

ACF Nationals 2016

Packet by MIT A (Neil Gurram and Saumil Bandyopadhyay)

Tossups

1. This element is bound to a chelating phosphorus/oxygen ligand and a cyclo-octa-diene ligand in a catalyst for ethylene oligomerization in the Shell higher olefin process. A cation fills the octahedral holes in a hexagonal close packed array of anions in a crystal structure named for this element's arsenide. It's not ruthenium, but hydrogen and carbon dioxide react to form methane and water using a catalyst of this element in the Sabatier process. This element converts carbonyls to alkanes via a thioketal intermediate in the Mozingo reduction. In a process that forms this element, a tetracarbonyl intermediate decomposes into this metal and four molecules of carbon monoxide. Treating an alloy of aluminum and this metal with sodium hydroxide forms a high-surface area catalyst for hydrogenating alkenes. For 10 points, what transition metal, along with iron and cobalt, is ferromagnetic?

ANSWER: nickel [or Ni]

2. Clement Marot translated six works by this author to curry favor in Francis I's court. The first French collection modeled on this author's works are a cycle of 449 *dizains* that comprise the emblem book *Délie*. Troilus states "If it's not love, then what is it that I feel?" in the first English translation of one of this author's works. In 1501, Pietro Bembo published an Aldine version of this author's works, and chose not to use the title of *Rerum Vulgarium Fragmenta* for them. A 2002 translation of this author made by Anthony Kline includes a poem stating "the clearest knowledge of how the world's delight is a brief dream" after opening "You who hear the sound, in scattered rhymes." Fourteen years before he was crowned Rome's poet laureate, this author wrote a collection that idealized the love of a woman whom he met in Avignon. For 10 points, name this author who wrote a collection of 366 poems about Laura de Noves, titled *Il Canzoniere*.

ANSWER: Petrarch [or Francesco Petrarca]

3. A text named for this mythical figure claims that temples of elephants and conch shells are the sources of the most lackluster pearls, while those found in oysters are superior. In book 7 of the *Mahabharata*, Kritavarman and Kripa form the "eyes" of a formation named for this figure used by the army of Dronacharya. Sumukha and Suvarna are two of the six sons of this figure, who appears on the battle flag used by Krishna. He drove Kaliya out of Ramanaka Dwipa, but was unable to pursue him into Vrindavan. This character shrank to get past a spiked wheel and put out a ring of flames with river water as part of a mission to retrieve amrita and free his mother from slavery to his aunt Kadru. His brother Aruna hatched from the first of his mother Vinata's two eggs. For 10 points, name this sworn enemy of the nagas, a humanoid king of birds who was the mount of Vishnu.

ANSWER: Garuda

4. As a young man, this politician opened up a small law practice in the town of Wakaw, and later gained national prominence by getting Jack Atherton acquitted of manslaughter charges in the Canoe River train crash. This man, who stepped up to lead his party after George Drew nearly died of meningitis, came to power after his predecessor's government was brought down by the Great Pipeline Debate. His Associate Minister of National Defense Pierre Seigny was embroiled in a sex scandal with East German prostitute Gerda Munsinger. His popularity fell even more when he accepted Bomarc missiles from the United States, which led him to cancel the Avro Arrow Program. He instituted his nation's Bill of Rights during his six-year term as prime minister, in which office he succeeded Louis St. Laurent. For 10 points, name this Progressive-Conservative who led Canada starting in 1957 and was succeeded by Lester Pearson.

ANSWER: John George **Diefenbaker** [accept **Dief the Chief**]

5. This composition's second movement opens with the cellos playing a rising minor third as part of its D major orchestral introduction. Its third movement, the only one in E-flat major, introduces a prominent harp part and features a solo violin playing a melody based on the soprano line "Te decet hymnus" from the first movement. This composition's penultimate movement was initially written separately as a piece for baritone soloist and organ. Its second movement, which omits the words "omnium fidelium" from the line "libera animas defunctorum," appears two movements before one that features a solo soprano who repeats "Dona eis, domine." Modifications its composer made to the form include the addition of the *In Paradisum* and *Libera me* movements and the elimination of the *Benedictus* and the traditional *Dies Irae* sequence, leaving only the prominent fourth-movement *Pie Jesu*. For 10 points, identify this mass for the dead by a 19th-century French composer of a notable *Pavane*.

