

Chicago Open 2015

Packet by Eliminative Materialism Without Tears (Carsten Gehring, James Lasker, Tejas Raje, and Doug Yetman)

1. A commercially important mechanism for this procedure uses 10-deacetylbaccatin III, an intermediate in the natural form of this process. The most recent of these procedures to be published uses the monoterpene geraniol. Nearly all mechanisms for this procedure involve the addition of a tail via the Ojima lactam. A convergent method of this procedure begins with the Wieland-Miescher Ketone as the C ring and then adds on the D and (*) AB rings separately. That method was discovered by Danishefsky. Differences in the publishing time between Nature and JACS led to controversy over whether Nicolau or Holton was the first to perform this procedure whose end product was once illegally controlled solely by Bristol-Myers Squibb. For 10 points, name this procedure where a medically useful product of the Pacific Yew tree is produced from more readily available reagents.

ANSWER Taxol Total Synthesis [Also Accept Paclitaxel Total Synthesis; prompt on equivalents like Making Taxol]

2. At one point in this story, a bet is made at Reifsnyder's barber shop regarding the identity of a man walking by wearing lavender trousers. It concludes on a Wednesday evening with a doctor realizing that his wife Gracie's breakdown is precipitated by the ostracism his choices have visited upon their household. Earlier in this story, Alek Williams argues with Judge Hagenthorne that five dollars a week is not worth the stress of boarding the title figure, whose stroll through the community nearly causes a riot and prompts Jake Winter to threaten to have Ned Trescott arrested. Set in the fictional town of (*) Whilomville, this short story was published in an eponymous 1899 volume alongside works like "The Blue Hotel," and centers on a black coachman who saves young Jimmie's life during a fire but ends up becoming disfigured. For 10 points, name this story about Henry Johnson, whose horrific appearance begets the title epithet, a work by Stephen Crane.

ANSWER: *The Monster and Other Stories*

3. An early version of these devices replaced two capacitors of the Abraham-Bloch multivibrator with resistors and was called the Eccles-Jordan circuit. Though they aren't capacitors, one of these devices built from cross-coupled NAND gates can be used to "debounce" a circuit. A common physics lab uses n of these devices in a "ripple counter" arrangement and LEDs to visually count to "two to the n " on a given clock signal, a technique which can be used to create frequency dividers. It is impossible to solve these systems completely from first principles for a given input without knowing the initial state of one of their two outputs, since they are a bistable (*) system. In integrated circuits, the inputs to these devices are typically passed through a Schmitt trigger. Their D type can be used to store a bit of memory while their JK type explicitly refers to the inputs which cause their namesake toggling function. For 10 points, name these computer circuit elements, whose SR types are composed of two NOR gates, which you can't actually wear on your feet.

ANSWER Flip Flops [I guess we should accept Eccles-Jordan Trigger before mention; accept any more specific answer such as D Flip Flop or JK Flip Flop]

4. An image in this work of benches and couches strewn with gold, which elicits a reply about a shield laid over a container of bright mead. One person in this work refuses to speak about a group of maidens who cry and toss sails into the sky. One person in this work calls another the mother of three rimetrolls and denies that she is wise, after repeatedly telling her to "not be silent" until he "knows all". One character in this work disguises himself as (*) Vegtam, son of Valtam, and is told that the son of Rind will grow to adulthood in one day. This work ends by one speaker proclaiming that she shouldn't be visited again until Loki is free from his bonds. At the beginning of this work, Odin goes to the "eastern door" and resurrects a volva, who tells him that Hodr will kill his son. For 10 points, name this section of the Poetic Edda titled after the fearful visions of one of the Aesir.

ANSWER: Baldur's Dream [or the Lay of Vegtam before that name's mentioned; prompt on "Poetic Edda" until "visited"]

5. In a story written in this language, after a character turns into a colorful bull, he is slaughtered and two drops of blood fall to the ground, where they turn into two *Persea* trees. One of the title characters of a story in this language places his heart in a tree, but dies after it is chopped down, only to be revived when the other title character places the heart in a bowl of cold water. Mika Waltari wrote a historical novel based on

another story written in this language, which centers on a character whose name means (*) “Son of the Sycamore.” The opening chapter of Steven Moore’s *The Novel: An Alternate History* begins by discussing literature written in this language. This language was used to write “The Tale of Two Brothers,” as well as a story about a court official who flees in terror during a military expedition to Libya, “The Tale of Sinuhe.” For 10 points, name this language of some of the world’s earliest works of literature, which were frequently written using Demotic or hieroglyphics.

