

2021 ACF Nationals

Packet by UC Davis

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Tossups

1. An artist's group with this nickname included a painter whose works are forged by the drug lord Gary Lamont's crime ring, as uncovered in the 2019 documentary *There Are No Fakes*. Because their use of impasto resembled "gobs of porridge," a group of this name was nicknamed the "Hot Mush School." The "Woodlands Style" artists Daphne Odjig and Norval Morriseau were part of PNIAI ("P-N-I-A-I"), an artist's collective that was given this nickname in reference to an earlier group. Before dying in a mysterious boating accident, an artist inspired a group of this name with his quasi-abstract painting of a tree silhouetted against a sunset. The painter of *Church at Yuquot Village*, Emily Carr, and the painter of *The Jack Pine*, Tom Thomson, are often associated with a group of artists of this name. For 10 points, give this numerical nickname of a group of modernist Canadian landscape painters.

ANSWER: group of **seven** [or the Indian group of **seven**; prompt on Algonquin School; prompt on Professional Native Indian Artists Inc. until "PNIAI" is read]

2. To find one of these things, archaeologists traversed a minefield to excavate the Nazi education center Ordensburg Krössinsee. A 2019 book by Nick Yablon challenges the Guinness World Record crediting Thornwell Jacobs with making the first of these things in the 1930s at Oglethorpe University in Atlanta. Jonathan Harris created one of these things for Yahoo!. They're not anthologies or libraries, but the books *The Last Taboo*, *Scribbler Moon*, and *Dear Son, My Beloved* were created for one of these things in a Norwegian forest. Andy Warhol made 610 of these things, which were created for two World's Fairs by Westinghouse. Martin Kunze seeks to create a global example of these things by printing the "1000 most important books" on ceramic tablets in the Hallstatt salt mine to preserve the "Memory of Mankind." For 10 points, name these caches of artifacts intended to be opened in the future.

ANSWER: **time capsules** [accept the **Crypt of Civilization**; accept **Memory of Mankind** or **MOM** before "Memory of Mankind" is read; prompt on crypts; prompt for more specific on answers related to historical preservation; prompt on the Future Library project or Framtidsbiblioteket by asking, "The Future Library is an example of what broader kind of cache of objects?"; prompt for more specific on caches or archives by asking, "What specific sort of archive/cache?"]

3. Historically, this religious group was believed to transform into wolf-like creatures and dig up graves using a form of the "evil eye" called *buda*. This non-Asian religious group has largely abandoned its former practice of confining menstruating women to huts called *yara gojo* for a week. Elders from this group read their scriptures publicly from underneath multi-colored umbrellas on their holiday of Sigd. In services, this group reads from its principal text, the "Orit." Women from this group, which was banned from donating blood until 2017, were allegedly given courses of the birth control drug Depo-Provera without their consent for decades. Operation Joshua and Operation Solomon airlifted this group, which includes the Falash Mura. For 10 points, name this minority Jewish community, most of which has, since the 1980s, emigrated to Israel from Africa.

ANSWER: **Ethiopian Jews** [or **Beta Israel**; accept **Falash Mura**; accept **Falasha** before "Falash" is read, but note that it is considered derogatory]

4. This author wrote about a game warden who decides to hunt humans after a conversion experience in the second of a pair of linked novellas about hunting. A Kyoto heron spearing for fish and a Louvre guard watching the *Venus de Milo* are subjects of two of the disparate chapters on aesthetics that make up another novel by this author. Mr. Eszter tries to supplant the “artificial” tuning system used in Bach’s *Well-Tempered Clavier* in another novel by this author, in which a traveling circus comes to a small town with the world’s largest dead whale. This author of *The Last Wolf and Herman*, as well as *Seiobo There Below*, collaborated on a seven-hour-long, extremely slow adaptation of one of his novels by Bela Tarr. Susan Sontag used the phrase “contemporary master of the apocalypse” to describe, for 10 points, what Hungarian author of *The Melancholy of Resistance* and *Satantango*?

ANSWER: Laszlo Krasznahorkai

5. In a myth from this country, a son and daughter become too large to live together, so their mother makes them race, with the son in wooden clogs and the daughter carrying rocks in her skirt. Creation myths from this country include one where “Grandmother Mago” mixes mud with her urine to create the world, and one where twins called “big star king” and “little star king” try to grow a flower on their lap. Five gold and five silver insects are made into men and women by their supreme god, who once held two suns and two moons in his hands before destroying one of each. Six eggs descended from heaven to create the Gaya Confederacy in this country, whose people were said to descend not from an impatient tigress but rather a patient female bear, who emerged from her cave as a beautiful lady to mother Tangun. For 10 points, name this country where heroes founded the Gojoseon and Silla Kingdoms.

