**ACF Nationals 2010**

**Packet by Illinois A and Penn**

1. Both Phillipe de Champaigne and Pieter Claesz were known for doing still lifes focused on this particular object. A detail of one on Mt. Golgotha was done by Fra Angelico and a teenage boy with an orange-feathered cap is seen in Frans Hals’ portrait of a “Youth” with one. Francisco Zurbaran depicted St Francis looking at one of these objects, while another one of these was depicted “with calico roses”. A recent sculpture of one of these was titled *For the Love of God*, and a “Pyramid” of them forms the scene and title of a Paul Cezanne painting. One appears at the bottom of a painting depicting Georges de Selve and Jean de Dentville. For 10 points, name this object which was covered with diamonds by Damien Hirst, a distorted example of which appears in Holbein’s *The Ambassadors*.

ANSWER: **skull**s

2. In this work, which features a milkman nicknamed the “One-Eyed,” a character angers his elders by publishing an article about Darwin’s theories and philosophizing with Qaldes. It ends with the central character suffering a stroke after returning from an air raid shelter. Pivotal events include the banishing of a wife for having broken her collar bone in a car accident, and the marriage of Zannuba to the man she formerly served as consort, Yasim. Fahmi dies because he engages in political activities in resisting the British, which causes patriarchal grocery store owner Sayyid Ahmad to cease having an affair. Its volumes are named after roads in the titular locale. For 10 points, name this novel sequence consisting of *Palace of Desire*, *Sugar Street* and *Palace Walk*, a work by Naguib Mahfouz.

ANSWER: the **Cairo** Trilogy [accept ***Sugar Street*** before “Darwin”]

3. One of the two widely studied forms of this process is attributable to the action of Vif proteins, which cause this reaction in response to APOBEC expression. That form of this mechanism was discovered first in spleen necrosis virus and was then in other lentiviridae. Another form of this biological process requires in its aftermath uracil-DNA glycosylase to undertake gene-specific high-fidelity repair to suppress the creation of lymphomas. That second form of this process is initiated by AID complexes, which induce it in proliferating plasma cell candidates after an encounter with a novel antigen; it is known as the “somatic” form and is the mechanism through which B cells acquire specificity. For 10 points, name this biological mechanism, the first form of which results in a high frequency of guanine-to-adenine changes and is used by HIV to evade detection.

ANSWER: **hypermutation** [accept somatic **hypermutation**; accept **SHM**; prompt on **mutation**; prompt on clear-knowledge equivalents like fast **mutation**]

4. This event was attributed to laziness and extravagant fashions by a contemporary article of Mordecai Manuel Noah, in the National Advocate. It was partly sparked when Ralph Osborn authorized the seizure of assets at Chillicothe. A book on this event by Murray Rothbard attributed it to dislocations arising from newly founded domestic industries following revived foreign trade. Senator Richard M. Johnson of Kentucky responded to it by proposing prorated foreclosures for public land debtors, which the Alabama legislature supported, citing “great diminution of the circulating medium.” The efficacy of the recently founded Bank of the United States was criticized for having contributed to this problem. For 10 points, name this calamity from the Era of Good Feelings, the first serious economic crisis in American history.

ANSWER: the **Panic of 1819**

5. One character in this work tells a story of a black man’s death, wishing he had been there with a machine gun to help. At a dinner party hosted by the protagonist, guests express sentiments like “America for the Americans” and “The place of the woman is in the home.” In this play, an animate corpse named Shrdlu expresses contrition for his crimes and complies with a request for the loan of a head. This play ends with the protagonist being forced out of the Elysian Fields by Lieutenant Charles because his soul is deemed a waste, after which he follows the girl Hope off the stage. Earlier, that protagonist failed to express his love for his co-worker Daisy Diana Dorothea Devore, who read him sales figures; after that, he killed his boss due to a threat of replacement. For 10 points, identify this Expressionist play about the expendable clerk Mister Zero, a work by Elmer Rice.

