

ACF Regionals 2020

Packet H by Auburn A, Brown A, Duke B, Iowa A, NYU A

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Tossups

1. Fred Greenstein described one behind-the-scenes approach to this institution as its “hidden hand” form in a 1982 book. Jeffrey Tulis analyzed this institution’s transition to public-oriented communication in a 1987 book on its “rhetorical” form. In his seminal text on this institution, Richard Neustadt declared that the title concept was “merely the power to persuade.” The growing powers of this institution allowed it to evolve into an “imperial” form according to a 1973 book by Arthur Schlesinger, who also analyzed this position in the “Ages” of some of its holders. An early 20th-century holder of this position lauded its agenda-setting opportunities as the “bully pulpit.” For 10 points, name this position held by the occupant of the White House.

ANSWER: the **Presidency** [or **President** of the United States; or equivalents; or **POTUS**; or the **White House**; accept *The Imperial Presidency*; accept *The Rhetorical Presidency*; accept *The Hidden Hand Presidency*; prompt on the Executive Branch] (Richard Neustadt wrote *Presidential Power*.)

<American History>

2. Plotting this quantity against a molecular coordinate gives a diagram called the potential of mean force. The magnitude of the hydrophobic effect can be quantified by determining the change of this quantity associated with transfer. The change in a form of this quantity is a sum of cavitation, electrostatic, and dispersion–repulsion terms in polarizable continuum models. The change in a form of this quantity during mixing of the two components *A* and *B* is equal to the following: “concentration-of-*A* times log-mole-fraction-of-*A*,” plus “concentration-of-*B* times log-mole-fraction-of-*B*,” all times *RT*. The partial derivative of a form of this quantity with respect to particle number is the chemical potential. For 10 points, J. W. Gibbs names a form of what quantity whose change must be negative for solvation to be spontaneous?

ANSWER: **free energy** [or Gibbs **free energy**; or Helmholtz **free energy**; accept Gibbs **free energy** of transfer; prompt on G; prompt on A or E; prompt on energy]

<Chemistry>

3. A poem by this author inspires Victoria Ponce to create a dance piece in the novel *The Dancer and the Thief*. This author recounts how “I left your crib in a snow of lilies” in a poem that ends, “You are going to judge me, you know it, Lord!” This poet forbade the listener from “offering their work” at a “carnival or fair” in a poem in which she declares, “Beauty shall not be an opiate” and “You shall love beauty.” The first poem in a collection by this author begins, “From that frozen niche the men have put you, I will lower you down to the humble, sunny earth.” That collection by this author of “The Decalogue of the Artist” was written after the suicide of her lover Romelio Ureta. For 10 points, name this Chilean poet who wrote the *Sonnets of Death*.

ANSWER: Gabriela **Mistral** [or Lucila **Godoy y Alcayaga** and accept either underlined portion]

<World/Other Literature>

4. A guitarist who played this genre was nicknamed “the octopus” for his enormous hands, and made a series of abrupt retirements and returns throughout his career. Tal Farlow played this genre, as did the clarinetist Buddy DeFranco. The origins of this genre are sometimes traced to the afterhours jam sessions at Minton’s Playhouse. Kenny Clarke revolutionized this genre’s drumming by shifting the downbeat to the ride cymbal rather than the bass drum, as favored by drummers of the swing era. Popular standards from the era dominated by this genre include “A Night in Tunisia” and “Salt Peanuts,” both of which were written by a composer known for playing a bent trumpet.

For 10 points, name this high-tempo style of postwar jazz played by bandleaders like Dizzy Gillespie and Charlie Parker.

ANSWER: **bop** [or **bebop**; prompt on **jazz**; do not accept or prompt on “hard bop”]

<Other Arts (Jazz)>

5. John Mikhail theorized about this non-linguistic concept by drawing on the cognitive components of Chomsky’s theory of innateness to develop his own “universal grammar” of it. Elliot Turiel developed domain theory to explain how views on this concept develop. Craig Joseph and Jesse Graham co-developed a theory about this concept that illustrates its complexity with a series of six “axes” (“AX-eez”), including Sanctity/Degradation and Liberty/Oppression; that theory of this concept is a “foundations” theory promoted by Jonathan Haidt (“height”). Carol Gilligan’s *In A Different Voice* criticized the androcentrism of a series of interviews focused on this concept, which included a story about Heinz stealing medicine for his sick wife. Lawrence Kohlberg studied the development of, for 10 points, what system of ascribing right or wrong to actions?