ANSWER: Korea [accept North Korea or South Korea]

6. Along with nitrofluorenes, Donald Cram used two carbanions (“carb-AN-ions”) containing this functional group to formulate the “conducted tour” mechanism of base-catalyzed iso-racemization. By avoiding “steric twisting,” a carbanion bonded to three coplanar examples of this group is more acidic than one bonded to three other strongly electron-withdrawing groups like nitro. Methionine’s C-terminus is cleaved by a bromo-substituted example of this group, two examples of which are found in CS tear gas. Reacting a Grignard reagent with this functional group, then hydrolyzing the product, creates a carbonyl. Standard lab gloves are made from a polymer of butadiene and a vinyl example of this functional group, which is hydrolyzed to form an alpha-amino acid in the second step of the Strecker synthesis. For 10 points, name this pseudohalogen, which bonds to an R group via a carbon atom that is triple-bonded to nitrogen.

ANSWER: nitriles [accept CN; accept cyano; accept cyanides; do not accept “isocyanides” or “isonitriles”]

7. This non-amino acid molecule is the primary input for the bacterial acrylate pathway of propionate production, which interconverts its isomers with a racemase (“RASS-uh-mase”) that uses a “nickel pincer” cofactor. A 2019 *Nature* paper from the Zhao and Becker groups suggested that this molecule can regulate M1 macrophages as a histone modification. This molecule is the most desirable end product in silage. The “bifid shunt” yields two equivalents of this molecule. PGC-1-alpha regulates the threshold at which this molecule’s blood level increases exponentially, which occurs at a lower VO_2 max in untrained subjects. Sodium bicarbonate supplements are taken to block the protonation of this molecule, which is interconverted with glucose in the Cori cycle. For 10 points, a namesake dehydrogenase produces what molecule from pyruvate in an anaerobic fermentation pathway that fuels muscles?

ANSWER: lactate [or lactic acid; or 2-hydroxypropanoic acid; accept Lactobacillus or Lactobacilliales or lactic acid bacteria or LAB; accept sarcolactic acid; accept CH₃CH(OH)COOH or CH₃CH(OH)CO-minus; accept histone lactylation; prompt on C₃H₆O₃]

8. In 2020, this city's GoDown Arts Centre hosted an acrylic series by Michael Soi satirizing Chinese business. An artist born in this city created *The Bride Who Married a Camel's Head* and other mixed-media collages of human-plant-machine hybrids, as well as the video *The End of Eating Everything*. The story "Jambula Tree" inspired a censored 2018 film about a lesbian couple in this city whose title means "friend." Benga music evolved in this city, where hip-hop artists like Camp Mulla often use Sheng slang. This birthplace of Wangechi Mutu is the major setting of a film in which Tessa's assassination is linked to the drug Dyspraxa. *The Constant Gardener* was shot in this city's Kibera slum, and a National Museum in this city displays the bones of Turkana Boy. Ghanaian poet Kofi Awoonor was killed in the 2013 al-Shabaab attack on the Westgate Mall in, for 10 points, what capital of Kenya?
ANSWER: **Nairobi**

9. Thomas Sinclair argued that this city's 13th-century commercial growth was supported by Trebizond spice merchants avoiding the Red Sea. In this city, minister Rashīd al-Dīn Hamadānī created a manuscript *atelier* at the Rab'-e Rashidi complex. The "vessel" or "Safina" of this city gives its name to a Mongol encyclopedia. Also home to the Amir Nezam House, this city contained the "Arg" *acropolis* and the Maq-barato-shoara, a "Mausoleum of Poets" including Homam. Tommaso Ugi di Siena visited the court of Öljaitü in this city, where a Black Sheep Sultan is entombed in the earthquake-damaged Blue Mosque. The ruler Ghazan moved the capital of the Ilkhanate from nearby Maragheh to this city. Later, this city was replaced as capital first by Qazvin and then by Isfahan, under the reigns of Tahmasp and Abbas I. For 10 points, name this city captured with the help of the Qizilbash by Shah Isma'il I and made the capital of his Safavid Dynasty.
ANSWER: **Tabriz** [accept Shams **Tabrizi**]

10. Observed values for this physical variable are generally 7.4 to 7.8 times greater than predicted by the formula "E equals C times S to the two-thirds power," according to a measure developed by H. L. Jerison. James Sikela and Frans van Roy discovered a linear relationship between the copy number of an NBPF repeat and this physical variable and thus renamed the DUF1220 domain. Peter Wheeler and Leslie Aiello posited that evolutionary increases in this physical variable required a shift to easier-to-digest food to support a less-complicated gut in the "expensive tissue hypothesis." This physical variable is thought to be controlled by the "Olduvai" protein domain and was greater in Neanderthals than in *Homo sapiens*. For 10 points, what physical variable increased, on average, from about 650 to about 1,300 cubic centimeters in the evolution from *Homo habilis* to modern humans?
ANSWER: human **brain size** [or **encephalization**; or **hominid brain size** or **Homo brain size**; accept **brain volume** or **brain mass** or **cranial capacity** or **skull volume** or other answers suggesting **size of the brain** or **brain weight** or **brain volume** or **volume of cranium** or **volume of skull** or **size of skull**; do not accept or prompt on "size" or "volume" or "weight" or "mass"]

