ACF NATIONALS 2018

ROUND 4
PRELIMS 4

packet by
MARYLAND A

authors

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Tossups

1. A form of this technique run with a live reaction can be used to control the extent of PEGylation. FFF may be used as an alternative to this technique, which can be coupled with LALS or MALS. Desalting and buffer exchange rely on this technique, whose media can be characterized by its MWCO. A form of the distribution coefficient used in this technique is K_{AV} ("K-sub-A-V") whose value is calculated from total volume, void volume, and elution volume. Dextrin-based Sephadex resins are commonly used in this technique, whose principles can be explained by either a steric or secondary mechanism. The "absolute" form of this technique combines it with dynamic light scattering. Polystyrene was originally used for this technique due to easily controlled pore size. This technique is the most common used to find the polydispersity index of polymers. For 10 points name this technique that uses a column to separate molecules by their hydrodynamic radius.
ANSWER: size-exclusion chromatography [accept gel permeation chromatography or gel-filtration chromatography or molecular sieve chromatography or SEC or GPC; prompt on "chromatography" or "column chromatography"]

2. A book by this thinker analyzes the distribution of real income without regard to production in the section "Liberal Formulations" before accepting the equivalency of distribution and production in the section "Socialist Formulations." This thinker built on another person's concept of the "annihilation of space and time" in his book *The Condition of Postmodernity* to theorize that rapid long-distance travel produces the effect of "time-space compression." This thinker described how the WTO's emphasis on intellectual property rights is part of a "'New' Imperialism" based on "accumulation by dispossession." He expounded on the use of the scientific methodology in geography in *Explanation in Geography*. In *Rebel Cities,* this thinker analyzed the history of urban anti-capitalist movements up to Occupy Wall Street after advocating for Henri Lefebvre's concept of "the right to the city." For 10 points, name this author of *Social Justice and the City*, a Marxist geographer.
ANSWER: David Harvey [or David W. Harvey]

3. In a poem in this collection, a young sorceress repeats "draw from the city, my songs" as she burns laurel and melts wax in rituals intended to bring her lover back. Two characters in this collection wager beachwood cups decorated with ivies and acanthus and ask each other in what land "the sky is five feet wide" and in what land "flowers bloom with royal names inscribed" as part of a riddle contest that they both win. The first poem in this collection follows the exiled Meliboeus (mel-ih-BEE-uss), who is forced to abandon his newborn goats on a road. The line "love conquers all; let us, too yield to love" is spoken by Cornelius Gallus in the last poem in this collection, which is structured after the "Dying Daphnis" poem of Theocritus's *Idylls*. A poem in this collection prophecies a golden age ushered in by the birth of a boy called the "great increase of Jove." For 10 points, name this collection that Christian writers credited with predicting the birth of Christ, a set of pastoral poems by Virgil.
ANSWER: *Eclogues* [or *Bucolics*]

4. Drawing on an article by J. Elfreth Watkins, among other sources, Henry Charlton Beck compiled a canonical set of stories about this creature. A well-known description of this beast appears in a falsified 1790 diary entry of Vance Larner, who claimed to have seen this creature screaming as it rubbed against an oak tree. This creature is sometimes regarded as a harbinger of war, having been sighted on December 7, 1941, hours before the Pearl Harbor attack. Legend states that, while hunting near an estate in Bordentown, Joseph Bonaparte found this creature. The subject of a widespread hysteria in 1909, this creature was much earlier linked with the family crest of Titan Leeds, an almanac publisher who feuded with Benjamin Franklin. Its mother was a witch named Mother Leeds who, pregnant with her thirteenth child, wished for it to be a demon; she then gave birth to this creature with a horse head, horns, hooves, and bat-like wings. For 10 points, name this legendary creature from the Pine Barrens of a namesake Atlantic state.
ANSWER: Jersey Devil [accept New Jersey Devil; accept Leeds Devil before "Leeds"]

5. After being dispatched with a small force of three biremes (BY-reemz), this general was credited with ending a seven-year civil war in Cyrene by governing that city after the departure of Caius Claudius Pulcher. After this man reportedly cut a channel through a mountain to let in seawater, he was jokingly compared to a Persian who cut through the isthmus at Mount Athos, and ridiculed as "Xerxes in a Toga." Although this general was victorious at the Battle of Artaxata, his army disobeyed his orders and forced him to set up winter camp at Nisibis. This general secretly sent a messenger into the plague-ridden city of Cyzicus (SIZ-uh-kuss), forcing his opponent to leave that city, after which he captured Tigranocerta and defeated Tigranes II while pursuing his foe into Armenia. The Lex Manilia forced this man to turn over his command to Pompey, after which he retired to his gardens. For 10 points, name this Roman general known for putting on luxurious banquets and warring against Mithridates VI of Pontus.
ANSWER: Lucullus [or Lucius Licinius Lucullus]

