



ACADEMIC  
COMPETITION  
FEDERATION

ACF NATIONALS 2018

ROUND 10  
PLAYOFFS 2

packet by  
THE EDITORS (2)

## Tossups

1. A 2013 paper by Myasnikov et al. demonstrated that this problem is solvable for finitely generated nilpotent groups. Although the decidability of this problem is unknown for the cases of three or four inputs, an exponential-time solution has been discovered for a variant in which each input must begin with a different symbol. The namesake of this problem formulated the unrelated problem of constructing a Turing degree between “zero” and “zero-prime.” A proof of the undecidability of this problem relies on the fact that solutions to it can be constructed to represent a Turing machine’s computational history, which allows for a reduction to the halting problem. In visualizations of this problem, solutions consist of a sequence of blocks such that the strings formed on the top and bottom halves of both blocks match. For 10 points, name this decision problem named in part after its formulator, Emil Post.

ANSWER: **Post correspondence** problem [accept **correspondence** problem after “Post”; prompt on “**correspondence** problem” before “Post”]

2. Esteem for workers of this ethnic group grew when one of them stayed to die with Willy Merkl (VEE-lee MAIR-kul) during a 1934 disaster in which three Nazi-backed Germans and six members of this ethnic group died. A 2015 Jennifer Peedom documentary titled for this ethnic group profiles a man who works for Russell Brice’s company Himex. A description of this ethnic group’s city of Nauje (NOW-jay), called Namche (NAM-chay) Bazaar in English, opens Jonathan Neale’s book *Tigers of the Snow*, which describes how this group forged its identity in the 1934 Nanga Parbat disaster. In April 2014, members of this ethnic group who were a part of the NMA announced that they would not work for the remainder of the year after 16 of these people were killed when a serac fell in the Khumbu Icefall, triggering an avalanche. For 10 points, name this ethnic group known for helping climbers ascend Mount Everest.

ANSWER: **sherpa(s)** [or **sherwa(s)**]

3. The confusion of “descriptive reduction” and “explanatory reduction” in accounts of this phenomenon is critiqued in Wayne Proudfoot’s book titled for it. This phenomenon with a two-word name was classed into types like “public ordinary” and “public extraordinary” by Richard Swinburne, who claimed that instances of it should be assessed with the “principle of credulity.” The doxastic practice of forming “m-beliefs” based on this phenomenon is defended in William Alston’s best-known book, which is subtitled for the “epistemology of” this phenomenon. A book titled for this phenomenon with a two-word name quotes from accounts collected by Dr. Starbuck in its section on “Conversion.” A distinction between the “healthy-minded” and the “sick soul” was proposed in that series of Gifford Lectures titled for this phenomenon, which was published as a book subtitled “A Study in Human Nature.” For 10 points, William James wrote about the “varieties of” what perception of the divine?

ANSWER: **religious experience** [accept any answers indicating a personal **experience** of the **divine** or the **holy** or the **sacred** or **God** or similar; accept *The Varieties of Religious Experience*]

4. Ten years after this union was founded, seven members of its senior leadership were acquitted of ordering the murder of Herman Leibowitz. This union won a lengthy legal battle against the Kellwood Corporation after its members launched a strike in Little Rock, Arkansas. A leader of this union called for a strike by reciting a Yiddish saying that, were she to betray her cause, her upheld hand would wither from her arm. Benjamin Schlesinger and David Dubinsky were two longtime leaders of this union, which staged a strike of over 60,000 people in the “Great Revolt” in 1910, a year after Clara Lemlich incited members of this union to strike in the Uprising of the 20,000. Membership in this union rose sharply after the death of 146 people in New York City’s Asch Building in the 1911 Triangle Shirtwaist Factory Fire. For 10 points, what union representing laborers in the clothing industry was known by a five-letter acronym?

ANSWER: **ILGWU** [or **International Ladies’ Garment Workers’ Union**]

5. On translating this poet, an author wrote that if “light appears” without ruining the eyes, “we undo a bit of the cloth.” That translator’s introduction to this poet recommends viewing the liberal use of brackets as “a free space of imaginal adventure.” This poet predicted that “not one girl I think / who looks on the light of the sun / will ever / have wisdom / like this.” This author of the oft-quoted line “someone will remember us / I say / even in another time” wrote, in another poem, “May you sleep on the breast of your delicate friend.” This poet wrote that rather than an army of horses or army of ships, the “most beautiful thing / on the black earth” is “what you love.” Anne Carson’s translation of this poet, *If Not, Winter*, opens with a poem that ends by asking the title figure to “be my ally” and is addressed to a “child of Zeus” whose car is yoked to “quick sparrows.” The phrase “Deathless Aphrodite of the spangled mind” opens the “Ode to Aphrodite” by, for 10 points, what ancient Greek poet from Lesbos?

