

2021 ACF Nationals

Packet by Columbia A

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Tossups

1. For a given orbital in this system, the root mean square of the fluctuation in the occupation number is given by the average occupancy minus the average occupancy squared. The heat capacity for this system in 3 dimensions can be obtained at low temperatures by evaluating the integral [read slowly] $x^2 e^{-x}$ over quantity $(e^{-x} + 1)^{-2}$. A quantity in the 3-dimensional realization of this physical system that is proportional to \hbar^2 over $2m$, times the density raised to the $2/3$ power represents the highest energy state that a particle in this system can occupy, which at low temperatures is equal to the chemical potential. The pressure in this system in 3 dimensions is proportional to the density raised to the $5/3$ power, and arises from degeneracy. This system is used to model matter in white dwarves and conduction in metals. For 10 points, identify this physical system which consists of particles with half-integer spin in a potential well and obeys a distribution named for its namesake and Dirac.

ANSWER: **Fermi gas** [prompt on electron gas but do not prompt on “free electron gas”; accept **Fermi-Dirac** system before mention, but do not accept just “Dirac”]

2. A queen of these people asked for a tribute of three pigeons and three sparrows from each of her subjects, then had her army attach burning cloth to the birds’ feet so they would burn the thatched roofs of enemy huts. That queen had an affair with the Arabian traveler al-Ghazal, and refused to marry Prince Mal. After a king of these people ordered a group of priests massacred, the missionary Adalbert of Magdeburg escaped and reported the event to Otto the Great. This kingdom’s prince met defeat fighting against Bardas Scleros, after he destroyed the fortress of Sarkel while smashing the kingdom of the Khazars. Their queen ordered the burning of Iskorosten, the capital of the Drevlians, and converted to Christianity before her state was put under siege by the Pechenegs. For 10 points, name this power later Christianized by Vladimir the Great and ruled by his son Yaroslav the Wise.

ANSWER: Kievan **Rus’** [accept **Kievan** peoples; accept **Russians**; prompt on Slavic or Slavs] (The queen mentioned is Olga.)

3. Daniel Berset sculpted a gigantic “broken” one of these objects in Geneva to help push for the Ottawa Treaty on landmines. A 2003 artwork by Doris Salcedo consists of 1,550 of these artworks crammed between two buildings in Istanbul. Joseph Beuys (“BOYS”) let a triangular wedge of fat decompose atop one of these objects in a temperature-controlled museum case. Yayoi Kusama’s *Accumulation No. 1* is one of these objects with hundreds of fabric “phalluses” attached to it. The most famous artwork by the author of “Art After Philosophy” features a definition of this word, a photo of one of these objects, and an actual one. Joseph Kosuth depicted “One and Three” of these objects, real examples of which include Gerrit Rietveld’s *Zig-Zag*, Marcel Breuer’s *Wassily* and Charles and Ray Eames’s *LCW*. Eero Saarinen designed a tulip-shaped example of, for 10 points, what kind of furniture?

ANSWER: **chairs** [or sofa **chair**s; prompt on sofas or furniture]

4. A character in this novel beats his son for pronouncing “come” as “tum” before reading excerpts from Numbers to his servants. That character’s wife in this novel had earlier won the right to marry him by beating her four sisters in a game of cards. This novel’s final chapter ends by stating that the protagonist “is a Conservative so far as his vote and interest are concerned” though “in all other respects he is an advanced Radical.” Its protagonist works as a tailor’s apprentice in prison after assaulting Miss Maitland while attempting to convert her to Christianity. At age 28, the protagonist of this novel inherits the considerable wealth of his aunt Althea, who never marries this novel’s narrator, Edward Overton, despite their mutual love. For 10 points, name this novel that follows “Old John,” Theobald, Ernest, and other members of the Pontifex family, written by Samuel Butler.

ANSWER: *The Way of All Flesh* [accept *Ernest Pontifex*, or *The Way of All Flesh* until “Pontifex” is read]

5. Ten thousand schoolgirls in this U.S. state were fed iodized salt in an experiment to prevent goiter. Play-Doh was invented in this state as a product to clean wallpaper. A group of inventors in this state called the “Barn Gang” included Edward Deeds and Harold Talbott, who worked at the National Cash Register Company. It’s not New York, but this state had the first home with air conditioning, the Tudor-style Ridgeleigh Terrace. A city in this state gave its name to Delco Electronics, founded by a man who invented the Bug aerial torpedo and the electrical starting motor. Albert Sabin administered the first oral polio vaccine in this state. This state was the birthplace of both Charles Kettering and Harvey Firestone, who founded his company here at the same time as Benjamin Goodrich in a city called the “Rubber Capital of the World.” For 10 points, name this state where a bicycle shop was run by Wilbur and Orville Wright in the city of Dayton.

