

2021 ACF Nationals

Packet by Chicago A

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Tossups

1. This disease can cause a lacy, spiculated periosteal (“peri-OSS-tee-ull”) reaction and swelling of the hands and feet, called acropachy (“ACK-ro-pack-ee”). One drug used to treat this disease can cause choanal (“KO-uh-null”) atresia and aplasia cutis in fetuses. A genetic risk factor for this disease is the presence of arginine 74 in DR-beta-1. Tissue affected by this disease ectopically expresses HLA Class II DR. Patients with this disease sometimes have serum cross-reactive to OmpF from *Yersinia enterocolitica*. Stimulated dermal fibroblasts deposit GAGs in this disease, which in turn causes proptosis and an orange-peeling appearance of the skin called pretibial myxedema. This disease is treated with thioamides like propylthiouracil and methimazole. This disease often presents with diarrhea, tremor, sweating, and exophthalmos (“ex-off-THALL-muss”) or eye-popping. For 10 points, name this autoimmune disease in which anti-TSH receptor antibodies cause hyperthyroidism.

ANSWER: **Graves’** disease [or **Graves**–Basedow disease; prompt on hyperthyroidism; prompt on autoimmune thyroid disease; prompt on AITD]

2. One island in this archipelago contains the Quiraing (“kwih-RAHNG”), a famous hiking trail that loops around the Trotternish peninsula, as well as waterfalls dubbed the Fairy Pools and the “Old Man of Storr” rock formation. An island in this group names a set of chess pieces dated to the 12th century CE found at Uig (“oog”) Bay. Rows of brightly-colored houses line the fishing village of Tobermory on this group’s island of Mull. This group contains a holy site where the “Law of Innocents” was released by Adamnán, and where his cousin St. Columba cloistered at Iona Abbey. A “Condominium” of islands around Vanuatu called the “New” version of these islands was ruled jointly by the English and French. This group’s island of Staffa inspired Felix Mendelssohn with echoes of Fingal’s Cave. For 10 points, name these islands separated into Inner and Outer divisions off the west coast of Scotland.

ANSWER: **Hebrides** [accept **Outer Hebrides** or **Inner Hebrides**; accept **Skye** before “Uig Bay” is read]

3. The slow movement of a symphony of this number opens with muted strings playing the root-position chords C major, A major, G minor, A major; the first movement of that symphony of this number opens with a low C in the low strings, over which two horns play a gentle D major horn call. That symphony of this number contrasts with the harsh dissonance of its F minor predecessor and contains a Preludio, Scherzo, Romanza, and Passacaglia. Vaughan Williams’s symphony of this number uses many themes originally meant for his opera *The Pilgrim’s Progress*. A symphony of this number opens with a canon between the lower and upper strings playing rising and falling minor sixths and ends with hundreds of repeated A’s that the “memoir” *Testimony* claims symbolizes “forced celebration.” For 10 points, give this number of a symphony that Shostakovich called a “creative response to justified criticism.”

ANSWER: Symphony No. **5** [or **Fifth** Symphony]

4. In the Supreme Court case *Parisi v. Davidson*, Joseph Parisi claimed he legally performed this activity by way of habeas corpus petition. The legal standard for this action is contained in *Welsh v. US* and *Gillette v. US*. Two brothers, Joseph and Michael Hofer, died in squalid conditions after they chose to engage in this activity. Roger Baldwin and Crystal Eastman organized a legal division to defend those committing this action. The most public court case about this action saw Justice John Marshall Harlan change his vote and deadlock the court after Thurgood Marshall recused himself due to being Solicitor General at the relevant time. In that case, the man defending this act infamously said “they never called me [the N-word],” after his failure to pass a spelling and writing test was later reclassified as acceptable. For 10 points, name this action performed by Cassius Clay by citing his belief in the Nation of Islam to the Selective Service Board.

ANSWER: **conscientious objection** to war service [accept **refusing** a commission for the **draft**; or equivalents that indicate an individual chooses **not to report** for **military** service; accept **refusing to participate** in the Vietnam **War** or any other specific 20th-century war]

5. The protagonist of this novel disdains a character who is rumored to have let his boss kick him in the ass for a promotion. That character, “little Pompey,” attends a work banquet where the protagonist is misidentified as a server. In this novel, the protagonist meets a man who runs “Miss Blanche Cosmetics” at the Chesterfield Hotel in order to get away from the converted janitor’s closet where she lives. An executive at Arbo named Raymond Coombs goes undercover as “Natchez” in this novel, whose protagonist struggles to interpret the line “Horizontal thinking in a vertical world is the race’s curse” from a text written by James Fulton. That text in this novel theorizes the existence of a “black box” which the protagonist searches for while competing with the Empiricist school. For 10 points, name this novel about the elevator inspector Lila Mae Watson, the debut novel of Colson Whitehead.