ANSWER: **morality** [accept **moral** decision making or **moral** judgements; accept **morals**; accept **ethics**; accept universal **moral** grammar; accept **moral** development]

<Social Science (Psychology)>

6. Members of the “Cultural” stream of this movement defeated German as the language of instruction soon after the founding of a university formerly called the Technikum. A thinker from this movement asserted the impossibility of voluntary agreement between colonists and the colonized in “The Iron Wall.” The prefix “post-” is applied to this ideology in association with the New Historians, who used declassified documents to re-analyze the role of dispossession and displacement in independence. Ze’ev Jabotinsky (“zeh-EV zhah-bo-TIN-skee”) led the Revisionist movement of this ideology, whose Labor faction idealized agricultural communes like *moshavim* (“mo-sha-VEEM”). For 10 points, Theodor Herzl (“HURTS-ul”) founded a World Congress for what movement that advocated for the foundation of a Jewish state in the Land of Israel?

ANSWER: **Zionism** [or Cultural **Zionism**; or Revisionist **Zionism**; or Labor **Zionism**; or Socialist **Zionism**; or post-**Zionism**] (The Technikum was renamed the Technion after the “War of the Languages.”)

<World History>

7. The first builder of these devices was careful to account for the Millman effect and the phase differences in the Ramsey cavity when assembling components in a 1.5-meter-long pipe. The Jet Propulsion Laboratory designed a mercury-ion version of one of these devices and launched it into space in 2019. Tom Van Baak used the HP 5071A version of these devices in 2005 to obtain terrestrial blueshift results of roughly 1.1 times 10-to-the-negative-16th per meter on Mt. Rainier (“ray-NEER”). A laser-cooled one named PARCS was meant to help calibrate similar devices on GPS satellites. The Hafele–Keating (“HAFF-uh-lay KEE-ting”) experiment relied on these devices, the first of which was developed by Jack Parry and Louis Essen based on the cycles of a cesium-133 atom. For 10 points, name these devices that use quantum energy transitions to tell time.

ANSWER: **atomic clocks** [prompt on **clocks**; do not accept or prompt on “quantum clocks”]

<Physics>

8. A chanted cosmogony from this region describes the male “deep darkness” and female “light-streaked darkness” creating life before daybreak. Family gods from this region often manifested as the short-eared owl. “Oven houses” and “oracle towers” decorated temples in this region, whose fifty-plus priestly classes included bird catchers, fishpond architects, and hook-makers. In 1832, this region’s Queen Regent asked Jonathan S. Green to name a church for her. The Bingham, Lyman, and Thurston missionaries spread Christianity in this region, whose four great gods were Kū (“koo”), Kāne (“KAH-nay”), Kanaloa (“KAH-nuh-LO-uh”), and Lono (“LO-no”). This region’s *heiau* (“HAY-ao”) temples took sacrifices from *ali’i* (“uh-LEE-ee”) chiefs and *kahuna* priests. For 10 points, what

archipelago was bound by the kapu system before the baptism of Ka‘ahumanu (“kuh-AH-hoo-MAH-noo”), wife of Kamehameha I (“kuh-MAY-huh-MAY-huh the first”)?

ANSWER: **Hawai‘i** [or **Hawaiian** Islands; prompt on **Polynesian Triangle** or **Oceania** or the **Pacific Ocean** by asking “which archipelago?”; accept specific islands like the **Big Island** or **O‘ahu** or **Maui** or **Moloka‘i** or **Kaua‘i** or **Lāna‘i** or **Ni‘ihau** or **Kaho‘olawe**; accept the **Sandwich** Islands] (The first sentence is from the *Kumulipo* chant.)
<Religion>

9. István Mészáros (“EESHT-von MAY-saw-rohsh”) wrote about this concept as “universal saleability” in a 1970 book on another thinker’s theory of this concept. A passage in *The Holy Family* suggests that capitalists may experience the objective but not the subjective kind of this concept. Feuerbach’s (“FOY-er-bock’s”) *The Essence of Christianity* argues that the existence of God leads to this concept arising between humans and their natural characteristics. According to the *Economic and Philosophical Manuscripts of 1844*, this feeling arises as a consequence of stratified social classes, leading to a loss of “self-essence.” In the capitalist mode of production, workers feel [emphasize] *this way* with regard to the products of their labor. Karl Marx often wrote about, for 10 points, what feeling of foreignness between the self and the world?

ANSWER: **alienation** [accept self-**estrangement**; accept **entfremdung**; accept on objective or subjective **alienation** accept being **alienated** for products of labor or the world; prompt on **reification** or **fetishism**]
<Philosophy>

10. In a play by this author, a villainous duke ties his new wife up under a white veil and tricks his son into stabbing her after finding out about the affair they had begun when he rescued her from an overturned coach. A group of men are called “spinning women” and told to wear “headdresses and petticoats” in a monologue written by this author, which is delivered as a call to action by a disheveled woman. In a play by this author, peasants urged on by Laurencia storm a citadel and kill the rapist Commander who had terrorized them, then refuse to name his killer when a judge arrives and tortures them. This author of *Punishment Without Revenge* wrote some 1,500 plays, including a work set in the town of “Sheep Well.” For 10 points, name this Spanish Golden Age dramatist of *Fuenteovejuna* (“FWEN-tay-OH-vay-HOO-nah”).