ANSWER: Ohio

6. This thinker’s first solo-authored book used the example of a prisoner’s dilemma in which both prisoners are in the mafia, and would be killed if they defected, to show the limitations of rational-choice assumptions. A 1988 paper by this man contrasts thinkers who “substantively” follow Herbert Simon with “interpretive” scholars such as Hayward Alker and John Ruggie, whom this man labeled with a new term. This man, who contrasted “rationalistic” scholars with “reflective” ones in his paper “International Institutions: Two Approaches,” is an emeritus professor at Princeton and a leading proponent of international institutionalism. The 1984 book *After Hegemony* is by this man, who co-developed “complex interdependence” in the jointly authored book *Power and Interdependence*. For 10 points, what scholar is considered the co-founder of neoliberal IR theory with Joseph Nye?

ANSWER: Robert Owen Keohane (kee-oh-HAYN)

7. A commentary in this tradition argues that love occurs when people inhale each other’s “spirit” vapors, making unreciprocated love a form of murder. A polemic against this tradition in the *comparatio* genre by George of Trebizond prompted Cardinal Bessarion’s 1469 treatise “Against the Slanderer.” Another thinker attempted to combine this philosophical tradition with magic in a treatise that offers folk remedies for the “melancholic” temperament of scholars and describes an astrological method of “statue animation.” Besides writing *Three Books on Life*, that philosopher used the concept of “prisca theologica” to argue for the compatibility of this tradition with Christianity in an eighteen book treatise titled for this sort of “Theology.” The humanist Marsilio Ficino helped revive, for 10 points, what tradition, which the Florentine Academy promoted with its translations of Plotinus?

ANSWER: Neoplatonism [accept *Platonic Theology* or *Theologia platonica*; prompt on the Italian or Florentine Renaissance; prompt on humanism until “humanist” is read]

8. Dances during the Mutomboko Festival honor the founding of a kingdom in this country, where Stewart Gore-Browne lived at an estate near the “Lake of Royal Crocodiles” now called Shiwa House. The silly phrase “one party participatory democracy” in the constitution of its Second Republic was used to ban all parties except the United National Independence Party. This country funded Edward Nkoloso’s short-lived plan to send “Afronauts” as Christian missionaries to Mars. Its capital is where the 1974 accord ending the conflict between Portugal and FRELIMO (“freh-LEE-moh”) was signed, granting independence to Mozambique. The economy of this country depends on mining in the Copperbelt District. Its second president, Frederick Chiluba, was elected in 1991, bringing an end to the long tenure of Kenneth Kaunda. For 10 points, name this African country whose capital is Lusaka.
ANSWER: Republic of **Zambia** [accept **Northern Rhodesia** or **North-Eastern Rhodesia** or **North-Western Rhodesia**; do not accept or prompt on an answer of only “Rhodesia”]

9. When a son in this play warns “We are going to be in for trouble,” his mother replies “I’m not put together with flour paste. And neither are you.” A character in this play recites a song on piano that he learned from his friends after he quit his job as an engineer at Dornier Air Craft. This play’s author describes how its setting was changed from a small town in Ohio to better depict “nice, liberal Americans” in the memoir *Pentimento*. While characters are eating breakfast in this play, a man sneaks off and snoops through another man’s luggage as part of a scheme to pay off the gambling debts he incurred at an embassy. The prince Antoine Bibesco was the model for this play’s sinister Romanian count Teck de Brancovis, who lives with the Farrelly family in their estate outside of Washington D.C. For 10 points, name this play about the anti-Nazi activists Sara and Kurt Muller, written by Lillian Hellman.
ANSWER: ***Watch on the Rhine***

10. Whether the sign of a quantity representing the flux of this substance symbolized F_{ov} or M_{ov} (“F sub O V or M sub O V”) is positive or negative is believed to determine whether a certain bistable phenomenon is in its “on” or “off” state. The perturbation caused by a sudden increase in the flux of this substance is modeled in so-called “hosing” experiments, such as Ron Stouffer’s PMIP project. In 2004, a team led by Jerry F. McManus linked influxes of this substance to Heinrich events. The rapid release of this substance causes MWP events. According to this substance’s namesake forcing hypothesis, by preventing the formation of North Atlantic Deep Water, an influx of this substance may lead to a shutdown of the meridional overturning circulation. An eruption causes an outburst of this substance in a jökulhlaup (“YO-cull-howp”). For 10 points, name this liquid which can perturb the Earth’s climate system as it enters the ocean from melting icebergs.
ANSWER: **freshwater** [or **surface water**; or glacial **melt water**; accept answers which refer to **water** in **glaciers**; accept answers which refer to **water** that has no **salt** or **solutes** or has **zero salinity**; accept answers specifying **water** from Lake **Agassiz**; prompt on **water**; do not accept or prompt on “salty water” or “brackish water” or “ocean water” or “seawater” or “groundwater”]