ANSWER: **Sappho** [or **Psappho**]

6. The asymmetry parameter in this theory is defined as “one-half of the integral of the intensity-averaged cosine of the angle.” This formalism predicts that the extinction efficiency is largest when the dimensionless size parameter is close to unity but approaches two in the “geometric” limiting case. In this formalism, as the size parameter increases, the forward lobe becomes significantly larger than the backward lobe. In general, this theory does not assume that the internal fields are quasi-static. It is derived by expanding the solutions to Maxwell’s equations as an infinite multipole series of spherical partial waves. This theory explains the reduction of visibility by aerosols in urban areas, and the weak wavelength dependence of this theory explains the white color of clouds. For 10 points, name this theory of light scattering from spherical particles that is more general than Rayleigh scattering, and is named for a German physicist.

ANSWER: Mie scattering [or Lorenz-Mie or Lorenz-Mie-Debye scattering; prompt on “scattering” before mention]

7. A woman nicknamed “the Dark Eyes” married two rulers of these domains. A ruler of one of these domains refused to answer a royal writ of *quo warranto* by arguing that he held his lands *sicut regale*, or “like unto a king.” William III of the Braose (brah-ose) family ruled one of these domains that collectively contained the highest concentration of motte-and-bailey castles in the world. Two rulers of these domains, Humphrey de Bohun and Roger Mortimer, waged the Despenser War against an adviser of Edward II. Shrewsbury and Hereford were the centers of two of these domains, whose namesake lords were stripped of power following the Wars of the Roses. These domains were traversed by Wat’s Dyke and Offa’s Dyke, which were built before the establishment of these domains to protect western Mercia. For 10 points, name these domains that straddled medieval England’s border with a region ruled by Llywelyn the Great.

ANSWER: Welsh Marches [or Y Mers; or Marchia Walliae; or Marches of Wales; accept Marcher Lords; prompt on descriptive answers mentioning “kingdoms on the border between England and Wales” or equivalents]

8. *Description acceptable.* A passage in this section notes how, under moonlight, a familiar room can become “neutral territory, somewhere between the real world and fairy-land, where the Actual and the Imaginary may meet.” This section describes a fierce sculpture of an eagle carrying thunderbolts and arrows that hangs over a doorway. A “patriarchal personage” who spends his time recalling “good dinners” and a taciturn former general are among the group of “good old gentlemen” profiled in this section. The end of this section uses the metaphor of decapitation for the firing of the narrator after a presidential election. In this section, which is followed by a short chapter about a rosebush outside a prison door, the narrator recalls finding a book by Jonathan Pue and a ragged piece of needlework in a Salem building where he worked as a surveyor. For 10 points, name or identify the function of this section of a Nathaniel Hawthorne novel featuring Hester Prynne.

ANSWER: “The Custom House” [or the preface to The Scarlet Letter; accept anything indicating the introduction or introductory part or preface or frame-story or opening section of The Scarlet Letter; do not accept or prompt on “the first chapter of The Scarlet Letter” or other answers indicating “first chapter”]

9. This was the title of a painting that inspired the lines “don’t shoot until, the white of freedom glinting / on your gun barrel, you see the general fear,” which appear in a Frank O’Hara poem “on seeing” that painting “at the Museum of Modern Art.” That painting of this title was, according to the “unauthorized autobiography” *What Did I Do?*, an attempt to create “the most controversial painting of our time” and to bridge abstract and figurative art and made the career of Larry Rivers. An art museum in Winona, Minnesota, holds one of two surviving copies of another painting of this title that depicts, among others, a black man named Prince Whipple. This painting appears in the background of a later work that depicts a woman holding a blue-and-white teacup. Grant Wood’s *Daughters of Revolution* contains a recreation of a painting of this name that depicts James Monroe holding the American flag. For 10 points, what Emanuel Leutze painting shows a Revolutionary War general preparing to attack Trenton?

ANSWER: Washington Crossing the Delaware

10. Victor Hamilton notes that this woman’s actions are described with the Hebrew word “nabat,” while Abraham’s similar actions are described with the word “saqap.” This is the only woman specifically mentioned in the *Gemara* commentary on the section of the *Mishneh* mentioning certain locations where a person should say, “Blessed be He who wrought miracles for our ancestors in this place.” In Luke 17:32, Jesus tells his disciples to “remember” this woman before saying that “those who try to make their life secure will lose it, but those who lose their life will keep it.” This woman, who is called Edith in the Midrash, fails to reach Zoar after her husband attempts to offer up their two daughters in place of two angels. She does not heed those angels’ warnings as a city is engulfed in burning sulfur. For 10 points, what unnamed woman in Genesis looks back upon Sodom and is turned into a pillar of salt?