ANSWER: *The* ***Adding Machine***

6. The *Dionysiaca* describes this person’s destruction of Sokos with an avenging blade of justice. Some accounts of this figure’s origin claim migration from Sais. One important contribution by this ruler was the founding of twelve cities including Brauron, Kytheros, and Sphettos. This ruler’s most important charge was committed to the care of one of his daughters, Pandrosos, although some sources claim he also entrusted his remaining daughters, Aglaurus and Herse. In addition to serving as warden for Erichthonius, this man judged a dispute in which one participant struck a rock, creating a fount of seawater, and the other created a tree. That dispute ended with this man giving a sacrifice to the creator of olives, Athena. The usual origin of this king has him born of the earth, rather than a woman, which explains his most distinctive feature, namely, that he has a snake’s tail instead of legs. For 10 points, name this mythological founder of Athens.

ANSWER: **Cecrops**

7. A story about this figure's death says he was overcome with fever at Ather and asked for cold water, and when a native told his men that a cold spring was at a town called Jerusalem, he knew he was prophesied to die there. That story appears in a work about his deeds by the monk Geoffrey Malaterra. This man's older half-brother Drogo gave him a castle at Scribla, while his younger brother Humphrey joined him in battle against Pope Leo IX at the Battle of Civitate. Soon after that, he reconciled with the Papacy and was invested as duke at the Council of Melfi. More famously, he won the Battle of Dyrrachium in 1081 over the force of Alexius Comnenus, and took an epithet meaning “the clever.” For 10 points, name this son of Tancred de Hauteville, a knight from Normandy who became duke of Apulia.

ANSWER: Robert **Guiscard**

8. The finale to one opera by this man derives tunes from music to Gehe’s *Heinrich IV*. In that opera two slaves recount their childhood in the duet “On the Banks of the Sweet Garonne” and mermaids frolic in the finale, “Oh, ‘tis pleasant.” He also included such objects as an enchanted golden cup containing infinite wine and a magical horn in that opera, whose title character saves the day by having Ruon and Reiza returned to the court of Charlemagne. In another opera by him the title character has two solos in the first act, including “Through the forests and meadows.” That title character loves the cousin of Anchen and by opera’s end is forgiven by Prince Ottokar. His notable parts in that opera include the music of the Wolf’s Glen scene and the “Hunter’s Chorus.” For 10 points, name this composer of an opera about the king of fairies, *Oberon*, and an opera about the marksman Max, *Der Freischutz*.

ANSWER: Carl Maria von **Weber**

9. This process can be accelerated by a special form of temperature and compositional fatigue known as frost heaving. One model suitable for this process is sometimes given the name Stokes and other times coincidentally shares the name of this phenomenon; that model is the set of solutions to Navier-Stokes equations with Reynolds number much less than one. This longest-timescale member of the family of granular processes on regolith has characteristic speeds overlapping those of the slurry process of solifluction. This process is commonly demonstrated by noting the bending of trees growing on ground under which it is occurring. For 10 points, name this largest and slowest form of mass wasting, the simple downhill flow of soil due to gravity.

ANSWER: **creep** [prompt on mass **wasting**; prompt on clear-knowledge equivalent like **soil flow**ing downhill]

10. To account for the possibility of the invisible-hand, the author of this work appeals to genetic drift, Schelling’s tipping model, the Austrian theory of trade cycles, as well as thirteen other possible causes. One section includes an analysis of Hart’s principle of fairness, while another contains an analysis of envy and exploitation. This work posits three natural rights: justice in acquisition, transfer, and rectification, to account for justified entitlements. This work then argues that end-result and pattern principles do not satisfy these requirements of justice. Also containing the “experience machine” thought experiment, this work features chapters on “Prohibition, Compensation and Risk” and tries to derive the moral justification for a minimal government via state-of-nature theory. Featuring a famous thought experiment on Wilt Chamberlain, this is, for 10 points, what philosophical work by Robert Nozick?

ANSWER: ***Anarchy, State, and Utopia***

11. Part four opens with a visit to the *Shanghai* in search of a nude dancer named Teresa. Later in this work, which features a scene wherein a character tries to lose a game of checkers played with whiskey bottles, a dog named Max is mistakenly poisoned at the European Trader’s Association Dinner held at the Hotel Nacional. That episode, leads to an interrogation of the protagonist by his daughter Milly’s admirer, the ruthless Captain Segura. By the end of the novel, Dr. Hasselbacher has been killed and the confusion surrounding a curious series of schematics. Subtitled “An Entertainment,” this work features a series of interludes set in London where Hawthorne and the Chief discuss the latest “filings” by the title character. For 10 points, identify this work that centers on vacuum salesman James Wormold’s work as a spy on the island of Cuba, a novel by Graham Greene.