11. Charles Nicholl analyzed this event in the light of ideas spread by Giordano Bruno in his monograph on it, *The Reckoning*. In the lead-up to this event, a xenophobic poem threatening Dutch merchants, the "Dutch Church Libel," was posted publicly under a suggestive pseudonym. This event may have been incited by the "Baines note," which quoted the assertion that "they that love not Tobacco and Boys are Fools." The last novel Anthony Burgess published during his lifetime was a fictionalization of this incident. This event occurred at the house of Dame Bull, in a room rented to Robert Poley, Nicholas Skeres, and Ingram Frizer; all three were associates of Thomas Walsingham. This event's victim may have been targeted due to his reputed atheism, a view endorsed by his character Tamburlaine. For 10 points, name this incident in which the author of *The Jew of Malta* died under suspicious circumstances.
ANSWER: the **death** of Christopher **Marlowe** [or the **murder** of Christopher **Marlowe** or equivalents]

12. The fourth section of a one-movement work in this genre ends with a glissando from G7 to B8 accomplished with the assistance of the performer's teeth. The second movement of another composition in this genre opens with the piano playing "wraith-like" staccato ascending eighth note pairs, accompanied on the first notes by the viola and the second notes by the harp and violins, as the last notes of the cadenza fade out. Kari Kriikku was the dedicatee of a 2002 piece in this genre by Magnus Lindberg. An E-flat major movement marked "alla polacca" closes the second of Carl Maria von Weber's two pieces in this genre. A "basset" instrument was likely used to premiere an A major piece in this genre written by Mozart for Anton Stadler. For 10 points, name these compositions for solo woodwind and orchestra, an example of which was commissioned from Aaron Copland by Benny Goodman.

ANSWER: clarinet concertos [prompt on partial answers]

13. A leader of this Native American nation's "potato-eating" division refused to "earn a name" for scalping Osage warriors during a bear hunt, according to his biography by Anna Lewis. This people, who dominated the deerskin trade around Sixtowns, traced their origin to the Middle Woodland platform mound Nanih Waiya. They brought sassafras *filé* powder to New Orleans. LeAnne Howe's novel *Shell Shaker* fictionalizes the 1740s civil war among this people after the French assassinated their war-captain Red Shoes. During the War of 1812, Pushmataha led this people, whose other chiefs included Greenwood LeFlore and Mushulatubbee, an ally of Andrew Jackson during the Creek Wars. They ceded their land in the Treaty of Dancing Rabbit Creek, making them the first group moved under the Indian Removal Act. For 10 points, name this people who fought 18th-century wars in Mississippi with the related Chickasaw tribe.

ANSWER: Choctaw people [or Chahta; accept Choctaw Nation; accept Chahta Yakni] (The first sentence refers to Pushmataha.)

14. This thinker earned the nickname "Pigeon" for comparing the institution of private property to a group of 99 pigeons who ceaselessly gather the best corn for the "worst" bird of their flock. This thinker's theory of political obligation, which holds that "whatever is expedient is right," is criticized for allowing one to keep a plank stolen from a drowning man in Thoreau's "Civil Disobedience." The eight Bridgewater Treatises were commissioned to resolve the conflict between "radical new theories" and this thinker's major work. This thinker began that book with an *a posteriori* argument that imagines finding a stone on a heath and supposing it had "lain there for ever," then suggests that conclusion would be absurd if a "piece of workmanship" were found instead. For 10 points, what clergyman's 1802 treatise *Natural Theology* contains a teleological argument that compares God to a watchmaker?

ANSWER: William Paley

15. This author wrote a book that recalls an Irish headmistress who kept illegitimate children out of her school. The narrator of a story by this author observes her daughter "moving from pool to pool" while mocking a hunchbacked boy and contrasts the "silent voice" with the title "Blackness." The narrator of a book by this author sees "REPAIRS ARE PENDING" signs on a library after an earthquake hits her hometown. That book by this author discusses the praise that tourists give to an island's Mill Reef Club, as well as their confusion that an airport is named for V.C. Bird. In a story by this author, a mother lists a litany of domestic chores in the title "Letter from Home." That mother had earlier chastised her daughter for becoming a "slut" in a story by this author of *A Small Place*. For 10 points, name this Antiguan author whose collection *At the Bottom of the River* contains the story "Girl."