ANSWER: **Lope de Vega** [or **Lope de Vega** y Fernández; or **Lope** Félix de **Vega** y Carpio; accept any underlined portion]
<European Literature>

11. *Description acceptable.* One of these people is abstracted to the point of resembling a red-and-white checkerboarded bell with a human head in an image kept in Durrow. These people are shown wearing togas and sitting in gold-legged folding chairs at lecterns in images from the “Coronation” book. In namesake miniature portraits of these people, they are typically depicted with the symbols of a man, an ox, an eagle, and a lion. A book whose text is attributed to these people features the image of a cat and mice fighting over the eucharist on its incredibly elaborate “Chi Rho” (“kye roh”) page. These people are the namesake authors of the texts that make up illuminated manuscripts produced at Lindisfarne (“LIN-diss-farn”) and Kells. For 10 points, medieval liturgical books often featured images of what group of four authors?

ANSWER: the Four **Evangelists** [or **Matthew**, **Mark**, **Luke**, and **John**; accept equivalents of the **gospel** writers; accept answers that mention the canonical **gospels** or the synoptic **gospels**; prompt on **apostles** of Jesus; prompt on answers like **scribes**, **writers**, or **authors**; prompt on **saints**; prompt on answers like “authors of the **Bible**” by asking “which specific portion of the Bible?”; prompt on answers like “authors of the **New Testament**” by asking “which sections of the New Testament?”]
<Painting/Sculpture>

12. The national park on the island of Khortytisia (“KOR-tits-yuh”) includes a museum dedicated to these people in the place where they established their first proto-state. The unamended Treaty of Hadiach (“HOD-yotch”) would

have elevated some of these people to the nobility and expanded their registry. Charles XII (“the twelfth”) of Sweden confirmed a 1710 constitution drafted by these people under the leadership of Pylyp Orlyk (“PIL-ip OR-lik”) at Bender. These people, who once sought to establish a “three-nation” Polish-Lithuanian Commonwealth, pledged allegiance to Tsar Alexis of Russia at the Pereyaslav Council during an uprising led by Bohdan Khmelnytsky (“BO-don k’mel-NIT-skee”). These people legendarily called Sultan Mehmed IV (“the fourth”) “the crick in [their] dick” after he ordered their Zaporozhian (“ZAP-oh-ROH-zhee-in”) Host to cease raiding. For 10 points, name these frontier horsemen of the Ukrainian steppes.

ANSWER: **cossacks** [or the Zaporozhian **Cossacks**]

<European History>

13. A 2019 *Nature* paper suggested that the large-scale extraction of this metal could be aided by the chelating (“KEE-lay-ting”) agent H2BHT, which has higher recyclability than existing amidoxime (“am-id-OX-eem”)-based polymers. Although the concentration of this metal in the ocean is only three parts per billion, PNNL researchers made breakthroughs on extracting it from seawater in 2018. Ratios of a lighter metal to this metal form both axes of a concordia diagram. This metal’s hexafluoride readily changes phase in response to small temperature changes, making it suitable for storage. The decay of this element in zircons is used to estimate the age of the Earth. Sulfuric acid is used to leach this element from the ore pitchblende. For 10 points, name this element whose 235 isotope undergoes fission to generate nuclear power.

ANSWER: **uranium** [or **U**]

<Other Science (Earth Science)>

14. A man boasts of performing the “miracle” of giving another character these things in a letter that calls God “He who greatly ennobled human nature by creating it.” A voice assures the protagonist that these objects are better than Joanna’s and Michelen’s in an imaginary dialogue that opens the novel’s last chapter. A pedophilic West Indian “adviser” tricks the main character into poisoning an old dog when she asks him for these things. Fragments of Dick and Jane books serve as chapter titles in a novel titled for one of these things, in which the protagonist asks Soaphead Church to give her these things. In that novel, a girl who loves drinking milk from a Shirley Temple cup imagines that she has these features after being raped by her father Cholly. For 10 points, Pecola Breedlove wants what title body part of a Toni Morrison novel?

ANSWER: **blue eyes** [or *The **Bluest Eye***; prompt on **eyes** by asking “of what color?”]

<American Literature>

15. In a remix of this song, 2 Chainz raps, “You didn’t expect this, you think like a robot / I put bands in your face like Botox.” A pyramid of champagne glasses collapses after this song’s performer pours too much liquid on the pyramid in its music video, which prominently features Japanese text. This song, which was accused of plagiarizing the song “Mine” by Princess Nokia, asserts that “retail therapy my new addiction” and that “happiness is the same price as red-bottoms.” The lines “Breakfast at Tiffany’s / And bottles of bubbles” set to the tune of “My Favorite Things” open this 2019 song, whose choruses repeat, “I want it, I got it.” The second single released from Ariana Grande’s album *thank u, next* was, for 10 points, what song titled for a set of jewelry items?

