

2016 Chicago Open: "An Insatiable Kingpin of International Meme-Laundering"

Packet by "You can write your tossups from the Library of Babel, but you can NEVER! STRIKE! GOD!!!"
(Auroni Gupta, Ike Jose, Brian McPeak, and Chris Ray)

Edited by John Lawrence, Mike Cheyne, Matt Jackson, Adam Silverman, Mike Bentley, Aaron Rosenberg,
Jake Sundberg, and Shan Kothari, with contributions from Ewan Macaulay and Jonathan Magin

Tossups

1. Bicoid patterning in *Drosophila* is driven by one of these structures immediately surrounded by Homie and Nhomie and named for the *even-skipped* stripe 2 protein. Hi-C and ChIA-PET were developed to improve 3C methods for identifying these structures. They are considered flexible in the "billboard" model. A complex of HMG-1, NF-κB, and IRF-3 occurs at one of these structures named for interferon-beta. They are "trapped" using P-element transposons. In yeast, these structures are called UAS. A box named for them binds C-myc and other (*) basic helix-loop-helix proteins. These structures loop because of cohesin-associated proteins, which allows them to bind the Mediator complex either upstream or downstream. These cis-acting elements are often thousands of base-pairs away from where RNA polymerase binds. For 10 points, name these DNA sequences that activate transcription along with promoters.

ANSWER: enhancers [prompt on activators]

2. This work imagines two men named Caius and Titus who abandon plans to murder romantic rivals, one possibly following principles from Hutcheson and Smith, and the other because he imagined what the death-blow would feel like to the victim. Its author claims that most human actions egoistically emerge from "ill-will," varieties of which are classified as "antimoral incentives." This work suggests that because "ought" statements are always hypothetical, no ethical imperative can possibly be (*) categorical. Its third section claims that the only true form of the title subject is *mitleid* or "compassion." This work's second section is a diatribe against Kant's *Groundwork of the Metaphysic of Morals*, and it lost the Royal Danish Society of Scientific Studies essay contest in which it was entered, even though it was the only submission. For 10 points, name this major work of ethics by Arthur Schopenhauer.

ANSWER: *On the Basis of Morality* [or *Über die Grundlage der Moral*]

3. A 1977 paper by Sibson classified this type of rock as those formed on the QP side of the QP/EF transition. When this type of rock is backrotated with respect to shear direction, they may form mica fish or larger foliation fish. The name for these rocks was introduced by Charles Lapworth to describe the Scottish Moine Thrust Belt, where layers of this type of rock reach more than 100 meters in thickness. This type of rock may form via dynamic metamorphism when it occurs below about 10 kilometers because frictional heating is dispersed enough to prevent melting, which would form (*) pseudotachylite. These fault rocks are both cohesive and strongly schistostic unlike breccias and gouges, and they are distinct from cataclasites, which also form at sites of high shear stress but form due to grain crushing. For 10 points, name this type of highly foliated metamorphic rock whose grain size is reduced primarily by ductile deformation.

ANSWER: mylonite [prompt on fault rocks before mentioned]

4. A ruler with this name spent his early reign furiously buying back land lost by his insolvent father, Christopher II. Legendarily, a red cloth with a white cross on it fell from the heavens to inspire another king with this name to win the Battle of Lyndanisse at modern-day Tallinn. A king with this name captured Visby when he invaded Gotland, but had to leave Henning Podebusk to negotiate with an alliance that included the Confederation of (*) Cologne. A ruler with this name compiled the Code of Jutland, while another man, the rival of Albert of Mecklenberg, was the father of Margaret I, who founded the Kalmar Union. A king with this name known as "Atterdag" was indifferent to petitions over fishing rights, resulting in him pissing off a mercantile alliance that forced him to sign the Treaty of Stralsund. For 10 points, the fourth Danish king to have what name was defeated by a rising Hanseatic League?

ANSWER: Valdemar [number or epithet does not matter]

5. Jonathan Mercer argued that this phenomenon explains why countries are obsessively concerned with their reputations in a study on “[this] and Strategy in the Korean War.” Jonathan Renshon examines this phenomenon as the “micro-foundation” of commitment problems in international relations. This concept’s importance in political science is championed by Brown’s Rose McDermott, who suggested an evolutionary model of it “and War.” Antonio Damasio’s studies of the Iowa Gambling Task showed the influence of this thing on (*) decision-making, in part by using patients with prefrontal cortex damage. Damasio’s Somatic Marker hypothesis concerns this phenomenon, a model of which was verified in an experiment alleging injections of “Superoxin” and another which put an attractive interviewer on a rickety bridge. For 10 points, name this mental phenomenon explained by Schachter’s two-factor theory.