ANSWER: Ancient Egyptian

6. This man named Thomas Bouchier Archbishop of Canterbury and imprisoned the Duke of Exeter in Pontefract Castle in an attempt to end dissatisfaction in the North. On one occasion, this man put his hand on the throne and expected his supporters to cheer in support, but received only silence. This man’s petitions for reimbursement of costs incurred on campaign were ignored in favor of the Duke of Somerset, leading to his rivalry with the Beaufort (*) family. This man and his son Edmund, Earl of Rutland were killed outside Sandal Castle at the Battle of Wakefield, and his head was displayed on a pike with a paper crown on it. Shortly after his death, his son saw a symbol of three suns and won the Battle of Mortimer’s Cross, overthrowing Henry VI. For 10 points, name this onetime Lord Protector of England, a leader during the Wars of the Roses and father of Edward IV and Richard III.

ANSWER: Richard, Duke of York [need both, prompt on partial answers]

7. Dora Panofsky argued that this character’s pose in one painting, where he is framed by a doorway, is derived from that of Christ in Rembrandt’s 1665 *Ecce Homo*, in an article subtitled for “Iconographic Notes On” the artist. Another painting of this character was allegedly sold to Vivant Denon by a Parisian junk dealer with a label hanging on it reading “Buy me, I’m so lonely!”, and may have been painted as a sign for a café belonging to a former actor named Belloni. The Thyssen holds a (*) fete-galante painting of this character “content” and wearing the same clothes as in a later painting in which a doctor rides a donkey on a leash. Leandro and Isabella look on from the background of that painting, in which this character wears a round hat framing his face and satin shoes with pink ribbons. That painting was formerly known as *Gilles*, after a different stock character from the Commedia dell’Arte. For 10 points, name this clown character who wears all-white in a painting by Jean-Antoine Watteau.

ANSWER: Pierrot [prompt on “Gilles” before mention]

8. Efron and Petrosian used a non-parametric method for constructing these from doubly truncated data, while Lynden-Bell used the C minus method for singly truncated data. Sandage, Tamman, and Yahil devised a parametric maximum likelihood method for estimating these functions. A widely used function of this type can be integrated with respect to its primary variable to give an incomplete gamma function. One method of correcting these functions for incompleteness involves determining the maximum distance at which each data point could have been observed and then dividing by the comoving volume (*) corresponding to that distance. This is called the “Vmax” method. The parameters of the aforementioned most important of these functions are alpha, which denotes the faint-end slope, and one which denotes the position of the “knee” of that function. For 10 points, name these functions, exemplified by the Schechter function, that trace the number density of galaxies with respect to their brightness.

ANSWER: galactic luminosity function [prompt on partial answer, accept more specific answers]

9. This philosopher argued that just because moral dilemmas exist does not mean that there also exists some inconsistency in a set of moral principles in a paper titled “Moral Dilemmas and Consistency.” In one paper, this philosopher proposed the use of substitutional semantics to accomplish the paper’s title goal, “Dispensing with Possibilia.” A formula developed by this thinker allows for the interchange of quantifiers and modal operators, resulting in statements like “if it is possible that there exists an object satisfying P, then there exists an object that possibly satisfies P.” In the article titled “Modality and Intensional Languages,” (*) this philosopher proposed that names have no meanings, but are simply “tags.” This philosopher’s early work included a paper titled “A Functional Calculus of First Order Based on Strict Implication,” which began her project of quantifying modal logic. For 10 points, identify this late American philosopher of logic and language who taught for many years at Yale.

