

2021 ACF Nationals

Packet 10 by the Editors

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Tossups

1. A key religious leader in this kingdom, who wrote the *Karyes Typikon* and *Hilandar Typikon*, had all of his relics except for his left hand burned after an uprising in which peasants carried his image on war flags. That leader, born with the name Rastko, wrote the *Nomocanon*. A ruler of this kingdom employed the German mercenary Palman to lead the so-called “Alemannic Guard” and built the Monastery of the Holy Archangels. Another of its rulers married Helen of Anjou, and dug mines dedicated to its first Archbishop St. Sava, running under an area that is now dubbed the “Devil’s Town” for its earthen pyramids. This kingdom, ruled at its height by Stephen Dushan, was later led by a prince betrayed in battle at the Field of Blackbirds fighting against Murad I. This kingdom gave way to a Despotate after the fall of its Nemanjić (“NEH-mahn-yitch”) Dynasty. For 10 points, name this medieval kingdom that, like the modern state, had a center at Belgrade.

ANSWER: Kingdom of Serbia

2. This musician recounted how his 1962 Town Hall concert was derailed by three simultaneous strikes in an interview with Jacques Derrida entitled *The Other’s Language*. This musician quoted the bassoon opening from *The Rite of Spring* on the track “Sleep Talking,” which appears on a late album that concludes with a new recording of his collaboration with Pat Metheny (“muh-THEE-nee”), “Song X.” Miles Davis scoffed that this man was “all screwed up inside” after his controversial premiere at New York’s Five Spot with a quartet that included the trumpeter Don Cherry. This pioneer of “harmolodics” played his trademark white plastic instrument on an album that introduced the jazz standard “Lonely Woman”; almost fifty years later, he won the 2007 Pulitzer in Music for *Sound Grammar*. For 10 points, name this avant-garde jazz saxophonist who recorded the album *The Shape of Jazz to Come*.

ANSWER: Ornette Coleman

3. According to a formula named for this scientist, the quantity “pi-squared over 3 times Boltzmann’s constant squared times temperature over electric charge, times the logarithmic derivative of the density of states evaluated at the Fermi energy” gives the Seebeck coefficient. A criterion named for this scientist holds that the product of the effective Bohr radius and the cube root of the critical carrier density is approximately 0.25. This scientist is the alphabetically prior namesake of a bound state of an electron and an electron hole in a semiconductor, named for this man and Wannier. Another phenomenon named for this scientist results when Coulombic interactions between electrons, such as those described in the Hubbard model, drive the conductivity of a metal to zero. For 10 points, name this scientist who shared the 1977 Nobel Prize in Physics with Philip Anderson and J. H. Van Vleck and worked out a theory of how nickel oxide becomes one of his namesake insulators.

ANSWER: Nevill Francis Mott [accept Mott insulators or Mott criterion or Mott formula]

4. In a novel, a fictionalized version of a member of this family is the only person to speak frankly to the narrator after his play, *The Hunting Party*, flops. The title dying author anachronistically summons a member of this family to Weimar in the story “Goethe Dies.” A real-life member of this family wrote, “I do not understand them; but their tone makes me happy” about the poems of a writer he sponsored named Georg Trakl. That member of this family was the inspiration for Roithamer, who builds his sister a residence called “the Cone” in the middle of the Kobernausser Forest in the novel *Correction*. Thomas Bernhard wrote a novel about his friendship with the nephew of a philosopher from this family, who wrote, “whereof we cannot speak, thereof one must be silent.” For 10 points, name this family of the Austrian philosopher of language who wrote *Tractatus Logico-Philosophicus*.

ANSWER: **Wittgenstein** family [accept Paul **Wittgenstein** or Ludwig **Wittgenstein**]

5. In 2018, a letter requesting that two branches of this organization be shut down was signed by Jim Abeler and forty other Minnesota state legislators, citing a report criticizing this organization’s use of nondisclosure clauses, among other practices. This organization’s second branch was established in College Park, Maryland, in 2004, shortly after its first branch was established in Seoul. In 2014, the director of this organization controversially told her staff to remove several pages from the program of the EACS conference in Braga, Portugal. This organization has been described as “academic malware” by Marshall Sahlins, who argues that American universities should stop supporting it because it is an instrument of state propaganda, noting that it uses simplified characters rather than the traditional characters used in Taiwan. For 10 points, name this organization that runs Chinese language instruction programs worldwide, named after a philosopher.

