

2021 ACF Nationals

Packet 13 by the Editors, Finals 2

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Tossups

1. This functional group is created when dimethylallyl diphosphate is dimerized to chrysanthemic acid, the precursor of permethrin. De Meijere and Szymoniak developed modifications of a reaction that adds a hydroxylated version of this functional group; that reaction uses ethylmagnesium bromide and titanium isopropoxide. The enzyme that creates this functional group catalyzes the rate-limiting step of the Yang cycle and is called ACC synthase. Bromo-diethyl malonate in DBU adds this group on the 6-6 bonds of fullerenes. Another reaction that adds this functional group was made stereospecific by Charette using BINOL derivatives; that reaction reacts di-iodo-methane with a zinc-copper couple to generate a carbenoid, which then reacts with an alkene. For 10 points, name this functional group that is added by the Kullinkovich, Bingel, and Simmons-Smith reactions and that contains three carbon atoms in a ring.

ANSWER: **cyclopropane** [or **cyclopropyl**]

2. A pair of characters in this novel smuggle bullets by sewing them into goats' anuses. A character in this novel washes her bloody face into a drink before serving it to two feuding military commanders and weighs bodies from Dead Baby Hollow to determine her lucky gambling bets. While having his scrotum sewn back together, a character in this novel is told to "tough it out" like Uncle Arhat, who was skinned alive by enemy soldiers. That character has a growth spurt after eating the flesh of wild dogs that had earlier devoured people from his village. This novel reveals that urine is the secret ingredient in the honeyed taste of wine produced by its central family, who operate a distillery in Northeast Gaomi township using the title crop. For 10 points, name this nonlinear novel that is about the narrator's grandfather Yu Zhan'ao and father, Douguan, surviving the Second Sino-Japanese War and that was written by Mo Yan.

ANSWER: **Red Sorghum** [or **Red Sorghum Clan**; or **Hóng Gāoliáng Jiǎzú**]

3. *Description acceptable.* The hero of this military campaign was rewarded with two suits of chain mail, but its weight caused him to drown, and a fisherman found his magical corpse. A local prince named Demian used a gilded idol kept in a basin of water to defend his fort during this campaign, where a tribute known as yasak was enforced on local people, leading to revolts like the Itelmens uprising. The army sent to accomplish this task used high-sided boats as shields and defeated the general Mametkul at the Battle of Chuvash Cape, taking his capital at Kashlyk. That victorious army, led by the ataman Yermak, took the family of Kuchum Khan hostage and was supplied with muskets by the Stroganov family. After this conquest, indigenous peoples were subjected, including the Nenets, or the Samoyed, as well as the Yakuts and the Chukchi. For 10 points, name this effort by which the empire of Ivan the Terrible was greatly enlarged, adding land in the Kamchatka Peninsula and up to the Bering Strait.

ANSWER: Russian conquest of **Siberia** [or the defeat of the Khanate of **Sibir**; accept equivalents indicating the addition of **Siberia** to the Russian Empire; accept **Yermak**'s invasion before "Yermak" is read]

4. The opening of a work in this form suggests that the title figure may have been born when a bubble of mud filled with “spirit” became a baby. A theological text in this form named for Kamil presents the apocalyptic eschatology of al-Nafis, the chief physician of 13th-century Cairo. A work in this form centers on a man whose life is divided into seven stages of seven years, illustrating the author’s theory on how *shahada* allows one to achieve mystical union with Allah; that Andalusian response to Al-Ghazali in this format features a boy raised by a gazelle on a desert island and was translated as *Philosophicus Autodidactus*. Ibn Tufayl’s use of this format in *Hayy ibn Yaqzan* inspired an Enlightenment thinker who used a work in this form to attack ideas found in the *Discourse on Metaphysics* and *Théodicée*. For 10 points, name this type of work that Voltaire used to lampoon Leibniz as Dr. Pangloss.

ANSWER: philosophical **novel** [or **novella**; accept narrative **fiction**; accept **allegory**; prompt on **story**]

5. A memoir by this thinker contains such amusing chapter titles as “Manners Deployed for Academic Zing” and “Manners Demanded for Academic Ineptitude” but was criticized for labeling this thinker’s colleagues “deadbeats” and “fossils.” In an interview with *Time* magazine, this thinker opined, “We used to think our fate was in our stars.” He opened one of his books by noting that he had never seen one of his colleagues “in a modest mood.” This author of *Avoid Boring People* once called Craig Venter “Hitler.” He resigned as director of Cold Spring Harbor Laboratory after claiming Europeans are superior to Africans in terms of intelligence. The epilogue to one of this man’s memoirs is devoted to Rosalind Franklin, a colleague of his who died young. For 10 points, what Nobel Laureate wrote *The Double Helix*, in which he describes his collaboration with Francis Crick in discovering DNA?