ANSWER: Ruth Barcan Marcus

10. George Mylonas argued against a syncretic interpretation of the events at this site, in contrast to the work of Karoly Kerényi, who emphasized the “pristine richness and many-sidedness” and “embellishing activity of the mind” in a collection edited with Jung that links the “myth of the divine child” with this location. According to one source, those who were “not of pure hands” or “speak an incomprehensible tongue”, as well as murderers and barbarians, were forbidden to approach this site, although purity of heart is strangely unmentioned. The announcement of the birth of “Brimo the Brimos” was a central event at this location, which also included the (*) Fields of Rarus, and cloaked figures took turns yelling obscenities from a bridge on the road to this site. This site saw the slaughter of herds of pigs, as well as the drinking of barley and the offering of ears of corn. A series of rituals done here were first taught to Triptolemus. Clement of Alexandria revealed the password to, for 10 points, which location, which saw the worship of Demeter and a series of eponymous mysteries?
ANSWER: The Temple of Demeter at Eleusis (or Elefsina; or Eleusina)

11. At one point in this speech, the speaker notes that girls are now “termed ‘sexually active,’” which “has replaced the word ‘promiscuous.’” This speech includes a joke about a politician confused as to why he is given a mansion in heaven while a minister is given just a small room, but then learns from St. Peter that he’s “the first politician who ever made it.” *The Screwtape Letters* is used in this speech to argue against wishful thinking. This speech asserts that “we will never give away our freedom, we will never abandon our belief in (*) God, and we will never stop searching for a genuine peace.” Tony Dolan had argued for the most memorable phrase of this speech to be used a year earlier in a speech to the Houses of Parliament, but it was instead used in this speech after warning the addressee's not “to ignore the facts of history and the aggressive impulses of” the title entity. For 10 points, name this speech given in 1983 to the National Association of Evangelicals by Ronald Reagan, in which he placed the good and moral United States in opposition to a two-word term for the Soviet Union.
ANSWER: “Evil Empire” speech

12. This man won a civil war against his brother after an apparition of five horsemen and St James the Greater caused that brother to flee and that image remained the national coat of arms until 1859. This man started a celebration in which the leaders of religious brotherhoods were crowned king, which inspired a later holiday called Pinkster. This man was originally the ruler of Nsundi province before coming to the throne. His father Nzinga (*) Nkuwu was baptized after meeting Diogo Cão but returned to traditional beliefs after his burning of idols angered his people. His son Henrique was named a bishop by Pope Leo X, likely becoming the first black African bishop. This king protested to Manuel I and Joao III about Portuguese exploitation of his nation, which led to its eventual downfall. For 10 points, name this early 16th century Catholic ruler of the Kingdom of Kongo.
ANSWER: Alfonso I of Kongo [or Afonso I or Mvemba Nzinga]

13. Practitioners of this method commonly use the metaphor of mental metabolism, in which people grow by biting off a piece of something, chewing it, and then determining if it’s nourishing or toxic. Erving and Miriam Polster founded a center in La Jolla devoted to training people in this method, whose namesake “prayer” declares “I do my thing and you do your thing.” A common technique in this type of therapy involves the client imagining someone else sitting in an empty chair, speaking to it, then getting up, sitting on the chair, and reversing the roles. Paul Goodman helped found this type of therapy, which emphasizes a (*) phenomenological approach to make clients aware of the “here and now.” Along with Albert Ellis and Carl Rogers, the man who developed this type of therapy can be seen on the Gloria tapes. It was developed in the 1940s and 50s by a German-born psychiatrist and his wife Laura, who named it after an earlier school of psychology. For 10 points, name this holistic type of therapy developed by Fritz Perls.
ANSWER: Gestalt therapy

14. In a poem by this author, the speaker believes that the Heavenly love him but wonders how much more they love you; that poem also claims that the Heavenly always want offerings, and failing to give an offering has never resulted in anything good. In a novel by this author, the title character is distraught when his men commit a massacre after capturing the town of Misistras, and that character originally joined the fighting because of the influence of his friend Alabanda. (*) This author’s time as a tutor for the son of Susette Gontard led him to create the character of Diotima. This author used the Orlov Revolt as a setting for an epistolary novel in which the title character writes letters to his friend Bellarmin about his time in Greece. For 10 points, name this

German writer who wrote the poem “Patmos” as well as the “Schicksalslied,” or “Song of Destiny,” of the title character in his novel *Hyperion*.