ANSWER: **Confucius Institute** [or **Hanban**; or **Confucius Institute** Headquarters; or **Office of Chinese Language Council** International; or **Kongzi Xueyuan**]

6. The residents of this place were said to measure their grain in a hanap, or silver drinking goblet, which was thrown into the crowd during a ceremony. In one version, the princess of this place asks her suitor to put on a black mask, knowing that spikes will come out of its fabric and kill him, and then she swims naked outside. After the ruler of this place mounts his horse Morvarc’h, he is commanded by the saint Winwaloe to cast off his daughter, who falls to her death and becomes a witch. That ruler of this land is said to have “introduced the vine.” Its princess Dahut, the daughter of its final king Gradlon, falls in love with a red-bearded knight who convinces her to steal the keys from her father’s neck and open the gates to this kingdom. For 10 points, name this mythical city off the coast of Brittany that the Devil conspired to be sunk beneath the waves.

ANSWER: Kingdom of **Ys** [or **Is**; or **Ker-Is**; or Ville d’**Ys**]

7. In a battle named for this island, secretary and translator Cyril Drummond Le Gros Clark was captured, and 219 men once led by Dominicus Mars were thrown into the ocean with their hands bound. Lieutenant Colonel Charles M. Lane, initially sent to this island on a demolition campaign, became de facto commander of a local defense army called SARFOR. Two years after that campaign, Albert Kwok led opposition on this island during the Jesselton Uprising, also called the Double Tenth Incident. After the central city of Kuching was taken, the popular ruler Charles Vyner Brooke was marched to an internment camp and the precious oil fields at Labuan were seized, ending the rule of the White Rajahs on this island. For 10 points, name this island subjugated by the Japanese in 1942, ousting the British and the Dutch from its areas of Sarawak and Kalimantan.

ANSWER: **Borneo** [or the Battle of **Borneo**; or the Japanese invasion of **Borneo**; accept **North Borneo**]

8. This instrument is featured with alto flute in the piece *à la Fumée* and in the concerto *Notes on Light* by Kaija Saariaho. In a piece for this instrument with chamber choir, percussion, and celesta, the soloist uses a drumstick on parts of their instrument and plays a flexatone and bass drum; that is Sofia Gubaidulina's *Canticle of the Sun*. A concerto for this instrument is paired with a double timpani concerto on Volume I of Philip Glass's *Concerto Project*. A concerto for this instrument ends with seven fast timpani strikes and opens with the soloist entering on beat 2 with a motif of staccato quarter notes G, E-flat, high C-flat, followed by a long B-flat. That E-flat major concerto is the first of Shostakovich's two concertos for this instrument, which was also featured in an E minor concerto by Elgar. For 10 points, name this string instrument played by Mstislav Rostropovich and Yo-Yo Ma.
ANSWER: **cello** [or violon**cello**; accept **cello** concerto]

9. This writer compared the "provident" lily unfavorably to the "prodigal" poppy at the beginning of a philosophical essay ostensibly analyzing characters like Tess Durbeyfield and Eustacia Vye. In an oft-quoted letter, this man warned his friend Edward Garnett not to look for the "old stable ego of character" in his work. This author's *Study of Thomas Hardy* includes a lively excursus on his personal symbol, the phoenix. This writer originated the maxim "Never trust the artist. Trust the tale." in "The Spirit of Place," the introduction to a collection of essays on writers like Benjamin Franklin and Hector St. John de Crèvecoeur. This writer helped revive interest in *Moby Dick* with his *Studies in Classic American Literature*. For 10 points, name this Modernist who expressed a wish for people to "think sex, fully, completely" in an essay defending his novel *Lady Chatterley's Lover*.
ANSWER: D. H. **Lawrence** [or David Herbert **Lawrence**]

10. A 1997 paper, partly authored by J. Lawrence Aber and Neil Bennett of a "national center" for the study of this condition, laments that it is difficult to operationalize for study because of a lack of standard control variables. A key term in the US study of this condition derives from the Mexican case studies presented in cultural anthropologist Oscar Lewis's book *Five Families*. The United States's measure of this condition, which remains limited by the fact that Congress's initial mandate for "scientific" foundations led to sole reliance on USDA food data, is based on a set of surveys conducted by economist Mollie Orshansky. The argument that "social blindness" obscures this condition and its associated "culture" was made in Michael Harrington's 1962 book *The Other America*. For 10 points, the TANF ("tan-F") program is meant to combat what condition, which in 1964 Lyndon Johnson declared "war" on?
ANSWER: **poverty** [or being **poor**; accept **childhood poverty**; accept **poverty** line; accept **poverty** threshold; accept War on **Poverty**; do not accept or prompt on "hunger" or "lack of food"]