ANSWER: Gabriel **Faure's Requiem** [or **Requiem in D Minor**; or Gabriel **Faure's Opus 48**; prompt on partial answers]

6. A history of determining this concept is presented in a book by David King stating that Habash al-Hasib developed the "method of the zijes" to determine it, while Shams Al-Khalil devised a table with 30,000 entries explicating it. A *hadith* in the *Muwatta* of Imam Malik attributes to Abu Ayyub al-Ansari the idea that one should avoid utilizing this concept before *istinja*. In an explanation of this concept presented in *The Cow*, it is said that even if you were to bring "People of the Book" all the signs, they would not follow this concept, since they would "turn on their heels from the Faith." Since "To Allah belong both East and West," this concept was changed away from Syria. This concept is used during *salat* and is often indicated with a special niche called a *mihrab*. For 10 points, give this term for the direction toward the Kaaba, which is the Muslim direction of prayer.

ANSWER: **qibla** [**Qiblah**, **Qibleh**, **Kiblah**, **Kible** or **Kibla**; prompt on direction to Mecca]

7. This man names a method of finding stress distributions of objects under torsion by solving the differential equation for the deflection of a soap film, his “membrane analogy.” The thermal boundary layer thickness scales with the one-third power of a quantity named for this man. He is the alphabetically second namesake of a transformation used to solve the linearized potential equations for compressible, inviscid flow which features a singularity at the speed of sound. Because this man’s number doesn’t depend on length scale, the Peclet number is often divided by the Reynolds number to give this number in dimensional analysis of forced convection, which yields the result that the Nusselt number is a function of the Reynolds number and this number. For 10 points, name this German physicist who introduced a region of fluid in which viscosity is significant, called the boundary layer.

ANSWER: Ludwig **Prandtl**

8. In one work by this author, Mr. Bezuidenhout wants his friend to name his child Gorki, and he calls the dilapidated house he lives in “Xanadu”; characters in that work include a bricklayer who spent six months in prison for violating a banning order and is now trying to flee to England. In that work by him, Gladys awaits the arrival of Steve Daniels for dinner while her husband cares for the title plants. Another work by this author is set in the Karoo town of New Bethesda and features a woman who tends a “cement garden” of men, fantastic monsters and other oddities which all face east. This author set many of his works near Port Elizabeth, including *A Lesson from Aloes*. He wrote a work in which Marius Byleveld fails to convince the lonely Miss Helen to enter a church’s care home. For 10 points, name this author of *The Road to Mecca*, whose other plays include *Boesman and Lena* and *Blood Knot*.

ANSWER: [Harold] Athol [Lanigan] **Fugard**

9. A Robert Asprey book subtitled “The Magnificent Enigma” says that snow at this battle was two feet deep, so one side’s infantry took two hours to move 1.5 miles across flat ground. The losing head of cavalry, General Romer, was fatally wounded by a musket, and the winning commander declared “We’ll retreat over the bodies of our enemies.” The losing side was led by Swiss veteran General Goldlein, while Leopold II, Prince of Anhalt-Dessau received a sketch of troop formations from his monarch. This battle saw defeat for an army under Wilhelm Reinhard von Neipperg by forces led by Field Marshal Schwerin after the winning monarch fled across the Oder River, thinking he had lost. This contest marked the beginning of a war - it was fought four years before Fontenoy and two years before Dettingen. For 10 points, name this battle during the War of the Austrian Succession, a 1741 victory for Frederick the Great in Silesia.

ANSWER: Battle of **Mollwitz**

10. In *The Sources of Normativity*, Christine Korsgaard discusses the problem of human “reflexivity” using this philosopher’s discussion of free will. This philosopher conceived of human conscience as an “inner court” of justice in which an individual examines his behavior as if he is in front of a judge. This man’s doctrines are critiqued as egoistic in a prize essay written to the Royal Danish Society of Scientific Studies; the author of that work concludes that, unlike this philosopher, compassion is the one true source of good behavior. Arthur Schopenhauer’s *On the Basis of Morality* is largely a critique of this author, who developed a thought experiment in which the subjects treat each other’s well-being as an ultimate goal. The Kingdom of Ends was introduced by this philosopher, who formulated duty-driven ethics. For 10 points, name this author of *Groundwork for the Metaphysics of Morals*, who discussed the categorical imperative.
ANSWER: Immanuel **Kant**

11. In one work, this thinker discussed the power of “global gladiators” like transnational corporations and criminal organizations, which operate through “power-mosaics.” In another work, he discussed the rise of a “super-symbolic economy” in which “post-fact knowledge” has replaced the industrial-based economy, and wealth creation is now dependent on exchange of data. This author of *Revolutionary Wealth* discussed the economic aspects of the energy crises in the 1970s in *The Eco-Spasm Report*. This thinker, who co-authored many works with his wife Heidi, also wrote a book subtitled “Knowledge, Wealth, and Violence at the Edge of the 21st Century,” and is remembered for describing a phenomenon that happens when there is “too much change in too short a period of time.” For 10 points, name this author of *Powershift* and *The Third Wave*, best known for writing *Future Shock*.
ANSWER: Alvin **Toffler**