6. NG Ayad found that Tome1 ("tome one") is a substrate of this complex which also targets the origin recognition complex. The binding of thymidine to thymidine kinase prevents that kinase from reacting with this complex. The kinesins Kip1 ("kip one") and Cin8 ("sin eight") are substrates of this complex, which in inhibited by a complex containing Bub3 ("bub three") and MAD2 ("mad two") called the SAC ("sack"). Fizzy proteins are homologues of a protein that activates this complex, which oddly is inhibited by and degrades Rassf1a ("rass-F-one-A"). Emi1 ("eh-mee one") inhibits this complex that, like the SCF, contains a cullin subunit and targets D-box and KEN-box sequences. This E3 ubiquitin-ligase is activated by binding to either cdc20 or cdh1, and targets cyclin B and securin, whose degradation releases separase, which in turn cleaves cohesin. For 10 points, name this protein complex that triggers the transition from metaphase to a namesake phase of mitosis.
ANSWER: anaphase promoting complex [accept cyclosome; accept APC/C; do not accept or prompt on "anaphase"]

7. This artist, one of the original members of Section d'Or, used motifs of propellers and wing fuselages in his homage to aviation pioneer Louis Bleriot. Later in his career, this artist executed a series of *Runners* including *The Cardiff Team*. Erwin von Busse wrote about this artist for the *Blue Rider Almanac*, a book that included a print of one of this artist's works inspired by light streaming through the stained-glass windows at Saint Severin. This painter was a devotee of the color theory of Eugène Chevreul, the chemist whose work led to the invention of margarine, and used the term "simultanism" to describe the use of color in his works such as *Simultaneous Contrasts: Sun and Moon*. Guillaume Apollinaire noted the musical quality of this painter's multicolored discs and coined a term to describe this artist's work. *Simultaneous Windows on the City* is by, for 10 points, what artist of cubist paintings of the Eiffel Tower, an Orphist who married an artist named Sonia?
ANSWER: Robert Delaunay

8. A play that the author described as "a play about [these people] with no [these people] in it" ends with two Professors of Theology, played by women, discussing the "fragile feminine sex." Henry Packer arrives in a village searching for these people in that play, which was premiered by the Monstrous Regiment Theatre Company and is interspersed with songs such as "Nobody Sings." In another play, one of these people is saved from death when the drunken rag-and-bone merchant Old Skipps appears and is informed that he's been dead for hours. One of these people named Alice is the protagonist of Caryl Churchill's *Vinegar Tom*. A character who arrives in Cool Clary hoping to be hanged, Thomas Mendip, falls in love with a supposed one of these people named Jennet Jourdemayne in a 1948 play. For 10 points, the title woman of Christopher Fry's *The Lady's Not for Burning* is accused of being what sort of person?
ANSWER: witches [accept answers indicating people accused of being witches]

9. This man observed that, while people from his country desired *mukti*, Westerners desired *dharma* in his book-length comparison of Eastern and Western culture. This man first met a spiritual mentor after a teacher encouraged this man to visit that mentor while attempting to explain the meaning of "trance" in William Wordsworth's *The Excursion*. That spiritual mentor, who recognized this man as the sage Nara during their first meeting, was the namesake of an organization founded by this man at Belur Math. This author of *The East and the West* coined the concept of Daridra Narayana, or "God dwells into the poor," as part of his system of "Practical Vedanta." In 1895, this spiritual leader founded the Vedanta Society in New York. The Ramakrishna Mission was also founded by, for 10 points, what spiritual leader who introduced Hinduism to the West during the 1893 World's Parliament of Religions and took the title "Swami."
ANSWER: Swami Vivekananda [or Narendranath Datta]

10. This state was the site of a gold rush after William Hann explored the sands of the Palmer River, retracing previous expeditions of Richard Daintree. In a televised report, it was infamously referred to as the "Moonlight Stat," because of its rampant prostitution and police corruption, spurring an investigation called the Fitzgerald Inquiry. This state's longtime premier was called the "Hillbilly Dictator" for favoring rural districts; that premier of this state, Sir Joh Bjelke-Petersen, launched an aborted campaign to name himself prime minister. In a battle named for the capital of this state, troops rioted for two days in November 1942 against Douglas MacArthur and their American allies. In 1935, a population of cane toads was introduced to this state to save sugar cane fields from beetles. The third-oldest airline in the world was founded in this state, and is called the "Flying Kangaroo." For 10 points, what state runs from Cape York Peninsula in the north down the Sunshine Coast to its capital of Brisbane?
ANSWER: Queensland, Australia