ANSWER: James Dewey **Watson**

6. After two *pesante* statements of the “Russian Sailor’s Dance” theme, this instrument plays offbeats to accompany the English horn and clarinet in Reinhold Glière’s ballet *The Red Poppy*. Aram Khachaturian said his passion for major and minor seconds came from hearing “a trio of folk instruments consisting of the *tar*, the *kamancha*,” and this instrument as a child. Flutes and violins play an *andante* A, C-sharp, E, C-sharp melody over triangle and this instrument in the *Roman Carnival Overture*. This instrument plays a fast 3/8 (“three eight”) ostinato under boisterous trombones near the end of Emmanuel Chabrier’s *España*. For loud or fast rhythmic passes, this percussion instrument can be placed on the player’s knee to rattle the zills between the hand and knee, a technique sometimes used during the Russian “Trepak” from *The Nutcracker*. For 10 points, name this handheld percussion instrument with metal jingles.

ANSWER: **tambourine**

7. Many texts on this practice have been translated into English by Fabrizio Pregadio. According to a canonical text, a teacher of this practice should drink the blood of a white chicken with his student to mark its transmission. In conjunction with abstinence from grains, this discipline is used to expel the “three corpses” and “nine worms.” This subject is treated in the “Inner Chapters” of a text called *The Master Who Embraces Simplicity*. A discipline based on applying the principles of this activity to the body focuses on cultivating the “immortal embryo”; that meditative, “internal” form of this practice, called *neidan*, identifies three “cinnabar fields.” The “external” form of this practice declined in popularity after six Tang emperors died of mercury poisoning from its products. For 10 points, identify this mystical Taoist discipline whose aims included the synthesis of an elixir of immortality.

ANSWER: Chinese **alchemy** [or **waidan**; accept **neidan** before “*neidan*” is read; prompt on **meditation** or traditional Chinese **medicine**]

8. This modern-day country was home to the bank robbers Carl Mezar, John Maxim, and a husband-and-wife duo called the “Foster Gang”; a manhunt to find them led to the Five Shilling Rebellion. A longtime politician in this country referred to his life philosophy as “holism,” a notion that all organisms were interdependent; he ran on a pro-war ticket in this country to defeat Barry Hertzog and spoke at fundraisers for Israeli Zionist leader Chaim Weizmann. The Sauer Commission and the Fagan Commission published reports arguing for opposite policies in this modern country, where the Indian leader Mahatma Gandhi ran an Ambulance Corps at the Battle of Spion Kop. This country’s longtime leader Jan Christian Smuts tried to discredit the “two streams” policy supported by his mentor Louis Botha. For 10 points, name this modern country that was split into provinces like the Cape Colony and Transvaal.

ANSWER: **South Africa**

9. Theoretical calculations in this regime typically assume isentropic conditions, which makes it possible to calculate quantities as a function of their ratio to their stagnation equivalents, the ratio of specific heats, and a dimensionless constant. Scaling various physical quantities by the square root of the quantity one minus the square of a certain dimensionless number makes it possible to reduce problems in this regime to a simpler one, a technique known as the Prandtl-Glauert transformation. In this regime, turbulent and mean flow can be separated by a technique called Favre averaging, which weights velocity averages by mass. This type of flow typically occurs between Mach numbers of 0.3 and 1, and under this regime, the assumption that the divergence of the velocity field vanishes no longer holds. For 10 points, identify this type of fluid flow in which the density of the fluid can no longer be taken as constant.

ANSWER: **compressible** flow

10. A mixed-media work at this museum depicts a figure behind some red wooden fence panels with random letters stenciled on them; that work is Alvin Hollingsworth’s “Trapped.” A Jefferson Pinder sculpture at this museum, which is curated by Jacquelyn Serwer, consists of wood from a presidential inauguration platform recycled into the shape of a Mercury space capsule. This museum’s bottom floor contains an exhibit of 609 bricks with names on them looming behind a sculpture of a different president, while its top floor is arranged in a circle around a wooden “Caryatid Veranda Post” on loan from Munich. That sculpture by Olowe of Ise inspired this museum’s “corona,” which is angled to match the adjacent Washington Monument. For 10 points, name this Smithsonian museum designed by Freelon Adjaye Bond that opened in 2016 and is devoted to a certain ethnic group.