ANSWER: “**7 rings**”

<Pop Culture>

16. The first words written in the language of this kingdom were the opening line of the Book of Proverbs. One of this kingdom’s “Holy Translators,” Moses of Chorene (“KOH-ree-nee”), wrote an early history tracing its noble lineage through Noah. Tradition holds that Prince Astyages (“ass-TYE-uh-jeez”) had St. Bartholomew flayed after he and St. Jude brought Christianity to this kingdom. Hayk (“hike”) legendarily founded this nation, whose alphabet was developed for Bible translation by Mesrop Mashtots (“mess-ROPE mosh-TOTES”). The first Catholicos of its Apostolic Church, St. Gregory the Illuminator, baptized this kingdom’s ruler Tiridates III (“tir-RID-uh-teez

the third”), making this kingdom the first to adopt Christianity as its state religion. For 10 points, name this kingdom whose early Christian scholars are honored at the Matenadaran in Yerevan (“yair-uh-VAN”).

ANSWER: Kingdom of **Armenia** [or Greater **Armenia**; or **Hayastan**; or Persian **Armenia**; or Sassanian **Armenia**; or **Persarmenia**; or the Marzpanate of **Armenia**]

<European History>

17. A nanny’s observation that “she’s too beautiful, she can’t live long” titles a chapter of an autobiography by an author with this surname. An author with this surname described her childhood language of “Boudledidge” (“boodle-didge”) in a memoir that recounts how a battleship was sent to retrieve her after she eloped. An author with this surname described the treatment of “Mr. Jones” in a passage about the “extraordinary procedure” of embalming. Authors with this surname recounted their childhoods in *A Life of Contrasts* and *Hons and Rebels*. This surname is shared by the authors of the exposé *The American Way of Death* and of a novel in which Fanny Wincham visits the aristocratic Montdores, *Love in a Cold Climate*. For 10 points, give this surname of six socialite sisters, including the authors Jessica and Nancy.

ANSWER: **Mitford** [accept Nancy **Mitford**, Jessica **Mitford**, or Diana **Mitford**]

<British Literature>

18. The sources of these objects within an ecosystem are divided into a “rain” and “bank,” which are typically quantified in units of areal density or areal density per unit time. These objects are destroyed by distance-responsive predators in the Janzen–Connell model. The release of these objects occurs in response to a trigger rather than spontaneously in serotiny. These objects are produced synchronously in mastings. Barochory (“bair-oh-KOH-ree”), epizoochory (“epi-ZOH-uh-KOH-ree”), and anemochory (“anemo-KOH-ree”) are mechanisms of the dispersal of these objects by gravity, animals, and wind, respectively. These objects contain one or two cotyledons (“cot-uh-LEE-dins”) and a triploid nutrient-rich tissue called endosperm. These objects are borne by a fruit in angiosperms. For 10 points, name these embryonic structures from which plants germinate.

ANSWER: **seeds** [accept **seed** rain; accept **seed** bank; accept **seed** predation or **seed** predators; accept **seed** dispersal; accept **fruits**; accept **seedlings**; prompt on plants]

<Biology>

19. In the first twenty-eight bars of a piece from this country, an ostinato of ascending C-sharp octaves represents the song of the title sirens. The trumpets are notably absent from an orchestration of another piece from this country that begins with the low strings and bassoons repeating a stately descending scale of D, C-sharp, B, A. The 1913 cantata *Faust and Helen* was written by a composer from this country whose career was cut short by her early 1918 death. A composer from this country wrote a Flute Concertino in D major. Another composer from this country taught many American composers such as Aaron Copland and Philip Glass. Cécile Chaminade (“say-SEEL sha-mee-NODD”) was from, for 10 points, what country home to the sister composers Lili and Nadia Boulanger (“boo-lon-ZHAIR”)?

ANSWER: **France** [or **French Republic** or **République française**]

<Classical Music>

20. Hallbjorn (“HALL-b’yern”) the Strong kills Sölvi with one of these objects in *Njáls* (“n’YALS”) *saga*. Herodotus mentions one these objects made from arrowheads for King Ariantas of the Scythians (“SITH-ians”), who placed them with hemp seeds in the Pazyryk (“pah-zir-ik”) Burials. The wheel-bearer Taranis and horned Cernunnos appear on one of these objects from a Danish bog at Gundestrup. This sort of object proves Herkia guilty and Guðrún (“GOOD-roon”) innocent in the *Third Lay of Guðrún*. After hiding below one of these objects, Thor fishes for the Midgard Serpent with its owner. Týr (“teer”) visits Jötunheimr (“YOH-tun-hye-mer”) to fetch a mile-sized object of this sort in the *Lay of Hymir* (“HEE-meer”) to help Ægir (“AY-gheer”) host a party. Every night, Andhrímnir (“AND-hrim-neer”) puts the dead Sæhrímnir (“SAH-hrim-neer”) in this kind of object to sustain

the einherjar (“ANE-her-yar”). The goat Læraðr (“LAY-rad-er”) fills one with mead. For 10 points, what objects do witches heat to make potions?