11. An essay by this thinker introduces presuppositions of the form "*X is a reliable symptom of Y*" to argue that characterizing a state as "knowing" involves "placing it in the logical space of reasons." A follower of this thinker discussed this thinker's concept of a "game of giving and asking for reasons" in a book that draws on this thinker's treatment of non-inferential reports to present a strong inferentialist account of discursive commitment. This thinker, whose thought inspired the book *Making it Explicit*, imagined a man who supplements his community's strictly behavioristic language by theorizing that behavior is caused by "inner speech." Robert Brandom and John McDowell teach at the philosophy department that this thinker brought to prominence. This philosopher described the "Myth of Jones" in an essay that attacks the idea that sense perception provides the basis on which knowledge is built, which he dubbed the "myth of the given." For 10 points, name this University of Pittsburgh philosopher who wrote "Empiricism and the Philosophy of Mind."
ANSWER: Wilfrid **Sellars** [or Wilfrid Stalker **Sellars**]

12. *Two answers required.* A version of "The Barbara Song" from the *Threepenny Opera* appears on an album titled after the "individualism" of one of these two artists; that album also contains "Time of the Barracudas," a track written by these two artists in collaboration. An album by these two men, *Quiet Nights*, caused one of them to split with longtime producer Teo Macero. The collaborations between these two men are considered quintessential examples of a movement in jazz known as the "third stream." A collaborative work by these two men begins with an *adagio* B-minor theme originally played by the English horn. Together, these two men created an album of arrangements from *Porgy and Bess* and an album that includes a 16-minute long version of the *Concierto de Aranjuez* (ar-ahn-WHAYSS). For 10 points, name these two men, a pianist and trumpeter who together arranged the music for *Sketches of Spain*.
ANSWER: Miles **Davis** [or Miles Dewey **Davis** III] and Gil **Evans** [or Ian Ernest Gilmore **Evans**]

13. In a novel, a character who has this condition leaves the hospital where he was treated for a fractured skull and hallucinates a mouse emerging from a hole and being eaten by a bat. At the end of that novel about this condition, the protagonist finds the money he thought he'd lost in his breast pocket after stealing Helen's fur coat and pawning it for five dollars. The world-weary "White Logic" that beset the narrator during his "Long Sickness" is described in an autobiographical novel about this condition by Jack London. This condition afflicts Don Birnam in Charles Jackson's novel *The Lost Weekend*. Olivia Laing's *The Trip to Echo Spring* discusses an author who wrote about a facility for sufferers of this condition in "Where I'm Calling From," Raymond Carver, as well as other writers afflicted with it such as F. Scott Fitzgerald and Ernest Hemingway. For 10 points, name this condition described in Jack London's *John Barleycorn*.
ANSWER: **alcoholism** [accept answers mentioning addiction to or problems with **alcohol** or excessive **drinking** or similar]

14. After being blocked from writing a memoir about this organization, Charles Siringo condemned it in *Two Evil Isms*, claiming that it rigged the election of Edward Wolcott in Colorado. This organization's founder was responsible for retrieving Charles Anderson and Frank Reno after they were extradited from Canada, although those men were soon hung by the mob that attacked the New Albany Jail. A member of this organization secured a confession from Harry Orchard that he had carried out the lethal dynamite bombing of Frank Steunenberg, the governor of Idaho. That member of this organization was James McParland, who had earlier assisted the president of the Philadelphia and Reading Railroad by infiltrating the Molly Maguires, a secret association of coal miners. This company used a logo showing an open eye with the words "we never sleep" written beneath. For 10 points, name this private detective agency that engaged in a firefight against steel workers during the Homestead strike.
ANSWER: **Pinkerton** National Detective Agency [or **Pinkerton**s; accept answers mentioning **Pinkerton**s such as **Pinkerton** Agency or **Pinkerton** Detectives]

15. A book titled after these systems contains an analysis of a variant called the "Gamba machine," but suggests that it is subject to the same limitations. The first implementation of these systems, which used an array of 400 photocells as input to discriminate between letters of the alphabet, was called the Mark I. A book titled after these systems, which is sometimes credited with causing an "AI winter," was written by Seymour Papert and Marvin Minsky and noted that these systems are unable to solve the XOR ("ex-or") problem. According to these systems' namesake convergence theorem, given a linearly separable dataset, these neural networks will converge to a solution that separates the classes. For 10 points, name these early neural networks invented by Frank Rosenblatt, which are used for linear classification and consist solely of a single input layer and a single output layer.
ANSWER: single-layer **perceptron**s [prompt on "**neural networks**" or "**neural nets**" before "neural"; do not accept or prompt on "multilayer perceptrons"]

16. In an essay titled for the "poverty of" a certain movement, Richard K. Ashley analogized this thinker's work to Louis Althusser's failed attempts to create a structuralist version of Marxism. In one book, this thinker noted that reductionist theories like Hobson and Lenin's theory of imperialism were effectively "self-verifying theories" that merely changed to reflect what had happened. This thinker supported giving Iran nuclear weapons in a 2012 article for *Foreign Affairs.* Contra Scott Sagan, this thinker claimed that proliferation of nuclear weapons is an effective means of deterrence and bringing nuclear peace. This thinker also argued that the international system, which states belong to, should be understood as having an anarchic structure, as opposed to a hierarchical one. This thinker was credited with popularizing the term "bandwagoning" as he developed his "balance of power" theory. For 10 points, name this political theorist who wrote *Theory of International Politics* and pioneered neorealism.
ANSWER: Kenneth **Waltz** [or Kenneth Neal **Waltz**]