ANSWER: Jamaica Kincaid

16. Multiple papers by Nicolas Sourlas have shown that these physical systems can be modeled as error-correcting codes. Because these systems' Gibbs measures satisfy the Ghirlanda-Guerra identities in the thermodynamic limit, said measure must be ultrametric. These systems coexist at a multicritical point on a temperature-probability diagram with paramagnetic and ferromagnetic states along the Nishimori line. Replica symmetry breaking occurs in these systems below a line on the plot of applied field vs. temperature. Parisi's solution for the free energy of one of these systems provides the analytic solution to a mean-field model of them developed by Sherrington and Kirkpatrick, which extended the Edwards-Anderson model to infinite range and is a type of Ising model. For 10 points, identify these magnetic systems that exhibit quenched disorder, consisting of randomly aligned spins.
ANSWER: **spin glasses** [accept **Ising glass** before "Ising" is read, prompt on **Ising model** before "Ising" is read]

17. A "treasonous" paper against this monarch, written by buttonmaker John Broadhurst, was sent to the mayor of Leicester. Late in his reign, he controversially appointed Joshua Bassett to Sidney Sussex College at Cambridge. One rebel against this king was captured in peasant garb at the meeting of the Black Cart and White Cart Waters, and revealed himself by shouting "Alas, Unfortunate Argyll!" The next rebel against this king offered six guineas to the executioner Jack Ketch to behead him in one stroke, but it took five bloody hacks anyway. That leader of the "Pitchfork Rebellion" was defeated at the Battle of Sedgemoor. Henry Sydney wrote another letter seeking to remove this king, signed by Edward Russell and the Bishop of London Henry Compton, part of a group called the Immortal Seven. For 10 points, name this king whose return from exile was thwarted at the Battle of the Boyne, bringing an end to the Stuart Dynasty.
ANSWER: **James II** of England [or **James VII of Scotland**, prompt on "James"]

18. Ives and Garland modified a technique based on this function to test for phylogenetic signal. Max Welling and Yee Whye applied an algorithm based on Langevin dynamics to a model named for this function. This function is the basis of the cross-entropy loss function. In a method named for this function, the Firth correction uses Jeffreys invariant prior to penalize the likelihood. The softmax function generalizes this function to multinomial classification. The probit model is an alternative to this function's regression method for binary dependent variables. Richards's generalized version of this function includes in the Gompertz curve. The Hill equation is an example of this function used to model dose-response curves. The Fermi-Dirac distribution is described by this function, whose inverse is the log-odds. For 10 points, exponential growth with a limit is modeled by what S-shaped curve?
ANSWER: **logistic** function [accept **sigmoid** curves; accept Bayesian **logistic** regression or stochastic **logistic** regression or phylogenetic **logistic** regression; accept the **Verhulst** function; accept generalized **logistic** function or **Richards'** curve; accept **cross-entropy** loss before "cross-entropy loss" is read]

19. In a story by this author, a man shoots six people in revenge for his humiliating mock conviction over refusing to buy a badge for the Azalea Festival. One of this author's characters repeatedly denies that her father beats her while protesting a pasture's bulldozing, leading her grandfather to smash her head with a rock after she claims to be "pure Pitts" and not a Fortune like him. This author of "The Partridge Festival" described a turnip-shaped cloud descending over a man who drives with his car door open in shock after a boy called his mother a "stinking pole cat" instead of an "angel of Gawd." In that story, which is titled for a road sign reading "Drive carefully," Lucynell Crater is abandoned at a restaurant after her marriage to Tom Shiftlet. For 10 points, name this author of "A View of the Woods," who included "The Life You Save May Be Your Own" in her collection *A Good Man Is Hard to Find*.
ANSWER: (Mary) Flannery **O'Connor**

20. The equestrian “Red Hunter” or Tohazie legendarily left this body of water to found the Kingdom of Dagbon. Gustav Nachtigal observed coral-wearing dancers near this body of water, where the author of “Travels and Discoveries” recorded the presence of unique swimming kuri cattle. Pearl millet was domesticated north of this lake, which is given the prefix “Mega” to denote its expansion during the Holocene “humid period.” The Sao civilization built walled cities that were later taken over by an empire whose royal chronicle, the Girgam, documented their move to this body of water, which is home to the Kanuri-speaking horsemen of the Sayfawa dynasty. In the lands around this lake, the semi-mythic Duguwa dynasty founded an empire that ran a slave trade under Mais (“mize”) like Idris Alooma. For 10 points, the Kanem-Bornu Empire arose around what lake in the Sahel named for a country west of the Sudan?

ANSWER: Lake **Chad** [or Lac **Tchad**; or Buhayrat ta-**Shad**; accept Lake **Mega-Chad**]

Bonuses

1. An artist from this country is known for sculpting large crowds of headless figures, such as Chicago's *Agora*, as well as woven installations called "abakans." For 10 points each:

[10] Name this country. Leonardo DiCaprio has popularized a sculptor from this country who originated Zermatism, the theory that historical figures like Machiavelli and Churchill were actually evil half-yeti monsters.

ANSWER: **Poland** (the second artist is Stanisław Szukalski)

[10] Magdalena Abakanowicz's *Puellae*, a crowd sculpture whose 30 figures are cast from unique child models, is located in the sculpture garden of this city's National Gallery of Art. The Hirshhorn Museum is also in this city.