ANSWER: emotion

6. A character in this work enjoins: “He that tastes Woman, Woman, Woman / He that tastes Woman, ruin meets.” Guy Jones works his way up to lead role in a production of this work in Alan Ayckbourn’s *A Chorus of Disapproval*. It is not *The Recruiting Officer*, but a character in this work states that holding his lover “amidst eternal Frost” would keep him warm on “Greenland’s Coast” in a rendition of “Over the hills and far away.” While awaiting execution at (*) Newgate in the final scene, its protagonist is granted reprieve by the title character due to the conventions of the genre. Matt of the Mint, Nimming Ned, and Crook-Finger’d Jack are part of the crew of this work’s protagonist, who was based on real-life criminal Jack Sheppard. For 10 points, a love triangle between the jailer’s daughter Lucy Lockit, the fence’s child Polly Peachum, and the highwayman Macheath features in what ballad opera by John Gay?

ANSWER: *The Beggar’s Opera*

7. The GLASS initiative was launched in 2016 to counter this issue. Stuart Levy runs a group dedicated to publicizing this problem. One of Ted Kennedy’s final legislative actions was co-sponsoring the failed PAMTA bill about this issue with Louise Slaughter. Because of this issue Congress approved the LPAD mechanism in 2014. For the last year, the coiner of the term BRICS, Jim O’Neill, has chaired a review committee investigating this problem. In 2014, the Longitude Prize in Britain was resurrected to focus on it. Research efforts countering this problem, influenced by the original work of Selman (*) Waksman, include Yale’s Small World Initiative and mainly focus on screening soil samples. In June 2016, this problem got worse when the mcr-1 gene, a cousin of the New Delhi metallo-beta-lactamase, turned up in the US. For 10 points, name this issue which makes penicillins ineffective against bacteria.

ANSWER: antibiotic resistance [or antimicrobial resistance; or AMR; or drug resistance; or resistance to any specific antibiotics or drugs; or overprescription of antibiotics by doctors or similar answers; or the fact that we are running out of effective antibiotics or various similar answers; or superbugs]

8. The narrator of this novel describes a Brahmin proclaiming his love for a miller’s wife in a theatrical production of the play *Kedril the Glutton* that ends its first part. The protagonist of this novel defines man as “a creature who can get used to anything.” In this novel’s tenth chapter, red steam fills a bathhouse as a hundred bloodied men take a long-awaited shower during the Christmas holidays. In the frame story to this novel, the narrator buys the papers of a French tutor from the tutor’s landlady, including a thick notebook containing the main narrative. The protagonist of this novel befriends the intellectual (*) Petrov, who had stolen his Bible, alongside his neighbors, the Tartar Aley and the nobleman Akim Akimovich. It was informed by the author’s four-year exile for involvement in the Petrashevsky Circle, and is narrated by the thinly autobiographical Aleksandr Petrovich Goryanchikov. For 10 points, name this Dostoevsky novel about inmates in a Siberian prison camp.

ANSWER: *Notes from the House of the Dead* [or *Memoirs from the House of the Dead*; or *Notes from a/the Dead House*; or *Zapiski iz Myortvogo doma*]

9. While on an expedition to conquer this city, Prince Henry of Battenberg contracted a fatal illness. A palace in this city was destroyed with explosives, forcing the signing of the harsh Treaty of Fomena that ended human sacrifice. This city was conquered shortly after Amanquatia died at the Battle of Amoafu, a victory for a regiment known as the Black Watch. After Sir Francis Scott captured this city, a monarch was deported to the Seychelles. A secret council meeting in this city protested that deportation of king Prembeh I, and featured queen mother (*) Yaa referencing the legacy of Opoku Ware. It was conquered by Garnet Wolseley in 1874. Frederick Hodgson was besieged in this city after demanding a certain royal object. For 10 points, what African city, where the Golden Stool was supposedly received, served as the capital of the Ashanti Confederacy?
ANSWER: Kumasi [or Comassie]

10. Ed Durlacher led this activity in Central Park during the 1940's. Maneuvers called "Tea Cup Chain" and "Flip the Diamond" appear in this activity's "plus" level. A mondegreen overheard by Cecil Sharp led to this art form's term of "Running the Set." This specifically American activity grew out of *Les Lanciers*. Henry Ford's sponsorship of Benjamin Lovett spread this particular activity, through schools dedicated to it. This activity is referenced by a clapping-filled piece in 7/4 time on the Dave Brubeck album *Time Further Out*. It was mainly revived by a Colorado high-school teacher who published the collection (*) *Cowboy Tunes*; that man was Lloyd Shaw. In New England, this dance grew out of the similar French *quadrille*. During this kind of dance, it is common for a person to issue instructions such as "Right and Left Grand" and "Do-si-do." For 10 points, name this dance in which callers tell eight dancers to join into four groups and make the namesake shape.
ANSWER: square dance [prompt on "dancing"] [The Dave Brubeck piece is "Unsquare Dance".]