ANSWER: Lot’s wife [or wife of Lot; prompt on “Ado”; prompt on “Edith” before “Edith”]

11. An essay on male homosocial desire in this play from Eve Sedgwick's *Between Men* discusses a scene in which a man forces his wife at knifepoint to write a letter, which she then finishes in her own words when he leaves to get wax. In a scene of this play set at the New Exchange shopping mall, the protagonist buys fruit for, and kisses, a woman disguised as a boy. A "virtuous gang" toasts wine for making their husbands shortsighted and gallants bold in a bawdy Act V banquet scene of this play. An unwitting man shouts, "He is coming in to you the back way," to his wife, who has locked herself in a room where the protagonist supposedly keeps a collection of fine ware, in a scene of this play. The engagement of Sparkish and Alethea is a subplot of this play, in which the protagonist has the Quack start a rumor about him. The "china scene" occurs in, for 10 points, what play in which Horner pretends to be impotent to seduce women, a work of William Wycherley?

ANSWER: *The Country Wife*

12. Pages of this composer's diary indicate that he originally planned to base his final piece around the motto 'FFFF,' for "Frisch, Fromm, Fröhlich (FRU-lik), Frei ("fry")." In its final form, that piece is built on a series whose first nine notes form a chain of ascending thirds, while the last three form a chain of ascending whole steps. George Perle wrote a two-volume study of the operas of this composer. In a piece by this composer for string quartet, all of the movements have an emotion as part of their starting tempo, such as the fifth, marked *presto delirando* and later *tenebroso*. The sixth movement of that piece by this man, marked *largo desolato*, quotes from *Tristan und Isolde* in reference to his love affair with Hanna Fuchs-Robettin. This composer of *Seven Early Songs* dedicated his last major piece "to the memory of an angel," referring to the death of Manon Gropius. For 10 points, what Austrian composer of the *Lyric Suite* and a twelve-tone violin concerto was a member of the Second Viennese School along with Arnold Schoenberg and Anton Webern?

ANSWER: Alban Berg [or Alban Maria Johannes Berg]

13. An inhibitor of these proteins functions via a twelve amino acid sequence upstream of an SH2 domain known as a KIR. A loss-of-function mutation in a gene that codes for a *target* of these proteins causes the autosomal dominant form of "hyper IgE syndrome," which is named for the biblical Job. A V617F mutation in one of these proteins is present in many cases of MPN, especially in those with polycythemia vera. A 9-12 ("nine twelve") translocation associated with leukemia results in one of these proteins being combined with TEL. The rheumatoid arthritis drug tofacitinib (toe-fat-SIT-in-ib) inhibits one of these proteins, which are directly inhibited by SOCS1 and SOCS3. TYK2 is one of the four known proteins in this family that initiate a signalling cascade when cytokines bind to their receptors. For 10 points, name this class of tyrosine kinases that activate transcription factors called STATs in a signaling pathway named for both.

ANSWER: JAKs [or Janus kinases; accept just another kinase(s); prompt on "tyrosine kinases" or "kinases"]

14. An attempt to predict this body's actions using classification trees was 75% successful, while expert-driven predictions were only 59% successful, in a 2004 paper whose authors include Theodore Ruger and Pauline Kim. Andrew Martin and Kevin Quinn used a Markov chain Monte Carlo method to model this body's progression using a "dynamic ideal point model." A database named for this body is maintained at Washington University in St. Louis and is based on the research of Harold Spaeth. Spaeth has analyzed the actions of this body's members under an "attitudinal" model, in contrast to the "strategic" model that Lee Epstein has used. SUNY Stony Brook scholars Jeffrey Segal and Albert Cover analyzed newspaper editorials to arrive at "scores" of members of this body that are analogous to DW-Nominate scores. The Oyez (OH-yay) Project is an online archive of the decisions of, for 10 points, what highest judicial body in the U.S.?

ANSWER: United States Supreme Court [accept other answers mentioning Supreme Court and U.S. or United States; accept SCOTUS; do not accept or prompt on more general answers such as "judicial branch" or "(federal) courts"]

15. Rumors of rampant sex at an international event in this year gave rise to the term *deti festivalya*, or "festival children," describing biracial children who were born the next year. The underground circulation of music records printed on medical X-rays began to diminish in this year when the Soviet stance on jazz was relaxed for the Sixth World Festival of Youth and Students. In April of this year, the U.S. and USSR agreed to preserve scientific records by establishing the World Data Centers in preparation for the July 1 beginning of the International Geophysical Year. The CIA began plans for the next year's Brussels World's Fair to distribute Russian-language copies of *Doctor Zhivago* after that book was published in Italy in this year. An American "crisis" that began on October 4 of this year included the failure of the Vanguard TV3 and, in the following year, the creation of NASA. Laika became the first animal in space in November of, for 10 points, what year in which the Soviet Union launched the first two *Sputniks*?