17. Charles Rosen argues that this piece marks the first example of a "double time-scale" and a "wave form" that oscillates back and forth between tonic and distant keys in his article on its composer's "inflections of Classical form." This piece opens with the pianist playing the notes "F – A – F – E – D – E" on the right hand, a figure that is repeated throughout the first six measures of this piece. The running sixteenth-note rhythm of the accompaniment to this piece is replaced by a series of slow chords during the vocal soloist's exclamation "Und ach, sein Kuss!" (oont akh, zyne koos). The vocal refrain to this piece includes the phrases "Meine Ruh' ist hin, mein Herz ist schwer" ("mine"-eh roo ist hin, "mine" hairz ist shvair) uttered by the title character, and the piano accompaniment is generally understood to represent the motion of the object that character uses while singing. For 10 points, name this lied (leed) depicting the heroine of a Goethe tragedy, a composition by Franz Schubert.
ANSWER: "**Gretchen at the Spinning Wheel**" [or "**Gretchen am Spinnrade**"]

18. In this novella, the protagonist causes a religious maid to weep and quit her job by insisting she is a hypocrite who uses his fits of anger as a "hair shirt." That protagonist writes of feeling that he had discovered death after reading a Lord Byron poem in a posthumously discovered document addressed to his daughter, a set of *Confessions* excerpted in italics throughout this novella. In this novella, guests at a banquet honoring a prize-winning painting leave referring to it as "The Painting of the Speech," because the painting itself is overshadowed by the main character's speech on it. As a youth, the protagonist loses his love interest Helena to his rival, whose fatal heart attack he induces at the climax of this novella. This novella is often collected with "The Madness of Dr. Montarco" and "San Manuel Bueno, Martyr." For 10 points, name this novella in which the doctor Joaquin Monegro represents the biblical Cain opposite the title painter, a work of Miguel de Unamuno.
ANSWER: *Abel Sánchez: The History of a Passion* [or *Abel Sánchez: Una historia de pasión*]

19. This man asserted that he had never heard "one donkey-farting doctor whisper the least fraction or trace of the order of God and all creatures" in his *Prague Manifesto,* aimed at soliciting support from the Hussites. This man was dismissed from a convent after clandestinely offering communion in both kinds to the noblewoman Felicitas von Selennitz, who helped him find a position as a preacher in Allstedt (AHL-shtet), where he preached his "Sermon Before the Princes." This religious leader ministered to the weaver Nicholas Storch as well as two other members of a group of Anabaptist lay preachers called the Zwickau (TZVIH-"cow") Prophets. This religious leader was captured by George of Saxony and Philip of Hesse in the Battle of Frankenhausen, after which he was tortured and executed. For 10 points, name this Radical Reformation preacher who died while leading the German Peasants' Revolt.
ANSWER: Thomas **Müntzer**

20. In cosmology, this type of theory can be made gauge-invariant with Bardeen variables. A key result in this theory is derived by pulling the squared magnitude of the matrix element outside of the integral over energy and exploiting the fact that the sinc-squared ("sink-squared") function approaches a delta function in the limit of zero width. In celestial mechanics, the Laplace-Lagrange theory is used to calculate long-term change in orbital parameters and is an example of the "secular" form of this approach. In quantum mechanics, this approach is used to derive Fermi's golden rule. The time-independent form of this theory can be used to find corrections to energies based on the first nonvanishing term in a power series expansion of the Schrodinger equation. For 10 points, name this technique that is used to find approximate solutions in quantum mechanics under small changes in a Hamiltonian whose original solutions are known exactly.
ANSWER: **perturbation** theory [accept secular **perturbation** theory]

Bonuses

1. In this work, the arrangement of figures in a relief image of Adam and Eve receiving the apple of knowledge is repeated in the composition of a panel depicting the Crucifixion. For 10 points each:
[10] Name this set of bronze doors made for the Church of St. Michael. Panels on the left of these doors depict the Fall of Man, and the panels on the right depict the life of Christ, with each left-right pair linked symbolically.
ANSWER: Bernward Doors [or Hildesheim Doors; accept any answers indicating doors commissioned by Bishop Bernward of Hildesheim]
[10] Bishop Bernward also commissioned one of these works, whose spiraling frieze depicts scenes between Christ's baptism and his entry into Jerusalem. Trajan commissioned one of these works in Rome after defeating the Dacians.
ANSWER: columns [accept Bernward Column or Trajan's Column]
[10] The Gero Cross, another masterpiece of Ottonian art, can be found in this building, once the tallest in the world. This Gothic structure more recently installed stained glass windows designed by Gerhard Richter to resemble pixels.
ANSWER: Cologne Cathedral [or Köln Cathedral; or Kölner Dom; accept Cathedral Church of Saint Peter or Hohe Domkirche Sankt Petrus; prompt on "Cologne" or "Köln"]

