrospective in 1940.

ANSWER: the Museum of Modern Art [or the MoMa]

[10] In June, the MoMa acquired this artist's sculpture *Equal*, which consists of eight massive steel cubes. This American artist frequently works with sheet metal, such as in his sculpture *The Matter of Time* for the Guggenheim Bilbao, which consists of brown-painted curved steel walls that form ellipses, spirals, and other shapes.

ANSWER: Richard Serra

19. The failure of an 1870 law to resolve this problem led indirectly to an 1879 uprising in which the grievances of the "rebels" were centered on this issue. For 10 points each:

[10] Identify this issue related to the problem of codifying proprietorship on a certain island. Among the "three F's" of those on one side of this issue were the fixity of tenure and the freedom to sell.

ANSWER: Irish land question [accept anything that mentions Ireland and land]

[10] This one-time member of the Fenians and the Irish Republican Brotherhood founded the Irish Land League to push for reforms such as the "three F's," the last of which was fair rents, and led the opposition to absentee landlordism.

ANSWER: Michael Davitt

[10] This man helped Davitt organize the Land League, but was arrested for his violent rhetoric shortly after the passage of the 1881 Land Act. He also led the Home Rule League and was expelled from the IRB for his marriage to Katherine O'Shea.

ANSWER: Charles Stewart Parnell

20. A vacuum machine and mirrors belonging to Ardzrouni are determined to be possible perpetrators of this action, which is found to have occurred in a locked room. For 10 points each:

[10] Name this action, which a character claims was done by the same person who stole the Grasal. It results in the title character of a novel to throw the resulting corpse into a river, and other suspects included the Poet and Zosimos.

ANSWER: the murder of Frederick Barbarossa [accept rough equivalents]

[10] Frederick Barbarossa is a father-like figure to this title character of an Umberto Eco novel, in which the stories and lies of that title character are recounted to Niketas during the Fourth Crusade.

ANSWER: Baudolino

[10] After crossing the Sambatyon, Baudolino and company meet Gavagai, who is this type of creature. In the *Saga of Erik the Red*, a creature of this sort fires an arrow that kills Thorvald.

ANSWER: skiapod [or monopod]