ANSWER: 1957 [prompt on "57"]

16. Brendan Burke has attempted to trace the Anatolian origins for the myth of this object by examining the mention of cornelian cherry wood in a fragment praising the Hittite storm god. Justin's account of how the namesake of this object met with a virgin augur at a town gate links the virgin to Cybele, whose iconography usually places her in a doorway. This object takes its name from a farmer who, according to Arrian, consulted with a Telmessian maiden at a fountain after seeing an eagle land on the spot that this object would later occupy. That namesake of this object ended a civil war among the Phrygians when he fulfilled an oracle's prophecy by passing through an assembly on an oxcart. Aristobulus stated that this object, which is named for the father of Midas, was destroyed when a peg was removed from a pole. Other accounts state that this object, whose destroyer was prophesied to conquer Asia, was severed with a sword. For 10 points, name this mass of string that was destroyed by Alexander the Great.

ANSWER: Gordian knot

17. In his biography of this show's composer, David Ewen argues that the opening number of this show is actually a repurposed piece originally written on commission for Paul Whiteman. For the film adaptation of this show, the lyricist was forced to revise the verse "all the boys are feelin' lusty / and the girls ain't even puttin' up a fight" in a song that links the time of year to sexual awakening. This show has come under fire for a scene where a character gets slapped but remarks that it feels like a kiss. A spa owner assures her grieving cousin that there is "a golden sky / and the sweet silver song of a lark" if she can endure the death of this show's main character. This show, which adapts Ferenc Molnár's play *Liliom*, contains the songs "June is Bustin' Out All Over" and "You'll Never Walk Alone." For 10 points, name this musical in which the amusement park barker Billy Bigelow seeks posthumous redemption following his suicide, by Rodgers and Hammerstein.

ANSWER: Carousel

18. The first step of natural taxol synthesis produces a diphosphate and a compound whose name indicates that it is one of these compounds. These compounds are the starting material in a polymerization method driven by the formation of ethylene, which produces large linear polymers from acyclic examples of these compounds. ENB and VND are monomers with this functionality used to produce polymers called EPDM. These compounds are reacted in ADMET, and a four-carbon example polymerizes with styrene to form SBR. A cyclic four-carbon compound of this type can dimerize to form a precursor to a ladderane. These molecules are the simplest that can polymerize through a ring-closing metathesis mechanism. Natural rubber is formed from monomers with this functionality, which are called "cumulated" if their defining functional groups are shared with one atom. Isoprene is an example of, for 10 points, what kind of molecule containing two carbon-carbon double bonds?

ANSWER: dienes [prompt on "alkenes" or "olefins"]

19. This man's greatest military triumph was realized on his 38th birthday, when he marched his army into the capital and forced his enemy's retreat to the Castle of San Juan de Ulúa. This man ratified a treaty with *jefe político superior* Juan O'Donoju that was rejected by a government in the middle of the "Trienio Liberal" under the Constitution of Cádiz. This man had a tumultuous relationship with a general whom he was sent to crush in 1820, was subsequently allied with for the next two years, then clashed with again after that man allied with Nicolas Bravo. This on-again-off-again ally of Vicente Guerrero was proclaimed head of the Army of the Three Guarantees after he promised Catholicism, abolition of the caste system, and freedom from Spain in his Plan of Iguala. The first independent Mexican state was led by, for 10 points, what man who reigned from 1822 to 1823 as the first emperor of Mexico?

ANSWER: Agustín de Iturbide [or Agustín I; or Augustine of Mexico; or Agustín Cosme Damián de Iturbide y Arámburu]

20. In one novel, the symmetry of Fort Breendonk leads this person to imagine it as an "anatomical blueprint of some alien and crab-like creature." This person weirds out a family on a bus by asking for a photo of twins due to their resemblance to Franz Kafka, who stars in the book's next section, "Dr. K Takes the Waters at Riva." In a third novel, this person reflects on Edward Fitzgerald's love for William Browne after leaving the house of his friend Michael Hamburger. At the start of that novel, this person narrates his discharge from a hospital and speculates that Dr. Tulp's anatomy lesson was witnessed by Thomas Browne. Unnamed fictional versions of this author of *Vertigo* walk around Suffolk in one novel and befriend a man who grew up in Wales after being evacuated from Nazi Prague in another. For 10 points, name this German author who used black-and-white photographs in his novels *The Rings of Saturn* and *Austerlitz*.