11. After a traffic accident renders one of her legs shorter than the other, a character created by this author tries to find love by mailing kinky videos to anonymous men. A World War I veteran created by this author dies on New Year's when a stray bullet from a celebration hits him in his blind eye. In a novel by this author, a South African-born mercenary pilot fails to convince Franco to aid anti-Soviet partisans in the Carpathian mountains. This author's favorable portrayal of the poet John Gawsworth in his novel *All Souls* led to his being crowned king of Redonda, a real-life Caribbean island Gawsworth had ruled; those events are chronicled in his "false novel" (*) *Dark Back of Time*. The translator couple Luisa and Juan pry into the romantic history of Juan's father in a novel by this author titled for a Lady Macbeth quote mocking her husband's weak will. For 10 points, name this author of *A Heart So White*, a contemporary Spanish novelist.
ANSWER: Javier Mariás

12. Lyon Playfair argued that some references to this thing in the Bible should actually read "petroleum". Elisha heals the waters of Jericho using this substance. Leviticus 2:13 requires that grain offerings be accompanied by an offering of this. Second Chronicles uses it to denote the covenant by which God gives David dominion over Israel. According to one *midrash*, a sinful woman from the book of Genesis ran around to ask her sinful neighbors for this stuff so as to reveal that her husband was harboring (*) guests in their home. Matthew 5 discusses a type of this substance which "is no longer good for anything, except to be thrown out and trampled underfoot." Before saying that his listeners are the light of the world, Jesus says that they are the *this* "of the earth." For 10 points, looking back at the destruction of Sodom causes Lot's wife turns into a pillar of what substance?
ANSWER: salt [anti-prompt on sodium chloride, halite, etc.]

13. Mastan and Zhu used the "blend and block" strategy to develop an equation giving this quantity. This quantity for the Tung model equals the product of two gamma functions. Although this quantity is often represented by a Q, IUPAC now recommends a D with a line through it. This dimensionless quantity and the Z-average are calculated using cumulant analysis in a dynamic light scattering experiment. It equals λ_0 / λ_1^2 , where λ is a moment. Miktoarm stars are useful largely because they have a (*) low value for this property. This quantity increases with the width of a peak in gel permeation chromatography. It equals two minus the rate of termination if you apply the Carothers equation to a "living" reaction. This quantity is defined as the ratio of weight-average and number-average molecular weights. For 10 points, name this quantity that characterizes the variance in polymer chain lengths.
ANSWER: polydispersity index [or PDI; or dispersity; or polydispersity]

14. A belt made of this stuff was donned by the Salt River Goddess, which let the "Lord of the Granary" kill her with an arrow. A green-clad god of this substance was once a human hunter before he vanished atop Mount Yu. A woman who became a goddess of this material joked to her horse that she'd marry it if her father was brought home; her father then killed the horse, and the horse's flayed skin transformed her into a precursor of this material. The (*) Warring States-era rulers of Shu claimed descent from a god of this stuff, which ruined a cup of tea and garden belonging to Leizu, the wife of the legendary Yellow Emperor. Can Cong [tsan tsong] gave humanity golden creatures which produce, for 10 points, what material used to make the clouds and colors of the sky by the "weaver girl" in Chinese mythology, whose cultivation depends on mulberry-chewing worms?

ANSWER: silk [prompt on fabric or textiles]

15. In describing an object consisting of a "single hurt color and an arrangement in a system to pointing," this poet concluded: "the difference is spreading." A "stanza" by this poet consists of the single line "I wish that I had spoken only of it all." One of this author's poems concludes: "The care with which there is incredible justice and likeness, all this makes a magnificent asparagus, and also a fountain." This poet wrote "Certainly I come having come / These stanzas are done" to close out the eighty-third and last of the *Stanzas in Meditation*. This poet included "A carafe, that is a blind glass" among the "Objects" of a collection also divided into "Food" and "Rooms." Her penchant for repetitive wordplay is seen in a poem that starts "Compose compose beds," her 367-line poem "Sacred Emily." For 10 points, name this American poet whose collection *Tender Buttons* may be a coded account of her lesbian relationship with Alice B. Toklas.