ANSWER: ***Our Man in Havana***

12. During this man's early travels, he was accompanied by Alfred Marche and the doctor Noel Ballay, whom he entrusted with establishing a transport route. His third expedition resulted in founding a post at Cape Lopez after he fully charted the basin of the Ogowe River onboard the ship *Venus*. After pacifying the Fang peoples, he arranged a rendezvous with the elderly king Iloo. As a result of that meeting, he concluded the so-called Makoko Treaty, which he reportedly delivered in a crystal box to the Bateke peoples after securing the treaty's ratification by his friendship with Jules Ferry. For 10 points, name this late 19th century French explorer who was a more diplomatic counterpart to Henry Stanley, and whose name survives today in the capital of the Republic of the Congo.

ANSWER: Pierre Savorgnan de **Brazza**

13. In 2005 Alu and Engheta proposed using gold loops to construct a sort of invisibility cloak based on these. The polariton type of these are attractive candidate carriers for proposed photonic circuits. The typical energy scale for these is tens of electronvolts as can be found by measuring the energy lost by electrons fired through thin films. Their characteristic frequencies define the transmission bandwidth of metals. A variety of these localized to surfaces was predicted in 1957 by Rufus Ritchie; the sensitivity of that type to variations in the dielectric constant is the basis of surface-enhanced Raman spectroscopy. For 10 points, name these quasiparticles, quanta of collective vibrations of the electron gas in metals.

ANSWER: **plasmon**s

14. The first serious attempt to survey this locale, part of a Norwegian scientific expedition, was unable to penetrate the overgrowth of Joey’s Garden and took advantage of the view from “Ridge Where the Goat Jump Off,” which lies a mile southwest of Noisy Beach. The north end of its Patches Plain is dominated by the 150-year-old Potato Patches. A 1961 volcanic eruption here created the Pigbite between Big Beach and Big Point. The Dutch ship *t’Nachtglas* discovered and named the nearby Inaccessible Island in 1652; locals prefer to visit Nightingale Island for penguin eggs. Its inhabitants share only 8 surnames including Lavarello, Swain, and Green, and are prone to asthma and glaucoma. They mostly live in its capital, Edinburgh of the Seven Seas. For 10 points, name this island in the south Atlantic, the most remote inhabited place in the world.

ANSWER: **Tristan da Cunha**

15. The third section of this work is a Romanza that features a melody initially presented by clarinets and is marked “not fast.” Its reflective second theme is introduced by oboe and clarinet, while the second section, a scherzo, which features cellos, violas, and bassoons, incorporates a traditional “wine song” and was originally to have borne a title referring to the sun rising over a certain river. This work, which ends with a brisk march depicting a country festival, was written during the composer’s tenure as a conductor in Dusseldorf. Its fourth and penultimate movement features a stately contrapuntal melody that was supposedly inspired by the composer’s attendance at a ceremony marking the elevation of an archbishop at the Cologne Cathedral. For 10 points, identify this work written in E flat major, a symphony by Robert Schumann.

ANSWER: ***Rhenish*** *Symphony* or *Symphony* ***No. 3*** *in E Flat Major*

16. Jean Sauvaget has attempted to trace the origin of it, using as evidence early Egyptian sources calling them “mujawwaf.” Archeologists’ have found the earliest representation of it on an Umayyad coin found in Syria, while Creswell controversially places the earliest one at a site at Khassaki built by Al Mansur. The first one was built by al-Walid, while the Fath-al-Bari describes its original meaning as “a place of kings.” The one in the Mezquita of Cordoba is non-standard—Abd ar-Rahman was said to have built it imagining himself still in Damascus. Originally described as a special room in the Quran, it marks the location of the Qibla. For 10 points, identify this portion of a mosque, literally meaning “niche,” that indicates the direction of Mecca and thus which way prayers should face.