ANSWER: W. G. Sebald [or Winfried Georg Sebald; accept the narrator of *Vertigo* [or *Schwindel. Gefühle*] or narrator of *The Rings of Saturn* [or *Die Ringe des Saturn*] or narrator of *Austerlitz*, prompt on "Winfried" or "Georg" or "Max"]

**Bonuses**

1. A startling example of this chord function occurs at the start of Beethoven's First Symphony, where it resolves to the subdominant F major. For 10 points each:

[10] Name this chord function that tonicizes a note other than the overall tonic and has a root a perfect fifth above that other note. Chords with this function are referred to as "five of" the scale degree that they tonicize.

ANSWER: **secondary dominants** [or **secondary dominant** sevenths; or **applied dominants**; or **artificial dominants**; or **borrowed dominants**]

[10] The aforementioned Beethoven chord gains additional force from the seventh, B-flat, which forms this dissonant interval with the third of the chord, E. This interval is often called the *diabolus in musica*.

ANSWER: **tritone** [accept **diminished fifth** or **augmented fourth**]

[10] A dominant seventh chord in one key can also be respelled as a German augmented sixth in another, allowing for this type of modulation. The diminished leading-tone seventh can also be used for this process due to its symmetry.

ANSWER: **enharmonic** modulation

2. After being sentenced to death for kidnapping and rape, this man wrote *Cell 2455, Death Row*. For 10 points each:

[10] Name this California prisoner who became a cause célèbre for opponents of the death penalty in the 1950s.

ANSWER: Caryl **Chessman** [or Caryl Whittier **Chessman**]

[10] This California governor was unable to commute Chessman's sentence. He defeated Richard Nixon in 1962 but lost his bid for a third term to Ronald Reagan.

ANSWER: **Pat Brown** [or Edmund G. **Brown, Sr.**; prompt on "**Brown**"]

[10] Chessman was convicted and sentenced under California's version of the Federal Kidnapping Act, one of the "little" laws named for this American icon, whose young son was kidnapped and murdered in 1932 in a crime that Bruno Hauptmann was convicted of.

ANSWER: Charles **Lindbergh** [or Charles Augustus **Lindbergh**; accept Little **Lindbergh** Laws]

3. Poems by this group were translated in *Wine, Women, and Song* by John Addington Symonds and in Helen Waddell's influential 1927 study of them, *The Wandering Scholars*. For 10 points each:

[10] Give this term for itinerant clergy poets of the 12th century Renaissance. Songs authored by these poets, whose name derives from a Biblical giant, appear in the *Carmina Burana* collection.

ANSWER: **goliards**

[10] Many of the goliards were impoverished former attendees of these institutions. A lost poem called *The Romance of the Devil's Fart* describes a prank played by Francois Villon while he attended the Sorbonne, one of these places.

ANSWER: **universities** [or **university**; or **colleges**]

[10] The anonymous writer known by this moniker, who is usually considered a goliard, pled "Let me in the tavern die, / with a tankard by me, / while the angels looking down / joyously sing o'er me" in his *Confession*.

ANSWER: **Archpoet** [prompt on "the **Poet**"]

4. The name of this belief system was coined in a 1995 essay by media theorists Richard Barbrook and Andy Cameron, who linked its rise to the romantic individualism of Stewart Brand, who founded the *Whole Earth Catalog*. For 10 points each:

[10] Name this "ideology" that, according to Barbrook and Cameron, married concepts derived from the New Left and New Right with elements of anti-statism, 1960s counterculture, and techno-utopianism.

ANSWER: **Californian** ideology

[10] The Californian ideology traces to the ideas of this Canadian media theorist, who wrote that the "medium is the message" and coined the term "global village."

ANSWER: Marshall **McLuhan** [or Herbert Marshall **McLuhan**]

[10] Adam Curtis's documentary about the Californian ideology, *All Watched Over by Machines of Loving Grace*, is named for a poem written by this California poet and novelist, who also wrote *In Watermelon Sugar*.

ANSWER: Richard **Brautigan** [or Richard Gary **Brautigan**]

5. Reactions taking advantage of this effect may be used to produce sarcophagine or other macrocyclic ligands. For 10 points each:

[10] Name this effect in which the kinetics and selectivity of a reaction are improved by the organization of reactants in the coordination sphere.

ANSWER: **template** effect

[10] By providing a potassium ion as a template, one of these molecules forms in a variant of the Williamson synthesis in place of a linear ether.

ANSWER: **crown** ether(s) [accept **18-crown-6**]

[10] Like quaternary ammonium salts, crown ethers may be used as this sort of compound, which allow ionic reactants to enter organic solvents.