ANSWER: **Washington, D.C.** [accept either underlined part]

[10] A third Polish sculptor, Alina Szapocznikow (sha-POACH-in-ee-koff), created lamp-like sculptures of these objects "marching" and "illuminated." A sofa shaped like these objects is at the center of an illusionistic room created by Salvador Dali.

ANSWER: **lips** [prompt on mouths]

2. Answer the following about insane CIA Cold War plots that did not involve exploding cigars or acoustic kitties, for 10 points each.

[10] To discredit this world leader, the CIA created a full-face mask of him, and asked the Los Angeles police to find an actor to wear it for a fake pornographic film entitled "Happy Days." This man's air force later shot down CIA pilot Allen Pope.

ANSWER: **Sukarno** [or Kusno **Sosrodihardjo**]

[10] The American Mafia, Sicilian Mafia, and the Vatican coordinated in this Operation, which created a stay-behind resistance army in Italy during the Years of Lead in order to thwart a communist invasion of Europe.

ANSWER: Operation **Gladio**

[10] This place was long thought to contain a lost hydrogen bomb after a secret mission crashed at Thule Air Base. Project Iceworm wanted to build launch sites under this territory of Denmark, which is the world's largest island.

ANSWER: **Greenland**

3. A hypothesis named for this transformation states that infinite-groupoids are equivalent to topological spaces, and the fundamental group is the group of equivalence classes of loops under this transformation. For 10 points each:

[10] Name this transformation. Fibrations satisfy the lifting property named for this transformation.

ANSWER: **homotopy** ("huh-MOT-uh-pee") [accept **homotopic**, do not accept or prompt on "homeomorphism"]

[10] This inaugural winner of the Breakthrough Prize in Mathematics discussed homotopy theory using infinity-categories in his book *Higher Topos Theory*. He is also known for his work in derived algebraic geometry and the cobordism hypothesis.

ANSWER: Jacob **Lurie**

[10] The fundamental group and the concept of homotopy were introduced by this French mathematician. A generalized form of his namesake conjecture posits that the homotopy n-sphere is homeomorphic to the n-sphere.

ANSWER: Jules Henri **Poincare**

4. The merchant-scholar Constantine the African translated Arabic medical texts in this city, where Matteo Silvatico cultivated herbal remedies in “Minerva’s Garden.” For 10 points each:

[10] Name this city whose medieval school of women’s medicine was led by Rebecca Guarna, Abella of Castellomata, and Trota, the author of the *Trotula*.

ANSWER: **Salerno** [or **Salierno** or **Salierno**; accept Schola Medica **Salernitana** or Scuola Medica **Salernitana**; accept Lombard Principality of **Salerno** or Principato di **Salerno**]

[10] Petruccio Pisano recorded that merchants from Salerno dominated regional fairs, where Calabrian Jews brought this product from Catanzaro. The canuts of Lyons produced this good, which was woven in Cheshire after the Byzantines introduced it from China.

ANSWER: **silk** [or **soie**; or **sīchóu**; accept **silk**worms or domestic **silk**moth or **Bombyx mori**; accept **sericulture**; or prompt on **cloth** or **textiles** or **fabric**]

[10] In 1058, the Count of Salerno, Guaimar IV, gave his daughter Sichelgaita as a wife to this man; she fought alongside him, commanding troops in battle.

ANSWER: Robert **Guiscard**

5. A myth that Cosimo I de' Medici’s son accidentally murdered his own brother inspired the play *Don Garzia* by this author, who also dramatized the life of Scipio Africanus in *Sofonisba*. For 10 points each:

[10] Name this author whose elaborately-plotted revenge tragedies include *Rosmunda*, *Octavia*, *Saul*, *Myrrha* and *Timoleone* are among the dramas of this prolific 18th-century “father of Italian tragedy.”

ANSWER: Count Vittorio **Alfieri** [or il conte Vittorio Amedeo **Alfieri**]

[10] Alfieri’s two-part retelling of this play was posthumously published. The City Dionysia awarded second place to this Euripides play, whose title character agrees to die in place of her husband Admetus.

ANSWER: **Alcestis** [or **Alceste**; or **Alceste**]

[10] Alfieri wrote a political drama about the fictional suicide of this real ruler. In a Schiller play, this king shares a dream of his palace on fire with Count Lerma, who becomes the confidante of his traitorous son.

ANSWER: **Philip II** of Spain [or **Filippo Secondo** di Spagna; or **Filippo d’Asburgo**; or **Felipe Segundo**; accept “el **Prudente**”; accept **Philip I of Portugal** or **Filipe I of Portugal**] (The other play is Schiller’s *Don Carlos*)

6. Herbert von Karajan and the Berlin Philharmonic won Gramophone’s Record of the Year in 1982 for their recording of this symphony, whose final note is marked *esterbend*. For 10 points each:

[10] Name this symphony whose *Andante comodo* first movement quotes Beethoven’s *Les Adieux* sonata. Its third movement *Rondo-Burleske* opens with a dissonant double fugue and is marked “to my brothers in Apollo.”