ANSWER: Johann Christian Friedrich Holderlin

15. This process is controlled by several proteins containing SWAP domains. A recursive form of this process occurs in molecules containing RS regions. In trypanosomes, one form of this process occurring for variable surface glycoproteins is silenced in stress by the SLS response. The TopHat algorithm is used to find products of this process in high-throughput data. This process can be catalyzed by the Ire1 protein during the unfolded protein response. ESE and ISE sequences are used to (*) enhance this process. One component of the complex that performs this action binds to the polypyrimidine tract. BBP binds to the branch point while catalyzing this process, which is moderated by a complex containing the U1, U2, U4, U5, and U6 small nuclear RNPs. This process allows for the expression of multiple isoforms of a protein from the same gene. For 10 points, name this process by which introns are removed from a transcript.

ANSWER: splicing

16. Mozart added a part for this instrument for the Vienna premiere of his Symphony No. 32, which was not present in the original Salzburg version. In the allegretto second movement of Haydn’s “Military” symphony, the coda begins when the rest of the orchestra drops out to leave these instruments playing alone. It plays the first major solo in Copland’s *An Outdoor Overture* above pizzicato string accompaniment, and its lower range was once called the (*) *principale*. Anton Weidinger refined and championed a version of this instrument with keys to let it play chromatic passages. Weidinger was the dedicatee of Johann Nepomuk Hummel’s concerto for this instrument, which exists in both E and E-flat versions. Haydn’s only concerto for this instrument was also written for Weidinger and is in E-flat. For 10 points, name these brass instruments which introduce the main theme of *Fanfare for the Common Man*.

ANSWER: trumpet

17. In one work, this thinker borrowed a term from C.S. Peirce and argued that “all thought would be totally impossible in a universe in which *abduction* was not expectable” while claiming that human learning was a stochastic process. He detailed the relationship between *wau* and *laua* in a certain New Guinea tribe, an analysis which would later incorporate ideas borrowed from cybernetics, and he claimed that knowledge belongs to a hierarchy of classes in his formulation of symmetrical and complementary schismogenesis. This pioneer of “photographic analysis” (*) and author of *Mind and Nature* formulated the double-bind theory of schizophrenia and argued that learning a teacher’s implicit goals and absorbing contextual assumptions is critical to higher level understanding. The author of *Steps to an Ecology of Mind* studied the Iatmul tribe in *Naven* but may be better known for his collaboration on *Balinese Character: a photographic analysis* with another anthropologist. For 10 points, name this British-born anthropologist and public intellectual, the husband of Margaret Mead.

ANSWER: Gregory Bateson

18. An essay by this author explains why a certain location “cannot be caught in a net of words, for it is one of its qualities to be indescribable, though not imperceptible.” In that essay, this author described the “sudden joyous ‘turn’” of the happy endings provided by the title kind of literature as an example of “eucatastrophe.” He included that essay, which was first presented as an Andrew Lang lecture in 1939, in his book *Tree and Leaf*. Another of this author’s essays features an allegory about a man who builds a (*) tower from an accumulation of old stone, only for his friends to push it over to look for “hidden carvings and inscriptions.” That essay rebuts the views of W. P. Ker, and divides its title poem into two major sections, the first about youth and the second about age. This author of “On Fairy Stories” also wrote a book describing the regions of Beleriand and Numenor. For 10 points, name this author who argued that *Beowulf* should be considered a poem, not a historical document, in *The Monsters and the Critics*, and developed a detailed fictional mythology in *The Silmarillion*.

ANSWER: John Ronald Reuel (J. R. R.) Tolkien

19. In the 16th century, cartographer Gabriele Simeoni found the location of this battle, and it was later excavated by Colonel Eugene Stoffel, after which the village of Merdogne named itself after the battle. The commander of one side in this battle constructed a “large” and “small” camp connected by a double ditch or “duplex” before charging the enemy’s outer wall. The loser of the battle was forced to leave winter quarters

in Agedincum (*) to defend his allies, the Aedui. That man sent his lieutenant Titus Labienus to attack the Parisii before engaging in this battle. This location of this battle was a town located on a high and steep hill and was the main *oppidum* of the most powerful tribe in the region, the Arverni. For 10 points, name this 52BC battle in Gaul, where Vercingetorix handed Julius Caesar his only defeat in the field, and which was followed by the Battle of Alesia.