11. Excoffier and Slatkin introduced this algorithm to haplotype inference. MEME uses this algorithm on every starting point of a biological sequence to discover motifs. An expansion parameter is added to create an augmented model, which is then reduced, in the faster PX modification of this algorithm. The generalized version of this algorithm relaxes one step to simply ensuring that an objective function increases. This algorithm is commonly used to find the distributions after fitting to a Gaussian mixture model. A special case of it used to train hidden Markov models is named for Baum and Welch. Named by Dempster, Laird, and Rubin, this algorithm alternately computes the extremum of the log-likelihood function, then updates the parameters of the distribution to increase that log-likelihood. For 10 points, name this algorithm used for parameter estimation in statistical models containing latent variables, named for its two steps.
ANSWER: **EM** [or **expectation-maximization**; accept **Baum–Welch** until "Baum" is read; prompt on **maximum-likelihood estimation** or **MLE**]

12. In a portrait by Yousuf Karsh, one of these objects looms over a sitting artist who clutches a gnarled piece of wood while looking at the floor. A book by Rebecca Solnit takes its title from a painting of one of these objects depicting its artist's concept of *The Faraway, Nearby*. An artist who described how these objects "cut sharply to the center of something that is keenly alive" depicted one of them in the painting *Summer Days* and featured one of these objects in a painting meant as an expression of the "Great American Painting." In another painting, one of these objects floats above "little hills" next to a white hollyhock. Two red stripes and a V-shaped gradient of blue and white appear behind a stark white one of these objects in a painting completed during its artist's time at the Ghost Ranch. For 10 points, name these anatomical objects from the desert that were frequently painted by Georgia O'Keeffe.

ANSWER: **skulls** [prompt on bones, heads, or skeletons]

13. A philosopher who remarked that his task was to "bypass" this result discussed it in a passage that ends with the remark, "what may be called 'losing' in chess may constitute winning in another game." Notes by this result's formulator suggest that he believed the "notorious paragraph" on this result in Wittgenstein's *Remarks on the Foundations of Mathematics* was a deliberate misreading. Ernest Nagel collaborated with James Newman on a short book about this result, which includes a chapter devoted to "Rosser's Trick" that does not make use of omega-consistency in deriving it. In the 1931 paper that introduced this result, the author mapped symbols to natural numbers to prove that some propositions in the *Principia Mathematica* are "formally undecidable." For 10 points, an Austrian logician names what theorem about the unprovability of logical systems?

ANSWER: Gödel's **incompleteness** theorem [or **Gödel**'s theorems]

14. In one of this author's stories, a character steals the silver-coated foot of Mary Magdalene from a Carthusian monastery in order to use it against the witch Mad Moll. In another of his stories, Peterson gets hooked up to a polygraph on the invasive game show "Who Am I?" This author of "The Emerald" wrote a story whose narrator confuses people by inflating the title object over 45 blocks of Manhattan, and a story in which Edgar the gerbil succumbs to "distemper," forcing the narrator to answer questions about death from his students. This author of "A Shower of Gold" and "The Balloon," whose brother Frederick developed "K-mart realism," wrote a novel in which nineteen sons haul the 3200-cubit-long corpse of the title patriarch to its grave. For 10 points, name this postmodern author of *The Dead Father* who included "The School" in his *Sixty Stories*.

ANSWER: Donald **Barthelme**

15. After a general with this surname was victorious at the Great Siege of Acapulco, forcing the opposing army to flee to Fort San Diego, he put forth the "Sentiments of the Nation," a document calling for free elections and popular sovereignty, at the Congress of Chilpancingo. In a region with this name, the liberal forces of Francisco Leyva rebelled against Governor Pablo de Escandon in a conflict that led the region with this name to adopt Ricardo Flores Magon's motto "Land and Liberty." After the general with this surname was executed by the same firing squad that killed Father Miguel Hidalgo, his army was taken over by his loyal subordinate Vicente Guerrero. The region with this name, controlled from the towns of Cuautla and Cuernavaca, became the site of persistent rebellion after its native son published the Plan of Ayala. For 10 points, the army of Emiliano Zapata was based in a small state with what name, which is located south of Mexico City and named for the independence leader José María?