ANSWER: National Museum of **African American History** and Culture [or the **African-American History** Museum; or **NMAAHC**; prompt on partial answers] (The platform was Obama’s; the 609 bricks have the names of Jefferson’s slaves.)

11. While sneaking into the wilderness to read books, a character created by this author has an epiphanic experience upon hearing an echo of his voice in a valley. In a novel by this author, the protagonist cuts down a tree to cross a river, leading him to meet the elderly Queen Mab and find a wooden box that he cannot open. He wrote a novel in which a character is urged to “Hold! Hold!” while opening a closet door. This author wrote a novel whose title character escapes a panther attack while investigating the death of his friend Waldegrave. His most popular novel begins with the narrator describing her father’s spontaneous combustion and her relationship to the wealthy Catharine Pleyel; that novel by him features the bilquist Carwin’s duping of the title siblings, Clara and Theodore. For 10 points, name this author who wrote the early Gothic novels *Edgar Huntly* and *Wieland*.

ANSWER: Charles Brockden **Brown**

12. A method of detecting these things is the multiplexed iPLEX Gold assay, which uses MALDI-TOF. A database of these things assigns each of them an rs number, which appears in the “ID” section of a VCF file after using a calling algorithm. An assay named for these things plots an output with position on the *x*-axis and a log-R ratio on the *y*-axis; those are “arrays” named for these things. In a type of experiment, each of these things appears as a single dot on a Manhattan plot. “Tag” ones are used to distinguish regions of linkage disequilibrium. A collection of these things forms a haplotype. By definition, these things occur with a frequency of 1% or greater. In a GWAS, these things are associated with particular phenotypes. For 10 points, name these one-base variants in a genome. ANSWER: **SNP** [or **single-nucleotide polymorphism**; accept **copy-number variants** or **copy-number variation**, **CNV**, **indel**, **insertion**, **deletion**, or **duplication** before “rs” is read and do not accept after; prompt on variants, genetic variants, polymorphisms, or allele; do not accept or prompt on “mutation”]

13. The artist Joseph Severn is best known for portraits of two men of this occupation. A man of this occupation uses an open umbrella to patch the ceiling of his attic room in the most notable painting by the Biedermeier artist Carl Spitzweg. Henry Wallis’s first successful painting depicts the death of a red-haired man of this occupation. William Adolphe Bouguereau painted two men of this occupation watching a naked man kneel another naked man in the back and bite his neck. Thomas Phillips painted a man of this occupation wearing an Oriental shawl wound around his head, or “in Albanian dress.” A red-eyed, demonic creature climbing onto the title object is beaten back by the oarsman Phlegyas in a painting of two men of this profession crossing a lake around the city of Dis. For 10 points, name this occupation practiced by the title character of Eugene Delacroix’s *The Barque of Dante*. ANSWER: **poets** [prompt on writers or authors] (The paintings described but not named are *The Poor Poet*, *The Death of Chatterton*, *Dante and Virgil in Hell*, and *Lord Byron in Albanian Dress*.)

14. This document appears in the title of an essay that distinguishes between knowingly taking LSD and having a nice trip and unknowingly taking LSD and feeling insane for no discernible reason; that essay, which quotes the biblical proverb “the fathers have eaten bitter fruit, and the children’s teeth are on edge,” claims that “patterns of relationship” are “what mammals are about” to call the drafting of this document one of “the two historic events of the 20th century.” Meetings with financier Carl Melchior influenced a book about this document that provoked a comprehensive rebuttal by economist Étienne Mantoux. This document, whose effect Gregory Bateson contrasted with the development of cybernetics, was called “Carthaginian” in a 1919 book. For 10 points, what document’s impact on Germany was the subject of John Maynard Keynes’s *The Economic Consequences of the Peace*? ANSWER: Treaty of **Versailles** [or **Versaille** Vertrag; accept “**From Versailles to Cybernetics**”; do not accept or prompt on “Paris Peace Conference” or “Fourteen Points”]