ANSWER: Gertrude Stein

16. Despite being listed as an author of this document, Chip Bohlen complained that it exaggerated dangers. A committee co-chaired by David Lilienthal is cited in this document to argue that the inspection of certain facilities was not enough to ensure safety. This document was authored largely by Paul Nitze, who begins it by writing that "freedom is the most contagious idea in history" and warns of the growth of a "new fanatical faith antithetical to our own." According to John Lewis Gaddis, this document prescribed a "perimeter" strategy instead of a "strongpoint" one that had been advocated in the (*) X Article three years earlier. This document advocated greater spending on armaments as compared to George Kennan's containment theory. For 10 points, identify this memorandum which recommended confronting the "design of the Soviet Union" that was issued by the namesake council to Harry Truman.

ANSWER: NSC-68 [or National Security Council Report 68; or United States Objectives and National Security]

17. Nathan Milstein's 1948 recording of this piece with the New York Philharmonic, conducted by Bruno Walter, was the first-ever classical LP. In the first movement of this piece, the clarinets and flutes introduce the G-major secondary theme over a sustained G played by the soloist. Following a fourteen-bar passage for the solo instrument and strings only, the finale of this piece begins in the parallel major with a fanfare for brass and bassoons. At the end of this piece's *Allegro molto appassionato* first movement, the bassoon (*) sustains its B from the final chord and moves up a semitone to start the C-major second movement. This piece unusually contains an explicitly written-out cadenza before the first movement recapitulation, which was simplified by Ferdinand David, who premiered the piece. For 10 points, name this piece in E minor for a solo string instrument and orchestra, composed two years after its composer's incidental music to *A Midsummer Night's Dream*.

ANSWER: Felix Mendelssohn's Violin Concerto in E minor, Op. 64

18. In one episode of this conflict, soldiers went door-to-door to "check passports," assisted by gunships and blowtorches, as part of Operation Ring. This conflict featured a massacre of civilians perpetrated with the help of the 366th Motor Rifle Regiment. This war's early phase featured gangs killing and raping certain residents of Sumgait. The subject of Thomas de Waal's book *Black Garden*, it was finally ended with the Bishkek Protocol. Amid this conflict, a country's capital was invaded after a state of emergency declared during Black January, which prompted future president (*) Heydar Aliyev to resign from the Communist Party. This war featured heavy ethnic cleansing in Stepanakert, the capital of a republic recognized by very few other countries. For 10 points, name this 1988-1994 ethnic conflict over the namesake doubly-eponymous Caucasian enclave, fought between Armenia and Azerbaijan.

ANSWER: Nagorno-Karabakh War [or the Artsakh Liberation War]

19. Conformal symmetry is anomalously broken in a curved background when this operator contracted with the metric has non-zero expectation value. In a conformal field theory, this quantity is always traceless. One trick for computing this quantity gives it as the Lagrangian times the metric minus two times the variation of the Lagrangian with respect to the metric. The ten independent components of this quantity are the (*) conserved Noether currents corresponding to spacetime translational invariance. This quantity can be written as density times two four-velocities for dust solutions and it has only diagonal elements for perfect fluid solutions. This quantity is multiplied by $8\pi G$ over the speed of light to the fourth power on the right side of the Einstein field equations. For 10 points, name this quantity symbolized by capital T which measures energy and momentum in spacetime.

ANSWER: stress-energy tensor [or energy-momentum tensor]

20. *Descriptive answer acceptable.* X-ray analysis of this painting has revealed that the painting of Medusa on the wall and the baldachino on the right of the canvas were later additions. A male and female dog are symbolically chained together in the bottom left of this canvas. Through an open window in this painting, a half-finished mansion belonging to the man on the extreme left can be seen. One of the youths on the left of this canvas holds a (*) snuff box and has his back to the woman he shares a couch with. One person in this painting rests his gouty right foot on a stool and points his finger at a family tree which extends from "William, Duke of Normandy". The title object of this painting is being negotiated by the Alderman and the Earl of Squander, the fathers of the young couple. For 10 points, name this entry from a William Hogarth series, which is followed by *Shortly after the Marriage*.

ANSWER: The Marriage Contract [or The Marriage Settlement or the first painting in Marriage A-la-Mode or the first scene in Marriage A-la-Mode; prompt on Marriage-A-la-Mode]

21. The longest of these works ends a digression by adapting a Homer quote to say that men, not the gods, have surely deprived a man of his wits. R. G. Bury argued that the second one must be inauthentic since it gives the wrong date for an Olympic Games the author visited. One of these works smacks down an arrogant pupil who tried to write up all philosophical truths, because any expert philosopher knows better than to try writing it down, and relates how their author was kicked out of quarters by a palace's gardens and forced to live with mercenaries. The fifth of these works, which are numbered 309a through 363e in the (*) Stephanus pagination, went to Perdiccas of Macedon. Disaffection with all existing governments inspired a disastrous attempt to advise Dionysius II, the tyrant of Syracuse, as told in the "Seventh" of these documents. For 10 points, identify these communications attributed to an author who wrote *Philebus* and *Phaedo* in dialogue form.