ANSWER: **mihrab**

17. The city square named for this movement now contains a red spiral sculpture called “The Wind”. Leaders of this movement include the editor of the revolutionary magazine *La Jeunesse,* and the author of “Storm in a Teacup” who began to write in the vernacular *baihua* style. One major grievance of this movement, a result of the Twenty-One Demands, was resolved at the Washington Naval Conference. This movement also saw the intelligentsia of their country embrace the philosophy of pragmatism and begin to doubt the historical accuracy of the *Records of the Grand Historian*, ideas promulgated by the “national scholar” Hu Shi. Politically, its major goal was the restoration of the Shandong province from Japan after World War I. For 10 points, name this student-led cultural movement that led to the birth of both the Nationalist and Communist parties in China, and began on a certain date in 1919.

ANSWER: **May 4th** Movement

18. A relaxed set of postulates for this framework is the Mas-Colell axioms, which eliminate the need for transitivity. In systems governed by this model, the set of excess demand functions is not restricted by the usual rationality restrictions on individual demands in the economy, a result known as the Sonnenschein-Mantel-Debreu theorem. One argument for this theory considers an auction in which each agent calculates his demand for a good at every possible price and submits it to an auctioneer, from which a price in agreement with this theory will be computed. The production function usually used in this theory is due to Koopmans, although it was significantly refined by another economist in *The Theory of Value*. This theory’s central tenet is that excess market demand always sums to zero. For 10 points, identify this theory of economics that claims that all markets and prices are always at a macroeconomic optimum.

ANSWER: **general equilibrium** theory [or **GET**; or **DGSE**, **dynamic generalized stochastic equilibrium*,***  accept neo-**Walras**ian theory; prompt on **neo-classical** theory; do not accept or prompt on “partial equilibrium theory” or “equilibrium theory”]

19. One way to synthesize carbonyls is to cause these chemicals to undergo a saponification, protonation, and heat decomposition to liberate carbon dioxide. The utility of these multi-coupling reagents stems from the fact that, of their four structural carbons, two belong to different electrophilic groups and two are nucleophiles for different groups, which allows selective bonding to all four. These compounds are the major products in the reaction of two compounds of the form R-C-O-O-R-prime under base catalysis. These may be understood generally as the result of attaching a carbonyl to the product of a reaction between an acid and an alcohol. For 10 points, name this class of compounds of which the aforementioned Claisen condensation produces beta- forms.

ANSWER: **keto-ester**s [prompt on **ester**s or **ketone**s or **carbonyl**s]

20. A Rhodes Scholar from Connecticut, he earned the nickname “lucky” during his years in New Haven and Zurich. This man, who studied with Freud and wrote “A Psychology for Psychiatrists,” smuggles a dead body out of a Paris hotel room in order to help out the star of the film *Daddy’s Girl*. His friendships with the McKisco’s and their ilk dry up, however, after he resigns from the Gregorovius clinic and is forced to move to rural New York. Eventually, the ex-soldier Tommy Barban becomes stepfather to this character’s children, Lanier and Topsy. In fact, by the final chapter of the novel in which he appears, the drinking has taken its toll and, both, the young actress, Rosemary Hoyt, as well as his former patient and wife, Nicole, have left him. For 10 points, identify this once charming character whose dissolution is traced by F. Scott Fitzgerald in *Tender is the Night*.

ANSWER: Richard “Dick” **Diver**

21. Major commentaries on this work were written by "Odd Tablet" and Zhiyanzhai, and it first became known to the public after an edition was published by Cheng Weiyuan and Gao E. This novel, which was notably translated into English by David Hawkes, features a frame story in which Zhen Shi-yin reads the lines "truth becomes fiction when the fiction's true / Real becomes not-real when the unreal's real" during a reverie which begins with the fairy Disenchantment deciding to reincarnate the Crimson Pearl Flower. This novel's main plot describes the love between Lin Dai-yu and Bao-yu during the downfall of the Jia family, and the lives of the "Twelve Beauties of Jinling." For 10 points, name this eighteenth century classic Chinese novel written by Cao Xuequin.

ANSWER: ***The Story of the Stone*** [or ***Dream of the Red Chamber***; or ***A Dream of Red Mansions***; or ***Red Chamber Dream***; or ***Hung Lou Meng***]

22. This man defeated forces invading his nation during the Great Sleigh Drive, and invited Hugenots into his country via the Edict of Potsdam. He was forced to give up the lands of Bremen-Verden in the Peace of Saint-Germain-En-Laye, which also forced him to give up Swedish Pomerania. This man was forced to become a vassal of Charles X Gustav by the Treaty of Konigsberg. His delegation of power to subordinate commanders during battle would form the basis of the Auf-trag-staktik doctrine later employed by Germany. A staunch Calvinist, he pushed for several internal improvements such as a canal system, and his successor Frederick I managed to transform his nation into a Kingdom because of his policies. For 10 points, identify this Elector of Brandenburg and Duke of Prussia from 1640 until 1688, whose political skill earned him the title "The Great Elector."