ANSWER: **cauldrons** [accept cooking **pots**; accept **kettles**; accept **cooking vessels** but prompt on **vessels** alone; accept **vats**; accept **steamers** or **boilers**; accept specific cauldrons such as **Eldhrímnir**]

<Mythology>

21. The press baron Arthur Meyer opposed the 1912 sale of a painting of this woman to the Met in part because its painter was a national hero who died at the Battle of Buzenval (“byoo-zon-VAHL”). An 1870 craze for yellow gowns was set off by that painting of this woman by Henri Regnault (“on-REE rain-YO”). This woman converses with an androgynous figure in an illustration titled for the peacock-decorated skirt she wears. The Alhambra inspired the background of a painting of this woman, whose artist drew on Japanese prints for the halo encircling a vision she points at. A play titled for this non-Greek woman inspired a set of pen-and-ink illustrations by Aubrey Beardsley. This woman wears a bejeweled dress and points at a floating head in Gustave Moreau’s (“mo-ROH’s”) *The Apparition*. For 10 points, name this Biblical woman whom Moreau also painted “Dancing Before Herod.”

ANSWER: **Salome**

<Painting/Sculpture>

Bonuses

1. This ruler's sack of Mordano united Italian city-states against him in the League of Venice. For 10 points each:
[10] Name this French king who invaded Italy in 1494, beginning the Italian Wars. This ruler's pyrrhic ("peer-ick") victory at Fornovo forced him to leave Italy, and he died from hitting his head on a lintel two years later without returning.

ANSWER: **Charles VIII** ("the eighth") [or **Charles the Affable**; or **Charles I'Affable**]

[10] Charles invaded Italy in order to press his claim to the throne of this kingdom, after the death of its king Ferdinand I. In 1504, Ferdinand II of Aragon united this kingdom with Sicily, reuniting the Two Sicilies.

ANSWER: **Naples** [or **Napoli**]

[10] This duke invited Charles to invade his enemy Naples, but soon joined the League of Venice in fear of France. This ruler armed his soldiers at Fornovo with weapons cast from bronze intended for a colossal equine statue commissioned in honor of his father.

ANSWER: **Ludovico Sforza** [prompt on **Sforza**]

<European History>

2. A work in this medium was hidden from Hitler due to the supposed supernatural powers of its subject's gaze. For 10 points each:

[10] Name this medium of a portrait of an elderly man with flowing hair and beard. It has traditionally been identified as a self-portrait, due to its similarities with a Francesco Melzi portrait in this medium.

ANSWER: **red chalk** [accept *Portrait of a Man in Red Chalk*; prompt on **chalk**]

[10] *Portrait of a Man in Red Chalk* is one of the few possible self-portraits by this Renaissance polymath, whose other drawings include an image of a nude figure laid out in a circle, the Vitruvian Man.

ANSWER: **Leonardo da Vinci** [accept either name]

[10] In 2009, a red chalk sketch believed to be a self-portrait was discovered in a Leonardo codex titled for this behavior, which includes sketches of never-built machines designed to emulate it. The "Tunnel of Dreams" is part of an exhibit named for this phenomenon at The Leonardo museum in Salt Lake City.

ANSWER: the **flight** of birds [or **flying**; accept *Codex on the Flight of Birds*]

<Painting/Sculpture>

3. Answer the following about the Kentucky-based poet Wendell Berry, for 10 points each.

[10] One of Berry's most popular poems describes how he is freed from despair by the "peace" of "things" described by this adjective. This adjective precedes "Nights" in the repeated opening exclamation of an erotic Emily Dickinson poem.

ANSWER: **wild** [accept "The Peace of **Wild** Things" or "**Wild** Nights! Wild Nights!"]

[10] Berry's persona of the "Mad Farmer" narrates some of his long-running series of poems titled for this period. A poem titled for this time period asks "Is there no change of death in paradise? Does ripe fruit never fall?"

ANSWER: **Sunday** morning [or the **Sabbath**; prompt on **morning**] (The unnamed poem is "Sunday Morning" by Wallace Stevens.)

[10] Berry wrote a book-length poem titled for the date four days after this person's death. Robert Frost recited "The Gift Outright" from memory at this president's inauguration.

ANSWER: John F. **Kennedy** [or John Fitzgerald **Kennedy**; or **JFK**]

<American Literature>

4. Organisms in these two phyla ("FYE-luh") can exist in a state where they have two genetically distinct, unfused nuclei. For 10 points each:

[10] Identify these two phyla that form the taxon Dikarya ("dye-CARRY-uh"). Most organisms in one of them contain a structure called a clamp connection, while organisms in the other usually contain a crozier ("KRO-zhur").

ANSWER: **ascomycota** (“asco-mycota”) AND **basidiomycota** (“basidio-mycota”) [accept answers in either order; or **ascomycotes** AND **basidiomycotes**]

[10] Ascomycota and basidiomycota are two phyla in this kingdom of organisms, which includes yeasts and mushrooms.