ANSWER: **phase-transfer catalyst**(s) [or **PTC**(s); prompt on “catalysts”]

6. May Kendall wrote an 1885 comic poem titled for the “lay of” a type of these things, one of which Charles Knight finds himself facing while hanging off a cliff in Thomas Hardy’s *A Pair of Blue Eyes*. For 10 points each:

[10] Name these things collected by the historical person Mary Anning, whose shop is visited by a literary character who sees a woman nicknamed “Tragedy” napping in a meadow while he looks for these things at the Undercliff.

ANSWER: **fossils** [or **trilobites**; prompt on answers mentioning things like **bones** or **remains**]

[10] Like Charles Smithson in John Fowles’s *The French Lieutenant’s Woman*, this real-life Victorian was interested in fossils and wrote about them in *Town Geology* and his novel *Alton Locke*. This Christian socialist defended Darwinism in *The Water Babies*.

ANSWER: Charles **Kingsley**

[10] Claudia and her brother look for fossils on the beach in *Moon Tiger*, a Booker Prize-winning novel by an author with this first name and the surname Lively. In *Ulysses*, Molly Bloom stands in for a Homeric woman of this name.

ANSWER: **Penelope**

7. The night before this battle, the Arabic army was forced to burn all of its baggage under heavy cavalry harassment. For 10 points each:

[10] Give the English or Arabic name that denotes this 724 CE battle between the Turgesh khaganate under the warlord Suluk and the Umayyad Caliphate, which was fought on the banks of the river Jaxartes.

ANSWER: **Day of Thirst** [or **Yawm al-atash**]

[10] The Umayyad army fought during the Day of Thirst in its quest to capture this fertile area of Central Asia, which was the source of prized “heavenly horses” imported into China.

ANSWER: **Ferghana** Valley [or **Farghana** Valley]

[10] After the decisive loss in the Day of Thirst, the Umayyad army fell back to this city in modern-day Uzbekistan that later served as the capital of Tamerlane.

ANSWER: **Samarkand** [or **Samarqand**]

8. Rivaroxaban (riv-ah-ROX-ah-ban) is an inhibitor of this enzyme, as is the serpin ZPI. For 10 points each:

[10] Name this serine protease also inhibited by TFPI. Protein Z appears to help in the degradation of this enzyme.

ANSWER: **factor X** (“ten,” but accept pronunciations of “ex”) [or **factor Xa**; accept **Stuart-Prower** factor]

[10] Factor X participates in this process of forming blood clots, which undergoes intrinsic and extrinsic pathways that both lead to the activation of factor X.

ANSWER: **coagulation** [prompt on “blood clotting” or other answers mentioning forms of the word “clot”]

[10] This enzyme, also known as factor III, provides an alternate name for the extrinsic pathway of the coagulation cascade. It complexes with factor VIIa to activate factor X.

ANSWER: **tissue** factor [accept **CD142**]

9. Simplicius argued that the authors of these texts should not fall short of the *megalonoia*, or greatness of intellect, of their source. For 10 points each:

[10] Name this type of text, the best known of which was authored by Alexander of Aphrodisias. Avicenna claimed to have read a book 40 times without understanding before being helped by al-Farabi's text of this type.

ANSWER: **commentaries** on **Aristotle** [accept **commentaries** on specific Aristotle works, such as *Metaphysics*; prompt on answers using terms like *exegeses* or *treatises* in place of commentaries]

[10] Simplicius's commentaries include important transcriptions of older writings, such as this author's *Proem* to his *On Nature*. This Eleatic philosopher makes the "third man argument" in his namesake Socratic dialogue.

ANSWER: **Parmenides** of Elea

[10] Commentators on Aristotle disagree on an enigmatic half-page chapter from *De Anima III* in which Aristotle speaks of an "active" form of this concept that is "unaffected and unmixed." Thomas Aquinas's text "On the Unity of" this concept disputed the interpretation that Averroes advanced.

ANSWER: **intellect** [or **mind**; or **nous**; accept *On the Unity of the Intellect against the Averroists*; prompt on similar answers]

10. A wall inscribed with the *Res Gestae* is the only remaining element of Vittorio Ballio Morpurgo's 1937 design for this pavilion, whose glass walls are filled with argon to filter incoming light. For 10 points each:

[10] Name this museum whose travertine-plated white exterior features a low-slope staircase. Its namesake object has a frieze of garlands hanging from *bucrania*, as well as a panel depicting a goddess flanked by a swan and a dragon.

ANSWER: Museum of the **Ara Pacis** (AH-rah PAH-kis) [or Museo dell'**Ara Pacis**]

[10] This American architect designed both the new Ara Pacis museum and the Getty Center, whose white colors are typical of his style. His first all-black building, a glass residential tower, is under construction at 685 First Avenue.