ANSWER: **Frederick William I** (Accept "The **Great Elector**" before mention)

23. Observations at this site recently ruled out neutrino oscillation as an explanation for the LSND result; those data were acquired by an experimental group including Steve Brice and Richard Van de Water. The MINOS experiment is intended to study neutrino oscillations by sending a beam from its NUMI line to the Soudan mine 450 miles away; ARGONeut and MicroBoone are prototypes for a large neutrino detector to be installed at the DUSEL facility at the Homestake mine to work in conjunction with beams from this facility. Bison were introduced to this facility in 1969, with the current herd count at 45. Its Robert Rathbun Wilson Hall overlooks the ring which houses the DZero and CDF experiments, which jointly discovered the top quark in 1995. For 10 points, name this U.S. national laboratory that is home to the Tevatron and that is located in Batavia, Illinois.

ANSWER: **Fermilab**

EXTRA

This man once cursed a hunter for killing a bird after hearing the cry of its mate. He was originally a highway robber who gave up crime after his family didn’t want to be tormented for his sins. He derived his name from the anthill that grew around him during his one thousand years of meditation, after which he meets Narada, a son of Brahma, by a riverbank. In the presence of the sage Bharadwaja, this man composed the first shloka. This man served as the tutor to Kusha and Lava, who were born after their mother was exiled from Ayodhya for supposed infidelity during her time as a captive of Ravana. For 10 points, name this sage who recorded the story of the love of Rama and Sita in the Ramayana.

ANSWER: **Valmiki**

**Penn and Illinois A Bonuses**:

1. This princess of Cathay is imprisoned by the Bavarian Duke Namo, nearly sacrificed to the monstrous Orc, and later given a ring of invisibility, for 10 points each:

[10] Identify this fictional heroine whose decision to elope with the Saracen Medoro causes Orlando to lose his wits in a pair of Italian epics.

ANSWER: **Angelica**

[10] This author first told the tale of Angelica and her many suitors in 1495’s *Orlando Innamorato*.

ANSWER: Matteo Maria **Boiardo**

[10] Boiardo’s *Orlando Innamorato* also chronicled the adventures of this white knight, who was alternatively known as the Virgin Knight.

ANSWER: **Bradamante**

2. The artist depicted the titular group twice, one time with a man with a pink shirt toe-dancing to the music of a fiddler at the center right and eleven years later with a red-vested central figure toe dancing on a raised box to the music of a fiddler at center-right. For 10 points each:

[10] Name this titular group, which was depicted “in Port” in the second of those two paintings in 1857.

ANSWER: the **Jolly Flatboatmen** [the paintings are *The Jolly Flatboatmen* (1846) and *The Jolly Flatboatmen in Port* (1857)]

[10] Those two depictions of the “Jolly Flatboatmen” were done by this American who also painted *Fur Traders Descending the Missouri*.

ANSWER: George Caleb **Bingham**

[10] George Caleb Bingham occasionally painted in this style, an offshoot of the Hudson River School noted for its clarity and brightness. Its preeminent practitioner was Fitz Hugh Lane.

ANSWER: **Luminism** (accept word forms like **Luminist**s)

3. For 10 points each, answer these questions about the Eighty Years’ War.

[10] The main Dutch leader of the revolt was this member of the House of Nassau and grandfather of a King of England. He was assassinated by Balthasar Gerard.

ANSWER: **William I** [or **William the Silent**; prompt on **William** or **William of Orange**]

[10] William previously served in the court of this regent of the Netherlands. A daughter of Charles V, she was appointed Governess by Phillip II but resigned on the arrival of the Duke of Alva.

ANSWER: **Margaret of Parma** [prompt on **Margaret**]

[10] The Duke of Alba administered a reign of terror via this tribunal. It condemned some 9000 rebels and encouraged caused up to one fifth of the Dutch population to flee.