ANSWER: Symphony No. **9** by Gustav **Mahler** [or Gustav **Mahler**’s **Ninth** Symphony]

[10] Towards the end of Mahler’s Ninth, the first violins quote the line “the day is fine from yonder heights” from this earlier Mahler song cycle that sets poems like “Im diesen Wetter” by Friedrich Rückert.

ANSWER: **Kindertotenlieder** [accept **Songs on the Death of Children**]

[10] The first movement of Mahler’s Ninth also quotes a waltz by this composer called *Enjoy Life*, perhaps snarkily. This “Waltz King” also composed the operetta *Die Fledermaus*.

ANSWER: Johann **Strauss Jr.** [accept Johann **Strauss II**, Johann **Strauss** the **Younger**]

7. A technique that uses two of these things converts the laboratory frame to the CM frame to produce a product flux contour plot, which can display forward or backscattering. For 10 points each:

[10] Name these things. Supersonic examples of these things are produced using skimmers and collimators in a technique that crosses two of them in a vacuum.

ANSWER: **molecular beams** [prompt on **beams**]

[10] Contour plots in crossed molecular beam experiments can be created by a rotating one of these devices as the detector. These devices generate a readout of peaks, each of which corresponds to a molecular fragment at a particular m-to-z ratio.

ANSWER: **mass spectrometers**

[10] Crossed molecular beam experiments can use this particular type of detector used in mass spec to measure kinetic energy. This type of detector is combined with MALDI to analyze proteins via peptide mass fingerprinting.

ANSWER: **time of flight** [or **TOF**]

8. The bisexual proto-flapper Mary MacLane was called the Wild Woman of this city, which was home to the dangerous Berkeley Pit that Brian James Leech wrote about in *The City that Ate Itself*. For 10 points each:

[10] Name this U.S. city called the “Richest Hill on Earth,” where tensions between Finnish and Cornish workers culminated in 1914 labor riots that broke apart the IWW.

ANSWER: **Butte**, Montana [or *Mining Cultures: Men, Women, and Leisure in Butte, 1914-41*; accept the suburb **Meaderville**, where many pre-Depression nightclubs were located]

[10] Marcus Daly founded this successful copper mining company in Butte, Montana. He named it after Winfield Scott’s Civil War plan of this name, which called for a naval blockade of southern ports.

ANSWER: **Anaconda** Copper Mining Company

[10] The Western Federation of Miners thrived in Butte and this Colorado city, the site of a five-month 1893 strike alongside its sister city of Victor. The 1904 film *Tracked by Bloodhounds* depicts a lynching in this city.

ANSWER: **Cripple Creek**, Colorado

9. This movement began when the Konkokyo teacher and housewife Deguchi Nao had a “spirit dream” in 1892 and was possessed by the god of metal Konjin. For 10 points each:

[10] Name this new religion of Japan whose name refers to a “great source” or “origin,” and whose teachings are in the scripture “From the Tip of the Brush.”

ANSWER: **Oomoto** [or **Oomoto**-kyo or **Omoto**]

[10] Oomoto teaches that Deguchi Nao is the voice of this Shinto sun goddess who hid from her brother Susanowo in the heavenly rock cave.

ANSWER: **Amaterasu** [**Amaterasu**-omikami or **Ohirume**]

[10] One of the original great kamis of Oomoto was this ophthalmologist who called his own religious beliefs Homaranismo or “humanitism,” based on works of Hillel the Elder. He’s better known for inventing Esperanto.

ANSWER: Ludwik Lejzer **Zamenhof** [or Ludoviko Lazaro **Zamenhof**; or L.L. **Zamenhof**]

10. A book titled for this group of people posed extensive criticisms of the U.N. System of National Accounts and prompted that organization to remove certain accounting exceptions in 1993. For 10 points each:

[10] In 1988, a former member of New Zealand's parliament published a key text in an emerging branch of economics, a book titled "if" what group of people "counted"?

ANSWER: **women** [accept **females**; accept ***If Women Counted***]

[10] In *If Women Counted*, Marilyn Waring argued that the national accounts system underlying the world economy ignored unpaid "women's work" by relying on this traditional key measure of the size of a country's economy.

ANSWER: **GDP** [or **gross domestic product**; do not accept or prompt on "GNP" or "gross national product"]

[10] This economist, and her husband Richard, published pioneering work about the accounting of unpaid labor. Her son Steven is a University of Minnesota historian who created IPUMS, the world's largest population database.