ANSWER: **Morelos** [accept José María **Morelos** y Pavon; accept the Free and Sovereign State of **Morelos**]

16. It's not Coulomb, but this statement names a blockade in which strong coupling suppresses low bias current in single-molecule devices. Extending this statement multidimensionally uses the Duschinsky transform to account for coordinate changes. The Herzberg–Teller effect corresponds to the first-order term in the expansion for which this statement is the zero-order term. This statement is used to create a “stick” spectrum dressed with Gaussians. Its namesake factor is the absolute square of the overlap integral between initial and final states. It is derived using the Born–Oppenheimer approximation to separate nuclear and electronic wavefunctions. This statement describes vertical transitions between potential wells offset by a nuclear coordinate, which are displayed on its namesake diagram. For 10 points, name this statement about the intensity of vibronic transitions, which states that electronic transitions are much faster than nuclear motion.

ANSWER: **Franck–Condon** principle [prompt on the Born–Oppenheimer approximation until “Born” is read] (The Franck–Condon principle and the Born–Oppenheimer approximation are thought to be roughly equivalent.)

17. In a cycle of short stories set in this region, a corn cob rosary fails to cure the dog “Whale,” who partially narrates his own mercy-killing. A nonfiction account gives a Positivist justification for events in this region in a passage beginning, “We are condemned to civilization.” The *Faust* legend inspired a novel set in this region in which a woman in male disguise kills the evil Hermogenes, who is rumored to have made a pact with the devil. The “Little Blessed One” leads a congregation to drink their leader’s diarrhea in another novel set here, whose last section is narrated by a nearsighted journalist missing his glasses. In an infamously rare English translation, the *magnum opus* of Joao Guimaraes Rosa is titled for the “Devil to Pay” in this region. For 10 points, name this arid region of Brazil, the setting for the major work of Euclides da Cunha and Mario Vargas Llosa’s *The War of the End of the World*.

ANSWER: the Brazilian **backlands** [or the sertao; or os sertoes; prompt on Northeast Brazil; prompt on Bahia] (The lead-in is about Graciliano Ramos *Dry Lives*.)

18. Members of this genus can be detected using the antibody JF5. The *sydowii* species in this genus infects sea fan coral. A condition caused by hypersensitivity to one member of this genus is diagnosed using the Rosenberg–Patterson criteria, which includes a positive skin test and a total IgE (“eye-G-E”) of over 1000 IU per milliliter. Galactomannan is more specific than beta-B-glucan for detecting this genus. One member of this genus is used to ferment soybeans and is commonly called *kōji* in Japanese. Another member of this genus produces a compound that causes hepatic necrosis, called aflatoxin. This genus contains the species *oryzae*, *fumigatus*, and *niger*, and it produces 45-degree branching hyphae. Members of this genus can create balls in cavitory lesions in the lung. For 10 points, name this genus of fungi that, like *Candida* and *Mucor*, causes angioinvasive disease in the immunocompromised.

ANSWER: ***Aspergillus***

19. This text’s enthusiasts were the principal targets of John Reeves’s astroturfed “Crown and Anchor” Association. L. Frank Baum may have drawn on this text’s comparison of a revered institution to a “silly, contemptible thing... kept behind a curtain.” Near its conclusion, this text proposes appropriating coal tax revenues supporting the Duke of Richmond to finance a full employment plan. Nicholas Rogers estimated that 10 percent of adults in England and Wales attended burnings in effigy of this text’s author. Thomas Erskine, future counsel to the defendants of the Treason Trials, defended the author of this text at a trial where he was sentenced to death *in absentia*. Hundreds of thousands of copies were sold of this pamphlet’s second section, dedicated to the Marquis de Lafayette. For 10 points, name this rebuttal of Edmund Burke’s *Reflections on the Revolution in France*, written by Thomas Paine.

ANSWER: ***Rights of Man***

20. An image of a down-pointing triangle inside an octagon was replaced as the symbol of this religion by a picture of two flying doves. Followers of this religion launched a “share-a-home” program to house homeless people, whom they sedated by injecting beer kegs with Haldol. A leader of this religion coined the term “dynamic meditation” for a physically-active ritual involving cathartic screaming. A longtime leader of this movement, which briefly counted Arianna Huffington among its members, greeted his followers daily by driving past them in one of his 93 Rolls Royces. In the largest bioterrorist attack in US history, the “neo-sannyasins” of this group infected 751 people with salmonella by spraying salad bars to swing a Wasco County election. For 10 points, name this cult founded by a free-love-promoting Indian guru that became embroiled in conflict after founding an Oregon commune.