15. This author asserts that “the Dream is a second life” at the beginning of an autobiographical narrative in which he has visions of a “Sacred Table” around which seven warring Elohim sit. Umberto Eco’s *Six Walks in the Fictional Woods* diagrammed the jumps in time in another story by this author, whose protagonist fails to marry the title character due to his obsession over a dead nun named Adrienne. Julia Kristeva’s *Black Sun* takes its title from a description of melancholy in a poem from a sonnet sequence by this author. This earliest French translator of Goethe’s *Faust* recorded his descent into schizophrenia in his novella *Aurelia*. In a poem, this author of *Sylvie* compares himself to “the Prince of Aquitaine, his tower in ruins” and declares he is “the widower, the unconsolated.” For 10 points, name this French Romantic poet and lobster fan who wrote the sonnet “El Desdichado.” ANSWER: Gerard de **Nerval** [or Gerard **Labrunie**]

16. *Description Acceptable*. This substance was first used by a man who always slept near a bull, a horse, and a deer so that their bellowing, whinnying, and bleating would wake him up if anyone approached him. Learned men known as *Agari* supervised the preparation of this substance. A scholar named Andromachus drew on the work of Celsus in modifying the formula for this substance by adding viper flesh to it. Sources state that a man named Bituitis had to assist in a suicide as a result of this substance, which was known as a *theriac*. Research on this substance was ordered by a man who perpetrated the “Asiatic Vespers” that massacred 80,000 Romans, and who was defeated by Pompey the Great at the conclusion of a third namesake war. Resistance was thought to be conferred by minimal daily consumption of, for 10 points, what substance used by a Pontic king to stave off assassination attempts?
ANSWER: the preventative **antidote of Mithridates** [accept the collection of **poisons** that **Mithridates** drank or consumed to prevent poisonings; accept **Mithridate**; accept **mithridatium**; accept **mithridatum**; or **mithridaticum**; accept **theriac** before “*theriac*” is read; prompt on **poison** by asking “whose poison?”]

17. In a five-stage system devised by G. Evelyn Hutchinson, this process does not occur in one category but has a frequency that varies with temperature in the other four. A temperature-driven form of this process is often characterized by the Wedderburn number. This action does not occur in crenogenic systems due to the intervention of an underlying spring. Structures in which this process does not occur may have purple sulfur bacteria grow in their stable chemocline. The hydrological global retention time is accurate only when this process occurs frequently, which can be induced by using jet aerators. Systems in which this process does not occur may accumulate enough carbon to cause an overturn, leading to a limnic eruption. Holomictic but not meromictic lakes undergo, for 10 points, what process sometimes called upwelling that homogenizes the water column of a lake?
ANSWER: lake **mixing** [or lake **turnover**; or **upwelling** before “upwelling” is mentioned]

18. A book by this English-language writer was the source for the plot of John Pickering’s mythology-infused morality play *Horestes*. This writer added an original passage praising communal property among the White Friars in a social allegory that was based on a book by Jacobus de Cessolis and titled *The Game and Playe of Chesse*. This occupant of the “Red Pale” at Westminster related an oft-repeated anecdote about a misunderstanding between a merchant who asked for eggs and a woman who called them “eyren.” He translated a courtly romance by Raoul Lefevre under the title *Recuyell of the Historyes of Troye*. This collaborator of Wynkyn de Worde gave Thomas Malory’s major work the title *Le Morte d’Arthur*. He is often credited with helping standardize English spelling with his publications, which include an edition of the *Canterbury Tales*. For 10 points, name this publisher who introduced the printing press to England.
ANSWER: William **Caxton**

19. In Aegina, a wooden statue of this deity was designed in her temple by Myron, while the sculptor Alkamenes placed this deity in front of the Temple of Athena Nike. Like her aspect Melinoe, this deity is described as “cloaked in saffron,” and she may be identical with the Thessalian deity Enodia. A meal in honor of this god called the Deipnon was eaten once each month on the first day of a three-day celebration. To placate this deity, a figure is instructed to bathe in a stream of flowing water, put on dark robes, dig a round pit, cut the throat of a female sheep on a pyre, and retreat from the fire without looking back. First worshipped at Lagina in Caria, she’s the only daughter of the Titan Perses with the star goddess Asteria. Entrails of sacrificed dogs were read to propitiate this goddess, who was known to the Romans as Trivia. Often depicted with three bodies, she is the dark side of the moon. For 10 points, name this Greek goddess of crossroads and witchcraft.
ANSWER: **Hekate** [or **Hecate**]

20. A man with this surname was accused of being “but a remove from barbarism” in a letter by William Welsh, which inspired that man’s political enemies to charge him with misconduct. Another man with this surname led an attack on a settlement of buffalo hunters along with Isatai’i at the Second Battle of Adobe Walls, an early engagement in the Red River War. The kidnapping of a person with this surname, who married Peta Nocona and lived with her captors for 24 years, inspired the movie *The Searchers*. A leader with this surname led the Quahadi band to Fort Sill, Oklahoma, where he is now buried. A man with this surname, also called Donehogawa, was appointed by Ulysses S. Grant as the first Native American commissioner of Indian affairs and had the first name Ely. For 10 points, identify this surname also shared by the Comanche chief Quanah.