11. This composer wrote a chamber piece modeled heavily after Stravinsky’s *A Soldier’s Tale* called *A Fiddler’s Tale*. This composer wrote a D Major violin concerto for Nicola Benedetti that includes the movements “Rhapsody,” “Rondo Burlesque,” “Blues,” and “Hootenanny.” The movements “Saturday Night Slow Drag” and “I Am (Don’t You Run From Me)” conclude a large piece by this composer for orchestra, big band, and gospel choir titled *All Rise*. This composer wrote an oratorio in which Jesse and Leona escape to freedom from slavery; that oratorio won a Pulitzer Prize in 1997. As a soloist, this musician won a 1983 Grammy for a recording with conductor Raymond Leppard and the National Philharmonic Orchestra of Haydn’s Trumpet Concerto. For 10 points, name this composer of *Blood on the Fields*, a jazz trumpeter and current artistic director of Jazz at Lincoln Center.
ANSWER: Wynton Learson **Marsalis**

12. One method of flagging false positives in this procedure, like PAINS and IMPs, is the badapple algorithm, which uses a promiscuity score. An activity cliff may separate positives and negatives in this procedure, and frequent negatives in this procedure are called dark matter. A normalized effect size is plotted against a contrast variable in the dual-flashlight plot to visualize the output from this procedure. One method of normalizing the output of this procedure is the B-score, which corrects batch, row, and column biases. SSMD and Z-prime are normalized measures used in this procedure, which precedes lead ('lead') generation and lead optimization. In this procedure, robots pipet nanoliters of liquid from microtiter plates containing compounds of interest onto an assay plate. For 10 points, name this procedure in which thousands of compounds are searched for molecules with potential pharmaceutical application.

ANSWER: High-throughput **screening** [or **HTS**; accept **screening** a library; accept **screening** a drug library; accept **screening** a compound library; accept **screening** a natural products library; prompt on discovering medicine or drug discovery or drug design or rational drug design; accept **RNAi screen** or **RNA interference screening** due to the SSMD clue]

13. This building's interior was filled with random objects, such as umbrellas and pipes, in Alex da Corte's *Slow Graffiti* installation. For the 100th anniversary of this building's construction, the artist Marcus Geiger painted it an ostentatious bright red. This building's exterior features three Gorgon head sculptures that represent painting, sculpture, and architecture. It is emblazoned with the motto "to every age its art, to every age its freedom," which was reprinted in the journal *Ver Sacrum*. Joseph Maria Olbrich designed this building, and adorned it with a cupola comprised of 2,500 gilded leaves arranged in a hollow sphere shape. Its lowest floor contains a depiction of Typhon and a choir of angels that was made to surround a Max Klinger sculpture of a certain composer. *The Beethoven Frieze* can be found in, for 10 points, what building at the center of an early 20th-century Austrian art movement?

ANSWER: Vienna **Secession** Building [or the **Secessionsgebaude**]

14. This character frequently recalls a memory in which a superior tells him that men who lick bowls will always "croak first." This character rarely smiles because he lost several of his teeth due to scurvy, although he does smile when he sees the fog turn red during the sunrise. This character, whose hometown takes up carpet dyeing to make faux Persian rugs, highly prizes an aluminum spoon engraved with the number "1944." The novel in which this character appears ends with him recalling the number 3,653 and remembering to add three for leap years. This character spends time talking to a former filmmaker who might be Greek or Jewish, named Caesar. This character works with men like Alyoshka the Baptist to build a wall under the oversight of the foreman Tyurin. For 10 points, an Alexander Solzhenitsyn novel covers "one day" in the life of what prisoner in a Soviet labor camp?

ANSWER: **Ivan** Denisovich [or Ivan **Denisovich**; or **Shukhov**]

15. One source claims that this place is the home of the zither-playing woman Thitis who, like six of her siblings, learned mathematics from a sister who could fly in the manner of Daedalus. Gervase's *Otia Imperialia* equates this place with a "happy" set of locales found off Mauretania identified in the *Etymologiae* of Isidore of Seville. After journeying to this place with the aid of Barinthus, a man lies down to rest upon a golden bed. In the 12th century, a pair of monks fraudulently claimed to have found two bodies and a lead cross buried in this fictional place, based on Gerald of Wales equating this place with Glastonbury ("GLASS-tun-bree"). This place is first mentioned in the work of Geoffrey of Monmouth, who names it for its abundant apples in his *Vita Merlini*. A journey here is made after the Battle of Camlann. For 10 points, name this island where Morgan le Faye takes King Arthur to heal after his fatal wounding.