ANSWER *The **Intuitionist***

6. This figure sometimes performs a crucial function with the aid of apples inscribed with the *bismillah*. In a *hadith*, after Moses knocks one of this figure’s eyes out with a punch, Allah instructs Moses to run his hands over the back of an ox. This figure reads leaves that fall from a tree beneath the throne of Allah. This four-headed, 4,000-winged angel has a body entirely made up of eyes and tongues, and has one of each for every human on earth. In a story from the *Masnawi*, this angel is startled to encounter a noble at Solomon’s court, since he expects to meet that man later the same day in India. The dust that God used to create Adam was collected by this angel, who, along with Israfil, Mikail, and Jibril, is one of the four archangels in Islam. For 10 points, name or describe this angel from Islamic tradition, who is analogous to the Jewish angel who carries out the tenth plague in the Passover story.

ANSWER: the Angel of **Death** [or **Azrael**; or **Azra’il**; or **Izra’il**; or **Mal’akh ha-Mavet**; accept **Death**]

7. Philip Glasier became England’s most prominent 20th-century practitioner of this activity after appearing in a minor role in the film *The Sword and the Rose*. The chronicler Pero López de Ayala of Castille wrote a treatise in an attempt to correct errors in this practice. Moamyn (“mo-ah-MEEN”) wrote a famous manual about this activity that was drawn upon for a massive treatise on it written by Frederick II Hohenstaufen near the end of his life. *Takagari* was a Japanese form of this practice that became a state-run activity after Tokugawa Ieyasu banned the *kuge* (“KOO-geh”) from participating in it. Fields called takaba were created for use in this activity. A haggard was considered the best type of animal to catch for this practice. Bal-chatris were traps used for this practice, and a jess was used in order to keep the animals from getting away. For 10 points, name this activity, the practice of taming a certain type of bird to hunt animals.

ANSWER: **falconry** [prompt on **training birds** or equivalents]

8. Dudley and Stieglmann found that these phenomena enhanced the rate of retro Diels–Alder reactions with anthracene adducts, which has led to debates with C. Oliver Kappe over whether or not nonthermal effects due to these phenomena exist. These phenomena are used for the “exfoliation” process that produces MEGO. Use of these phenomena results in selective heating that is proposed to enhance reaction rates. Klystrons are used as a source for these phenomena, whose energy scale is at the same scale as Zeeman splitting. These phenomena do not break bonds and instead induce rotational transitions within molecules. Materials called susceptors help convert this phenomenon into heat, and are primarily used in a device named for these phenomena that functions through dielectric heating. For 10 points, name this form of radiation whose energy is higher than radio waves.

ANSWER: microwaves [or microwave radiation]

9. This artist, the owner of the massive house Malkasten, often enlisted his impoverished friend Charles Sanders Peirce (“purse”) in invention schemes such as transformable train cars. Ten years after Congress refused to pay this artist a hefty 80,000 dollars for a pair of paintings for the Capitol, he staged an unauthorized exhibition in the House Chamber to secure the commission. This painter’s late-career paintings of the tropics include *The Shore of the Turquoise Sea*. This artist mostly stopped painting after the 1889 Paris Exposition Universelle rejected his “old-fashioned” painting *The Last of the Buffalo*. Due to similarities such as a central waterfall, this man’s breakout painting is often compared to *The Heart of the Andes* by Fredric Edwin Church, an earlier Hudson River School painter. The 1863 painting *The Rocky Mountains, Lander’s Peak* is by, for 10 points, what German-American landscape painter?

ANSWER: Albert Bierstadt

10. Apuleius’s treatise titled for this entity is ferociously rebutted in Book VIII of Augustine’s *The City of God*. Hegel’s remark in *The Philosophy of Right* that this entity marked the beginning of “self-knowing and hence genuine freedom” is quoted in an 1841 master’s thesis that calls the difficulty of interpreting this entity a “crux philologorum.” This entity caused instinct to become “the critic” and consciousness to become “the creator” according to a passage of *The Birth of Tragedy* about the possessor of this “monstrous defect.” This entity is used to explain why the speaker never went into politics in an account that, unlike Xenophon’s, stresses that this entity only forbids and never commands. This entity is referred to as one of a man’s “new divinities” in an indictment read by Meletus. For 10 points, identify this mysterious inner voice described by Socrates in dialogues like the *Apology*.