ANSWER: **Parker** [accept Ely Samuel **Parker**; accept Cynthia Ann **Parker**; acceptQuanah **Parker**]

Bonuses

1. In 1994, the Florida legislature passed a bill providing \$1.5 million for survivors of an event in this town after lobbying by a group led by Arnett Doctor, whose mother survived that event. For 10 points each:

[10] Name this Florida town, the site of a 1923 massacre that cleared out its majority black population after a false rape accusation.

ANSWER: **Rosewood**

[10] Florida native George Starling, who moved to New York and became a train porter, was profiled in this Isabel Wilkerson book depicting the Great Migration.

ANSWER: *The **Warmth of Other Suns***

[10] *The Warmth of Other Suns* also followed Ida Mae Gladney, the wife of a sharecropper in rural Mississippi who moved to this northern city, where many African Americans lived in the Bronzeville neighborhood.

ANSWER: **Chicago**

2. Answer some questions about the Gutai art movement in Japan, for 10 points each.

[10] Gutai was founded during this decade in reaction to the realism of the “reportage” art movement. British pop art was kicked off by the *This Is Tomorrow* exhibit in this decade, during which Picasso painted *Massacre in Korea*.

ANSWER: the **1950s**

[10] At Gutai exhibitions, Atsuko Tanaka wore an extremely heavy dress adorned with 200 of these objects. These objects make up “*Monument*” *I for V. Tatlin* by Dan Flavin.

ANSWER: light **bulbs** [or **lights**; or **LEDs**; accept more specific answers like light **tubes** or fluorescent or neon light **bulbs**]

[10] Gutai’s cofounder Shozo Shimamoto was best known for art in this medium, including his “nengajo.” He was inspired by collagist Ray Johnson, who pioneered art in this medium with “moticos.”

ANSWER: **mail** art [or **postal** art; or **correspondence** art; accept **postcards** or similar]

3. The founder of this group wrote a book explaining how their methods involve searching for violence “at the threshold of detectability,” or the place where things hover between “identifiable and not.” For 10 points each:

[10] Name this research group led by Eyal Weizman, which examines the remains of buildings and other structures as part of their goal to expose human rights violations and political violence around the world.

ANSWER: **Forensic Architecture**

[10] Forensic Architecture’s analysis of the buildings destroyed by this country’s missile strikes exposed their so-called “Hannibal Directive,” which was used during the Entebbe Raid.

ANSWER: **Israel**

[10] Forensic Architecture often constructs this kind of reference work to trace smoke patterns coming from bombs. This kind of reference work inspired a sextet composed by the fictional bisexual musician Robert Frobisher.

ANSWER: a **cloud atlas** [or a bomb **cloud atlas**; prompt on **atlas**]

4. This theory uses a spherical top hat collapse of an overdensity to obtain an expression for the number of collapsed objects exceeding a certain mass, its namesake mass function. For 10 points each:

[10] Identify this empirical approach to deriving the number density of galactic halos per unit mass, which was first elucidated by its namesakes in a 1974 paper.

ANSWER: **Press-Schechter** formalism or theory [accept either order of names]

[10] The Press-Schechter formalism agrees well with both numerical simulations and measurements of the abundance of these objects, the largest gravitationally bound structures in the known universe.

ANSWER: **galaxy cluster**s [prompt on partial answers; do not accept “superclusters,” which are not gravitationally bound]

[10] One way of determining the mass of a galaxy cluster is by observing CMB photons scattered by the cluster’s hot gas. The shape of the distortion generated by this effect is fixed, and therefore identifiable, and the amplitude allows for a measurement of the temperature and, thereby, of mass.

ANSWER: **Sunyaev-Zeldovich** effect [prompt on **SZ**, accept names in either order]

5. Answer the following about helpful little men in mythology, for 10 points each.

[10] In the myth of these people, the Aluxes [ah-loosh-ays] are helpful gnomes who come to life to protect crops when tiny clay figurines are planted in the field with a heart made of honey. The Bacabs reside in the four corners of the world and send the Aluxes to help in this myth system.