2. Throughout the day, this god sat in his hall, which had red-golden pillars and a silver roof, settling legal disputes so skillfully that all who came before him left satisfied. For 10 points each:
[10] Name this Norse god of justice, a son of Baldr who lived in Glitnir. In the *Poetic Edda*, this figure is mentioned only in the *Grímnismál*, but worshippers of a probable Frisian cognate appears in the *Life of Willibrord*.
ANSWER: Forseti [prompt on "Fosite"]
[10] This goddess presided over justice in Egyptian mythology. At the Hall of Two Truths, the dead were judged by having their hearts weighed against a feather symbolizing this goddess, who opposed Isfet.
ANSWER: Ma'at
[10] In Greece, Dike (DYE-kee) was closely linked to this goddess of justice and innocence. Ovid says that this daughter of Eos was the last god to dwell among mortals, departing in the Iron Age to become the constellation Virgo.
ANSWER: Astraea [or Astrea; or Astria]

3. "My Own Heart Let More Have Pity On" describes casting for this concept, and the speaker tells himself to creep under this concept "in a whirlwind" in "No Worst, There is None." For 10 points each:
[10] Name this recurring concept in Gerard Manley Hopkins's "terrible sonnets," which is described by the oxymoronic adjective "carrion" in the first line of the best-known poem of the set.
ANSWER: comfort [accept "Carrion Comfort"]
[10] After asking whether to cheer for himself or the "hero whose heaven-handling flung me," the speaker of "Carrion Comfort" reveals that "that night, that yea . . . I wretch lay" performing this action "with (my God!) my God."
ANSWER: wrestling [accept answers mentioning forms of the word wrestle]
[10] In "Carrion Comfort," the italicized words "I can no more" are taken from this man's poem *The Dream of Gerontius*. This Catholic cardinal described his departure from Anglicanism in *Apologia Pro Vita Sua*.
ANSWER: John Henry Newman [or Cardinal Newman]

4. When the separation between these quantities is larger than the bandgap, population inversion is reached. For 10 points each:
[10] Name these quantities with units of energy, which describe how far the carrier concentrations in semiconductors are from equilibrium.
ANSWER: quasi-Fermi levels [or IMREF, prompt on "Fermi levels"]
[10] The quasi-Fermi levels also split from their equilibrium value in the normal operation of these devices, which convert incoming photons to electric current.
ANSWER: solar cells [or photovoltaics; or photodiodes; prompt on "cells"]
[10] The Fermi-Dirac distribution is particularly easy to work with under this condition because, at this condition, that distribution becomes a step function that drops straight from one to zero at the Fermi level.
ANSWER: absolute zero temperature [or 0K or zero Kelvin; prompt on "zero temperature"]

5. This historian was the first to write about the "green children of Woolpit," a green-skinned brother-and-sister pair who ate only raw beans and who claimed to come from St. Martin's Land beneath the Earth. For 10 points each:
[10] Name this vampire-loving English historian who, at the request of Ernald, the abbot of Rievaulx, penned the *Historia rerum Anglicarum,* or *History of English Affairs,* covering the period from 1066 to 1198.
ANSWER: William of Newburgh [or William of Newbury or William Parvus, prompt on "William" or "Newburgh" or "Newbury"]
[10] William of Newburgh's work is a prime source for this 18-year period of civil war in England, which resulted after the White Ship Disaster allowed Stephen of Blois to seize the throne.
ANSWER: The Anarchy
[10] One of the last events documented by Newburgh is the 1196 peasant uprising of William Fitz Osbert, also known as William of the Long Beard, who was put to death by this Chief Justiciar of England and Archbishop of Canterbury. This man later began keeping the Charter Rolls as Chancellor for King John.
ANSWER: Hubert Walter

6. This composer uses everyday materials in "organic music" such as his *Water Concerto,* which calls for a water gong and soda bottle. For 10 points each:
[10] Name this composer of the opera *Marco Polo,* as well as the soundtracks of *Hero* and *Crouching Tiger, Hidden Dragon.*
ANSWER: Tan Dun [prompt on "Dun"]
[10] Tan Dun's *Ghost Opera* is not an opera at all, but rather a composition for string quartet and this traditional Chinese lute, played by Wu Man. Unlike the smaller liuqin (lyoo-chin), it is played almost upright.
ANSWER: pipa
[10] A fictionalized version of this composer has a cameo in Tan's *Marco Polo.* Tan wrote *Earth Concerto* as a dialogue with this composer's *Das Lied von der Erde* (das leed fon dair AIR-deh), whose lyrics are drawn from Tang dynasty poems.
ANSWER: Gustav Mahler