ANSWER: **Rajneesh** Movement [or the **Rajneeshes**; or the **Oshoites**; or **Rajneeshpuram**]

Bonuses

1. During this event, the protagonist crosses paths for the first time with his likely biological father, the Comte de A—, who doesn't notice him and commandeers his horse. For 10 points each:

[10] Name this event whose chaotic portrayal in an 1839 novel heavily influenced Leo Tolstoy. The protagonist of that novel makes his way to this event after leaving the castle Grianta with diamonds from his aunt Gina.

ANSWER: Battle of **Waterloo**

[10] Fabrizio del Dongo gets too drunk to recognize his hero Napoleon while confusedly taking part in the Battle of Waterloo in this Stendhal novel largely set in northern Italy.

ANSWER: *The **Charterhouse of Parma*** [or *Le **Chartreuse de Parme***]

[10] Before Fabrizio leaves his childhood home to join Napoleon, the barometer seller Vasi provides him with one of these objects. Later in the novel, Fabrizio takes one of these items from the actor Giletti after killing him.

ANSWER: an Austrian **passport** [prompt on identifying **papers** or an **ID** or equivalents]

2. Answer the following about dangerous reptiles and amphibians of Africa, for 10 points each.

[10] Swazi legends claim that this fastest and largest venomous snake of Africa will sometimes suck on cow's udders for their milk. Despite its name, its offspring are actually green, then change color as they mature.

ANSWER: **black mamba** [prompt on **mamba**]

[10] The Bakossi people believe that eating this amphibian allows couples to have children. Recent research has shown that when in danger, this animal will break its own bones to create claws, and then murder you.

ANSWER: **hairy frog** of Cameroon

[10] The poison from one of these animals, believed to be the Egyptian king cobra, was supposedly used by Cleopatra to kill herself. In reality she used a poison partly derived from hemlock, and not this animal's venom.

ANSWER: an **asp**

3. In a footnote from one of this philosopher's essays, he draws a distinction between the phrases "by accident" and "by mistake" using the example of a man who inadvertently shoots his neighbor's donkey. For 10 points each:

[10] Name this philosopher who argued for the existence of universals in "Are there *A Priori* Concepts?" and used ordinary language philosophy to argue against the concept of total responsibility in "A Plea for Excuses."

ANSWER: J. L. **Austin** [or John Langshaw **Austin**]

[10] In a popular anecdote, J. L. Austin claimed during a lecture that there is no language in which a double positive implies a negative, only to be told "Yeah, yeah," by this "Sidewalk Socrates," a long-time philosophy professor at Columbia.

ANSWER: Sidney **Morgenbesser**

[10] This Harvard philosopher said that he "majored in Sidney Morgenbesser" at Columbia and dedicated his dissertation on decision theory to him. He argued for a minimal state in *Anarchy, State, and Utopia*.

ANSWER: Robert **Nozick**

4. Answer the following about the depiction of animals in Dutch still lifes, for 10 points each.

[10] These animals often appear in Dutch still-life paintings, such as in Clara Peeters's painting of one of them staring at a pile of dead birds. A black cat and one of these animals appear behind Frida Kahlo in her *Self-Portrait with Thorn Necklace and Hummingbird*.

ANSWER: **monkeys**

[10] Many "banquet still-lifes," such as those by Pieter Claesz ("class"), prominently feature this creature as a food item. A mobile by Alexander Calder is titled for a fish tail and a trap for one of these creatures.

ANSWER: **lobsters**

[10] This Flemish artist of *Still Life with a Monkey* and *Still Life with Bat Game and Lobster* painted many still-lifes depicting dead game. Snakes and lizards sprout up from a Gorgon's blood in this artist's painting *Medusa*.

ANSWER: Frans **Snyders**

5. Answer the following about men who ruled Libya, for 10 points each.

[10] King Idris I was a grand chief of this Muslim Sufi order, which had dominated the Cyrenaica ("sigh-ruh-NAY-ih-kuh") as a tribe since 1843, and was studied in a namesake work by Edward Evans-Pritchard.

ANSWER: **Sanussi**

[10] Idris was overthrown by this Libyan dictator who created the socialist Jamahiriya state and wrote *The Green Book*.

ANSWER: Muammar **Gaddafi** [or Colonel **Qaddafi** or Muammar Mohammed Abu Minyar **Gaddafi**]

[10] This dynasty previously ruled Libya from 1711 to 1835 after seizing power from the Ottoman bey and setting up a semi-autonomous state. This dynasty included Yusuf, who initiated the first Barbary War by deposing his brother Hamet and demanding tribute from Thomas Jefferson.