ANSWER: Richard **Meier**

[10] Meier used a sleek white design for this city's contemporary art museum MACBA, which is called "the pearl" due to its contrast with the nearby Barri Gòtic (bah-ree GOH-teeek). This city is home to Antoni Gaudí's Sagrada Família and Park Güell.

ANSWER: **Barcelona**, Catalonia, Spain

11. The simplest way to make one of these circuits is to stick a resistor and capacitor in series and take the output across the capacitor. For 10 points each:

[10] Name these filter circuits that attenuate all signals above a certain cutoff frequency while allowing signals with smaller frequencies to go through.

ANSWER: **low-pass** filter(s)

[10] Analysis of low-pass filters and many other circuits can be simplified using these quantities that represent sinusoidal voltages and currents as time-invariant complex numbers, often written in polar form.

ANSWER: **phasors**

[10] A low-pass filter is used to cut out the AC components generated by multiplying the input and reference signals in these amplifiers, which can extract signals with a known carrier frequency from very noisy systems.

ANSWER: **lock-in** amplifier

12. *Democracy Now!* host Juan González was a founding member of a branch of this organization on the East Coast. For 10 points each:

[10] Name this leftist social organization that was founded in the Lincoln Park neighborhood of Chicago by José "Cha-Cha" Jiménez.

ANSWER: **Young Lords** [or **Young Lords Organization**; or **Young Lords Party**]

[10] In New York, the Young Lords flourished in this section of a larger neighborhood that is a hotspot for U.S. salsa music.

ANSWER: **Spanish Harlem** [or **East Harlem**; prompt on "Harlem" or "El Barrio" or "Italian Harlem"]

[10] The Young Lords was founded by descendants of immigrants from this island, which was devastated by Hurricane Maria in 2017.

ANSWER: **Puerto Rico** [accept Commonwealth of **Puerto Rico** or Estado Libre Asociado de **Puerto Rico**]

13. The Chartist William Lovett organized a mass meeting at Copenhagen Fields to present a petition for leniency for these people. For 10 points each:

[10] Name this group of six “martyrs” that included George Loveless, a cofounder of the Friendly Society of Agricultural Laborers.

ANSWER: Tolpuddle Martyrs [or Tolpuddle Laborers; or Dorchester Laborers]

[10] Some of the Tolpuddle Martyrs were sent to Van Diemen’s Land, an island now known by this name.

ANSWER: Tasmania

[10] James Frampton falsely told Lord Melbourne that two of the Tolpuddle Martyrs had participated in this earlier unrest. James Cooper of Wiltshire was one of the many men executed for supposedly being the namesake “captain” of these 1830 events.

ANSWER: Swing Riots [or Captain Swing Riots; prompt on “Swing” or “Captain Swing”]

14. A collection named for this city contains “Days of 1981,” a poem that notes how “emblems of our embarrassment become acceptable to us, after a while,” in reference to a lover’s gift of a “pottery heart.” For 10 points each:

[10] Name this city that titles a 1993 collection by Mark Doty, written after his partner was diagnosed with HIV. While working in this city, Callimachus of Cyrene wrote *Aetia* and compiled the *Pinakes*.

ANSWER: Alexandria

[10] This lengthy prose meditation on a painting by Jan Davidsz de Heem (yahn DAH-vidz deh HAYM) is among Doty’s most celebrated writings. After describing the translucency of a fruit peel in this book, Doty explores the human tendency to imbue objects with meaning.

ANSWER: Still Life with Oysters and Lemon

[10] Doty’s influences include this author, whose “Self-Portrait in a Convex Mirror” is a long meditation on a painting by Parmigianino. This man published *Commotion of the Birds* before dying in 2017.

ANSWER: John Ashbery [or John Lawrence Ashbery]

15. While out hunting, this man’s son was killed by the goddess Anath, who, in the shape of a falcon, dropped a sack containing her servant Yatpan on that young son’s head. For 10 points each:

[10] Name this Canaanite culture hero who is the subject of an ancient text found at Ugarit. In the text, his son Aqhat dies after refusing to give up a bow created by the divine craftsman Kothar, thereby bringing famine to the land.

ANSWER: Danel [or Daniel]

[10] The best-known cycle of Ugaritic myths concerns this Canaanite warrior-storm god, whose name means “Lord.” The cycle details his battles with the sea serpent Yam and the death god Mot.

ANSWER: Ba’al [accept Ba’al Hadad]

[10] The people of this city worshipped a cognate of Ba’al named Ba’al Hammon, who was chief god of this city with his wife Tanit. They were dedicatees of child sacrifice that likely took place at a sanctuary in this city called the *tophet*.