ANSWER: the **Council of Troubles** [or **Council of Blood**]

4. This religious text considers three elements of existence: God, World, and Man. FTPE:

[10] Name this theological work which culminates in representing Judaism and Christianity in terms of a particular Jewish symbol, with the light of Judaism at the center illuminating Christianity at the periphery.

ANSWER: ***The*** ***Star of Redemption***

[10] This student of Hermann Cohen founded the House of Jewish Learning before he died of ALS. He wrote *The Star of Redemption* and was a collaborator and friend of Martin Buber.

ANSWER: Franz **Rosenzweig**

[10] Rosenzweig also translated the poetry of Judah Halevi, whose treatise the Kuzari foreshadowed this Jewish Nationalist movement founded by Theodore Herzl.

ANSWER: **Zionism** [accept **Zionist** movement]

5. For 10 points each, answer these questions about beam optics.

[10] This paramount equation of beam optics states that the transverse Laplacian of the amplitude is equal to 2 times the imaginary unit times the wave vector times the axial partial derivative of the amplitude. More generally, equations of this type state that the Laplacian of a function is equal to a multiple of that function.

ANSWER: **Helmholtz** equations [accept the paraxial **Helmholtz** equation]

[10] Most lasers produce a beam of this type, also called TEM zero-zero. It is named for its profile, a distribution of the form e to the minus radius squared, which is in turn named for the German mathematician who proved the law of quadratic reciprocity.

ANSWER: a **Gauss**ian beam

[10] One parameter used to characterize a Gaussian beam is this length equal to half of the confocal parameter. With the beam waist, it forms a right triangle that includes the angular divergence as the beam leaves the focus.

ANSWER: the **Rayleigh** range

6. Most of the fieldwork undergirding this book was done among the Guayaki. Its fundamental assumption is that knowledge of power is a fundamental characteristic of every social system. For 10 points each:

[10] Name this work that critiques the notion that the natural destiny of any society is government, which may suggest that there is an instinct to anarchy.

ANSWER: ***Society Against the State****: Essays in Political Anthropology* [or *La Société contre l'État*]

[10] *Society Against the State* is a work by this French anthropologist and ethnographer, who was criticized by Clifford Geertz in the essay “Deep Hanging Out.” This man wrote *Chronicle of the Guayaki Indians*.

ANSWER: Pierre **Clastres**

[10] The ideas of *Society Against the State* contrast with the ideas of fitness and ideal state happiness, which were expressed by this thinker in his magnus opus, *Social Statics*.

ANSWER: Herbert **Spencer**

7. Based on its author’s encounters with real life diaries, it centers on a father’s attempts to assure prospective suitors that his daughter Yasuko is healthy, for 10 points each:

[10] Identify this book about Shigematsu’s stoic resolve in the face of the titular precipitation that fell after the dropping of the atomic bomb.

ANSWER: ***Black Rain***

[10] This author of *Waves* and *City of Flowers* wrote *Black Rain*.

ANSWER: Masuji **Ibuse**

[10] This French woman tackled the same subject matter in her script to *Hiroshima Mon Amour*. She also wrote the works *The Lover* and *Moderato Cantabile*.

ANSWER: Marguerite **Duras**

8. Answer these questions about the history of conservationism in the United States FTPE:

[10] This geologist and friend of Henry Adams was in charge of the 40th Parallel Survey as the first director of the U.S. Geological Survey.

ANSWER: Clarence **King**

[10] This man was appointed by Teddy Roosevelt as the first Chief of the United States Forest Service and was later fired for speaking out against Richard Ballinger.

ANSWER: Gifford **Pinchot**

[10] This 1911 act, named for a Congressman from Massachusetts who would later become the U.S. Secretary of War, empowered Pinchot to purchase land for conservation and was later expanded by the Clarke-McNary Act.

ANSWER: **Weeks** Act

9. This 1838 work exploring the ideas of a 17th Century thinker, includes the line, “a human face smeared with excrement” is hardly “an aesthetic sight,” for 10 points each:

[10] Identify this philosophical study named for its subject, a philosopher who posited a namesake “trilemma” that sought to expand on Zeno’s original arguments against motion by denying the existence of spatial extension.

ANSWER: ***Pierre Bayle*** (do not prompt on partial answers, the title of the book is the full name)

[10] The *Pierre Bayle* was written by this German whose other works include *The Essence of Christianity*.