ANSWER: Socrates’s divine sign [or Socrates’s daimonion; or Socrates’s genius; or the god of Socrates; accept the inner voice of Socrates until “voice” is read; prompt on a genius, a voice, or a god] (The master’s thesis is Kierkegaard’s *On the Concept of Irony with Continual Reference to Socrates*.)

11. One tale claims that these people sent a horse with a golden saddle and bridle to the ruler Zuatapolug and then demanded that he surrender the land, the grass, and the water. After being captured, a ruler of these people asked for his horn before death, then chipped that horn’s rim when he used it to kill the opposing general by conking him on the head. It’s not the Mongols, but Friar Julian investigated whether a branch of this group had died out by traveling to Bashkiria. The Chronicon Pictum features stories about this group, who lost a battle at Southern Buh after being hired to fight Simeon the Great. This group, which formed the “ten arrow tribes,” was crushed at the Battle of Riade, after which their forces killed Conrad the Red in a battle where they were commanded by Bulcsú and Lehel. For 10 points, name this group defeated at the Battle of Lechfeld by Otto the Great, the principal ethnic group of Hungary.

ANSWER: Magyars [accept Székelys; accept Hungarians until “Hungary” is read]

12. A section of this book argues that the “slightly malevolent futurity of all happily-ever-afters” written by its subject operates as a “cover story” to protect that subject’s “secret agents.” This text argues that Lattimer and Bertha are two halves of a divided self in the story “The Lifted Veil,” which this text elevated to canonical status. This book quotes Harold Bloom’s description of “the great Inhibitor, the Sphinx that strangles... strong imaginations” to interpret an enigmatic reference to “Milton’s Bogey.” Opening with the question “Is the pen a metaphorical penis?”, this book identifies an “anxiety of authorship” in writers like Dickinson and Woolf, which splits them between the “angel” and the “monster.” For 10 points, name this collection of feminist critical essays by Sandra Gilbert and Susan Gubar, titled in reference to Bertha Mason from *Jane Eyre*.

ANSWER: *The Madwoman in the Attic*

13. In 2006, Vlastimil Klima demonstrated a method called “tunneling” for efficiently creating these events. The “coalescence” method for eliminating these events involves restricting the possible output space, then using the remaining “cellar” as tail nodes of linked lists. Since removing these events linearly can lead to clustering, these events are often dealt with by adding a square to the output of a function when the load factor is less than 0.5. For an output of length N, these events occur by chance at a rate of 2 to the power N-over-2 due to the birthday paradox. Linear and quadratic probing are “open addressing” methods used to resolve these events. In 2019, researchers at Google and the CWI intentionally generated one of these events between two PDF files, rendering SHA-1 cryptographically insecure. For 10 points, name these events in which the same value is returned for two different inputs to a hash function.

ANSWER: hash collisions

14. An architect from this city designed the headquarters for an energy company in this city whose cantilevered office block extends 42 meters horizontally over its courtyard. Another architect from this city designed a rationalist museum in this city whose roof features lots of curved one-story-tall skylights. That architect from this city created the first urban design program while teaching at Harvard. Another architect from here designed a building whose windows resemble Raeburn’s *Skating Minister*, the Scottish Parliament building. This non-American city has a contemporary art museum with glass-paved hallways by Richard Meier and an LED-covered skyscraper shaped like a bullet by Jean Nouvel. Josep Lluís Sert (“zhoo-ZEP l’yoo-EESE sairt”) designed a museum in this city that displays Calder’s *Mercury Fountain*. For 10 points, name this city home to Enric Miralles (“un-REEK mee-RALL-yuss”), the Joan Miró Foundation, and a 1929 pavilion by Ludwig Mies van der Rohe.

ANSWER: Barcelona

15. A form of “kissing” used in the production of this good led to rampant byssinosis. Sanford Cluett patented the process of Sanforization for refining this good. Publisher Edward Cave became a tycoon in this industry and began to work with Lewis Paul and John Wyatt. A type of speech known for being pompous, Fustian, was initially a name for a byproduct in the production of this good. The “Munger Revolution” began in the United States after a change in how this good was produced. The Stalybridge Riots occurred after production of this good fell in Lancashire. A namesake series of acts in 1700 and 1720 were used to set protectionist tariffs over a type of this good, which helped spur the Industrial Revolution in England. Manchester was given a nickname referencing its prodigious production of this good. For 10 points, calico is made from an unprocessed version of what good used to make clothing?