12. This monarch nearly died in a ship fire while boarding the *Trinité Royale* in Portsmouth Harbor, and a couple years later built the flagship *Grace Dieu*. He secured an alliance with the future Holy Roman Emperor Sigismund by the Treaty of Canterbury, after sending his older brother, the Duke of Bedford, to defeat a fleet of Genoan ships. He was nearly overthrown when Henry Scrope and the Earl of Cambridge tried to replace him with Edmund Mortimer. After surviving the Southampton Plot and lifting the siege of Harfleur, he signed the Treaty of Troyes with Philip the Good to lay claim to the French throne and marry Catherine of Valois. This man, who executed John Lollard, died of dysentery contracted at the siege of Meaux, seven years after he won a battle on St. Crispin’s Day. For 10 points, name this Lancastrian winner of the Battle of Agincourt, who ruled between two other kings of the same name.
ANSWER: **Henry V** [prompt on Henry]

13. In this model organism, actomyosin contractility near the dorsal marginal zone drives apical constriction in bottle cells, which are formed through invagination during gastrulation. One commonly used assay in this organism involves cutting cells near its cement gland and moving them elsewhere. In this organism, Wnt signaling occurs from the Nieuwkoop (“NEW-cop”) center, which in turn gives rise to the set of cells responsible for dorso-ventral and antero-posterior axis formation, called the Spemann-Mangold organizer. Because organisms in this genus have a large brood size and eggs over 1 mm in diameter, they are useful for studying embryological development. *Tropicalis* and *laevis* are species of , for 10 points, what model organism, commonly called the African clawed frog?

ANSWER: *Xenopus* [or *Xenopus tropicalis*; or *Xenopus laevis*, accept **African clawed frog**, prompt on frog]

14. This book’s preface ends with a French quotation attributed to “a Master” but actually invented by the author that translates as “I impose nothing; I propose nothing; I expose.” Its preface also laments that England has had “no Fontenelles and Condorcets” and asserts that that “the history of” a certain time period “will never be written” because “we know too much about it.” A character in this book is bedeviled by “the pernicious influences of official etiquette” while attempting to reform the facilities at Scutari. The final section of this book describes its subject’s “mystic feeling” upon encountering a slaver named Zobeir and blamed its subject’s fate in part on clashes with Sir Evelyn Baring. Its third section attacks its subject for his fixation on classics in lieu of hard sciences while headmaster of the Rugby School. For 10 points, name this quadruple biography of Cardinal Manning, Florence Nightingale, Thomas Arnold, and “Chinese” Gordon, written by Bloomsbury Group member Lytton Strachey.

ANSWER: *Eminent Victorians*

15. Six variations on a theme from this opera form the basis for the Franz Liszt-led collaborative composition *Hexameron*. The final sequence of *Fitzcarraldo* includes a shipboard performance of this opera in full costume. A character in this opera argues with his niece about her impending marriage in “Sai com’arde in petto mio” and describes that niece’s bout of madness in “Cinta di fiori.” Carlo Pepoli wrote the libretto for this opera, whose second act ends with the bass-baritone duet “Suoni la tromba.” The primary tenor sings a high F above a high C in this opera’s aria “Credeasi, misera.” In this opera, a borrowed wedding veil facilitates the escape of Enrichetta, who is assisted by a man betrothed to the daughter of Lord Gualtiero Valton. This opera ends with Arturo marrying Elvira after a general pardon is declared by Oliver Cromwell. For 10 points, identify this Vincenzo Bellini opera named for an English religious group.

ANSWER: *I* *Puritani* [or *The* *Puritans*]

16. In 1960, the Supreme Court ruled that the Federal Power Commission had the right to take lands belonging to these people by eminent domain for a hydroelectric power project. A conflict involving these people saw Colonel James Moore lay siege to Fort Neoheroke, and started after European settlers attacked the areas around Neuse and Pamlico Rivers. Two leaders of these people occupied present-day Bertie County and Craven County. During that conflict, which also featured members of the Weetock and Bear River tribes, these people were defeated by governor Edward Hyde, and forced to flee. Their southern branch was led by Chief Hancock and their northern branch by Tom Blunt. For 10 points, identify this tribe who was the namesake of a war fought from 1711 to 1713 in North Carolina, and a few years later became the sixth member of the Iroquois Confederacy.