ANSWER: Ludwig **Feuerbach**

[10] Much of Feuerbach’s analysis of Bayle focuses on this work, the latter thinker’s masterpiece. Nicknamed “the Arsenal of the Enlightenment,” this long work offered up profiles of previous thinkers through Bayle’s skeptic lens.

ANSWER: *An* ***Historical and Critical Dictionary*** or ***Dictionnaire historique et critique***

10. Usually symbolized with a backward script E, this operator operating on the statement “a an element of the empty set” renders false any subsequent proposition P of a. For 10 points each:

[10] Name this operator fundamental to first-order logic.

ANSWER: the **existential quantifier** [or **existential quantification**; prompt on there **exists**]

[10] Existential quantifiers can be removed from a first-order statement by this process, in which an existentially quantified variable in a proposition is replaced with an appropriate function of the universally quantified variables appearing before it.

ANSWER: **Skolemization**

[10] Skolemization is often the first step in systems designed to do this automatically. Gödel’s incompleteness theorem states that any sufficiently powerful theory contains statements that are true but for which this is impossible.

ANSWER: to **prove** statements [accept word forms like **proof**]

11. This historical figure was commissioned by Callixtus III to fight against a foreign enemy. For 10 points each:

[10] Name this man who delivered an invective against the Turks at the Diet of Frankfurt.

ANSWER: St. **John of Capistrano** [or S. **Giovanni di Capistrano**; prompt on St. **John** or S. **Giovanni**]

[10] John of Capistrano led 60,000 men out of this city that, three years earlier in 1453, had fallen to the forces of Mehmed II after a prolonged siege.

ANSWER: **Constantinople** (or **Istanbul** or **Byzantium**)

[10] Constantinople had been under the power of the Paleologus dynasty since 1261 when it was captured by this man, the founder of said dynasty.

ANSWER: **Michael VIII** Paleologus

12. These compounds have kappa, mu, and delta receptors in the periaqueductal gray matter, and natural analogues of them include endorphins. For 10 points each:

[10] Identify this class of drugs used to dull nociception that includes suboxone and morphine.

ANSWER: **opiates** or **opioids**

[10] Opioid receptors, like G-coupled receptors, fall into this broad class of membrane-associated proteins that are sometimes termed “serpentine receptors.” Their more common name derives from the number of hydrophobic helices they possess.

ANSWER: **7TM** receptors [accept **seven transmembrane** domain receptors, **seven transmembrane spanning** receptors, **serpentine** receptors, **heptahelical** receptors, or other equivalents indicating that they cross the plasma **membrane** **seven** times; prompt on **transmembrane** receptors]

[10] Emergency heroin overdoses are typically treated by this short-acting opioid receptor antagonist. Replacing this drug’s allyl group with methylcyclopropane yields a long-acting compound that is used as a maintenance treatment for opioid and alcohol dependence

ANSWER: **naloxone** [do not accept **naltrexone**]

13. Supposedly originating in Spain, Paul Spicer wrote one for organ, while Leoncavallo wrote one for piano subtitled “Ancient Dance,” for 10 points each:

[10] Identify this type of composition, a slow and stately dance in triple time, with the phrase usually beginning on the first beat, often found as a movement of the Baroque suite

ANSWER: **saraband**(e)(s)

[10] In 1887 this Frenchman presented three exotic *Sarabandes* for piano notable for their use of parallel chords and chords of the ninth. His other works include the ballet *Parade*.

ANSWER: Erik **Satie**

[10] Satie’s *Sarabandes* were created one year before this more well known three part suite, whose title was derived from an ancient Spartan festival and inspired by the decoration on a Greek vase.

ANSWER: ***Gymnopedies***

14. He built a seven story high structure on the shores of Lake Biwa, for 10 points each:

[10] Identify this master of Azuchi Castle who destroyed the Takeda Clan at the Battle of Nagashino.

ANSWER: **Oda** Nobunaga

[10] When Oda drove Yoshiaki out of Kyoto in 1573, it marked the end of the reign of this shogunate that had been established by Takauji in 1338, but had been badly weakened during the Onin War.

ANSWER: **Ashikaga**

[10] Oda’s death by seppuku was instigated by this discontented former general at Honnoji in 1582.