7. Albert Schweitzer's book on the "quest of" this figure surveys the scholarship before ultimately claiming that this figure "will be to our time an enigma and a stranger." For 10 points each:
[10] Name this figure, which has been the subject of three academic "quests." Methods of studying this figure include the "criteria of embarrassment" and the "criteria of multiple attestation."
ANSWER: historical Jesus [or historical Christ; accept answers mentioning Jesus and the concept of the real person from history or historicity; prompt on "Jesus"]
[10] Jesus mythicists, such as this American atheist, deny outright that Christ ever existed. He advocated that position by attempting to apply Bayes' theorem in *Proving History* and *On the Historicity of Jesus.*
ANSWER: Richard Carrier [or Richard Cevantis Carrier]
[10] A non-Christian source of evidence for the existence of Jesus can be found in this Roman historian's *Annals,* which describes Pontius Pilate's execution of "Christus." This historian also write the *Histories.*
ANSWER: Tacitus [or Publius Cornelius Tacitus or Gaius Cornelius Tacitus]

8. The postscriptum of this document recalls when the author and the addressee discussed "Empedocles on Etna," noting "At that time, I was one who fancied himself a god." For 10 points each:
[10] Identify this document titled "A Note to a Certain Old Friend," which recounts the author's rejection of various reasons "for aesthetic and practical reasons" and discusses emotions fictionalized in the story "Cogwheels."
ANSWER: Ryūnosuke Akutagawa's suicide note [accept equivalents in place of "suicide note" such as death note or last letter; accept answers mentioning Akutagawa's names in reverse order; accept answers mentioning Chokodo or Shujin in place of "Akutagawa"]
[10] This author quoted Akutagawa's suicide note before quoting the words "suicide is not a form of enlightenment" from his own essay "Eyes in their Last Extremity" in his 1968 Nobel lecture. He also wrote *Snow Country.*
ANSWER: Yasunari Kawabata [accept names in either order]
[10] In the note, Akutagawa discusses his examination of his "vague sense of unease towards [the] future" in a story titled for the "life" of one of these people, one of his last works. In a novel titled for one of these people, the title character uses a loincloth as a napkin shortly after being welcomed to Japan by Takamori and Tomoe.
ANSWER: a fool [or a stupid man; accept *Wonderful Fool* (by Shusaku Endo) or "A Fool's Life" or "Life of a Stupid Man" or Obaka-san]

9. The kingdom included the Great Temple at Musasir dedicated to its supreme god Haldi, and the fortress at Erebuni, where an apadana throne hall and potter's wheel were uncovered. For 10 points each:
[10] Name this ancient kingdom ruled by king Aramu and his son Sarduri I, who moved its capital to Tushpa.
ANSWER: Urartu Kingdom [or Kingdom of Van; or Uratu; or Urashtu; or Biai; or Biainili; prompt on "Kingdom of Ararat"]
[10] This early Neo-Assyrian ruler led a major subjection of Urartu circa 735 BC during the reign of Rakhianu ("rack"-ee-AH-noo). He had himself named King Pulu after capturing the ruler of Babylon, and he fathered the two rulers who succeeded him, Shalmaneser V (SHAHL-muh-NESS-ur "the fifth") and Sargon II.
ANSWER: Tiglath-Pileser III [prompt on "Tiglath-Pileser"]
[10] Urartu's kings like Rusas I were constantly hassled by the Cimmerians, who later invaded this kingdom ruled by men like Gyges and the wealthy king Croesus (KREE-siss).
ANSWER: Lydia

10. This reagent reacts via a three-plus-two cycloaddition whose product is then hydrolyzed to form a glycol. For 10 points each:
[10] Name this reagent with a plus-8 oxidation state used for di·hydroxyl·ation reactions. Reactions using this compound are made catalytic by providing oxidizing agents that reoxidize the central metal without affecting the alkenes that this reagent is meant to react with.
ANSWER: osmium tetroxide [or OsO_4]
[10] In the Lemieux-Johnson oxidation, osmium tetroxide is regenerated by a reagent containing an atom of this halogen; that reagent containing this halogen cleaves vicinal diols to form a pair of carbonyl compounds. This halogen exists as a solid at room temperature.
ANSWER: iodine [or I]
[10] The Upjohn reaction uses this amine oxide as a sacrificial catalyst to regenerate osmium tetroxide. This compound serves as the solvent in the Lyocell product, in which it dissolves cellulose to form "dope."
ANSWER: NMO [accept NMMO; accept N-methylmorpholine N-oxide or 4-methylmorpholine 4-oxide]