ANSWER: cotton [accept calico until read]

16. The idea that these institutions control their labor forces by exploiting worker anxiety was advanced by Kate Bowles and Richard Hall, the latter of whom called them “anxiety machines.” The Auckland Declaration regarding the 21st-century “purpose” of these institutions was drafted by the EC-funded UNIKE project. Craig Brandist proposed that these institutions have succumbed to a “Stalinist management model” that will be heightened by the adoption of an “excellence framework” known as “REF.” Following the 1997 Dearing Report, the Quality Assurance Agency was tasked with auditing these institutions during New Labour’s “consumer choice” revolution. These institutions, which are now dependent on “fractional” employees, were the subject of the EU’s Bologna Process. For 10 points, reforms based on the “knowledge economy” have reshaped what institutions such as UCL and Oxford?

ANSWER: **universities** [accept **colleges**; accept answers indicating (British or Commonwealth) **universities** or **university** or **colleges**]

17. One scholar of this genre claimed that its popularity followed a certain ruler’s choice to debase the value of silver currency by 80 percent. A 1722 edict against this genre banned a specific word from appearing in titles. In one work in this genre, the protagonist is kicked by an older monk after he breaks off their homosexual oath of “brotherhood” for a female lover. After trying to stab a woman through a lattice window, the protagonist of another work in this genre has his arms tied to the window by his disguised brother. A villain from this genre cheats the protagonist by using a seal he had reported as stolen to sign an IOU; that character is the oil merchant Kuheiji. One work in this genre follows the paper merchant Jihei, while another follows Tokubei and the courtesan Ohatsu. For 10 points, name this bunraku genre in which Chikamatsu depicted a certain action by couples at Amijima and Sonezaki. ANSWER: **love suicide** plays [accept **shinjū**; prompt on **bunraku** or **suicide** with “What genre is in the title of that play?”]

18. A formula named for this quantity is derived by Fourier transforming a metric perturbation, dropping terms that move slowly, reverse-integrating by parts, and finally inverse Fourier transforming to obtain an expression in terms of  $\ddot{I}$  double dot of the retarded time. For two masses, the time-average of the third time derivative of this quantity is proportional to the power radiated due to gravitational radiation. In general, the second time derivative of this quantity is proportional to the strength of gravitational waves. Another quantity with this name refers to deviations from the sphericity of the charge distribution of an atomic nucleus. A charge configuration with this name has a potential that scales as one over  $r$  cubed. For 10 points, give the name of a system consisting of alternating charges at the corners of a square, which has a non-zero moment one order higher than a dipole.

ANSWER: **quadrupole** [accept mass/electric **quadrupole** moment tensor; accept **quadrupole** deformation]

19. In response to Goethe’s dying words of “Light, light, more light!”, this author wrote “No, warmth, warmth, more warmth! for we die of cold and not of darkness.” On his deathbed, the protagonist of one of this author’s works declares that the reason his wife Antonia couldn’t cure him of his obsessive envy was because he didn’t love her. Lazarus reveals to his sister Angela that the title priest is a non-believer but uses religion to spread virtue in his village in a novella by this author. This author reformulated Descartes’s *cogito, ergo sum* as *sum, ergo cogito* in a treatise containing the chapter “Don Quixote in the Contemporary European Tragi-Comedy.” The doctor Joaquín kills his brother, the title character, in this author’s retelling of the Cain and Abel story. For 10 points, name this early 20th-century Spanish author of *Saint Manuel the Good, Martyr, The Tragic Sense of Life*, and *Abel Sánchez*. ANSWER: Miguel de **Unamuno**

20. Education reform in this country led to the release of two reports, one titled “Administering for Excellence” named for businessman Brian Picot and one called “Tomorrow’s Schools.” In 1889, a politician from this country predicted gender equality in the year 2000 in his novel *Anno Domini 2000; Or, Woman’s Destiny*. A group known as the “Treasury Troika” reformed the economy of this country, where the so-called “Mother of All Budgets” was used to support the “Decent Society” plan. This country’s “Great Public Works” program during the era of Julius Vogel saw railway networks cut through the Cape gauge. Punning names for economic programs in this country included Ruthanasia and Rogernomics, named for Ruth Richardson and Roger Douglas. For 10 points, name this country in which Apirana Ngata led Great Depression reform policy as a member of the Young Maoris.