ANSWER: **Tuscarora** [accept **Tuscarora** War]

17. Laci Gerhart et al. studied trees from these areas to conclude that trees that existed during the Pleistocene were physiologically constrained by low amounts of carbon dioxide. Along with the Blancan and Irvingtonian fauna, the group of fauna named for of these regions gives its name to the class of animals that crossed the Bering Land Bridge. Families of *Halobacteriaceae* found in one of these *lagerstattes* may be responsible for the production of methane within it. The most notable one of these structures formed in an underwater basin during the Tertiary period, since a fault caused fossil fuels to seep upward and form dry bitumen. These structures are a good source of fossils since animals seem to become stuck in the asphalt within. For 10 points, name these sticky structures, some of which can be found at La Brea.

ANSWER: **tar pits** [or **tar lake** accept **asphalt pit** or **asphalt lake** before "asphalt" accept **La Brea** tar pits]

18. An entry in this collection describes a "System" that "strangles talent" and "poisons the soul" and opens by describing a scene in which a mechanical monster abducts a child whose mother later muses "I just can't get that monster out of my mind." Another piece in this collection ends by dubbing the title man's life "a minor but perilous triumph of being over nothingness" after earlier describing that man fidgeting with a book of poems by Mao. This collection, which is divided into sections titled "Lifestyles in the Golden Land," "Personals", and "Seven Places of the Mind," contains "Comrade Laski, C.P.U.S.A. (M.-L.)," and appears after the "Introduction" in *We Tell Ourselves Stories in Order to Live*. A five-year old named Susan is fed acid and peyote by her mother in this collection's title essay, which describes the dissolution of San Francisco's Haight-Ashbury district. For 10 points, name this essay collection by Joan Didion that takes its title from Yeats' "The Second Coming."

ANSWER: **Slouching Towards Bethlehem** [accept **We Tell Ourselves Stories in Order to Live**: *Collected Nonfiction* before mention]

19. One river in this region contains the Friedenau Dam, which provides water to the Matchless Mine, and flows from the Khomas Highlands—that is the Kuiseb River. The namesake park of this region contains species like Rüppell’s korhaan and the Fogstand beetle, as well as the Naukluft Mountain Range, whose southern end contains the town of Sesriem. This region’s highest point is Brandberg Mountain, located near the town of Erongo in Damaraland. The northern part of this desert is known as Kaokoveld and experiences cool temperatures because of the Benguela Current. This desert is the namesake of a golden mole and contains cities such as Luderitz and Swakopmund. It also contains an area named for collecting the remains of ships and fish, the Skeleton Coast, and the city of Walvis Bay. For 10 points, name this desert which runs along the Atlantic coast south from Angola and into the country it is named after.

ANSWER: Namib Desert [accept Kuiseb River before it is mentioned, accept Namibia before park]

20. An exhibition of this man’s art at the Acquavella Gallery in Manhattan featured the debut of a painting in which a nude man and a dog splay out atop a bed, while a pair of disembodied knees protrude from beneath it. In another of his paintings, a black-clad man reads in the foreground while in the background, a baby is being breast-fed by a middle-aged man. This artist of *Sunny Morning--Eight Legs* was inspired by another artist’s *Afternoon in Naples* to create a “paraphrase” featuring three nudes on an unusual Utah-shaped canvas called *After Cezanne*. His regular models included the performance artist Leigh Bowery and his first wife Kitty Garman, who is shown with a single breast flopping out of her yellow bathrobe in this man’s *Girl with a White Dog*. He depicted “Big Sue” Tilley lying nude on a couch in his 1995 painting *Benefits Supervisor Sleeping*. For 10 points, name this British painter, the grandson of an Austrian psychoanalyst.

ANSWER: Lucian Michael Freud

Tiebreaker: With its southern neighbor, this nation signed the Treaty of Mapasingue, which ceded rights to its disputed territories. The Central Bank of this nation was advised by a group including Edwin Kemmerer during a rocky period where its president, the namesake of its ayora coin, was deposed in the liberal Julian revolution. The May 28th “Glorious Revolution” in this country brought to power a man who served five terms before being ousted by the general Guillermo Lara. Much earlier, this nation was home to a political rivalry between Eloy Alfaro and Gabriel Garcia Moreno. With its southern neighbor, this nation fought the aforementioned Paquisha and Cenepa wars. Led for many years by José Ibarra, this nation contains a city which was the site of an 1822 meeting between Jose de San Martin and Simon Bolivar. For 10 points, name this location of the Guayaquil Conference, which fought several wars with its southern neighbor, Peru.