ANSWER: Plato's letters [or Platonic epistles; or Plato's correspondences; accept answers with Platon or Aristocles in place of "Plato"]

Bonuses

1. For 10 points each, answer the following about *Mechademia*, a peer-reviewed annual journal published by University of Minnesota Press on "anime, manga, and the fan arts":

[10] An essay in *Mechademia* 5, titled "Dark Energies," argues that violating this type of law is justified to produce fansubs of anime and *dojinshi* fan comics. Mickey Mouse has an infamously long protection under this type of law.

ANSWER: copyright law [or anti-piracy law; prompt on intellectual property law; do not accept "patent" or "trademark" law]

[10] *Mechademia*'s fourth issue, *War/Time*, contains an essay on this acclaimed anime film directed by Isao Takahata at Studio Ghibli. It follows a starving brother and sister in Tokyo as World War II nears its end.

ANSWER: Grave of the Fireflies [or Hotaru no haka]

[10] *Mechademia* volume 3 has an essay on this sort of prejudice within anime and manga. In reality, Richard Ryder coined the term for this prejudice in 1970.

ANSWER: speciesism [or being speciesist; prompt on descriptive answers indicating that humans are better than other species, or that animals are worse than people]

2. In one example of this procedure, the electron's $U(1)$ symmetry is made a function of x . This creates an extra term, and requires the addition of a new field whose symmetry transformation cancels it. For 10 points each:

[10] Name this procedure which promotes a global symmetry to a local one and forces the addition of some extra terms to keep the Lagrangian invariant.

ANSWER: gauging an interaction or symmetry [accept answers like "making a gauge symmetry"]

[10] This class of theory involves an $SU(N)$ gauge symmetry. Its Lagrangian can be written as minus half the trace of the field strength.

ANSWER: Yang-Mills theories

[10] Yang-Mills theories are the most prominent example of these types of field theories, whose defining characteristic is that the symmetry group is non-commutative.

ANSWER: non-Abelian

3. This artist had participants create works inspired by James Lovelock, which he broadcast onto a screen at the Brucknerhaus in Austria, as part of *Aspects of Gaia: Digital Pathways Across the Whole Earth*. For 10 points each:

[10] Name this pioneer of telematic art. In "Beyond Time Based Art," this man proposed that the concept of parallel universes could be a source of "timeless" art.

ANSWER: Roy Ascott

[10] Ascott described how there is a "field of vitreous reality in which energy and emotion are generated from ... human and machine" when talking about this artist's *The Bride Stripped Bare by Her Bachelors, Even*.

ANSWER: Marcel Duchamp [or Henri-Robert-Marcel Duchamp]

[10] Ascott credits this Hungarian artist's "Telephone Pictures," in which he phoned a factory and described what he wanted painted, as being the first works of telematic art. This teacher at the Bauhaus wrote *The New Vision* and promoted the idea that "everybody is talented."

ANSWER: Laszlo Moholy-Nagy [NAHJ] [or Laszlo Weisz]

4. Franz Toussaint was one of the first French scholars to attempt to translate the original Persian version of this collection, rather than just re-translating Edward FitzGerald's English translation. For 10 points each:

[10] Name this 12th-century Persian collection which includes a couplet that FitzGerald translated as: "A Book of Verses underneath the Bough / A Jug of Wine, a Loaf of Bread—and Thou."

ANSWER: *The* Rubaiyat of Omar Khayyam

[10] This contemporary Lebanese novelist wrote of an American scholar's quest to find the original manuscript of the *Rubaiyat* in *Samarkand*, and won a Prix Goncourt for his novel *The Rock of Tanios*.

ANSWER: Amin Maalouf

[10] Maalouf wrote a novel about this real-life Renaissance-era author of the travelogue *Description of Africa*, in which he witnesses the Ottoman slaughter of the Mamelukes.

ANSWER: Joannes Leo Africanus [or Johannis Leo de Medici; or El Hasan ben Muhammed el-Wazzan-ez-Zayyati]

5. One member of this family was bankrolled by his good friend Emperor Rudolf II to create an “ideal city” of the renaissance at Sabbioneta. For 10 points each:

[10] Name this family that included Vespasiano I and Saint Aloysius, who died while treating plague victims. They took control after emerging over the rival Bonacolsi family.

ANSWER: **Gonzaga**

[10] The Gonzaga family held a dukedom in this city in Lombardy, until being supplanted by the Duke of Nevers after a namesake succession war during the 30 Years War.

ANSWER: **Mantua**

[10] Mantegna’s Madonna of Victory commemorates this battle, where Francesco II Gonzaga forced the French under Charles VIII out of Italy, ending the first phase of the Italian Wars.