ANSWER: **New Zealand**

## Bonuses

1. Answer the following about the resurgence of the memoir in American writing at the end of the 20th century, for 10 points each.

[10] This author related his visits to Dr. Gold and his realization that he could never commit suicide upon hearing Brahms's *Alto Rhapsody* in the memoir *Darkness Visible*. He's better known for fictional works like *Sophie's Choice*.

ANSWER: William **Styron**

[10] Charlie pulls a gun on her boyfriend Hector, who tries to force her daughters to call him "Daddy," in the second section of this 1995 memoir by Mary Karr that details her troubled upbringing in Texas and Colorado.

ANSWER: *The **Liars' Club***

[10] In the memoir *This Boy's Life*, this author forges his transcript and letters of recommendation to attend the Hill School in order to escape his abusive stepfather Dwight, but he flunks out and enlists in the army during Vietnam.

ANSWER: Tobias **Wolff**

2. Answer the following about the new directions taken by Futurist painters after World War I, for 10 points each.

[10] Carlo Carrà joined forces with Giorgio de Chirico ("JOR-joh day KEE-ree-ko") to develop this dreamlike, proto-surrealist style, whose paintings often featured mannequins and deserted streets.

ANSWER: **metaphysical** painting [or *pittura metafisica*]

[10] This artist participated in the "return to order" with his paintings of *commedia dell'arte* characters in the 1920s. This painter of *Armored Train* included real sequins in his *Dynamic Hieroglyphic of the Bal Tabarin*.

ANSWER: Gino **Severini**

[10] The second generation of Futurists announced a focus on this subject matter via a namesake 1929 manifesto. Benedetta Cappa Marinetti's third *Synthesis of Communications* mural exemplifies this subject matter, whose adopters often used it to paint illusionistic portraits of Mussolini.

ANSWER: **aerial** landscapes [or **aeropittura**; or **aeropainting**; accept the **air**; accept **sky**; accept **flight**, accept **airplanes**, or synonyms]

3. *American Bandstand* host Dick Clark testified in front of Congress over this scandal, for which he managed to escape punishment by selling off his stakes in record companies. For 10 points each:

[10] Name this 1950s scandal in which record companies bribed DJs to boost their artists' songs on the radio.

ANSWER: **Payola**

[10] The Payola scandal ended the career of this DJ who was credited with inventing the phrase "rock and roll" while working in Cleveland. This man organized the Moondog Coronation Ball, considered the first rock and roll concert, which was shut down by authorities after one song.

ANSWER: Alan **Freed** [or Albert James **Freed**]

[10] Freed was targeted in part due to his support of African-American musicians such as this singer of "Johnny B Goode."

ANSWER: Chuck **Berry** [or Charles Edward Anderson **Berry**]



4. The pseudoknot of telomerase's RNA component contains this structural motif. For 10 points each:  
[10] Name this motif that Pauling proposed as a potential structure for DNA. G. N. Ramachandran had more success proposing this motif as the structure of collagen.

ANSWER: **triple helix** [or **triple helices**; prompt on **helix** or **helices**]

[10] The telomerase triple helix contains these interactions, which are denoted with a dot. Transient examples of these interactions form in energetic DNA molecules and they are selectively formed by DNA polymerase  $\alpha$ .

ANSWER: **Hoogsteen** base pairing [accept reversed-**Hoogsteen** base pairing or **HG** base pairing; prompt on **hydrogen bonds**, **hydrogen bonding**, or **base pairing**]

[10] TET enzymes, which help maintain telomere stability, are responsible for creating this modified base. Rahul Kohli's ACE-seq method can detect this modification, which was originally discovered in Purkinje neurons.

ANSWER: 5-**hmC** or 5-**hdmC** [or 5-**hydroxymethylcytosine**; or 5-**hydroxymethylcytidine**; or 5-**hydroxymethyl-2-deoxycytidine**; or 5-**hydroxymethyldeoxycytidine**]

5. An economist with this surname developed discounted cash flow theory in his 1938 book *The Theory of Investment Value*. For 10 points each:

[10] Identify this surname shared by that economist, who argued that stock prices reflect a company's "intrinsic value," and a contemporary Stanford economist who won a 2015 MacArthur Fellowship to pursue research on medical innovation.