ANSWER: Akechi **Mitsuhide**

15. Answer some questions about really long strings of double bonds, for 10 points each.

[10] Long systems of alternating single and double bonds have this property, in which overlapping p-orbitals decentralize the pi-electron density. If it occurs in a cyclic molecule, it is called aromaticity.

ANSWER: **conjugation**

[10] Conjugated pi systems are often found in this type of moeity, which is any area of a molecule which is responsible for giving a molecule color. Woodward-Fieser rules are used to find the wavelengths of these compounds, examples of which include retinal and beta-carotene.

ANSWER: **chromophore**

[10] Conjugated dienes are useful reactants in the Diels-Alder reaction; this diene, which contains a methoxy and a trimethylsilyloxy group, is a particularly reactive example. Its eponymous discoverer also pioneered a total synthesis of Taxol beginning with an enedione.

ANSWER: **Danishefsky** diene [also accept **Kitahara** diene or **Danishefsky**-Kitahara diene, named for Samuel J. Danishefsky and sometimes Takeshi Kitahara]

16. This novel’s main character has been reduced to writing reviews of such biographies as *Love in a Maze: A Life of James Shirley*, while trying to finish his migraine inducing masterwork *Untitled*, for 10 points each:

[10] Identify this novel chronicling down-and-out writer Richard Tull’s attempts to get back at Gwyn Barry, his more successful and vapid former friend.

ANSWER: ***The Information***

[10] In addition to *The Information*, this author has penned such works as *Money*, *Einstein’s Monsters*, and *Time’s Arrow*.

ANSWER: **M**artin **Amis**

[10] In this Martin Amis novel, set against the backdrop of “The Crisis,” Sam Young gets involved with the femme fatale Nicola Six, though he yearns to return to the titular place.

ANSWER: ***London Fields***

17. This man, the son of Queen Hiordis, was fostered by Regin. For 10 points each:

[10] Name this protagonist of the Saga of the Volsungs who slew Fafnir.

ANSWER: **Sigurd**

[10] 10] Sigurd's lover, Gudrun, is the daughter of this “grim-minded” magician who was also queen of the Nibelungs.

ANSWER: **Grinhild** [or **Grimhild**]

[10] Grinhild tricks Sigurd into marrying Gudrun, despite his attraction to Brynhild, by giving him this substance.

ANSWER: **ale of forgetfulness** [prompt on **ale**; accept reasonable equivalents]

18. The title character's love Pollione has fallen for the temple virgin Adalgisa, despite the title character having borne two of his children. For 10 points each:

[10] Name this opera about a female Druid, which ends with her stepping up to a funeral pyre.

ANSWER: ***Norma***

[10] *Norma* is an opera by this Italian giant of the Bel Canto style, whose other operas include *La Somnambula* and *I Puritani*.

ANSWER: Vincenzo **Bellini**

[10] This early Bellini opera tells the story of love between the shipwrecked Gualtiero and the married Imogene. Gualtiero eventually kills Ernesto in a duel.

ANSWER: ***Il Pirata*** or ***The Pirate***

19. This fictional character serves as the President of Harley College in an 1828 novel, for 10 points each:

[10] Identify this character, created by Nathaniel Hawthorne, whose ward Ellen Langdon is saved from an attempted seduction by the eponymous *Fanshawe*.

ANSWER: Dr. **Melmoth**

[10] Dr. Melmoth thus shares a name with the title character of this man’s gothic masterpiece, *Melmoth the Wanderer*.

ANSWER: Charles Robert **Maturin**

[10] While in exile under the name Sebastian Melmoth, Oscar Wilde wrote this 1898 poem about a man condemned to die at the title location in Berkshire County.

ANSWER: “**The Ballad of Reading Gaol**”

20. One of these is taken to a multiple of itself by the action of a linear operator. For 10 points each:

[10] Name these rank-one objects central to much of linear algebra.

ANSWER: **eigenvector**s of an operator

[10] Transforming an n-dimensional square matrix with n independent eigenvectors into the basis defined by those eigenvectors is the same as performing this operation on the matrix. n-by-n matrices without n independent eigenvectors can only undergo a “block” form of this.

ANSWER: **diagonalization** [accept word forms like **diagonalizing**]

[10] This theorem states that any real, square matrix with positive entries has a unique largest eigenvalue, which has an associated eigenvector having all positive components.

ANSWER: the **Perron-Frobenius** theorem