ANSWER: Nancy **Dunlap Ruggles** [accept either underlined part; accept Richard Francis **Ruggles**; accept Steven **Ruggles**]

11. This poet wrote "Hell is this: The lack of any bed but one's / Music to sleep in" and compared Eurydice to a "frigate bird or a rock or some seaweed" in "Orfeo." For 10 points each:

[10] Name this San Francisco Renaissance author who wrote "poetry is like a rope" in "A Book of Music." This author collected several "Imaginary Elegies" in *My Vocabulary Did This to Me*.

ANSWER: Jack **Spicer** [or John Lester **Spicer**]

[10] Spicer wrote "Improvisations" on a line by this poet, related to his idea of writing "for the poem's sake" from his essay "The Poetic Principle." This 19th-century poet also wrote an "Epigram for Wall Street."

ANSWER: Edgar Allan **Poe**

[10] Jack Spicer wrote a collection titled *After [this Spanish poet]* which contains translations of such poems as "Ode to Walt Whitman," though it does not contain this poet's "Lament for the Death of a Bullfighter."

ANSWER: Federico Garcia **Lorca**

12. Yatsuhashi Kengyo developed the "Hirajoshi scale" based on the tunings of this instrument. For 10 points each:

[10] Name this traditional Japanese instrument, a thirteen-stringed zither similar to the Korean *kayagum*. It is one of the principal instruments in traditional Japanese music along with the *shamisen* and *shakuhachi*.

ANSWER: the **koto**

[10] This jazz album features a cover of "Moon Over the Ruined Castle" under the title "Japanese Folk Song." Other tracks on this album include "Locomotive" and a version of "Between the Devil and the Deep Blue Sea."

ANSWER: ***Straight, No Chaser*** (By Thelonious Monk.)

[10] Many historical *koto* musicians, including Miyagi, have had this distinctive attribute. The medieval *biwa hoshi* who performed the *Tale of Genji* often had this disability, also held by the "stride" pianist Art Tatum.

ANSWER: **blindness** [accept being **unable to see**]

13. This collection contains a fragmentary 9th-century poem about a "strong servant of the Savior," *Judith*. For 10 points each:

[10] Name this Old English manuscript, which depicts fantastic peoples such as blemmyae and hostes in the illustrated *Wonders of the East*. Grímur Jónsson Thorkelin transcribed *Beowulf* from this text.

ANSWER: **Nowell** Codex

[10] This Old English elegy from the Exeter Book begins with the compound *uhtcearu* ("OOT-cha-roo"), meaning "pre-dawn-sorrow." Its speaker predicts, "That man of mine / will drag his days under a mighty mind-caring."

ANSWER: "The **Wife's Lament**"

[10] This *Beowulf* character is described by the similar compound term *uhtfloga* ("OOT-flog-uh"), meaning "dawn-flyer." At the end of the poem, an aged Beowulf slays this character with assistance from Wiglaf.

ANSWER: the **dragon**

14. As of 2019, this unit's definition is no longer based on a golf ball-sized piece of metal in Sèvres, France. For 10 points each:

[10] Name this SI unit of mass, which is now based on Planck's constant rather than a physical prototype.

ANSWER: **kilogram**

[10] The International Prototype of the Kilogram was 90% platinum and 10% this corrosive-resistant metal. A telecom company named for this element created first-generation satellites whose "flares" annoyed astronomers.

ANSWER: **iridium** [accept **Iridium Communications** or **iridium flares**]

[10] The SI unit change was approved by the GCPM, an international body that governs these *two* general concepts, including quantities for physical measurements. In the United States, statewide bureaus responsible for these two concepts measure gasoline quality.

ANSWER: **weights** and **measures**

15. This text lists eight different languages spoken by its subjects, and argues that excluding hybrid languages amounts to "linguistic terrorism," in its chapter "How to Tame a Wild Tongue." For 10 points each:

[10] Name this work of theory interspersed with poetry by its author. This text uses the image of a chthonic ("THON-ick") goddess that is both eagle and serpent to capture the vertiginous experience of looking in a mirror.

ANSWER: **Borderlands/La Frontera**

[10] Gloria Anzaldúa's *Borderlands/La Frontera* theorizes a form of consciousness called *mestizaje* ("mess-tee-THA-hey"), which is often discussed in relation to this feminist theory by Kimberlé Crenshaw. This paradigm emphasizes thinking about the way oppressions like racism and sexism interact, rather than analyzing them in isolation.

ANSWER: **intersectionality** [or **intersectional** feminism]

[10] Anzaldúa's anthology *Making Face, Making Soul* included the article "Playfulness, 'World'-Traveling, and Loving Perception" by this Argentine feminist philosopher. This thinker also theorized the "coloniality of gender."

ANSWER: Maria **Lugones**

16. In 2003, Craig Venter's group created a synthetic version of this virus's genome from oligonucleotide assembly. For 10 points each:

[10] Name this virus that was the second organism to have its genome sequenced after bacteriophage MS2. In Illumina sequencing, this virus is often added as a "spike-in" to increase nucleotide diversity.