ANSWER: **fungi** [or **fungus**]

[10] An important ascomycote is this model organism, a bread mold that Beadle and Tatum used to propose their “one gene, one enzyme” hypothesis by shooting X-rays at it, inducing mutations.

ANSWER: ***Neurospora crassa*** [or ***N. crassa***]

<Biology>

5. Since she was unknown to Nennius, Eochaid ua Flannacáin (“YO-kayd oh flanagan”) was possibly the first to describe this woman, whose grave lies on the River Boyne according to the *Annals of the Four Masters*. For 10 points each:

[10] Name this granddaughter of Noah who leads the first invasion of Ireland with fifty women and three men. She dies in the Flood after introducing sheep to Ireland, but her husband Fintán survives as a salmon.

ANSWER: **Cessair** (“KESS-ar”) [or **Kesair**; accept **Banba** (possibly a pre-Christian version of the same figure)]

[10] After Cessair’s people, the *Book of Invasions* reports five other groups who settle Ireland, to match the six ages of the world. Name any of the other five. They include a “holy people,” “men of bags,” and Hispanic Gaels (“gails”).

ANSWER: **Tuatha Dé Danann** (“TOO-huh day DAH-nan”) [or **Tuath Dé** (“TOO-uh DAY”); OR **Fir Bolg** or **Fir Bholg** (“wolg”); OR **Milesians**; OR People of **Partholón** or Muintir **Partholón**; OR People of **Nemed** or **Nimeth** or **Neimheadh** (“NAVE-yah”) or Clan **Nemedd** or **Nemedians**]

[10] The exploits of mythic Irish invaders like the Tuatha Dé Danann (“TOO-huh day DAH-nan”) are recounted in a book of “tales” named for people with this trait. In the Bible, Noah’s grandfather Methuselah (“meh-THOO-zuh-luh”) is famed for this trait.

ANSWER: being **old** [accept equivalents like being **long-lived** or having **longevity**; accept *Tales of the Elders of Ireland* or *The Dialogue of the Ancients of Ireland* or Acallam na **Senórach**]

<Mythology>

6. Answer the following about mathematical techniques used in speech processing, for 10 points each.

[10] Visualizing an audio spectrum may involve performing this operation on a signal in a “short-time” window to generate a spectrogram. Fast techniques for this operation include the Cooley–Tukey algorithm.

ANSWER: discrete **Fourier transform** [or **DFT**; or short-time **Fourier transform**; or fast **Fourier transform**; or **STFT**; or **FFT**; prompt on **Fourier**; do not accept or prompt on “Fourier series”]

[10] This theorem named for an Englishman is most often used as the basis for determining whether a given speech sample corresponds to a certain word. It is used to calculate posterior probabilities from prior probabilities.

ANSWER: **Bayes’** (“bays”) theorem [or **Bayes’** rule]

[10] Modern speech recognition systems treat speech signals as these simple dynamic Bayesian (“BAY-zee-in”) networks. In these models, states are unobservable but can be predicted using the Viterbi algorithm.

ANSWER: **hidden Markov** models [or **hidden Markov** processes; or **hidden Markov** chains; or **HMMs**; prompt on **Markov** models or **Markov** processes or **Markov** chains]

<Other Science (Math)>

7. The largest and most complex of these structures is found at Bighorn in Wyoming, and another is located at Moose Mountain in Saskatchewan. For 10 points each:

[10] Name these large circular arrangements of stones found in the Great Plains, mostly in Canada. These sites are sacred to tribes including the Ojibwe (“oh-JIB-way”), Crow, and Arapaho (“uh-RAP-uh-ho”).

ANSWER: **medicine wheels**

[10] Some archaeologists have applied archaeoastronomy (“archaeo-astronomy”) to medicine wheels, based on the work done by Gerald Hawkins at this arrangement of megaliths on England’s Salisbury Plain.

ANSWER: **Stonehenge**

[10] A so-called “woodhenge” located west of Monks Mound has been found at this ancient Mississippian site where the sport of chunky likely originated.

ANSWER: **Cahokia**

<European History>

8. This poet’s entire known body of work primarily consists of six poems that some scholars contentiously ascribe to her contemporary, Tibullus. For 10 points each:

[10] Name this Augustan woman poet, who is the most commonly attributed author of six poems addressed to a pseudonymous lover named Cerinthus.

ANSWER: **Sulpicia**

[10] Sulpicia’s six poems were written in this couplet form used by Tibullus and Sextus Propertius. Another poem in this form, which consists of a hexameter verse and a pentameter verse, ends with the phrase “ave atque vale” (“AH-way AT-kway WAH-lay”).

ANSWER: **elegy** [or **elegiac** couplet]

[10] “Ave atque vale” is the final phrase of an elegiac poem by this Roman poet. He wrote many poems about his lover Lesbia, including one that describes her pet sparrow.