ANSWER: **Williams** [accept John Burr **Williams**; or Heidi **Williams**]

[10] In 2010, Heidi Williams published a paper which found that allowing companies to have this kind of legal protection over parts of the human genome had persistent negative impacts on subsequent innovation.

ANSWER: gene **patents** [or genetic **patenting**]

[10] In a 2013 decision whose parties were the Association for Molecular Pathology and this biotech firm, the Supreme Court held that naturally occurring DNA sequences could not be patented, but artificially created DNA sequences could be patented.

ANSWER: **Myriad** Genetics Inc. [accept *Association for Molecular Pathology v. Myriad Genetics, Inc.*]

6. During this offensive, the Sheffield Pals were slaughtered in the town of Serre, which was recreated by Jeremy Deller in his art event "We're Here Because We're Here." For 10 points each:

[10] Name this battle, the largest on the western front of World War I, which saw the first use of tanks in battle in an effort to relieve pressure on Verdun.

ANSWER: Battle of the **Somme** [accept **Somme** Offensive]

[10] This ineffective British field marshal led forces at the Battle of the Somme. He replaced John French after the Battle of Loos, and he gave the "Backs against the Wall" order in a later battle.

ANSWER: Douglas **Haig**, 1st Earl Haig

[10] Haig fought at this earlier battle, supposedly featuring the apparition of "Angels," or soldiers from the Battle of Agincourt, that protected British soldiers. Arthur Machen wrote about this battle in the short story "The Bowmen."

ANSWER: Battle of **Mons** [accept Angels of **Mons**]



7. A composer from this state wrote the song cycle *Sonnets From the Portuguese* for soprano Arleen Augér. For 10 points each:

[10] Name this state where contemporary composers like Libby Larsen and Stephen Paulus studied with composer Dominick Argento.

ANSWER: **Minnesota**

[10] The neo-Romanticism of Larsen and Paulus is often seen as a way of rejecting this repetitive musical style exemplified by composers like Philip Glass.

ANSWER: **minimalism**

[10] Larsen wrote her first symphony, which has this subtitle, as composer-in-residence for the Minnesota Orchestra. Another piece with this title includes three suites in F, D, and G; in an arrangement of that piece, Hamilton Harty included several sections of the suite in F plus a 3/2 movement from the suite in D.

ANSWER: **Water Music**

8. In this tradition, a pouch containing magical items like bones and roots, called a “mojo” bag, can be used as a protective charm. For 10 points each:

[10] Name this African-American folk tradition, sometimes called “rootwork” or “conjure,” which also encompasses many stories about summoning the devil at a crossroads.

ANSWER: **Hoodoo**

[10] “Mojo” bags are sometimes made using the blood of these animals. In Santeria, these are the most common animals sacrificed to orishas.

ANSWER: **roosters** [or **chickens**]

[10] The significance of the crossroads in Hoodoo tradition is often connected to this symbol from West Africa. This symbol consists of a cross surrounded by circular arrows, representing the motion of the sun.

ANSWER: the Kongo **cosmogram** [or the Bakongo **cosmogram**; or the **dikenga**; or the **Yowa** symbol]

9. This name was given by the British to the protectorate they established over the so-called “Pirate Coast.” For 10 points each:

[10] Name this protectorate that existed up until 1968 when the UK pulled out of everywhere east of the Suez. The 1927 Treaty of Jeddah granted independence to Saudi Arabia, convincing it to stop attacking this protectorate.

ANSWER: **Trucial** States [or **Trucial** Coast; or **Trucial** Oman; or **Trucial** States of the Coast of Oman; or **Trucial** Sheikdoms; prompt on **Oman**]

[10] The Trucial States would become this modern country that was established after a meeting at the Union House in Dubai.

ANSWER: **United Arab Emirates** [or the **UAE**]

[10] The seventh emirate joined after Iran seized the Tunb islands in 1971, just two months after the Shah had put on the world’s largest party in his lavish “Tent City of Persepolis” to celebrate this many years of continued existence of imperial Iran.

ANSWER: **2,500** years

10. In the original collection in which it appears, this poem is grouped with poems praising patience and cleanness. For 10 points each:

[10] Name this poem whose protagonist has a dream of a woman standing across a body of water, who shows him a vision of the New Jerusalem.

ANSWER: **Pearl**

[10] The author of *Pearl*, the so-called “Pearl Poet,” is also thought to have written a poem in which this Arthurian character travels to an appointment for his beheading by the Green Knight.