ANSWER: Republic of Ecuador [or República del Ecuador]

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Bonuses

1. This artist coated his face in honey and gold leaf and wandered around the Galerie Schmela mumbling to an animal corpse in one work, while in another, he wrapped himself in felt to travel to New York, where he spent three days in a room with a coyote. For 10 points each:

[10] Name this German performance artist behind *How to Explain Pictures to a Dead Hare* and *I Like America and America Likes Me*.

ANSWER: Joseph **Beuys** ("boys")

[10] Beuys briefly joined Fluxus, a movement inspired by this Dadaist sculptor whose many readymades include *Pulled at 4 pins*, *Bicycle Wheel*, and *Fountain*.

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

[10] This Lithuanian-born artist wrote the first *Fluxus Manifesto* in 1963 and coordinated the group's activities. His last work, *Flux Wedding*, was performed with his wife Billie Hutching before he died of cancer in 1977.

ANSWER: George **Maciunas** [or Jurgis **Maciunas**]

2. This man served as prime minister from 1867-1871 under the monarch Franz Josef I, and allegedly often slept with Franz Josef's wife Sisi. For 10 points each:

[10] Name this Foreign Minister of Austria-Hungary, whose namesake "note" urged the sultan of the Ottoman Empire to institute reforms in Bosnia and Herzegovina.

ANSWER: Count Gyula **Andrassy** [or Graf Julius **Andrassy**]

[10] Count Andrassy convoked this diplomatic meeting in 1878, which followed the Treaty of San Stefano, and secured Austrian influence on the Balkan territories after the Russo-Turkish War.

ANSWER: **Congress** of **Berlin** [do not accept Conference of Berlin or Berlni Conference]

[10] Andrassy rose in stature by supporting the party of this Hungarian statesman known as the "sage of the country." This man drafted the April Laws as minister of justice, and authored the "Easter Article," which laid out the terms of the dual monarchy compromise.

ANSWER: Ferenc **Deák** [or Ferenc **Deák** de Kehida, or Francis **Deak**]

3. Valero, a minister serving this prince, passes a decree stating that anyone who boasts that he earned his bread through the sweat of his brow will be declared mentally insane and dangerous to society. For 10 points each:

[10] Name this prince who governs the Kingdom of Popo after his father King Peter abdicates to study philosophy. He flees from the kingdom to avoid marriage to a princess of Pipi.

ANSWER: **Leonce**

[10] In this play by the author of *Leonce and Lena*, Lucile Desmoulins yells out "Long Live the King!" during the execution of her husband Camille. It is set during the French Revolution.

ANSWER: **Danton's Death** [or **Dantons Tod**]

[10] *Leonce and Lena* and *Danton's Death* are two plays by this German dramatist who also wrote a drama about a soldier who stabs his lover Marie for sleeping with the Drum Major entitled *Woyzeck*.

ANSWER: Georg **Büchner** [or Karl Georg **Büchner**]

4. The fetal portion of this structure contains the chorionic villi. For 10 points each:

[10] Name this structure across which nutrients and gases can pass between the mother and fetus. The umbilical cord connects the fetus to this structure.

ANSWER: **placenta** [accept **afterbirth**]

[10] The mother provides immune protection for the fetus through this protein, which is the only immunoglobulin which can cross the placenta. This monomeric immunoglobulin is the most abundant immunoglobulin present in serum.

ANSWER: **IgG** [or Immunoglobulin **G**]

[10] These multinucleated placental cells synthesize the hormones progesterone and human chorionic gonadotropin. They originate as the outermost layer of the blastocyst, and they invade the uterine wall during implantation.

ANSWER: **syncytiotrophoblasts** [sin-SISH-yo-TRO-fo-blasts]

5. In this painting, three sunflowers on the left side of the canvas extend out over an extremely pudgy figure in a polka-dotted red dress who sits in a wagon. For 10 points each:

[10] Name this painting in which another of the title figures whirls a whip above his head while gazing directly at the viewer. It was painted by Philipp Otto Runge.

ANSWER: *The **Hülsenbeck Children*** [or *Die **Hülsenbeckschen Kinder***]

[10] A Victor Miesel article compares Runge's *Morning* to *Morning in the Riesengebirge*, a painting by this fellow German Romantic. This man painted a young man standing on a rocky precipice in his *Wanderer above the Sea of Fog*.

ANSWER: Caspar David **Friedrich**

[10] In the foreground of this painting by Friedrich, an elderly man walks towards two children and two adults. Its background is dominated by five ships, each a different distance from shore, mirroring the five people.