ANSWER: Battle of **Fornovo**

6. In this play, the asthmatic Jesus joins his vengeful father in plotting the destruction of humanity after hearing reports of bare-breasted women roaming freely in Naples. For 10 points each:

[10] Name this 1894 “celestial tragedy in five acts,” set during the first historically-attested outbreak of syphilis, at the court of Pope Alexander VI. It won its author, Oskar Panizza, a year-long stint in prison for blasphemy.

ANSWER: *The **Love Council*** [or *The **Council of Love***; or *Das **Liebeskonzil***]

[10] After his imprisonment, Panizza moved to this city. Hugo Ball wrote and performed most of his “sound poetry” while in this city.

ANSWER: **Zürich**, Switzerland

[10] In the play, Syphilis is the daughter of the Devil and this woman. In a somewhat more sympathetic Oscar Wilde play published three years earlier, she performs the empowering Dance of the Seven Veils.

ANSWER: **Salome**

7. Groups of this type include *eighth blackbird*, which performs a cabaret-inspired version of a certain piece entirely from memory, and Lunatics at Large, which established the “Sanctuary Project.” For 10 points each:

[10] Name this type of ensemble, the best-known of which was jointly directed by Peter Maxwell Davies and Harrison Birtwistle, and is now called The Fires of London. The core instrumentation of these ensembles consists of flute, clarinet, violin, cello, and piano.

ANSWER: **Pierrot** ensembles [accept answers conveying that these are ensembles that were formed to play Schoenberg’s ***Pierrot Lunaire***; prompt on sextet]

[10] The sextet in this composer’s *Double Sextet* is a Pierrot ensemble. He used recordings from Holocaust survivors in his piece *Different Trains*.

ANSWER: (Stephen Michael) “Steve” **Reich**

[10] The ensembles Orkest de Volharding and Hoketus were formed to play the correspondingly-named works by this contemporary Dutch composer, who set passages from Plato’s *Republic* for four women’s voices in *De Staat*.

ANSWER: Louis **Andriessen**

8. Voids are found in between these objects, and along with sheets, these elements together form what’s sometimes called the “cosmic web.” For 10 points each:

[10] Name these long tendril-like groups of clusters and superclusters. The manner in which large scale structures like these form from primordial density fluctuations in one of the deepest problems in cosmology.

ANSWER: **filaments** [prompt on supercluster complexes or whatever else Wikipedia thinks it’s called]

[10] The formation of large scale structure requires the existence of this kind of non-baryonic matter. Its existence was inferred by looking at rotation curves of spiral galaxies.

ANSWER: **dark matter**

[10] The inhomogeneities that give rise to large scale structure may be described in frequency space by the power spectrum or in position space by the power spectrum’s Fourier transform, which is this functional of the density field.

ANSWER: **two point** correlation **function** [prompt on correlation function]

9. Examples of these soldiers that comprised the 11th New York Infantry regiment during the Civil War wore an unusual style of dress, including a fez and baggy pants. For 10 points each:

[10] Name these volunteer soldiers, around 70 regiments of which fought for the North during the Civil War. They were renowned for a type of drill popularized by French forces fighting in North Africa.

ANSWER: Zouaves

[10] The 11th New York Infantry Zouaves participated in this July 1861 battle of the Civil War, during which a narrowly-defined group of Virginians, led by P.G.T. Beauregard, crushed forces under Irvin McDowell.

ANSWER: First Battle of Bull Run [or First Manassas; prompt on Bull Run or Manassas]

[10] This politician said of the Zouaves “a jolly, gay set of blackguards, ... that were in a pretty complete state of don't care a damn.” With John Nicolay, he wrote a multi-volume biography of his friend Abe Lincoln.

ANSWER: John Hay

10. This character knocks her employer out with ammonia and tortures her with sharp instruments to induce a nightmare. For 10 points each:

[10] Name this woman, whose streak of extreme evil starts after she burns down her home after locking her parents inside. She imagines herself shrinking like Carroll's Alice during her suicide with poison, taken after her son Aron is horrified at the sight of her.

ANSWER: Cathy Ames [or Cathy Trask; or Catherine; or Kate Albey; accept other nicknames for Catherine as well]

[10] Critics often find Cathy's cruelty to be a weak point of this John Steinbeck novel chronicling the Trask family in Salinas, California.

ANSWER: East of Eden

[10] During her labor, Cathy performs this action on Samuel Hamilton, who is trying to assist her, forcing him to seek out Lee for treatment.

ANSWER: she bites his hand [prompt on partial answer; accept obvious equivalents for “bite” such as “gnaw,” “chew,” etc.]