ANSWER: **Mayans** [accept any historical kinds of **Mayan** people; accept **Yucatan** peoples or **Yucatec**; accept **Chanéque** or **Chaneké** people]

[10] The dark elves of Svartalfheim include the sons of Ivaldi who made this spear wielded by Odin and obtained by Loki after he cut off Sif’s hair.

ANSWER: **Gungnir**

[10] These 2- or 3-foot-tall Hawaiian people were rumored to come out at night and build things like the Alekoko Fishpond Wall and the Kikiaola Ditch at Waimea, which is named after them. They destroy their projects if they are spotted by anyone.

ANSWER: **Menehune**

6. Vindice in *The Revenger’s Tragedy* possesses traits of the revenger and this other character type, which was similar to the Machiavel and often depicted as melancholy. For 10 points each:

[10] Name this cynical type of character common in Elizabethan and Jacobean drama, exemplified by Bosola in *The Duchess of Malfi*. The disguised Duke Altofronto exemplifies this character type in a play named for it.

ANSWER: a **malcontent**

[10] Altofronto disguises himself as the cynical courtier Malevole in *The Malcontent*, a play by this Jacobean satirist who sided with Thomas Dekker against Ben Jonson in the “War of the Theatres.”

ANSWER: John **Marston**

[10] This Shakespeare villain, who duplicitously tells Othello to “beware” the “green-eyed monster” jealousy, is often described as a malcontent.

ANSWER: **Iago**

7. For 10 points each, answer the following about various ways a CPU may interact with peripheral devices.

[10] One of the most common ways is this technique in which the registers of the peripheral devices are put into the same addresses as that of the CPU's mechanism of storage. It is a hallmark of RISC architecture.

ANSWER: **memory-mapping** [accept word forms]

[10] To let the processor know when an input needs to be processed, a peripheral device will often send one of these signals to the processor. CPUs have a namesake "handler" for these things, which can be thought of as low-level alternatives to events.

ANSWER: **interrupts**

[10] One of the drawbacks of using interrupt handlers is that the CPU will have to context switch, meaning it will need to swap out values from these storage spaces and load new ones. These structures can store addresses or floating-point integers.

ANSWER: **registers**

8. A paper by this anthropologist examines Sinhalese rituals to argue that the redundancy of healers' chanting ultimately does create relief in patients. For 10 points each:

[10] Name this Sri Lankan-born anthropologist who wrote "The Magical Power of Words." He developed the "galactic polity" model in several books on Southeast Asian Buddhism, such as *World Conqueror and World Renouncer*.

ANSWER: Stanley Jeyaraja **Tambiah**

[10] Tambiah's "The Magical Power of Words" begins by discussing the ethnographic theory of language from this two-volume book published in the 1930s, which describes Trobriand systems of land tenure and agricultural tilling.

ANSWER: ***Coral Gardens and Their Magic***

[10] *Coral Gardens and Their Magic* is the last book in this anthropologist's trilogy about the Trobriand Islanders, which began with his *Argonauts of the Western Pacific*.

ANSWER: Bronisław Kasper **Malinowski**

9. The artwork of this culture shows a spider god called the "Decapitator" holding a knife and a severed head, an indication that these people practiced human sacrifice. For 10 points each:

[10] Name this civilization whose adobe temple at Huaca del Sol near Cerro Blanco is considered by many to be the largest pre-Columbian structure in South America.

ANSWER: **Moche** civilization [or **Moche** culture]

[10] The site of Quilmes is the largest pre-Columbian ruin in this modern country, where the Cave of Hands is a relic of the Tehuelche people. Those people's giant footprints inspired the name of Patagonia, which this country shares with its smaller neighbor to the west.

ANSWER: **Argentina**

[10] These are believed to have been the first people of coastal Brazil, or at least the first Amerindians encountered by the Portuguese, as the Guaraní lived inland. The German soldier Hans Staden, captured by them in 1552, propagated the belief that they were cannibals.

ANSWER: **Tupi** people [or the **Tupinambá**; or the **Tupiniquim**; or the **Tupians**]

10. This poem adapts Virgil's comparison of Neoptolemus to a snake after shedding its skin in a description of Rodomonte, who is literally wearing armor made of snake skin. For 10 points each:

[10] Name this Italian Renaissance poem by Ludovico Ariosto, in which the title knight goes insane from his unrequited love for Angelica.

ANSWER: **Orlando Furioso**

[10] Rodomonte is ultimately slain by this ancestor of the D'Este family after interrupting this man's wedding feast. This knight rescues a princess from a water-dwelling orc while riding a hippogriff.