ANSWER: Battle of **Gergovia**

20. This city is home to a 154-foot-tall Corinthian column that was used as a water tower until 1912; that building was one of many designed for this city by George I. Barnett, who became known as the dean of this city's architecture. The architectural firm HOK was founded in this city, which is also home to a greenhouse called the Jewel Box. A sculpture by Alexander Liberman consisting of eighteen steel oil tanks painted red, *The Way*, can be found in this city's Laumeier Sculpture Park. (*) Minoru Yamasaki designed the four-domed terminal for this city's airport, as well as a modernist housing complex in this city consisting of 33 identical eleven-story buildings that fell into disrepair and were demolished in 1972. This city was home to the 1904 World's Fair, as well as the Pruitt-Igoe Housing project. It also features a red-brick ten-story skyscraper designed by Dankmar Adler and Louis Sullivan. For 10 points, name this Midwestern city, the site of the Wainwright Building.

ANSWER: **St. Louis**

1. This surprise attack led by Michiel de Ruyter ended the Second Anglo-Dutch War and was one of the greatest humiliations in British naval history. For 10 points each:

[10] Name this battle in which the Dutch sailed up the Thames and captured the *Unity* and the *Royal Charles*.

ANSWER: Battle of the **Medway** [or Raid on the **Medway**; accept Battle of **Chatham**]

[10] The Dutch were led by this Grand Pensionary whose brother Cornelis accompanied the fleet at Medway.

ANSWER: Johan **de Witt**

[10] Both the de Witt brothers were murdered by supporters of this man, who took over the government and later became King of England.

ANSWER: **William III** of Orange [or **William III** of England; or **William II** of Scotland]

2. Balthasar Neumann built a basilica in Bad Staffelstein named for this group, and the shepherd Hermann Leicht claimed they came to him in the form of children in the 1440s. For 10 points each:

[10] Name this group that was once often invoked for help with a wide range of bodily ailments, especially in Bavaria.

ANSWER: Fourteen **Holy Helpers** [or **Auxiliary Saints**]

[10] A century before Hermann Leicht's visions, The Fourteen Holy Helpers first became a prominent group for Christians to call on during this devastating event that decimated fourteenth-century Europe.

ANSWER: **Black Death**

[10] This Holy Helper was invoked against epilepsy, and he is also fittingly the patron saint of dancers, although a "dance" sometimes named for him is actually a type of chorea.

ANSWER: Saint **Vitus** [or Saint **Guy**]

3. This novel climaxes with the protagonist's confrontation with the gang leader Hermogenes. For 10 points each:

[10] Name this complex, allusive novel narrated by Riobaldo, who describes his travels in the title location and his attraction to his fellow jagunco Diadorim.

ANSWER: *The **Devil to Pay in the Backlands*** [or ***Grande Sertão: Veredas***]

[10] Joao Guimares Rosa set *The Devil to Pay in the Backlands* in this country's Sertao region. Its major authors include Machado de Assis and Jorge Amado.

ANSWER: **Brazil**

[10] Two brothers with this last name spearheaded modernism in Brazil by organizing the Week of Modern Art in 1922. One of them, Oswald, wrote the *Cannibal Manifesto*, while the other, Mario, wrote the novel *Macunaima*.

ANSWER: de **Andrade**

4. This cinematographer created the shot of Tim Robbins raising his arms in the rain after escaping from prison for *The Shawshank Redemption*. For 10 points each:

[10] Name this British cinematographer for many films by the Coen brothers, including *Barton Fink*, *No Country for Old Men*, and *The Big Lebowski*.

ANSWER: Roger **Deakins**

[10] Deakins was also the cinematographer for this Coen brothers movie, which centers on a disastrous kidnapping scheme set in motion by Jerry Lundegaard, who was played by William H. Macy.