ANSWER: **Avalon** [accept **Isle of Apples** or **Island of Apples** before "Apple"; prompt on Fortunate Isle; prompt on Glastonbury Tor before "Glastonbury"]

16. Ancient Greek sources credit this man with inventing a device consisting of a ball with a number of rings floating around it, the armillary sphere. This man's contemporaries implied he was a jack-of-all-trades, but master of none, by nicknaming him "Beta," or second, but also "Pentathlos," or an athlete who competes in five different events. Upon becoming blind at age 82, he elected to die a "philosopher's death" by starving himself. To accomplish one of his tasks, this man hired a number of bematists to walk 5,000 stadia. Knowing that the entire bottom of a well was illuminated during the solstice in his hometown of Cyrene, he built a large pole in Alexandria and measured the angle of its shadow to be 1/50th of a circle, then extrapolated from the distance between the two cities. For 10 points, name this first known mathematician to measure the circumference of the Earth.

ANSWER: **Eratosthenes** of Cyrene

17. Gelett Burgess, who coined the word "blurb," satirized the publishing industry with a parody of this work that describes "Into the Library, and Why not knowing, / Nor What I Want, I find myself a-going." Rudyard Kipling mocked the tax policy of Indian administrator Auckland Colvin with one parody of this work. In 1967, John Bowen accused another author of fraud after his friend Idries convinced him to translate this work from a manuscript he never saw. Omar Ali-Shah aided that translator, Robert Graves, who criticized a "hedonistic" translation of this poem that concludes "turn down an empty Glass!" That translation of this poem begins with the command "Awake!" and states "all thy Piety nor Wit / Shall lure it back to cancel half a Line" regarding the "Moving Finger." For 10 points, name this series of quatrains first translated into English by Edward FitzGerald.

ANSWER: The **Rubaiyat** of Omar Khayyam

18. This man's wife was suspected of killing her newborn illegitimate child in the "Bizarre Plantation" scandal. He refused to fight for Thomas Paine's release from Luxembourg Prison, claiming Paine was an alcoholic writing pamphlets against Jesus, leading James Monroe to take his place as Minister Plenipotentiary to France. This man cast the tie-breaking vote preventing the Conway Cabal from unseating Washington as commander of the Continental Army, and his final public role was as chair of the Erie Canal Commission. Theodore Roosevelt wrote a biography of this aristocrat, who died from internal injuries after clearing up his urinary tract using a whalebone. His success as assistant superintendent of finance for Pennsylvania led this peg-legged man to be tapped as the primary writer of the Constitution. For 10 points, name this statesman whose uncle Robert of the same surname was called the "financier of the Revolution."

ANSWER: Gouverneur **Morris**

19. In one species, laser vibrometry was used to discover a specific "shudder" vibration characteristic of this activity, which is succeeded by use of the palpal bulbs and epigyne. The similarity of this behavior to another species' behavior gives *Maratus* spiders their common name. The "hotspot" and "hotshot" models attempt to explain a type of this behavior known as lekking. This behavior, which explains so-called "underwater crop circles," involves a gypsobelum made of calcium carbonate in some mollusks. Sex-specific alternative splicing at the *fruitless* gene in *Drosophila* is critical for regulating this process, which is also the goal of lordotic behavior. It's not aggression, but this behavior is induced by the presence of a red throat in sticklebacks. Bowerbirds gather sticks and brightly-colored objects to build a nest as part of this process. For 10 points, name this function of the peacock's tail.

ANSWER: **courtship** [accept **mating** rituals or attracting a **mate**; prompt on **sex** or **sexual preference** or **sexual selection**; prompt on **singing** or **building** or **dancing** with "What is the purpose of the behavior?"]

20. This man sees a lion rebuke an eagle with “twelve feathered wings and three heads” in a pseudepigraphic text dated to after the destruction of the Second Temple. This man receives seven apocalyptic visions of Jews suffering at the hands of Gentiles in that book, which is canon in both the Russian and Ethiopian Orthodox churches. In another book, this man receives a royal letter granting him silver, wheat, wine, and oil to enact his reforms, such as having the Israelites send away their foreign wives. This man is traditionally considered the author of 1 and 2 Chronicles, and many scholars credit him with compiling the Torah in the 5th century. In one of his namesake books of the Bible, this man leads a group of exiles in Babylonia back to Israel with the sponsorship of Cyrus the Great. For 10 points, name this Jewish prophet known as “the Scribe,” a contemporary of Nehemiah.