ANSWER: Sir **Gawain**

[10] *Sir Gawain and the Green Knight* spends 46 lines explaining this word, which describes a shape on Gawain’s shield. It represents the joys of the Virgin Mary depicted on the shield, as well as symbolizing the wounds of Christ.

ANSWER: **pentangle**

11. It’s not twisted, but Pablo Jarillo-Herrero’s lab recently discovered that one material with this property is superconducting when aligned at the “magic angle” of 1.1 degrees. For 10 points each:

[10] Name this property of components of van der Waals heterostructures that is also responsible for the high conductivity of MXenes. Many compounds that form “buckled honeycomb” lattices also have this property.

ANSWER: **2D** [or **two-dimensional**; prompt on descriptions like **flat**]

[10] Jarillo-Herrero discovered that two layers of this material rotated 1.1 degrees with respect to each other were superconducting. This material can be rolled up into carbon nanotubes.

ANSWER: **graphene**

[10] Some members of this class of 2D materials have unusual properties such as giant magnetoresistance and flexibility, making them promising candidates for use in thin electronics. A subclass of these materials named for Janus is used in spintronics.

ANSWER: **transition metal dichalcogenides** [or **TMDs**]

12. Answer the following about leaf structure, for 10 points each.

[10] These small openings on the underside of a leaf are flanked by a pair of guard cells. They are responsible for transpiration.

ANSWER: **stomata** [or **stoma**]

[10] This thin stalk attaches the body of the leaf to the stem. Sessile (“SESS-ull”) leaves lack this structure, which in deciduous plants is flattened and called the phyllode (“FILL-ode”).

ANSWER: **petiole**

[10] The cortex of leaves often contains this kind of ground tissue, which has thin primary walls with irregular secondary thickening. They make up the thin strings in celery and provide structural support to young plants.

ANSWER: **collenchyma**

13. The Notre Dame-based philosopher Robert Audi advances a form of ethical intuitionism derived from this earlier thinker. For 10 points each:

[10] Name this philosopher who outlined a form of moral intuitionism in his book *The Right and the Good*. Many of his translations of Aristotle, including the *Nicomachean Ethics*, are still used today.

ANSWER: W. D. **Ross** [or William David **Ross**]

[10] Since it focuses on *prima facie* (“PREE-muh FAY-shee”) duties, Ross’s ethical theory is a variant of deontological ethics. Deontology is often contrasted with this position, which holds that the morality of an action depends on its outcome.

ANSWER: **consequentialism**

[10] Ross’s intuitionism is drawn from the description of it presented in this Victorian philosopher’s tome that compares intuitionism with utilitarianism and egoism; that work is his *Methods of Ethics*.

ANSWER: Henry **Sidgwick**

14. After one of these events, a knife sharpener calls a paramedic a “dumbfuck” after making a discovery with an ice cream vendor in a city often believed to be the “hidden center” of the novel it appears in. For 10 points each:  
[10] Name these events. Over one hundred of these events are described in the fourth section of a novel that opens with an epigraph from Baudelaire alluding to an “oasis of horror in a desert of boredom.”

ANSWER: the **Santa Teresa murders** [or **murders** in the novel **2666**; prompt on **murders** of women or **femicides** or equivalents by asking “in what novel?”]

[10] The Santa Teresa murders occur in *2666*, a novel by this Chilean author who created a group of Mexican poets called the Visceral Realists in *The Savage Detectives*.

ANSWER: Roberto **Bolaño** Ávalos

[10] The fifth section of *2666* is titled for this mysterious author, whom three literary critics look for in Mexico in the first section. This character takes his pseudonym from a Mannerist painter.

ANSWER: Benno von **Archimboldi** [or **Benno** von Archimboldi; or Hans **Reiter**; or **Hans** Reiter]

15. Alexander Young attributed a description of the “First Thanksgiving” to this text, which describes the arrival of the ship *Fortune* in 1621. For 10 points each:

[10] Name this text written primarily by Edward Winslow, but erroneously named for being attributed to a different Puritan separatist at Plymouth.

ANSWER: **Mourt’s Relation** [or **A Relation or Journal of the Beginning and Proceedings of the English Plantation Settled at Plimoth in New England**]

[10] *Mourt’s Relation* was published by George Morton, whose son Nathaniel was secretary to this founder and first governor of Plymouth colony. He ran it for 30 years, and wrote the journal *Of Plymouth Plantation*.