ANSWER: **Fargo**

[10] In *Fargo*, Marge Gunderson returns to Jerry's car dealership after having dinner with this former classmate, who lies that he has a job at Honeywell and that his wife Linda died of leukemia in a desperate attempt to seduce her. He was played by Steve Park.

ANSWER: Mike **Yanagita** [or **Mike** Yanagita]

5. Donovan Hohn was inspired to write the book *Moby-Duck* by a situation involving these toys, which have been used by oceanographer Curtis Ebbesmeyer in analyzing ocean currents. For 10 points each:

[10] Name these bath toys made by The First Years, Inc. that became global news when more than 28,000 ducks, beavers, turtles, and frogs were washed into the ocean during transport.

ANSWER: **Friendly Floatees**

[10] The Friendly Floatees helped raise awareness of this massive collection of plastic debris that has accumulated in the gyre known as the North Pacific Subtropical Convergence Zone.

ANSWER: Great Pacific **Garbage Patch** [or Pacific **Trash Vortex**]

[10] The Ocean Voyages Institute started this project that hopes studying the Great Pacific Garbage Patch will lead to ways to clean it up. This project led the SEAPLEX expedition to the garbage patch in 2009.

ANSWER: Project **Kaisei**

6. Answer the following about mutations gone wild, for 10 points each,

[10] This process, which was first observed in cancer cells, is characterized by up to a thousand rearrangements within a small area of one or two chromosomes, increasing the DNA copy number in an oscillatory fashion.

ANSWER: **chromothripsis**

[10] After these cells encounter an antigen, their receptors undergo somatic hypermutation to enhance their binding ability. These immune cells produce antibodies and mature in the bone marrow.

ANSWER: **B** cells

[10] This procedure identifies mutagenic compounds by determining their effects on a strain of *S. typhimurium* that is unable to synthesize histidine.

ANSWER: **Ames** test

7. This man was twice responsible for discovering and relaying information that saved George Washington from being captured by the British. For 10 points each:

[10] Name this man who was served by the slave Cato and whose job as a tailor for high-ranking Brits in New York City made him a valuable source of information for the Patriot cause.

ANSWER: Hercules **Mulligan**

[10] Hercules Mulligan was not directly a member of this group managed by Benjamin Tallmadge, but both Mulligan and this spy group were used by Washington during the occupation of New York City.

ANSWER: **Culper** Ring

[10] Mulligan had been involved with the Patriot cause well before the Revolutionary War began, having joined this secret society a decade before. In Rhode Island, members of this group attacked and set fire to the *Gaspee*.

ANSWER: **Sons of Liberty**

8. W. W. Skeat completed this process by employing the Bradshaw Shift, which differentiated Skeat's work from that of Thomas Tyrwhitt. For 10 points each:

[10] Name this process that involves classifying the ten "fragments" present in such manuscripts as the Hengwrt manuscript and then placing them into "families."

ANSWER: **ordering** the tales in the **Canterbury Tales** [accept equivalents such as "putting *The Canterbury Tales* in order"]

[10] In all editions and manuscripts of the *Canterbury Tales*, this section always comes first. This section begins, "Whan that Aprill with his shoures soote," and describes the pilgrims in detail.

ANSWER: "The **General Prologue**"

[10] In the late 15th century, this man printed several editions of *The Canterbury Tales* after setting up the first printing press in England, which contributed heavily to the standardization of written English.

ANSWER: William **Caxton**

9. Beethoven suggested that its "four rules" could be reduced to two – one for motion into perfect consonances, and another for imperfect consonances. For 10 points each:

[10] Name this treatise and textbook by Johann Fux, mostly presented as a dialogue between the student Josephus and the teacher Aloysius. In it, Fux discusses the five species of counterpoint, as well as the proper method by which to compose for four voices.

ANSWER: **Gradus ad Parnassum** [or **Steps to Parnassus**]

[10] The character of Aloysius in *Gradus* is based on this Italian composer of the *Pope Marcellus Mass*.

ANSWER: Giovanni Perluigi da **Palestrina**

[10] One of the few ways in which Fux permits the composer to leap out of a dissonance is this figure, in which a consonance moves stepwise to a dissonance, and then leaps by a third in the same direction, usually to another consonance.