11. This essay uses examples such as ammonia inversion, QCD in the large N limit, the Josephson effect, and symmetry breaking to illustrate its main point. For 10 points each:

[10] Name this essay by physicist P. W. Anderson. It argues that more complicated sciences are not just “applied” versions of more fundamental sciences, and that in general complexity leads to qualitative changes in behavior.

ANSWER: “More is Different”

[10] “More is Different” argues for the existence of the behavioral form of this phenomenon, whereby complex properties arise from simple components that do not themselves possess those properties.

ANSWER: emergence [or emergent phenomena]

[10] This English philosopher was one of the first to explain emergent phenomena, which he referred to as “heteropathic effects,” in his *A System of Logic*.

ANSWER: John Stuart Mill

12. In this model, one actor chooses an incentive scheme for how to compensate the other, who then decides how to act or how much work to do. For 10 points each:

[10] Name this situation in which one person acts on behalf of another. Its namesake “problem,” as studied by many social sciences, can occur when the incentives of those persons don't align.

ANSWER: principal agent problem [or principal agent model; or dynamic principal agent problem/model; prompt on agency model/dilemma/problem]

[10] When the agent's interests aren't aligned with the principal's, the result may be this kind of situation, in which an agent is incentivized to accept high risks because they don't bear the costs of those risks.

ANSWER: moral hazard

[10] This approach to studying principal agent problems involves the principal updating the incentive scheme periodically based on how the agent acts. Academics who use it include Yuliy Sannikov at Princeton.

ANSWER: dynamic contracting [or optimal dynamic contracting; prompt on optimal contracting]

13. This artist's son stated that he died nearby the Bridge of Allan after throwing up his arms when he saw a sunset and declaring "My God how beautiful!" For 10 points each:

[10] Name this American landscape artist known for mystical paintings such as *The Rainbow* and *The Lackawanna Valley*. The writings of Emanuel Swedenborg led him to portray the "spiritual realm" in his "earthly paintings."

ANSWER: George **Inness**

[10] One of George Inness's influences was a Barbizon school painter of this surname, known for *Hoar-Frost* and *The Edge of the Forest*. Another artist with this surname painted *The Sleeping Gypsy*.

ANSWER: Theodore **Rousseau** [or Henri **Rousseau**]

[10] Inness' painting *The Lonely Pine*, at the Detroit Institute of Arts, shares a theme with *The Jack Pine*, the best known painting by this Canadian artist and member of the Group of Seven.

ANSWER: Tom **Thomson** [or Thomas John **Thomson**]

14. This woman was constantly protected by 12 tutors, but a druid who constantly pursued her had them all killed so that he could rape her. For 10 points each:

[10] Name this woman, whose name changed from the "gentle one" to "ungentle" after she went on a killing spree in Ulster. Her son duped Fergus mac Roich out of the kingship.

ANSWER: **Nessa** [or **Assa**] [According to Wikipedia, "Nessa" is a contraction of *ni-assa*, or "not gentle".]

[10] This druid raped Nessa and later served her son Conchobar. Using his prophetic powers, he predicted that Deirdre would bring much sorrow to Ulster.

ANSWER: **Cathbad**

[10] In most versions, Cathbad is *not* the father of Conchobar; rather, Nessa became supernaturally pregnant after she found two of these things in her cup of water and imbibed them.

ANSWER: **worms**

15. An intramolecular version of this reaction occurs in the second step of the reaction of methyl vinyl ketone and methyl-cyclo-hexa-dione to form the Wieland-Miescher ketone. For 10 points each:

[10] Name the second step of a Robinson annulation. In this crucial carbon-carbon bond forming reaction, an enolate attacks a carbonyl, then undergoes E1cb dehydration to form an alpha-beta unsaturated ketone.

ANSWER: **aldol condensation** [prompt on **aldol** reaction or **aldol** addition]

[10] The asymmetric aldol condensation that leads to enantiomerically pure Wieland-Miescher ketone usually relies on this ubiquitous chiral auxiliary agent. This compound turns ninhydrin orange rather than purple.

ANSWER: **proline** [or **P**; or **Pro**; that's the Hajos-Parrish-Eder-Sauer-Wiechert reaction]

[10] Angular annulation of benzene rings yields these other optically-active compounds, which are chiral despite only having sp² carbons, since the rings are linked in a screw-like shape.

ANSWER: **helicenes** [prompt on **helices**]

16. This entity first met on its own in 1332, in the wake of the Battle of Dupplin Moor. For 10 points each:

[10] Identify this legislative body that evolved to form the lower house of the various incarnations of the English state.

ANSWER: House of **Commons** [accept any variant of England, the U.K., etc.]

[10] The framework for the House of Commons was set when Edward I convened this Parliament in 1295. Oddly enough, its inclusion of knights and burgesses was similar to the seditious Parliament of Simon de Montfort.