ANSWER: William **Bradford**

[10] This colonial woman kept a copy of Bradford’s books with her when she was captured during King Philip’s War, which she wrote about in her 1682 bestseller *The Sovereignty and Goodness of God*.

ANSWER: Mary **Rowlandson** [or Mary **White**; or Mary **Talcott**]

16. This performer for Chess Records responded to Bo Diddley’s “I’m a Man” with his standard “Mannish Boy.” For 10 points each:

[10] Name this “father of the Chicago blues,” whose song “Rollin’ Stone” inspired the name for the band featuring Keith Richards and Mick Jagger.

ANSWER: **Muddy Waters** [or McKinley **Morganfield**]

[10] One of Muddy Waters’s bandmates was this harmonica virtuoso, known for playing his harmonica through an amplifier. His single “Juke” remains the only harmonica-led instrumental to top the Billboard R&B charts.

ANSWER: **Little Walter** [or Marion Walter **Jacobs**]

[10] Muddy Waters started out playing music in this region, often called the birthplace of the blues. B. B. King and Howlin’ Wolf also grew up in this floodplain in the southern United States.

ANSWER: Mississippi **Delta** [prompt on **Mississippi**]

17. Performing this operation on an element and itself yields zero in an algebra system developed by Herman Grassmann. For 10 points each:

[10] Name this mathematical operation that generates structures called blades. In toy examples, this operation is often used to generate bivectors and trivectors.

ANSWER: **wedge product** [or **exterior product**; prompt on **wedge**]

[10] Taking the wedge product of the column vectors of a square matrix can be used to provide a geometric interpretation of this matrix operation. For a two-by-two matrix it is equal to  $ad - bc$ .

ANSWER: **determinant**

[10] In this other algebra, the wedge product is defined as the line joining two points between them. The geometry based on this algebra is often visualized as having a supernumerary dimension from which objects in the other dimensions are observed.

ANSWER: **projective** algebra [or **projective** geometry]

18. Villhem Thomsen published a translation of these inscriptions. For 10 points each:

[10] Name these inscriptions erected around 732 CE that describe the accomplishments of Bilge Khagan in uniting an empire, as well as the death of his brother Kul-Tegin.

ANSWER: **Orkhon** Inscriptions [or **Orhon** Inscriptions; or **Khöshöö Tsaidam** monuments]

[10] The Orkhon Inscriptions were created by a Uyghur khaganate of this ethnicity. Led by a grey wolf, the Oghuz tribe of this ethnicity founded an empire under Osman I.

ANSWER: **Turks** [or **Turkie**; or **Turkish**; or **Turcomen**; prompt on **Ottoman**]

[10] The Orkhon Valley is also home to the Erdene Zuu monastery, which was unfortunately smashed up in 1939 by this Communist leader called the “Stalin of Mongolia,” as part of his program of destroying Buddhist sites.

ANSWER: Khorloogiin **Choibalsan** [or Koroloogiin **Coibalsan**]

19. At the end of this novel, the androgynous protagonist enters into a sexual relationship with the criminal Vautrin, who is disguised as the Abbé Herrera. For 10 points each:

[10] Name this novel about Lucien de Rubempre, a talented young writer who moves to Paris and squanders his potential.

ANSWER: **Lost Illusions** [or **Illusions Perdues**]

[10] This author wrote about the opera singer La Zambinella, whom the title character discovers to be a castrato, in his novella *Sarrasine*; that novella, like his novel *Lost Illusions*, is part of his *Human Comedy*.

ANSWER: Honoré de **Balzac**

[10] In Balzac’s novel *Seraphita*, this writer’s cousin fathers the androgynous title character. In *Louis Lambert*, Balzac fictionalized his obsession with this earlier writer, who inspired *Seraphita*.

ANSWER: Emanuel **Swedenborg**

20. After a wedding celebration, a character makes a quick pit stop in this place to repair his broken-down sleigh during his journey home. For 10 points each:

[10] Name this location where, earlier, the same character transformed himself into a snake to avoid being captured. Another character wins a woman’s hand in marriage after catching the giant pike that inhabits this location.

ANSWER: **Tuonela** [or **Tuoni**; accept **Manala**]

[10] Tuonela is guarded by this Finnish hellhound and rough equivalent of Cerberus. It is often said to be the protector of Kalma, the goddess of death.

ANSWER: **Surma**

[10] Surma’s gaze is said to be able to cause this transformation. This transformation also results from making eye contact with Medusa.

ANSWER: **turning** people **into stone** [or equivalents such as **petrifying** them]