ANSWER: nota **cambiata** [or **changed note** or **exchanged note**; prompt on "escape" tone or note]

10. This philosopher was one of few in Western Europe in his time to have knowledge of Greek. For 10 points each:

[10] Name this Irish philosopher who succeeded Alcuin of York as head of the Palatine Academy and described his cosmology in the *Periphyseon*.

ANSWER: John Scottus **Eriugena** [or Johannes Scottus **Eriugena**]

[10] Eriugena translated the works of this pseudonymous philosopher who claimed to be a biblical figure and combined Neoplatonic ideas with those of Christian mysticism.

ANSWER: **Pseudo-Dionysius** [or **Dionysius the Areopagite**]

[10] Eriugena was called to refute the monk Gottschalk's belief in a "twofold" form of this doctrine. He argued that that this is false because of God's singular wisdom and because it contradicts human freedom of will.

ANSWER: **predestination**

11. At the beginning of this epistolary novel, the title character is relieved by the death of her betrothed, the Reverend Haly. For 10 points each:

[10] Name this sentimental novel that used Eliza Whitman as the basis for its main character, Eliza Wharton, who fails to marry the boring Reverend Boyer after being seduced by the rakish Peter Sanford.

ANSWER: *The **Coquette**; or, The History of Eliza Wharton*

[10] Like Eliza Whitman, Eliza Wharton dies because of this event. In another novel, this event causes the death of Charlotte Temple.

ANSWER: **childbirth** [or answers such as **having a baby**]

[10] Eliza Whitman may have been impregnated and abandoned by this member of the Hartford Wits. This poet wrote the *Columbiad*, a terrible long poem that failed to catch on as America's national epic, as well as the similarly awful "The Hasty Pudding."

ANSWER: Joel **Barlow**

12. This man was tutored in painting by 'Abd al-Samad, who painted him meeting a Sufi dervish. For 10 points each:

[10] Name this ruler who commissioned an illuminated manuscript of the *Hamzanama* which took 14 years to complete. Basawan and Chatai painted him taming a savage elephant.

ANSWER: **Akbar** the Great

[10] Akbar also commissioned an illustrated version of this work, meaning "Tales of a Parrot", which was completed by 'Abd al-Samad and Mir Sayyid Ali.

ANSWER: **Tutinama**

[10] Both Abd al-Samad and Mir Sayyid came from the court of Shah Tahmasp I, who patronized many works involving this type of painting, which is often included in illuminated manuscripts such as his *Shahnameh*.

ANSWER: **miniatures**

13. These transformations are defined as the identity matrix minus a vector, u , times its own transpose, and the determinant of them times another matrix is always equal to the determinant of the second matrix. For 10 points each:

[10] Name these transforms which are actually reflections about a plane with normal vector u that contains the origin.

ANSWER: **Householder** transformation

[10] The Householder transformation is the first step in the QR type of this matrix operation. Another type is named for Cholesky, while the most common type turns one matrix into the product of a lower triangular, upper triangular, and diagonal matrices, the LU form of this operation.

ANSWER **decomposition** [also accept: **factorization**]

[10] QR decomposition is equivalent to performing a Gramm-Schmidt operation on the matrix columns, which produces vectors that have this relation to each other, equivalent to the requirement that the dot product of two different vectors is zero, while the dot product of any vector with itself is 1.

ANSWER: **orthonormal** [accept **orthogonal** and **normal** if given as two separate answers]

14. According to Hammond's Postulate, these structures resemble whichever of the reactants or products that they are closer to in energy, For 10 points each,

[10] Name these structures, which appear as peaks in reaction coordinate diagrams or saddle points on Potential Energy Surfaces.

ANSWER: **Transition States**

[10] This method of finding Transition States computationally takes a series of “images” between known start and end configurations and simultaneously minimizes their Potential Energy by considering a “spring” force perpendicular to the namesake construct and a “true” force parallel to it.

ANSWER: **Nudged Elastic Band** [prompt on partial answer]

[10] A problem with Nudged Elastic Band Methods are that they ignore this property of the atoms in the initial state relative to those in the final state. This property of atoms in gases leads to the resolution of Gibbs’ paradox.