ANSWER: **Karamanli** [or **Qaramanli** or al-**Qaramanli** or **Caramanli** or **Caramelli**]

6. This term describes systems in which all constraints can be written as some function of the coordinates equal to zero. For 10 points each:

[10] Identify this term used to describe dynamical systems. In systems described by this term, the motion can be fully expressed in terms of the generalized coordinates.

ANSWER: **holonomic** system

[10] It is often useful to transform mechanical problems into this set of canonical coordinates, where the generalized coordinates are given by partial derivatives of Hamilton's characteristic function, while the conjugate momenta are given by a loop integral of the motion.

ANSWER: **action-angle** variables or coordinates

[10] The Hamilton–Jacobi equation is separable when the Hamiltonian is independent of this quantity. The curl of the electric field is proportional to the derivative of the magnetic field with respect to this quantity according to Faraday's law of induction.

ANSWER: **time**

7. A slim 2020 book on existing in this state, written by a former member of Opus Dei who lost his faith and worked as a building manager at Harvard for 35 years, contains a long section of “Documentia” consisting of decades of actual medical notes written about the author. For 10 points each:

[10] Name this state in the title of a book by literary critic George Scialabba (“sha-LAH-bah”) on “how to be” in it, which he temporarily escaped after undergoing electroconvulsive therapy and decades of SSRI use.

ANSWER: **depressed** [or clinical **depression**; accept *How to Be Depressed*]

[10] Scialabba briefly discusses emerging treatments for depression that use this NMDA receptor antagonist, which can be administered intravenously in a racemic mixture or via a nasal spray with the brand name Spravato.

ANSWER: **ketamine** [accept **esketamine**]

[10] Scialabba credits an “aggressively skeptical rationalist” podcaster for opening his eyes to the efficacy of this general approach to treating depression. A form of behavioral therapy based on and named for this approach was developed by Mark Williams and Zindel Segal.

ANSWER: **mindfulness** [accept **mindfulness-based cognitive therapy**; prompt on **cognitive therapy**]

8. This Controller-General encouraged lavish spending that he called “useful splendor,” coming to office a few years after Jacques Necker. For 10 points each:

[10] Name this man dismissed in 1787 after trying to convene an Assembly of Notables to pass a universal land tax, which only caused a bunch of revolutionaries to discover that the nation was bankrupt.

ANSWER: Charles Alexandre de **Calonne** (“ka-LUNN”) [or the Count of **Hannonville**]

[10] This great orator fled after making an enemy of Calonne, then wrote a scandalous Secret History of the Court of Berlin. This count authored an “Essay on Despotism” and became the mouthpiece for the Third Estate, rivalling Lafayette for court influence.

ANSWER: Comte de **Mirabeau** [or Honoré Gabriel **Riqueti**]

[10] At the Jacobin Club, Mirabeau tried in vain to stop the December 1790 speeches of this man. He led the Committee of Public Safety in its Reign of Terror.

ANSWER: Maximilien **Robespierre**

9. Blind Celtic harpist Turlough O’Carolan (“TUR-lock oh-CAROL-in”) is said to have been challenged to perform the fifth piece from this collection on the spot; he did so perfectly, despite never having actually heard it before. For 10 points each:

[10] Name this set of twelve concertos, each of which is scored for four violins, two violas, cello, and continuo. Bach transcribed three of these concertos for solo harpsichord and two of them for organ.

ANSWER: ***L’estro armonico***

[10] About a decade after publishing *L’estro armonico*, this Italian composer wrote another set of twelve violin concertos, the first four of which are called *The Four Seasons*.

ANSWER: Antonio **Vivaldi**

[10] Vivaldi composed this setting of text from the Latin Mass for the Ospedale della Pietà. It reworks material from a similar piece by Giovanni Maria Ruggieri (“roo-JAIR-ee”) in its “Cum Sancto Spiritu” section.

ANSWER: ***Gloria in D***

10. Hutton et al. found that the namesake element of these hardened layers decreases and is replaced by magnesium as the depth increases. For 10 points each:

[10] Name these duricrusts whose cementing material is calcite. Because they are often formed from the pedogenesis induced by fungi or plant roots, they are often found in sedimentary strata.

ANSWER: **calcretes** [or **caliche** or **hardpan**]

[10] Duricrusts are formed by the weathering of material in the soil horizon named for this letter, sometimes called the topsoil. This layer lies beneath the O or organic soil layer.

ANSWER: **A** horizon

[10] Duricrusts are a contributor to the formation of ores of this element often found in bogs. Those “bog” ores are often composed of goethite (“GUR-tite”) and hematite, a hydroxide and oxide of this element, respectively.