ANSWER: **Ezra** the Scribe [or **Ezra** ha-Sofer; or **Esdras**]

Bonuses

1. This ransomware was identified with malware code created by Zinc, which had earlier launched an attack on Sony, and which the FBI had linked to North Korea. For 10 points each:

[10] Name this ransomware which was used in a 2017 attack that the U.S., Britain, Australia, and Japan formally attributed to North Korea. It worked by encrypting Windows data and demanding payment in Bitcoin.

ANSWER: **WannaCry**

[10] WannaCry exploited a vulnerability that was identified by this U.S. agency, then stolen and sold to North Korea by the Shadow Brokers Group. Many of this agency's programs were exposed by Edward Snowden.

ANSWER: **NSA** [or **National Security Agency**]

[10] Many Russian cyber attacks in recent years have been attributed to this other group, which is also known by such colorful names as the "Tsar Team" and "Pawn Storm."

ANSWER: **Fancy Bear** [or **Strontium**; or **APT28**; or **Sofacy Group**; or **Sednit**]

2. Though they can take on W- and S-shapes, these functional groups are held in a U-shape in mesoionic compounds like montréalones, where they are found overlapping with a Wittig-type moiety. For 10 points each:

[10] Name these functional groups with zero net charge which are useful for their regioselective and stereoselective cycloadditions. These functional groups were historically formed via the thermal ring-opening of aziridines.

ANSWER: **azomethine ylides** [prompt on ylides, iminium ions, or carbanions]

[10] The reactive [6,6] ("six six") double bonds of these molecules serve as dipolarophiles for azomethine ylide ("EE-lides") in the Prato reaction. Molecules enclosed in endohedral examples of these compounds are specified after an "at" sign.

ANSWER: endohedral **fullerenes** [accept **buckminsterfullerenes**; prompt on buckyballs]

[10] The reaction of the ylide group of münchnones with these functional groups was reported by Huisgen, namesake of a reaction between them and azides. This functional group has a triple bond between two carbons.

ANSWER: **alkynes** [or **acetylenes**]

3. According to legend, this town's name comes from the name taken by the Andalusian general Mirat, after he converted to Christianity when an eagle dropped a fat trout from the sky, causing him to surrender to the "Queen of the Sky." For 10 points each:

[10] Name this sleepy Occitan town home to the Chateau Fort, which was surrendered to Britain in the 1360 CE Treaty of Bretigny.

ANSWER: **Lourdes** [or **Lorda**]

[10] Saracens were still hanging around Lourdes at places like Mirambel castle, years after this Mayor of the Palace had driven them out at the 732 CE Battle of Tours. His son Pepin the Short was the father of Charlemagne.

ANSWER: Charles **Martel** [prompt on Charles]

[10] Lourdes became a major pilgrimage site in 1858 after this local miller's daughter experienced Marian apparitions at the grotto of Massabielle. Church authorities have claimed that her remains are internally incorrupt.

ANSWER: Saint **Bernadette Soubirous** [accept either underlined part]

4. The 2021 Benjamin Bratton book *The Revenge of the Real* used the COVID-19 pandemic to argue for the necessity of a “positive” form of this term. For 10 points each:

[10] Give this term for the capability of a state to regulate the bodies of its populace *en masse*. A sovereign’s ability to exercise it is defined as the “death he [is] capable of requiring” in a volume titled *The Will to Knowledge*.

ANSWER: **biopower** [or **biopolitics**; or **biopouvoir**; accept positive **biopower** or positive **biopolitics**]

[10] The concepts of biopower and biopolitics were developed by this French theorist, who identified the concept of the “medical gaze” in his book *The Birth of the Clinic*.

ANSWER: Paul-Michel **Foucault**

[10] This UC-Berkeley anthropologist developed a theory of “molecularized biopower,” which he fleshed out in his work *French DNA: Trouble in Purgatory*. This author of a *Foucault Reader* collaborated with Hubert Dreyfus on *Michel Foucault: Beyond Structuralism and Hermeneutics*.

ANSWER: Paul M. **Rabinow**

5. This novel’s characters include Judith, a woman who reads *The Brothers Karamazov* aloud while visiting the protagonist’s store. For 10 points each:

[10] Name this novel whose protagonist, Sepha Stephanos, emigrates to Washington D.C. and purchases his own grocery store near Logan Circle while observing local gentrification.