ANSWER: **indistinguishable** [Accept word forms]

15. Communities of this indigenous group are led by sailas, and this group retained some independence after a revolution in 1925. For 10 points each:

[10] Name this indigenous group that speaks Dulegaya and lives on the San Blas Islands as part of a namesake province in northeastern Panama.

ANSWER: **Guna** Indians [or **Kuna**]

[10] The Guna practice this form of descent, which both Lewis Henry Morgan and Fredrich Engels believed to be used by human clans that predated the family.

ANSWER: **matrilineal**

[10] This trait occurs at an especially high rate among the Guna. People with this trait are believed to be responsible for stopping dragons from eating the moon during an eclipse, and it mostly occurs due to mutations in tyrosinase.

ANSWER: **albinism**

16. These people’s rulers were known as *shanyu* and their namesake empire was founded by Modu. For 10 points each:

[10] Name these nomadic Asian peoples whose leader Laoshang made a drinking cup out of the Yuezhi king’s skull.

ANSWER: **Xiongnu**

[10] After being defeated by Modu, the founder of the Han Dynasty, Liu Bang was forced to agree to marriage alliances as well as tribute payments. Liu Bang also had a “contention” with this other kingdom led by Xiang Yu.

ANSWER: Western **Chu**

[10] Joseph de Guignes alleged that the Xiongnu were the ancestors of these people who first invaded Europe in the 4th century and were led by people like Rugila and Bleda.

ANSWER: **Huns**

17. This man sowed a dragon’s teeth in the ground to create the Spartoi, for 10 points each:

[10] Name this man who founded Thebes when the Delphic oracle told him to found a city where his cow would lie down.

ANSWER: **Cadmus**

[10] Cadmus was also known for bringing this discovery from Phoenicia to Greece, which Herodotus claimed occurred in 2000 BC.

ANSWER: the **alphabet** [or **letters**, or **writing**]

[10] According to the Suda, 4 letters of the Greek alphabet were invented by this lyric poet and rival of Pindar.

ANSWER: **Simonides** of Ceos

18. The characteristic length of this effect is equal to 1 over the square root of 4 pi times the density of states times the charge of an electron squared in Gaussian units. For 10 points each,

[10] Name this effect where electrons in a solid screen external electric fields. It is a special case of Lindhard theory.

ANSWER: **Thomas-Fermi** screening

[10] Finding the equilibrium electron number density due to Thomas-Fermi screening in this specific system is vastly complicated due to the Laplacian of 1/s not yielding a delta function. This is the system where the fractional quantum Hall effect is observed.

ANSWER: **two-dimensional electron gas** [prompt on partial answer]

[10] A common physical example of a two-dimensional electron gas is this material which was notably isolated using Scotch tape. When rolled up into cylinders, this material can be made into carbon nanotubes.

ANSWER: **graphene**

19. This poem was written in 1820, but suppressed for many years due to its patriotic nature. For 10 points each:

[10] Name this poem which ends “Hail, Dawn of Liberty! Oh, Long live Thou!/Thou carriest the Redeeming Sun so bright.”

ANSWER: “Ode to Youth” [or “Oda do młodości”]

[10] “Ode to Youth” was written by this member of the Philomathic society who wrote of a man who rises to become Grand Master of the Teutonic Knights in the epic poem “Konrad Wallenrod.”

ANSWER: Adam Mickiewicz

[10] Mickiewicz is best known for this poem, considered the national epic of Poland, which tells of the feud between two noble families.

ANSWER: Pan Tadeusz

20. A line mentioning this king’s defeat of Assuwa was inscribed on a sword found near the site of Hattusa. For 10 points each:

[10] Name this Hittite king who was either the first or second of his name and is considered the first king of the New Kingdom.

ANSWER: Tudhaliya I/II

[10] One of the kingdoms involved in the Assuwa Rebellion was Wilusiya, which has been identified with this legendary city, whose location was determined by Charles Maclaren and confirmed by Heinrich Schliemann.

ANSWER: Troy [or Ilium]

[10] Schliemann found the ruins of Troy while excavating this site in Turkey.

ANSWER: Hisarlik