ANSWER: **Ruggiero** [or **Roger**]

[10] Ariosto drew on this Catullus poem for his depiction of Bireno ditching Olympia. Peleus's wedding to Thetis is the frame story of this *epyllion*, which is mostly a treatment of Theseus's abandonment of Ariadne.

ANSWER: Catullus **64**

11. This composer and his teacher were pitted against each other in rival concert series. However, they refused to play along, dining together and programming each other's music at their own concerts. For 10 points each:

[10] Name this prolific composer of 42 symphonies. To protect himself during the Reign of Terror, this composer also wrote several choral pieces in honor of the First Republic, which debuted at Strasbourg Cathedral.

ANSWER: Ignaz **Pleyel** [or Ignace Joseph **Pleyel**]

[10] Pleyel was a student of this Austrian composer, the "Father of the Symphony."

ANSWER: Franz Joseph **Haydn**

[10] During one of those rival concerts, Haydn premiered this penultimate London symphony. In measure two of this E-flat major symphony, the low strings and bassoons play a somber theme with the same first four notes as the *Dies Irae*.

ANSWER: **Drumroll** Symphony [or Symphony No. **103**; or **H. 1/103**]

12. This Frenchman was the first and most notable of the "Coureurs des bois," or "runners of the woods," and his route was followed by Jean Nicolet. For 10 points each:

[10] Name this explorer who lived among the Huron Indians and became the first European to see the Great Lakes, journeying to all five with the possible exception of Lake Michigan.

ANSWER: Etienne **Brulé**

[10] The first school for the Abenaki was established by this French Jesuit, whose support for Abenaki raids on the English was revealed by Thomas Westbrook. Like the later Father Le Loutre, he failed to check English expansion in the course of a namesake conflict.

ANSWER: Father Sebastien **Rale** [or Sebastien **Rasles**; accept Father **Rale**'s War]

[10] The expeditions of Brulé and Nicolet paved the way for this missionary to become the first to map the northern Mississippi River in 1673, which he did with fur trader Louis Joliet.

ANSWER: Father Jacques **Marquette**

13. The medieval Italian philosopher Agostino Nifo attempted to resolve several paradoxes. For 10 points each:

[10] Nifo wrote several *Insolubilia*, the term for analyses of the paradox in which one of these people says, "This statement is false." The Epimenides paradox starts with the premise that "all Cretans" are these people.

ANSWER: **liars**

[10] One of Nifo's *Insolubilia* concerns the Paradox of the Courts, in which this Greek sues his student Euathlus after Euathlus does not pay for rhetoric lessons. His book *Truths* is partially preserved by other philosophers.

ANSWER: **Protagoras**

[10] Agostino Nifo's analyses of paradoxes partly drew on a treatise on economics attributed to a member of this ancient school of thought. Leaders of this school include Strato of Lampascus and the botanist Theophrastus.

ANSWER: **Peripatetic** school [or the **Lyceum**]

14. In this author's story "Wild," Ada accidentally reveals that her well-behaved cousin Chinyere's "brother" is actually her son. For 10 points each:

[10] Name this Nigerian author who collected stories like "Glory" and "Who Will Greet You at Home?" in her 2017 book *What It Means When a Man Falls from the Sky*.

ANSWER: Lesley Nneka **Arimah**

[10] Arimah won the 2019 Caine Prize for African Writing for a story in which all women are required to live this way until they marry. Reverend Hartman sees Kate Swift praying in this way in Sherwood Anderson's story "The Strength of God."

ANSWER: **naked** [or **nude**]

[10] The Caine Prize is cosponsored by all four Nobel Prize in Literature winners from African countries: Wole Soyinka, Nadine Gordimer, J. M. Coetzee, and this deceased author, who set the story "Zaabalawi" and the novel *Midaq Alley* in his native Cairo.

ANSWER: Naguib **Mahfouz**

15. Answer the following about "meditations" in music, for 10 points each.

[10] The "Méditation" theme appears in Act III of this opera by Jules Massenet as the White Nuns attend to the dying title character.

ANSWER: **Thaïs**

[10] The album *Meditations* is considered the "spiritual follow-up" to this modal jazz album. This album's first track opens with a gong clash and features the primary artist repeatedly chanting this album's four-syllable title.

ANSWER: *A* **Love Supreme**

[10] *Sonic Meditations* is a series of exercises by Pauline Oliveros, who coined this two-word term for meditative music participation and improvisation. Oliveros founded a band by this name that specialized in performing in large, resonant spaces.