11. In 1989, this company purchased several military ships, including 17 submarines from the Soviet Union, that it sold for scrap. For 10 points each:
[10] Name this company that, during the tenure of Don Kendall, procured exclusive distribution rights in the Soviet Union in exchange for distribution of Stolichnaya (stohl-"ITCH"-nye-uh) vodka in America. Senator Joseph McCarthy was branded as this company's "kid" after he pushed to end wartime rations on sugar.
ANSWER: Pepsi [or Pepsico; or Pepsi Cola Company; accept "The Pepsi-Cola Kid"]
[10] Don Kendall served the Soviet Premier a Pepsi during this famous 1959 debate in Moscow, an interchange between Nikita Khrushchev and Vice President Richard Nixon at the American National Exhibition.
ANSWER: Kitchen Debate
[10] Pepsi's black marketing pioneer Ed Boyd ridiculed Coca-Cola for its ties to this white supremacist, who served as governor of Georgia from 1957 to 1981. This man's father of the same name was a Dixiecrat who fought with Walter Cocking to ban blacks from the University of Georgia.
ANSWER: Herman Talmadge [accept Eugene Talmadge or Herman Eugene Talmadge] [Both Talmadges had the same name, but the elder went by his middle name, Eugene.]

12. The only knowledge of this painting's layout comes from a drawing by Peter Paul Rubens, whose own *Hippopotamus Hunt* evidently bears similarities to this work. For 10 points each:
[10] Name this painting that its artist abandoned when his attempt to work with oil paints on the surface of a wall went disastrously awry.
ANSWER: The *Battle of Anghiari*
[10] *The Battle of Anghiari* is known as the "lost" painting of this Renaissance master, whose folly of painting oil-on-wall stemmed from his bad experience frescoing *The Last Supper* onto the refectory wall at the Santa Maria delle Grazie.
ANSWER: Leonardo da Vinci [or Leonardo di ser Piero da Vinci; accept any underlined portion]
[10] *The Battle of Anghiari* was painted in the Salone dei Cinquecento in this Florentine building. Michelangelo's original *David* stood outside this building until 1873, when it was replaced by a facsimile.
ANSWER: Palazzo Vecchio [or Palazzo della Signoria; accept Palazzo del Popolo or Palazzo dei Priori or Palazzo Ducale; prompt on "Old Palace"]

13. This equation can be solved with the help of the two-stream approximation, which assumes that energy comes in at only one angle and out at only one other angle. For 10 points each:
[10] Name this equation that gives the change in specific intensity along an optical path. The Eddington approximation is another common way to simplify it.
ANSWER: <u>radiative transfer</u> equation
[10] In radiative transfer, this dimensionless quantity equals the integral of the product of opacity and density with respect to path length. The intensity of an outgoing beam is equal to the incoming intensity times the negative exponential of this quantity.
ANSWER: <u>optical depth</u> [or <u>optical thickness</u>]
[10] In our Sun, an optical depth of two-thirds marks the inner boundary of this layer, which lies between the convection zone and the chromosphere and is the deepest layer we can observe directly.
ANSWER: <u>photosphere</u>

14. In a poem titled for this figure, Donald Revell claims that he is "a magical hermit" before stating "Dear Reader, your eyes are now green, green as they used to be, before I was born." For 10 points each:
[10] Name this personified concept who "comes as a master from Germany" in a Paul Celan poem that repeats the phrase "black milk of daybreak." This figure is instructed to "be not proud" in one of John Donne's *Holy Sonnets*.
ANSWER: <u>Death</u> [or <u>Tod</u>; accept "<u>Death Fugue</u>" or "<u>Todesfuge</u>" or "<u>Death, be not proud</u>"]
[10] In "Death Fugue," Celan uses this pair of adjectives to describe the hair of Margarete and Shulamith. These two color-based adjectives may suggest that the figures symbolize German womanhood and Jewish womanhood.
ANSWER: <u>golden</u> and <u>ashen</u> [or <u>goldenes</u> and <u>aschenes</u>]
[10] Celan dedicated his poem "Zurich, the Stork Inn" to this close friend of his. This German-born Jewish poet and author of the play *Eli* fled to Sweden during the Holocaust, and went on to win the Nobel Prize in 1966.
ANSWER: Nelly <u>Sachs</u> [or Leonie <u>Sachs</u>]

15. In response to John Norris and Mary Astell, a thinker with this maiden name argued that God is the sole proper object of our love in *A Discourse Concerning the Love of God*. For 10 points each:
[10] Give this maiden name of the philosopher Damaris Masham. Masham corresponded with Leibniz about the philosophy of her father, had this surname and wrote works rebutting "hylozoic" atheism.
ANSWER: <u>Cudworth</u> [accept Damaris <u>Cudworth</u> Masham or Ralph <u>Cudworth</u>]
[10] Masham's *Occasional Thoughts* argues for this opportunity for women, which was also advocated by Mary Astell. Rousseau argued that women should receive this right to be more pleasing to men in his treatise on it, *Emile*.
ANSWER: <u>education</u> [accept equivalents such as <u>learn</u>ing or being <u>taught</u> or <u>school</u>ing]
[10] Masham's father, Ralph Cudworth, was a member of this philosophical movement. Anne Conway, whose vitalism influenced Leibniz's idea of monads, was associated with this movement.
ANSWER: <u>Cambridge Platonist</u>s [prompt on "Neo<u>platonism</u>"]