ANSWER: *The **Stages of Life*** [or *Die **Lebensstufen***]

6. A 2007 book on this kind of psychology was written by Nicholas DiFonzo, and the pioneering study was done in 1944 by Robert Knapp. For 10 points each:

[10] Leo Joseph Postman is best known for collaborating on a 1947 study titled for the psychology of this phenomenon, which he broke down into three stages of movement called leveling, sharpening, and assimilation.

ANSWER: **rumor** [or **rumors**, do not accept any other words]

[10] Postman collaborated on his rumor study with this Indiana-born psychologist, whose brother Floyd wrote the 1924 textbook *Social Psychology*. This man developed a religious orientation scale with J. Michael Ross and a "trait" theory with a hierarchy of cardinal, central, and secondary traits.

ANSWER: Gordon [Willard] **Allport**

[10] Trait theory helped pioneer the study of this concept, which can be described as the visible aspects of a person's character. It can be assessed with the Myers-Briggs Test and the MMPI.

ANSWER: **personality** [accept **personality** traits]

7. A legend involving John Lambton dealing with the consequences of missing church inspired this novel, whose secondary villain Edgar Caswell seeks to revive the art of mesmerism. For 10 points each:

[10] Name this novel in which Adam Salton returns to Mercia and enlists the help of Sir Nathaniel de Salis in defeating Arabella March, who can transform into the title creature.

ANSWER: *The Lair of the White Worm* [or *The Garden of Evil*]

[10] *The Lair of the White Worm* was written by this Irish author. That novel's characters Lilia and Mimi Watford bear striking similarities to Lucy Westenra and Mina Harker, characters in this man's most famous novel, *Dracula*.

ANSWER: Bram Stoker [or Abraham Stoker]

[10] *Dracula* followed in the tradition of vampire literature established by this author, whose creation Lord Ruthven appears in his 1819 story "The Vampyre," which was long erroneously attributed to Lord Byron.

ANSWER: John William Polidori

8. This man clashed with John Cotton over whether suffrage should be limited to members of the church. For 10 points each:

[10] Name this Puritan minister who left with John Haynes to become the founder of another colony, where he was joined by Roger Ludlow.

ANSWER: Thomas Hooker

[10] Thomas Hooker founded this colony, and Ludlow as its lone attorney drew up its namesake constitution, the Fundamental Orders. It absorbed the colony of New Haven in 1660.

ANSWER: Connecticut [or Connecticut Colony; accept Fundamental Orders of Connecticut or the River Colony]

[10] This other short-lived colony, which was founded by the younger John Winthrop in 1635 together with men like Captain Lion Gardiner, was governed by George Fenwick when it was also merged with the Connecticut colony in 1644.

ANSWER: Saybrook Colony [or Old Saybrook]

9. According to the *Saga of Olaf Tryggvason*, a curse involving this object caused the never-ending battle between Högni and Hedinn. For 10 points each:

[10] Name this precious object whose owner, Freya, slept with four dwarves to obtain it.

ANSWER: Brisingamen [accept word forms of "the Brisings' necklace" or "the Brisinga necklace"; prompt on necklace or torc]

[10] This Norse god borrows Brisingamen when he dresses up as Freyja as part of a fake marriage plot designed to allow him to recover his hammer Mjolnir from the giant Thrym.

ANSWER: Thor [or Donar]

[10] In another story, Loki steals Brisingamen and is pursued by Heimdall; the two gods eventually fight at Singasteinn in the form of these animals. They are the smallest animals into which Sedna's chopped-off fingers transformed.

ANSWER: seals [do not accept "walruses" or "whales"]

10. Applications of this algorithm, which should be used on dense graphs, can be used to find the inverse of real matrices as well as converting a deterministic finite automaton into a regular expression. For 10 points each:

[10] Name this algorithm which finds the shortest paths between all pairs of vertices in a weighted graph.

ANSWER: **Floyd-Warshall** algorithm [or **Floyd**'s algorithm, the **Roy-Warshall** algorithm, the **Roy-Floyd** algorithm, or the **WFI** algorithm]

[10] The Floyd-Warshall algorithm is often used to find this kind of “closure.” This property of a binary relation means that given the relation holds for a and b and it holds for b and c then, the relation will hold for a and c.

ANSWER: **transitive** [or **transitive** closure; accept word forms such as **transitivity**]

[10] Before running the Floyd-Warshall algorithm, one might run this algorithm as a subroutine a single time to determine if any negative weight cycles exist. This algorithm that runs in “big O of V^3 ” time, is used to find the shortest paths from a single source vertex and can be used on graphs with negative edge weights.