ANSWER: **iron**

11. In this novel, the title character wishes for his remains to be flushed down the toilet at the Abbey Theater, but his friend Cooper instead loses his ashes in a bar fight. For 10 points each:

[10] Name this novel that begins with the sentence “The sun shone, having no alternative, on the nothing new.” Its magnificently lazy title character begins a relationship with the prostitute Celia in London.

ANSWER: **Murphy**

[10] *Murphy* is the first novel by this pessimistic Irish writer, who also wrote a trilogy consisting of *Molloy*, *Malone Dies*, and *The Unnamable*.

ANSWER: Samuel **Beckett**

[10] Shortly before dying on the toilet, Murphy engages in this activity with the schizophrenic Mr. Endon. A Thomas Middleton play represents the issue of the Spanish Match as a contest in this activity.

ANSWER: playing **chess**

12. Answer the following about the Greek mythical princess Pero, for 10 points each.

[10] Pero was a princess from this kingdom, whose father Neleus demanded the bride price of the cattle of Iphicles before anyone could marry her. In Homer, this kingdom is frequently called “sandy.”

ANSWER: Sandy **Pylos**

[10] Melampus helped retrieve the cattle of Iphicles after he learned of a method from one of these animals. One of these animals ate the liver of Prometheus every day when he was chained in the mountains.

ANSWER: **vultures** [accept **eagles** or **birds**]

[10] Melampus got the cattle of Iphicles by curing Iphicles of infertility. To do that, he created a mixture of wine with this rather odd substance mixed in.

ANSWER: **rusted** iron [prompt on **iron** by asking “in what state?”]

13. A dead version of one enzyme in this pathway can be used if mere interference with the target is desired. For 10 points each:

[10] Name this pathway that was originally discovered as an antiviral defense mechanism in bacteria. In this pathway, the Cas9 nuclease cleaves a target strand.

ANSWER: **CRISPR** [or **clustered regularly interspaced short palindromic repeats**]

[10] A challenge in the use of CRISPR for gene editing is the designing of this artificial RNA, which usually takes on the function of both the tracrRNA and the crRNA required for the natural CRISPR pathway.

ANSWER: **guide RNA** [or **single guide RNA**; or **gRNA**; or **sgRNA**]

[10] In order for a given segment of DNA to be a viable target for CRISPR, it has to contain this short segment of DNA downstream of the target area. For the Cas9 encoded by *S. pyogenes*, this sequence is NGG.

ANSWER: **PAM** [or **protospacer adjacent motif**]

14. Livy writes that Roman consul Popilius Laenas used a stick to draw a circle in the sand around this king, demanding that he reply before stepping out of the circle, after which this king left and threw a great parade in Daphne attended by five thousand silver shields. For 10 points each:

[10] Name this king who took his throne after allying with Eumenes II of Pergamon to kill the minister Heliodorus.

ANSWER: **Antiochus IV** Epiphanes [prompt on **Antiochus**]

[10] Rome was defending its colony of Egypt, which was then ruled by the sixth king of this name, the namesake of the Egyptian dynasty that ruled until the death of Cleopatra in 30 BC.

ANSWER: **Ptolemy** [accept **Ptolemaic** dynasty]

[10] Previously, Antiochus had made a client kingdom out of Armenia. Years later, in 95 BC, this Armenian king of the same Artaxiad house crushed the last of the Seleucid Empire, and ruled for forty years in his namesake capital city.

ANSWER: **Tigranes** the Great [or **Tigranes II**]

15. *The New York Times*'s architecture critic, Michael Kimmelman, was nominated for a 2018 Pulitzer Prize for a series that discusses the need to reduce this metric in building projects. For 10 points each:

[10] Identify this metric. The 2019 "Architects Declare" manifesto lists several methods for reducing this metric, including life cycle assessment, upgrading buildings rather than demolishing them, and switching to "low embodied" materials.

ANSWER: **carbon footprint** [prompt on **environmental impact** or similar; prompt on carbon **emissions**]

[10] The founding signatories of the manifesto included this architect, who designed a zero-carbon, zero-waste city named Masdar for the United Arab Emirates. He designed London City Hall in the shape of a "glass testicle" to improve its energy efficiency, and his other London buildings include "The Gherkin."

ANSWER: Norman **Foster**

[10] Another British signatory was this museum-loving architect, whose work includes the Hepworth Wakefield museum, the Neues Museum in Berlin, and a recent extension to the St. Louis Art Museum. He is currently working on a sustainable redesign of the Met's modern and contemporary art wing.