ANSWER: **Model** Parliament

[10] The House of Commons asserted its influence under Peter de la Mare during the Good Parliament, which exiled this influential handmaiden of Philippa of Hainault and mistress of Edward III.

ANSWER: Alice **Perrers**

17. Thin evaginations called filopodia extend from the entire cell body and the single long dendrite of the unipolar brush type of these neurons. For 10 points each:

[10] Name these neurons that connect sensory or motor neurons to the central nervous system.

ANSWER: **interneurons**

[10] Interneurons with this name in the dorsal cochlear nucleus have two or three dendrites with claw-like endings. This name, which is given to any neuron with a small cell body, denotes cells in the cerebellum that account for 75% of all neurons in the brain.

ANSWER: **granule** cells

[10] GABAergic, fast-spiking interneurons, such as chandelier, basket, and Purkinje cells, are often named for the fact that they express this 110-residue calcium-binding protein with three EF hands.

ANSWER: **parvalbumin** [or **PValb**]

18. One scholar of this religion described its setup as "kathenotheism," meaning that multiple gods are recognized but any given believer only worships one at a time. For 10 points each:

[10] Name this religious tradition, some of whose members wear a sacred thread over one shoulder. A controversial 2009 history of this faith by Wendy Doniger was withdrawn by Penguin Press after nationalists and BJP members complained.

ANSWER: **Hinduism** [accept *The **Hindus**: An Alternative History*]

[10] This German philologist coined the term kathenotheism, translated the Upanishads and Vedas, and wrote an annotated 50-volume commentary on *Sacred Books of the East*. His Gifford lectures coined the term "theosophy".

ANSWER: Max **Müller** [or Friedrich Max **Müller**]

[10] Many references to Max Muller's studies appear in *The Secret Doctrine* and *Isis Unveiled*, two main works of theosophy written by this woman.

ANSWER: Helena **Blavatsky** [or Madame **Blavatsky**]

19. One of these works contains a heartbreaking account of a little girl whose robe, her only possession, gets shredded to pieces after getting caught in the wheel of a carriage. For 10 points each:

[10] Name this type of work, such as the popular "Grasmere" one written by Dorothy Wordsworth. A work of this type by John Evelyn was eclipsed in popularity by a contemporaneous one that begins "Blessed be God, at the end of the last year I was in very good health."

ANSWER: **diary** [or **journal**; or **memoirs**]

[10] The aforementioned diary of this naval administrator contains accounts of the Great Fire and Great Plague of London.

ANSWER: Samuel **Pepys** ["peeps"]

[10] This English lawyer kept a diary recording, among other things, his arbitration of the dispute between Wordsworth and Coleridge, his encounters with the leading lights of German Romanticism, and his stint as correspondent for the Peninsular War.

ANSWER: Henry Crabb **Robinson**

20. Answer these questions about some revolutionary whining (and they *are* actually all questions, Andrew Hart), for 10 points each.

[10] After receiving a strongly-worded letter from his wife Maria Leopoldina, what man shouted "independence or death!" on the shores of Ipiranga Brook? He went on to become the first Emperor of Brazil.

ANSWER: **Pedro I** [or **Pedro IV of Portugal**]

[10] In what modern day country did rebels issue the Cry of Asencio in support of another colony's May Revolution? This country's own revolt featured the Battle of Las Piedras under Jose Artigas and its other heroes include Juan Antonio Lavalleja.

ANSWER: Oriental Republic of **Uruguay**

[10] After being exposed by some snitching nuns, what Asian revolutionary group made the Cry of Pugad Lawi against their colonial rulers, which may have consisted of members tearing up their reviled sedulas, or Community Tax Certificates?

ANSWER: **Katipunan** [or **KKK**; or Samahang Kataastaasan, Kagalanggalang **Katipunan** ng mga Anak ng Bayan]

21. The third section of this poem begins “And can a man his own quietus make / with a bard bodkin?”, and it begins by describing fruit falling off a tree in autumn. For 10 points each:

[10] Name this poem, whose speaker asks “Have you built your [title conveyance], o have you?”

ANSWER: “The **Ship of Death**”

[10] “The Ship of Death” is by this English author who wrote about an encounter with a reptile at a water trough in his poem “Snake,” from the collection *Birds, Beasts, and Flowers*.

ANSWER: D(avid) H(erbert) **Lawrence** [or David Herbert Richards **Lawrence**]

[10] Lawrence separately published a series of six poems about these animals. He described a “baby” one of these animals as a “tiny, fragile, half-animate bean,” and wrote of “that, which is whole, torn asunder” in a poem likening the Crucifixion to this animal’s “shout.”

ANSWER: **tortoises**