ANSWER: Carthage

16. The bottom of this painting contains a memento mori of a cadaver tomb showing a skeleton in repose beneath a Latin inscription reading, “I once was what you are and what I am you also will be.” For 10 points each:

[10] Name this fresco that depicts two kneeling donor portraits in front of an archway that frames the central scene.

ANSWER: The Holy Trinity [or The Holy Trinity, with the Virgin and Saint John and Donors; or Santa Trinita]

[10] This artist, who executed many frescoes in the Brancacci Chapel with Masolino, painted *The Holy Trinity*.

ANSWER: Masaccio [or Tommaso di Ser Giovanni di Simone; prompt on “Tommaso”]

[10] *The Holy Trinity* was rediscovered in the Santa Maria Novella behind an altar designed by this artist. While overseeing renovations, he deliberately placed his altar in front of *The Holy Trinity* to save it from destruction.

ANSWER: Giorgio Vasari

17. Jorge Luis Borges solves the murder of Rotkopf at a literary conference dedicated to this author in Luis Verissimo's novel *Borges and the Eternal Orangutans*. For 10 points each:

[10] Name this American author whose stories about C. Auguste Dupin inspired "The Other Heaven," a story by his translator, Julio Cortazar.

ANSWER: Edgar Allan **Poe**

[10] Borges drew on Poe's "The Purloined Letter" for this story, which ends with Red Scharlach promising to trap its detective protagonist in a "labyrinth made of the single straight line which is invisible and everlasting" before shooting him.

ANSWER: "**Death and the Compass**" [or "**La muerte y la brújula**"]

[10] Like Luis Verissimo, this prolific Argentine author wrote a wacky novel set at a literary conference; in this man's novel, a mad scientist version of himself creates giant worms while trying to clone Carlos Fuentes. His novel *Ghosts* is set at a haunted construction site.

ANSWER: César **Aira** [The first novel is *The Literary Conference*.]

18. Ellison Burton and William Sanjour first demonstrated the possible efficacy of this system in a series of microeconomic computer simulations conducted in 1970 at the NAPCA. For 10 points each:

[10] Name this system that, in the EU, proceeds via the ETS, which operates using "credits" and "offsets."

ANSWER: **cap and trade** [or **emissions trading**; or **CAT**; accept answers mentioning forms of the word **capping and trading** or **emissions trade**; accept more specific answers mentioning "carbon" or "pollution" or similar]

[10] Thomas H. Tietenberg's book *Emissions Trading* traces the cap-and-trade system to the ideas in this economist's paper "The Problem of Social Cost," which introduced his namesake "theorem" about externalities.

ANSWER: Ronald **Coase** [or Ronald Harry **Coase**; accept **Coase** theorem]

[10] This Yale economist and cap-and-trade skeptic developed the DICE and the RICE models for analyzing the impacts of climate change. He took over editing the textbook *Economics* from Paul Samuelson in the 1980s.

ANSWER: William **Nordhaus** [or Bill **Nordhaus**; or William Dawbney **Nordhaus**]

19. Rumors were spread among serfs in this province that the emperor had repealed the Ten Commandments, causing them to murder their rebellious masters in a namesake uprising. For 10 points each:

[10] Name this region of the Habsburg empire that witnessed a namesake "Slaughter" in 1846 led in part by Jakub Szela, two years after a rebellion of weavers in nearby Silesia.

ANSWER: **Galicia** [accept **Galician** Slaughter or **Galician** Uprising; prompt on "**Lesser Poland**"]

[10] Two years later, Lajos Kossuth led a larger nationalist rebellion against the Habsburgs in this country. In 1867, the Habsburg monarchy recognized this country as an equal partner in the Ausgleich.

ANSWER: **Hungary** [or **Magyarország**]

[10] The Galician uprising has been dubbed the last peasant revolt in Europe, though that claim is also staked by a 1907 Peasants Revolt against this first king of Romania, who was the initial ruler of the Hohenzollern-Sigmaringen dynasty.

ANSWER: King **Carol I** of Romania [or **Karl I** of Romania]

20. Quantum theory cannot be reconciled with general relativity because it is impossible to perform this process on the latter. For 10 points each:

[10] Name this mathematical trick from quantum field theory that adds a series of counter-terms to the Lagrangian to obtain meaningful physical predictions at lower energy scales.

ANSWER: **renormalization** [accept **renormalization** group]

[10] The simplest renormalizations are those for the "one loop" corrections, so called because they are graphically represented by one loop in these diagrams, which represent photons by using wavy lines.

ANSWER: **Feynman** diagrams

[10] Quantum field theory distinguishes between renormalized quantities and these quantities, such as the mass of the noninteracting theory, which cannot actually be measured.

ANSWER: **bare** quantities