ANSWER: *The **Beautiful Things that Heaven Bears***

[10] Dinaw Mengestu, the author of *The Beautiful Things that Heaven Bears*, is originally from this African country, like his character Sepha. The *Kebrä Nagast*, an epic from this country, details the origin of its Solomonic dynasty.

ANSWER: **Ethiopia** [or **Ityopya**; or **Abyssinia**]

[10] In Mengestu’s novel, Judith’s eleven-year old biracial daughter has this first name. In a Junichiro Tanizaki novel, Joji seeks to transform a girl of this name into his ideal of a Westernized woman.

ANSWER: **Naomi**

6. This philosopher used the examples of a distracted driver avoiding a double parked truck and a dishwasher swept up in the finale of Schubert’s “Arpeggio Sonata” to describe “nonconscious experiences.” For 10 points each:

[10] Name this University of Maryland philosopher who advocates the dispositional theory of higher-order consciousness. His paper “Brute Experiences” argues that animals should not be given moral consideration since their pain is nonconscious.

ANSWER: Peter **Carruthers**

[10] This Australian philosopher proposed a utilitarian argument for veganism based on minimizing animal suffering in the book *Animal Liberation*, which also popularized the term “speciesism.”

ANSWER: Peter **Singer**

[10] Martha Nussbaum has argued for animal protections outside a utilitarian perspective using this moral framework she developed with Amartya Sen based on an agent’s freedom to achieve well-being.

ANSWER: **capability** approach [or **capabilities** approach]

7. Arguments that the Q'uran restricts this practice often note that a verse endorsing it was revealed in the aftermath of the Battle of Uhud. For 10 points each:

[10] Name this practice, which is permitted in a verse from Surah al-Nisa. Muhammad Abduh argued that the Q'uran allows this practice primarily to ensure the fair treatment of orphans.

ANSWER: **polygamy** [or **polygyny**]

[10] Defenses of polygamy often note that Muhammad himself had multiple wives; this third wife of Muhammad, the daughter of Abu Bakr, later fought against Ali at the Battle of the Camel.

ANSWER: **A'isha** bint Abu Bakr

[10] This Islamic feminist from Morocco argued that Muhammad's wives shared authority with him in a work about women's rights in Islam, *The Veil and the Male Elite*.

ANSWER: Fatema **Mernissi**

8. Conditions under which one of these objects "lie above" another are given by the Cohen-Seidenberg theorems.

For 10 points each:

[10] Name these subsets of a ring that form an additive group. The even numbers form one of these structures within the ring of integers.

ANSWER: **ideal**

[10] A key result that characterizes the ideals of a polynomial ring is this mathematician's Nullstellenatz. This mathematician is more famous for generating a list of 23 unsolved problems in 1900.

ANSWER: David **Hilbert**

[10] The Jacobson one of these things is the intersection of all maximal ideals of R. This set is the collection of elements in a commutative ring R, some power of which lie in ideal I.

ANSWER: **radical**

9. The installation *Manet-Projekt '74*, which uses Manet's *Bunch of Asparagus* to trace the plundering of art by the ex-Nazi museum patron Hermann Abs, is an example of this practice. For 10 points each:

[10] In works such as *MoMA Poll*, Hans Haacke pioneered what type of "critique," in which artworks examine the hidden ideologies of the art world?

ANSWER: **institutional** critique

[10] Like Hermann Abs, the namesake of this collection profited from the Nazi "Aryanization" of Jewish property. In 2012, this hoard of around 1,500 artworks was discovered in a Munich apartment during an investigation into tax evasion by its namesake art dealer's son Cornelius.

ANSWER: **Gurlitt** collection

[10] Descendants of the Jewish art dealer Jacques Goudstikker have launched many suits to recover Nazi-stolen art, such as an *Adam and Eve* by this friend and portraitist of Martin Luther.

ANSWER: Lucas **Cranach** the Elder

10. This event is preceded by Professor Schmiegelow and Old General von Brackel observing the scenery from a small hill. For 10 points each:

[10] Name this event which causes a group of peasants to seek refuge in a granary, where they are greeted by a group of travelers including Jonathan Maersk. In its aftermath, Miss Nag-Ot-Dag kisses the valet Kasparson..

ANSWER: the **deluge** at **Norderney** [accept synonyms for **deluge** such as a **flood** or being **inundated** by water; prompt on partial answer]

[10] “The Deluge at Norderney” is the first story in *Seven Gothic Tales*, a collection of short stories by this Danish author of *Out of Africa*.

ANSWER: Isak **Dinesen** [or Karen **Blixen**; or Karen Christenze von **Blixen**-Finecke]

[10] In a story from *Seven Gothic Tales* titled for this Danish city, Fanny and Eliza converse with the ghost of their dead brother Morten, who tells them about his career as a pirate.