ANSWER: **deep listening** [or **Deep Listening** Band]

16. This model predicts a sigmoidal relationship between substrate concentration and velocity, and enzymes that obey it show a straight line on a Lineweaver-Burke plot. For 10 points each:

[10] Name this model of enzyme kinetics that assumes the intermediate complex concentration doesn't change during product formation.

ANSWER: **Michaelis-Menten** kinetics

[10] When the substrate concentration is equal to K_{sub-m} , the velocity of the enzyme is equal to this fraction of the maximum velocity.

ANSWER: **one-half** [or **0.5**]

[10] Pencil and paper ready. On a Lineweaver-Burke plot, the y -intercept of the line is equal to this value. You may express your answer as a function of V_{max} and K_{sub-m} .

ANSWER: **one over V-max**

17. This country's postwar chemistry community evolved parallel to but separate from both the Western and Soviet blocs, resulting in the McMurry reaction being named for its American third discoverer. For 10 points each:

[10] Name this country. A pioneering chemist from this country remarked that "the results of one's chemistry should be published in journals of one's country" to justify his hundreds of papers in the *Chemistry Letters* journal.

ANSWER: **Japan**

[10] This scientist's study of steroids and santonins helped create the pharmaceutical industry of China during and after WWII. This scientist is better known for accidentally finding that, after forming the hydrazone intermediate, excess water could be distilled away to improve the yield of the Wolff-Kishner reaction.

ANSWER: **Huang** Minglong [or Minglong **Huang**; accept **Huang** Minlon; accept **Huang**-Minlon modification]

[10] Kenichi Fukui became the first Asian person to win the chemistry Nobel for his study of the highest occupied and lowest unoccupied examples of these things, which he termed "frontier" examples.

ANSWER: **molecular orbitals** [or **MOs**; accept **HOMO**; accept **LUMO**; prompt on frontier **orbitals**; do not accept or prompt on "atomic orbitals"]

18. Along with Cecile Fatiman, this man gave a speech after drinking the blood of a black pig in the forest of Bois Caiman. For 10 points each:

[10] Name this former coachman who presided over a voodoo ceremony in 1791, which spurred an early black slave revolt around Le Cap in French Haiti.

ANSWER: Dutty **Boukman** [or Boukman **Dutty**]

[10] This "Black Spartacus" led the slave revolt that succeeded where Boukman failed, becoming governor-general of an independent Haiti in 1801 before quickly giving way to his lieutenant Dessalines.

ANSWER: Toussaint **L'Ouverture** [or Francois-Dominique Toussaint **Louverture**; or Toussaint **Breda**]

[10] This French abbot wrote about St. Domingue in his 1770 book *History of the Two Indies*, which contained chapters on the East Indies, South America, West Indies, and North America and then a final chapter analyzing the future of France in the New World.

ANSWER: Abbé **Raynal** [or Guillaume Thomas Francois **Raynal**]

19. The main conflict in this novel is between a police force led by Hassan-i Sabbah and Agent K9 against a mob that includes The Intolerable Kid and Uranian Willy. For 10 points each:

[10] Name this nonlinear novel in which a group of criminals take the form of viruses on Earth to recreate the conditions leading to creation of the Crab Nebula.

ANSWER: **Nova Express**

[10] With the novels *The Soft Machine* and *The Ticket That Exploded*, *Nova Express* forms a trilogy often named for this writing technique developed by the trilogy's author and Brion Gysin.

ANSWER: **cut-up**

[10] *The Cut-Up Trilogy* was written by this author, whose most famous novel describes the drug trade in a surreal version of Tangier called Interzone.

ANSWER: William S. **Burroughs**

20. Between 1992 and 2007, the population of these creatures in India declined by over 99%, a drop attributed to their consumption of the drug diclofenac. For 10 points each:

[10] Name these creatures whose shrinking population has been a huge blow to the Parsi community, which has been forced to adapt to their decline by using solar concentrators in an important ritual.

ANSWER: **vultures** [or **buzzards**]

[10] The vulture decline has also forced more religious adherents in this region to turn to cremation instead of the “sky burial” tradition. The Dalai Lama is revered in a branch of Buddhism followed in this region.

ANSWER: **Tibet** [or **Tibet Autonomous Region**; prompt on Xizang]

[10] After the death of a family member, adherents of Tibetan Buddhism observe rituals for the family member’s soul for this length of time, which is the maximum length of time it takes to pass through the *bardo*.

ANSWER: **49 days** [or **seven weeks**]