ANSWER: **PhiX** ("fye-ex") 174

[10] In the Baltimore scheme, PhiX belongs to this class of viruses, which includes geminiviruses, circoviruses, and parvoviruses. Viruses in this class always replicate in the nucleus by forming a negative-sense template strand.

ANSWER: **ssDNA** viruses [or **single-stranded DNA** viruses; accept group **II** viruses; prompt on **DNA viruses**; do not accept or prompt on any answers about "RNA viruses"]

[10] Environmental DNA studies have found abundant single-stranded DNA viruses from the family Microviridae in microbial mats, which include the stromatolites created by these bacteria. Their endosymbiosis created plastids like chloroplasts.

ANSWER: **cyanobacteria** [or **cyanophyta**; or **blue-green algae**; prompt on **algae**]

17. The 2017 Man Booker International was awarded to a novel written in this language narrated by a retired district judge as a series of increasingly unhinged stand-up jokes. For 10 points each:

[10] Name this language of the novel *A Horse Walks Into a Bar*. Short story collections written in this language include *Suddenly*, *a Knock on the Door* and *The Bus Driver Who Wanted to be God* by Etgar Keret.

ANSWER: **Hebrew**

[10] Etgar Keret wrote a story discussing the nutritional value of these things. Mǎ Jiàn's novel about China creating a propaganda chip implant is titled for these things, which Morpheus rules in Neil Gaiman's comic *The Sandman*.

ANSWER: **dreams** [accept clear-knowledge equivalents; accept *China Dream*]

[10] In a Keret story, Sergei meets a goldfish that can talk and perform this action. In a Haruki Murakami story, the title girl delivers a chicken dinner to a restaurant's owner in room 604, who tells her he can perform this action.

ANSWER: **grant wishes** [accept clear-knowledge equivalents; specifically **grant** birthday **wishes** in the case of the Murakami story, "Birthday Girl"]

18. One ruler of this tribe took the land of Altishahr and conquered the Khalkha people, but was revolted against by his nephew Rabtan who had discovered gold in their land. For 10 points each:

[10] Name these peoples that ascended under the rule of Galdan, who called himself the "fifth son of Genghis Khan."

ANSWER: **Dzungars** [or **Kalmyks**; or **Ooled**; or **Eleuths**; or **Zunghar**; prompt on Oirat or Mongols or Mongolians]

[10] In part to ensure that no aid would be provided to the Dzungars, the Kangxi emperor of China concluded this 1689 trade treaty with the Russians. It was extended in 1727 by the Treaty of Kyakhta.

ANSWER: Treaty of **Nerchinsk**

[10] The Dzungars inhabited the area around the Turpan basin in this autonomous region of northwest China, which remains home to a Uighur population undergoing forced re-education.

ANSWER: **Xinjiang** Autonomous Region [accept **East Turkestan**]

19. In 2010 the Fermi Telescope collaboration published a finding of a two-lobed structure extending from the center of the Milky Way perpendicular to the galactic plane. For 10 points each:

[10] These so-called "Fermi bubbles" were detected because they emitted powerfully in this region of the electromagnetic spectrum, usually considered to begin at energies above 100 keV.

ANSWER: **gamma** radiation

[10] The observation of the 0.847 MeV and 1.238 MeV gamma ray emission lines from cobalt-56 during this event confirmed Donald Clayton's theoretical work on nucleosynthesis and established that iron-56 is the most strongly bound stable nucleus that occurs in nature.

ANSWER: supernova **1987A** or **SN 1987A**

[10] The relativistic jets of blazars, which during their active period emit strongest in the gamma wavelengths, are powered by this process, the inspiral of material into a supermassive black hole.

ANSWER: **accretion**

20. The Buddha's visit to Sri Lanka was marked by the Mahiyangana example of these structures, which are often topped with a parasol known called the *chhatra* that affords protection from evil. For 10 points each:

[10] Name these mound-shaped Buddhist monuments that often hold *Śarīra* relics. In Tibetan Buddhism, there are eight "great" designs for these structures, which inspired pagodas.

ANSWER: **stupa**s [or **thūpa**; or **chorten**; or **dagoba**; or **sharitō**; or **sūdūpō**; or **suvarga**; or **soldopha**; or **zèdi**; or **caetdḗy** or **phù dô**]

[10] Tibetan "descent from the god realm" stupas commemorate the Buddha's return from this heaven after teaching his mother to reach enlightenment. The Lhabab Duchen festival celebrates the Buddha's return from this realm.

ANSWER: **Tushita** heaven [or **Tusita**; accept stupa of descent from **Trāyastriṃśa** or **Tāvātimsa**; prompt on **kāmadhātu** or **desire** realms or **khams**]

[10] A 325-foot, bell-shaped stupa coated in solid gold plates is at the center of this opulent Buddhist complex. This pagoda was legendarily built around eight strands of hair gifted by the Buddha.

ANSWER: **Shwedagon** Pagoda [or the **Great Dagon** Pagoda]