16. An ATPase is present at the base of this structure that contains a needle complex known as the injectisome. For 10 points each:
[10] Name this complex that some bacteria use to inject effector proteins directly into host cells.
ANSWER: <u>Type III secretion system</u> [or <u>TTSS</u>; or <u>T3SS</u>]
[10] The type III secretion system shares significant similarities with this bacteria motility structure, suggesting a common ancestry, which is one of many reasons why this structure is not irreducibly complex.
ANSWER: <u>flagellum</u> [or <u>flagella</u>; accept <u>cilium</u> or <u>cilia</u>]
[10] This class of effectors are secreted by the type III secretion systems of *Xanthomonas* bacteria and name a class of proteins containing repeated DNA binding sequences of 33 to 35 residues. These effectors are combined with nucleases in a major class of engineered nucleases used in genome editing.
ANSWER: <u>TAL</u> effectors [accept <u>TALE</u>s or <u>TALE-like</u>s or <u>transcription activator-like</u> effectors; do not accept or prompt on "TALENS"]

17. After this character utters the "cry of a creature hurled over an abyss," the narrator realizes that "we were alone with the quiet day, and his little heart, dispossessed, had stopped." For 10 points each:
[10] Name this character who expresses a "want to get away" during a nighttime conversation that climaxes with a gust of freezing air extinguishing out a candle, prompting this character to say "it was I who blew it, dear!"
ANSWER: Miles
[10] Miles exclaims "Peter Quint—you devil!" before dying in the arms of his governess at the end of this ghost story by Henry James.
ANSWER: The *Turn of the Screw*
[10] Like Miles and his sister Flora, this title character of an 1897 James novel is one of his most famous child characters. That novel uses free indirect style to render this character's perspective on the divorce of her parents, Beale and Ida.
ANSWER: Maisie Farange [accept *What Maisie Knew*; prompt on "Farange"]

18. *Forbes* writer Adam Penenberg's discovery that there was no such business as Jukt Micronics led this man to confess that an article he had written on Ian Restil, a teenage hacker, was fraudulent. For 10 points each:
[10] Name this disgraced journalist who fabricated many news stories in the mid-1990s.
ANSWER: Stephen Glass [or Stephen Randall Glass]
[10] Glass fabricated stories while working for this American political magazine. In 2017, Leon Wieseltier came under fire for allegedly sexually harassing many women while working as its literary editor from 1983 to 2014.
ANSWER: The *New Republic* [prompt on "*TNR*"]
[10] Shortly before the release of the film *Shattered Glass*, in which Hayden Christensen plays Stephen Glass, Jayson Blair was revealed to have fabricated stories for this newspaper. David Brooks is an opinion columnist for this "newspaper of record."
ANSWER: *New York Times* [accept *NYT*; prompt on "*Times*" or "The Gray Lady"]

19. Plutarch writes that this man's dog was so loyal that it jumped into the sea to pursue its master, who had fled to the Isle of Salamis, where a spot is still known as his dog's grave. For 10 points:
[10] Name this Athenian politician who had been ostracized but was recalled early to lead the Athenian naval forces at the Battle of Mycale (my-KAL-ee), where he and Leotychides (lee-oh-TIKE-ih-deez) destroyed the Persian fleet.
ANSWER: Xanthippus (zan-THIH-puss)
[10] Xanthippus may be better recalled as the father of this great Athenian leader, who gave a noted funeral oration at the end of the first year of the Peloponnesian War.
ANSWER: Pericles [or Perikles]
[10] This city, whose school of painting later flourished under Eupompus during the rule Aristratus, is said to have lost more men than any other at Mycale. This city's later tyrant Aratus was a leader of the Achaean (uh-KEE-un) League who was poisoned by Philip V of Macedon.
ANSWER: Sicyon (SIH-see-ahn) [or Sikyon; or Sikyonos]

20. This psychologist discovered that changes in the ratio of leg fat to muscle cause the U-shaped developmental trajectory in infants' stepping movements. For 10 points each:
[10] Name this developmental psychologist whose experiments on babies placed in fish tanks showed that babies learn new motor skills dynamically by interacting with their environment.
ANSWER: Esther Thelen
[10] Thelen's experiments let her to propose a dynamic explanation for this phenomenon, which occurs when 8-to-12-month-old infants attempt to locate a toy in the same box they recently found it, despite seeing it placed into a different box.
ANSWER: A-not-B error [or perseveration error; or perseverative search error; or stage four error]
[10] This Swiss psychologist discovered the A-not-B error in his experiments, which caused him to identify four stages of cognitive development, including sensorimotor and preoperational.
ANSWER: Jean Piaget