ANSWER: **Bellman-Ford**-Moore algorithm

11. For 10 points each, answer the following about the contemporary philosopher Julia Annas.

[10] Her recent work on this concept includes a 2011 book whose title refers to its “intelligent” form; that book argues that exercising this concept is akin to exercising a skill like playing the piano. A current debate asks whether a school of thought associated with this concept is “self-effacing.”

ANSWER: **virtue** [accept **virtue** ethics or **Intelligent Virtue**]

[10] Along with Jonathan Barnes, Annas produced the major modern translation of the *Outlines of Skepticism* written by this man in the 2nd century AD. His other works include a text called *Against the Mathematicians*.

ANSWER: **Sextus Empiricus** [prompt on partial answers]

[10] Her other work includes a translation of Books M and N of this text by Aristotle. Its first book, which is known as “alpha,” includes a celebration of “first philosophy” as the “most divine” of sciences.

ANSWER: **Metaphysics** [or **Metaphysica**]

12. Among the few parts of this composition not based on its tone row are the passages in its first movement that quote the melody of a Carinthian folk song. For 10 points each:

[10] Name this musical composition commissioned by Louis Krasner. Its dedication “To the memory of an angel” refers to the then-recent death of the composer’s muse Manon Gropius.

ANSWER: Alban **Berg**’s **Violin Concerto** [or Alban **Berg**’s **Concerto for Violin and Orchestra**; accept equivalents that mention Alban [Maria Johannes] **Berg** and **Violin Concerto**; prompt on partial answers]

[10] The final movement of Berg’s violin concerto includes variations on this Baroque composer’s chorale *Es ist genug*. This man’s other works include *The Well-Tempered Clavier* and the *Brandenburg Concertos*.

ANSWER: **Johann Sebastian Bach** [prompt on **Bach**]

[10] Another famous violin concerto, Felix Mendelssohn’s, was first performed by this German violin virtuoso in Leipzig in March 1845. This man composed the opera *Hans Wacht* and a *Concertino for Trombone and Orchestra*.

ANSWER: Ferdinand **David**

13. The MKG Museum in Hamburg is home to a vase named after this battle, which shows a man ready to be anally penetrated, and an inscription that reads: “my name is [*this battle*], I am now bent over.” For 10 points each:

[10] Name this battle where, in circa 466 BC, the Athenian general Cimon destroyed a fleet of 200 triremes in Pamphylia.

ANSWER: Battle of the **Eurymedon** River

[10] The ground battle at Eurymedon, including the burning of Persian ships, shared much in common with this earlier battle fought in 479 BC on the same day as the Battle of Plataea. Leotychides defeated the Persians at a namesake mountain in this battle.

ANSWER: Battle of **Mycale** [or **Mykales**]

[10] Kayqubad, a ruler of these people, built a new bridge over the Eurymedon River in the 13th century CE. The empire of these people thrived under Alp Arslan, when they defeated the Byzantines at Manzikert.

ANSWER: **Seljuk** Turks [**Seljuq** Empire]

14. The bifluoride anion exhibits a strong form of this phenomenon as part of a three-center four-electron bond. For 10 points each:

[10] Name this intermolecular force which links the base pairs of DNA and causes the high boiling point of water.

ANSWER: **hydrogen** bonding

[10] The strength of hydrogen bonds can be modelled using a modified Lennard-Jones potential whose attractive term falls off as r raised to this power, rather than falling off as r raised to the sixth power.

ANSWER: **10**

[10] In organocatalysis, hydrogen bonds can be used in place of protic acids or Lewis acids in “activating” the oxygen found in this electrophilic functional group.

ANSWER: **carbonyl**

15. Answer the following about Tito Okello, for 10 points each.

[10] Okello served for six months as president of this country after ousting Milton Obote. It was earlier ruled by the butcher Idi Amin.

ANSWER: Republic of **Uganda**

[10] As a youth, like many Ugandan leaders, Okello served in this military unit abbreviated as the KAR, which employed indigenous askaris under British commanding officers. Much earlier, this regiment fought against the Mad Mullah in Somalia.

ANSWER: **King's African Rifles** [prompt on **KAR**]

[10] Prior to being overthrown, Obote had brought forth this policy towards socialism that was stated in the Common Man's Charter and the Nakivubo Pronouncement. This policy sought to nationalize 60 percent of Uganda's industry.