ANSWER: **Catullus** [or Gaius Valerius **Catullus**]

<World/Other Literature>

9. After criticism about its excess and exclusivity, Frank Ocean was forced to defend himself for hosting a party named for this regimen “plus.” For 10 points each:

[10] Name this [emphasize] *preventative* drug regimen taken before sexual activity. The hashtag campaign to “#breakthepatent” (“break-the-patent”) for Truvada, the brand-name drug for this treatment, achieved a major milestone in November 2019 when the U.S. government sued for its patent rights.

ANSWER: **PrEP** (“prep”) [accept **pre-exposure prophylaxis**; do not accept or prompt on “PEP” or “post-exposure prophylaxis”; prompt on **prophylaxis**]

[10] PrEP prevents this disease. Ocean says PrEP+ (“prep-plus”) was meant to imagine a world where PrEP existed in the 1980s New York City club scene, which like much of the gay community was devastated by this disease.

ANSWER: **AIDS** [accept **HIV**]

[10] Ocean was forced to clarify PrEP+ was [emphasize] *not* sponsored by this company, who owns the patent for Truvada. This pharmaceutical company was accused of price-gouging after hiking the price of Sofosbuvir, or Sovaldi.

ANSWER: **Gilead** (“GIL-ee-ad”) Sciences

<Current Events>

10. This man titles a mass whose Kyrie (“KEE-ree-ay”) section introduces the following recurring motif: “D [pause] D, D [pause] G, F, E, D.” For 10 points each:

[10] Name this pope who is the namesake of a mass by Giovanni Pierluigi da Palestrina that is erroneously credited with saving Renaissance polyphony.

ANSWER: Pope **Marcellus** II [accept *Pope **Marcellus** Mass* or *Missa Papae **Marcelli***; accept **Marcello** Cervini degli Spannochi]

[10] In *Gradus ad Parnassum*, Johann Joseph Fux cited Palestrina’s style as an example of counterpoint that uses and is named for these entities. “Note against note” is the first of these entities, which are used to pedagogically conceptualize the progression of counterpoint with elements such as the *cantus firmus*.

ANSWER: **species** [accept **species** counterpoint]

[10] Palestrina also wrote many pieces in this genre of sacred polyphonic choral music. This genre is often contrasted with the secular madrigal.

ANSWER: **motets**

<Classical Music>

11. A commonly used ideal model in this paradigm has a residence time distribution that takes on the form of the Dirac delta function. For 10 points each:

[10] Name this paradigm in chemical synthesis in which reagents are continuously combined by pumping them through pipes. It is contrasted with batch chemistry.

ANSWER: **flow** chemistry [or continuous **flow** chemistry; accept, but DO NOT REVEAL, plug **flow** reactors; prompt on, but DO NOT REVEAL, PFRs]

[10] Many syntheses in flow chemistry are performed in the “micro” type of these systems, which also come in protected “batch,” “plug flow,” and “continuous-stirred tank” types. They are enclosed control volumes where reagents (“re-agents”) are converted into products.

ANSWER: chemical **reactors** [or micro**reactors**; or batch **reactors**; or continuous-stirred tank **reactors**; prompt on CSTRs or PFRs by asking “what does that stand for?”]

[10] Impellers in a continuous-stirred tank reactor are used to perform this process. In the laboratory, a magnetic bar is commonly used to perform this process that makes a solution more homogenous.

ANSWER: **mixing** [prompt on impelling; prompt on stirring]

<Chemistry>

12. In September 2019, Jason Scott-Warren announced a widely-supported theory that the notes on a copy of this author’s work in Philadelphia’s Free Library were made by John Milton. For 10 points each:

[10] Name this poet who is addressed as a “Dear son of Memory, great heir of fame” in Milton’s poem “on” him. “Ariel’s Song” is one of the passages singled out by Milton in his copy of the First Folio of this playwright’s works.

ANSWER: William **Shakespeare**

[10] “Ariel’s Song” is likely the source for the unusual rhyme of “kist” and “whist” in this Milton poem, which commemorates the birth of Jesus.

ANSWER: “**On the Morning of Christ’s Nativity**”

[10] Nigel Smith, the author of *Is Milton Better Than Shakespeare?*, claims that Milton attempted to purge Shakespearian influences from this verse drama, whose title blinded strongman laments seeing nothing but “dark, dark, dark, amid the blaze of noon.”

ANSWER: **Samson Agonistes** (“uh-GON-ist-eez” or “AH-guh-NISS-teez”)

<British Literature>

13. This man’s orders to construct a fence with barbed wire around a steel mill led the mill to be named his “fort.” For 10 points each:

[10] Name this chairman of the Carnegie Steel Company who sent Pinkertons to put down the Homestead Strike, leading Emma Goldman and Alexander Berkman to attempt to assassinate him.

ANSWER: Henry Clay **Frick**

[10] Their attempted assassination of Frick represented this four-word concept intended to inspire the masses to revolt. Luigi Galleani (“gah-lay-AH-nee”) encouraged this anarchist tactic, which likely included the Wall Street bombing and the assassination of William McKinley.