ANSWER: **Elsinore** [or **Helsingor**; or “The Supper at **Elsinore**”]

11. The Elamites got revenge on this king by stealing his namesake stele and taking it to Susa, where it was found by Jean-Vincent Scheil in 1901. For 10 points each:

[10] Name this king, the sixth from his city’s Amorite dynasty. He claimed that Shamash gave him his best-known legal creation, which outlines the *lex talionis* in the form of “an eye for an eye.”

ANSWER: **Hammurabi**

[10] Hammurabi became very popular with the public for performing this action, whose earliest known historical instance was performed by Enmetana of Lagash. Hammurabi’s dynasty inaugurated the tradition of doing this action periodically by smashing tablets.

ANSWER: **debt cancellation** [accept any answer that refers to **ending debts**]

[10] Hammurabi destroyed this ancient Syrian city home to the Lim Dynasty of Amorite people, now known as Tell Hariri, where 25,000 tablets were unearthed in 1933. This city had warred with Ebla for many years, and was run by a “Shakka-nakku,” or military governor.

ANSWER: **Mari**

12. Because this creature would always catch his prey, a paradox resulted when it was sent to catch the uncatchable Teumessian fox, so Zeus put a halt to the confusion by turning them both to stone. For 10 points each:

[10] Name this loyal pooch who was then placed in the sky as Canis Major.

ANSWER: **Laelaps** [or **Lailaps**; or **Lalaps**]

[10] An early master of Laelaps was this king of Crete whose labyrinth contained a half-man, half-bull monster that was killed by Theseus.

ANSWER: King **Minos**

[10] The final owner of Laelaps, the hunter Cephalus, formed a league with Amphitryon to fight these people. Their king Pterelaos was made immortal by Poseidon due to a single golden hair on his head, but his daughter Comaetho plucked it while he was asleep.

ANSWER: **Taphians** [or the people of **Taphos**]

13. For 10 points each, answer the following about thigmonasty, the response of plants to touch:

[10] The “touch-me-not” plant *Mimosa pudica* closes the leaves in response to touch, by rapidly moving water out of these structures, causing them to deflate. These joint-like structures are attached to the main stem and the petiole.

ANSWER: **pulvini** [or **pulvinus**]

[10] In nastic movements, the direction of the response is independent of the direction of the stimulus, unlike in this process. Amyloplasts in root cap cells mediate the ability of the plant to carry out this response.

ANSWER: **gravitropism** [prompt on **tropism**]

[10] In some plants, rapid movement of the stamen aids in this process, often conducted by bees. As a backup mechanism, some plants will move their stamen towards their style to complete this process via selfing.

ANSWER: **pollination** [accept descriptive answers like **transferring pollen**; prompt on **fertilization**]

14. Recent attempts to initiate one of these projects were led by Wang Jing, whose HKND corporation obtained a fifty-year lease and proposed to fund one of these through an IPO. For 10 points each:

[10] The main issue to resolve during negotiation of the Clayton-Bulwer Treaty were proposals regarding this specific project, which both powers agreed would not be undertaken without consent from the other.

ANSWER: **Nicaragua Canal** [or **Nicaraguan Grand Canal**; accept answers that refer to a **canal** dug through **Nicaragua**; prompt on **canal** by asking “where?”; prompt on **waterway** or **passage** from Atlantic to Pacific]

[10] In 1894, this Liberal president of Nicaragua seized the British protectorate claimed by Zambos or African pirates at Greytown. He then made overtures to France on deals to build a canal, prompting the U.S. to fund his political opponents.

ANSWER: José Santos **Zelaya**

[10] Zelaya was buddies with Eloy Alfaro, the “Old Warrior” who ruled this South American country, and sang this country’s national anthem at Guayaquil.

ANSWER: (Republic of) **Ecuador**

15. Answer some questions about Unsuk Chin, the Seoul Philharmonic Orchestra’s composer-in-residence from 2006 to 2017. For 10 points each:

[10] In the 1980s, Chin studied with this composer of the piano cycle *Musica Ricercata*. This composer claimed to write music with a “polyphonic structure” that remains “underwater” and comes across as “impenetrable texture.”

ANSWER: György **Ligeti** [or György Sándor **Ligeti**]

[10] Chin has composed several technically demanding works of this type for piano, such as *Grains* and *Scherzo ad libitum*. Ligeti’s examples of these pieces meant to build technique include *Arc-en-ciel* and *The Devil’s Staircase*.