ANSWER: **Move to the Left** [or First Steps for Uganda to **Move to the Left**]

16. This text partly grew out of the author's dissertation "The Double Standard," which used the vocabulary of New Criticism to write about female writers. For 10 points each:

[10] Name this book of pioneering gynocriticism, which examines "British Women Novelists from *Brontë* to *Lessing*." It argues that there is a "lost female literary tradition" and was written by Elaine Showalter.

ANSWER: A **Literature of Their Own**: *British Women Novelists from Brontë to Lessing*

[10] A *Literature of Their Own* derives its title from this British essayist, who wrote "A Room of One's Own" and the novel *Orlando*.

ANSWER: Virginia **Woolf** [or Adeline Virginia **Woolf**; or Adeline Virginia **Stephen**]

[10] Elaine Showalter once said of this critic "I wish [this author] no harm, but I doubt that many women will get up at 4 am to watch her funeral." Her book *Intercourse* is often interpreted as stating "All heterosexual sex is rape."

ANSWER: Andrea [Rita] **Dworkin**

17. If the square of the characteristic size of the aperture divided by the product of distance from the aperture times wavelength is greater than 1, then the near-field form of this phenomenon is produced. For 10 points each:

[10] Name this phenomenon, the bending of light around the corners of an obstacle and the spreading out of waves past small openings.

ANSWER: **diffraction**

[10] This principle states that the diffraction pattern for an aperture is the same as the pattern for an opaque object of the same shape illuminated in the same manner. For example, a droplet and a circular hole of the same size will produce the same diffraction pattern.

ANSWER: **Babinet**'s principle

[10] This effect is a quantum mechanical phenomenon consisting of the diffraction of a well-collimated particle beam by a standing wave of light. This effect's first namesake also names the thermal resistance across the interface between a solid and liquid helium.

ANSWER: **Kapitza-Dirac** effect [or **Kapitsa-Dirac** effect; prompt on partial answer]

18. Answer the following about concepts in property law, for 10 points each.

[10] Future vice president Daniel Tompkins wrote the majority opinion in this 1805 case, which held that mere pursuit of a wild animal does not establish property rights, so you can legally swipe a fox being chased by another person.

ANSWER: **Pierson v. Post** [also accept **Post v. Pierson**, prompt on just Pierson or Post]

[10] *Hawaii Housing Authority v. Midkiff* held that the state may use this power to take private land if it proves that the taking is “rationally related to a conceivable public purpose.”

ANSWER: **eminent domain**

[10] This rule states that any interest in property must vest not more than 21 years after the death of some living person. This rule prevents you from assigning or willing your property to your great-great-great grandkids, preventing property from being tied up far into the future.

ANSWER: Rule Against **Perpetuities**

19. This man succeeded Shenouda III in his highest religious office and announced that 21 people killed in Libya would be commemorated as martyr saints on the 8th of Amshir. For 10 points each:

[10] Name this current Pope of Alexandria and Patriarch of the See of St. Mark.

ANSWER: His Holiness Pope **Tawadros II** [or **Wagih** Subhi Baqi Sulayman or **Theodore II**; prompt on **Tawadros**; prompt on **Theodore**]

[10] Pope Tawadros II is the leader of this church, the largest Christian church in Egypt. It was formed by Monophysites who disagreed with the Council of Chalcedon in AD 451.

ANSWER: **Coptic** Orthodox Church of Alexandria [accept word forms]

[10] Coptic monasticism saw a revival in the 1960s under the tenure of a Coptic pope of this name. Another man with this name was a major figure of the AD 431 Council of Ephesus who engaged in a dispute with Nestorius.

ANSWER: **Cyril** [accept Pope **Cyril** VI or **Cyril** of Alexandria]

20. This poem’s speaker offers the moral “nothing that keeps its youth / so far as I know, but a tree and truth” for “no extra charge” in a brief aside. For 10 points each:

[10] Name this poem that ends with the line “Logic is Logic. That’s all I say” after the title object suddenly falls to pieces exactly one hundred years after its construction.

ANSWER: “The **Deacon’s Masterpiece**; [or, the **Wonderful One-Hoss Shay**”]

[10] This American poet of “The Deacon’s Masterpiece” wrote “Build thee more stately mansions, O my soul” in “The Chambered Nautilus.”

ANSWER: Oliver Wendell **Holmes**, Sr.

[10] According to the poem, the Deacon finishes the one-hoss shay on the day that this event takes place. An earlier poem about this event condemns “philosophers who cry, ‘All is well,’ / And contemplate the ruins of this world.”

ANSWER: the 1755 **Lisbon earthquake** [or the Great **Lisbon Earthquake**; prompt on **Portuguese Earthquake**]