ANSWER: David **Chipperfield**

16. I. A. Richards introduced the term "stock response" to this movement with his essay "Badness in Poetry." For 10 points each:

[10] Name this movement in literary criticism whose members enjoyed dunking on the poetry of Sidney Lanier and Joyce Kilmer. Another term used in this movement was coined by W. K. Wimsatt and Monroe Beardsley.

ANSWER: **New Criticism**

[10] "Badness in Poetry" criticizes "Friendship After Love" by this poet, who also coined the phrase "Laugh and the world laughs with you." John Ashbery challenged the New Critics' theories of value with his homage titled "Variations, Calypso and Fugue on a Theme by" this author.

ANSWER: Ella Wheeler **Wilcox**

[10] Another frequently mocked poet from the 19th century was Joaquin Miller, who infamously rhymed "Goethe" with "teeth." Miller worked mostly in this state, which was also the setting of Bret Harte poems like "The Heathen Chinees."

ANSWER: **California**

17. Joseph Story's opinion in this case ruled that John Ashmore could not have charges pressed under his state's laws against a slave-catcher who returned the black woman Margaret Morgan to Maryland. For 10 points each:
[10] Name this 1842 Supreme Court case in which a Northern state was refused the right to impede the federal Fugitive Slave Act.

ANSWER: **Prigg v. Pennsylvania**

[10] Along with cases like *Groves v. Slaughter* and *Strader v. Graham*, *Prigg* represents a wave of slave law enforcement cases under this Supreme Court Chief Justice who took over for John Marshall and held the office from 1836 to 1864.

ANSWER: Roger Brooke **Taney**

[10] In 1825, the John Marshall court considered the case of this slave ship captured flying the Spanish flag at Cabinda in Angola. Jonathan Bryant wrote about this ship in his book *Dark Places of the Earth*.

ANSWER: *The **Antelope***

18. This ceremony is performed when three stars are seen in the sky, marking the end of the Sabbath. For 10 points each:

[10] Name this Jewish ceremony in which a namesake braided candle is extinguished in wine. This ceremony takes its name from the Hebrew for "separation."

ANSWER: **Havdalah** ("hahv-dah-LAH" or "huhv-DUH-luh")

[10] A tradition states that on this Jewish "Festival of Lots," celebrants should drink wine until they can no longer distinguish between the phrases "Cursed is Haman" and "Blessed is Mordecai."

ANSWER: **Purim**

[10] A cup of wine is blessed after the *pidyon ha-ben* ("peed-YONE ha-BEN") ceremony, which has mostly been abandoned in Reform Judaism. In the *pidyon ha-ben*, five silver coins are given to a *kohen* ("ko-HAIN") to "redeem" this specific type of person.

ANSWER: a **firstborn** son [prompt on a child or a son]

19. Answer the following about the formation of gels in polymer chemistry, for 10 points each.

[10] During polymer synthesis, the gel point occurs when a sufficient amount of these interactions, usually covalent or ionic bonds, have formed between adjacent polymer chains to form an infinite network. These interactions are induced in the sulfur vulcanization of rubber.

ANSWER: **cross-links**

[10] He's not Maurice Huggins, but this scientist developed and co-names a theory with Paul Flory used to predict the gel point of step-growth polymerizations.

ANSWER: Walter (Hugo) **Stockmayer**

[10] Also known as the gel effect, this dangerous process in free radical polymerizations occurs when local increases in viscosity prevent sufficient radical termination, leading to a runaway increase in rate and temperature.

ANSWER: **autoacceleration** [or the **Trommsdorff** effect; or the **Trommsdorff-Norrish** effect; or **Norrish-Smith** effect]

20. Answer the following about Obi Wali's scathing report on the 1962 Conference of African Writers of English Expression, for 10 points each.

[10] Wali's essay "The Dead End of African Literature" criticizes this author of *The Lion and the Jewel* for writing *A Dance of the Forests* in English, even though only 1 percent of his countrymen could understand it.

ANSWER: Wole **Soyinka**

[10] The essay "English and the African Writer" defended second-language writing in response to Wali. Examples from that essay included a speech from this novel, in which Chief Priest Ezeulu explains why he wants to send his son to experience the white man's church.

ANSWER: **Arrow of God**

[10] Wali's essay and Achebe's response both discuss this other English-language Nigerian author. Achebe praises his poem "Night Rain," while Wali quotes a negative review of his play *Song of a Goat*.

ANSWER: John Pepper **Clark**