ANSWER: piano **études**

[10] *Su* is a concerto by Chin for this Chinese wind instrument, a polyphonic free reed aerophone with dozens of reeds attached to a pipe, producing a high organ-like sound. Players achieve a smooth sound by quickly alternating between inhaling and exhaling.

ANSWER: **sheng** (“shung”)

16. An epitaph for this writer tells the reader to “ask his story,” which will “speak” what his tombstone “can’t tell / of his glory.” For 10 points each:

[10] Name this English Renaissance poet who presided over the Apollo Club, a gathering place for a group of writers he influenced who were called his “tribe” or his “sons.”

ANSWER: Ben **Jonson** [accept Saint **Ben**; accept “Upon Ben **Jonson**”; accept “His Prayer to Ben **Jonson**”]

[10] Ben Jonson was the subject of several poems by this Cavalier poet. He instructed the title figures to “gather ye rose-buds while ye may” in “To the Virgins, To Make Much of Time”

ANSWER: Robert **Herrick**

[10] In this short lyric, Ben Jonson writes that all his vows are “such / as what he loves may never like too much,” and calls the title character “his best piece of poetry.”

ANSWER: “**On My First Son**”

17. This book opens by describing one figure’s skin as “dusk on the eastern horizon” before repeatedly asking “O cant you see it.” For 10 points each:

[10] Name this 1923 collection which mixes prose, poetry, and drama to tell the stories of Karintha and Becky. A story in this collection describes Bob and Tom vying over the affections of the light-skinned woman Louisa.

ANSWER: **Cane**

[10] One of Jean Toomer’s poems in *Cane* describes how this substance “assumed / Significance” by creating “sudden” beauty during a cold November. *Cane* also contains a “Song” of this substance, which repeats the lines “God’s body’s got a soul” and “We aint agwine t wait until th Judgment Day!”

ANSWER: **cotton** [accept “November **Cotton** Flower” or “**Cotton** Song”, prompt on flower]

[10] Toomer described lips like “old scars” in his poem “Portrait in [this state]”, where he wrote most of *Cane*. Another cotton plantation in this state is the setting of Margaret Mitchell’s novel *Gone with the Wind*.

ANSWER: **Georgia**

18. The central figure in this scandal testified to Congress that “some things are true, some things are not true, and some things I know nothing about.” For 10 points each:

[10] Name this scandal in which the wife of the sitting Secretary of War William Belknap received kickbacks from illegal agreements at Fort Sill. Belknap raked in money after being allowed to license “sutlers” or army provisioners instead of William Tecumseh Sherman.

ANSWER: **trader post** scandal [or **Indian ring**; prompt on the **Belknap** scandal]

[10] William Belknap distributed aid to victims in the wake of this disaster, after Mayor Roswell Mason requested assistance. Years later, in 1903, a similar event to this one killed more people at the Iroquois Theatre.

ANSWER: Great **Chicago Fire** [prompt on **fire**]

[10] In this other Grant administration scandal, exposed around the same time by Benjamin Bristow, distillers were found to have bribed government officials to evade excise taxes.

ANSWER: **Whiskey Ring** scandal

19. A common way to achieve this state is via optical pumping, which results in electrons being elevated to a metastable level. For 10 points each:

[10] Identify this configuration in which the electrons in a lasing medium are excited to a state from which they can be stimulated to decay and emit coherent light.

ANSWER: **population inversion**

[10] Most modern lasers, including such common examples as the helium-neon and YAG, feature this many levels, due to the presence of a lower lasing level distinct from the ground state.

ANSWER: **four**

[10] This technique produces pico and femtosecond laser pulses by using a Q-switch that opens with a periodicity equal to the round-trip-time of the pulse within the lasing cavity, producing a light beam in which all the standing waves constructively interfere.

ANSWER: **modelocking** [or **phaselocking**]

20. In a dramatic scene in *The Shawshank Redemption*, an aria from this opera plays over the P.A. system at the prison yard. For 10 points each:

[10] Name this Mozart opera. In that aria, “Sull’aria,” Susanna woman repeats bits of the Countess’ lines the Countess dictates a letter.

ANSWER: *The **Marriage of Figaro*** [or *Le **Nozze di Figaro***]

[10] In *Driving Miss Daisy*, Daisy sits embroidering while listening to this opera’s “Song to the Moon” on the radio. Renée Fleming popularized that aria, sung by a water nymph during Act I of this opera.

ANSWER: **Rusalka**

[10] Sofia Coppola directed a Kirsten Dunst-led *Marie Antoinette* in which the title character sees this Rameau opera. The film’s excerpt shows Tellaire mourning the death of one of the title characters of this *tragédie en musique*.

ANSWER: **Castor et Pollux** [or **Castor and Pollux**]