ANSWER: **propaganda of the deed** [prompt on propaganda; prompt on terrorism; do not prompt on or accept anything else]

[10] Goldman became an anarchist after the executions following the 1886 bombing against demonstrating workers in this Chicago square. That event is commemorated by International Labor Day.

ANSWER: **Haymarket** Square [accept **Haymarket** Riot]

<American History>

14. This philosophical tradition is usually contrasted with the kataphatic (“cat-uh-FAT-ic”) tradition, which may describe God as “all-good” or “all-wise.” For 10 points each:

[10] Name this theological tradition that contends the best way to come to know God is by stating what God is not. Proponents of this tradition stress that God is incorporeal and uncreated.

ANSWER: **negative** theology [accept *via negativa*; accept **apophatic** (“app-oh-FAT-ic”) theology]

[10] This 6th-century Syrian monk drew on Neoplatonism to develop a version of negative theology in *On the Divine Names*.

ANSWER: **Dionysius** the Areopagite [or Pseudo-**Dionysius**]

[10] Maimonides (“my-MON-ih-deez”), a philosopher who practiced this religion, advocated a form of negative theology that warned against applying anthropomorphisms to God in *The Guide for the Perplexed*. Philosophers who practiced this religion often tried to reconcile Aristotelian thought with the Tanakh (“tah-NAHK”).

ANSWER: **Judaism**

<Philosophy>

15. This author criticized “consensus ecumenism” in *Joint Declaration on the Doctrine of Justification* and attacked religious pluralism that elides the unique role of Jesus in *Dominus Iesus* (“YAY-sooss”). For 10 points each:

[10] Name this exegetic (“ex-uh-JEE-tic”) theologian who expanded use of the Tridentine liturgy with his *motu proprio Summorum Pontificum*. This pope was portrayed by Anthony Hopkins opposite Jonathan Pryce’s Francis in *The Two Popes*.

ANSWER: Pope **Benedict XVI** (“the sixteenth”) [or **Benedictus Sextus Decimus**; or **Benedetto il sedicesimo**; or **Benedikt der Sechzehnte**; prompt on **Benedict** or **Benedictus**; accept Joseph Aloisius **Ratzinger**]

[10] Two of Benedict XVI’s (“the sixteenth’s”) encyclicals are named for this theological virtue, which he likened to a “community of love” and linked to the eucharist in an apostolic exhortation. Aquinas (“uh-KWY-nuss”) derived this virtue from its Greek equivalent in 1 John’s statement “God is love.”

ANSWER: **caritas** [or **charity**; accept **agapē**; prompt on related answers like **alms-giving**]

[10] Benedict’s *Jesus of Nazareth* evaluates this term, which Peter instructs along with baptism in Acts 2:38 (“chapter 2, verse 38”). This Greek term refers to a profound change of heart and may be translated as “conversion” or “repentance.”

ANSWER: **metanoia** (“meta-NOY-uh”) [accept the analogous Hebrew term **teshuva**]

<Religion>

16. Raymond Hood predicted that this art form will eventually be studied in the same way as Norman Bel Geddes’s theater work. For 10 points each:

[10] Describe this art form practiced by designers like Douglas Leigh and Yann Kersalé. The work of Richard Kelly, a practitioner of this art form, includes projects for the Seagram Building and the Glass House.

ANSWER: **lighting** design [or **illumination**; or artificial **lighting**; accept any answers indicating **lighting** up the exterior of buildings; accept **architecture of the night**; prompt on **architecture**; do not accept or prompt on answers about windows or design of natural light]

[10] Georgia O’Keeffe created a series of paintings of skyscrapers in this city illuminated at night, including Hood’s Radiator Building. Hood also designed Rockefeller Center in this city.

ANSWER: **New York** City [or **NYC**]

[10] Hood’s Radiator Building was based on a design originally by an architect with this surname. Another architect with this surname designed the Miller House and the MIT Chapel.

ANSWER: **Saarinén** (“SAH-ree-nen”) [accept Eliel **Saarinén** or Eero **Saarinén**]

<Other Arts (Architecture)>

17. This type of flow is characterized by parallel layers of fluid that slide past each other without mixing, and occurs at a low Reynolds number. For 10 points each:

[10] Name this type of flow that is often contrasted with turbulent flow.

ANSWER: **laminar** flow

[10] The Reynolds number equals pipe diameter times mean velocity over this quantity. This quantity for a liquid is derived as the “shear modulus multiplied by time,” and is measured in units of “length-squared over time.”

ANSWER: **kinematic viscosity** [prompt on viscosity; do not accept or prompt on “dynamic viscosity”]

[10] This type of chart plots the relation between the Darcy–Weisbach (“VYZE-bahk”) friction factor of a pipe, the Reynolds number, and the surface roughness. It can be used to predict the pressure drop or flow rate through a pipe.

ANSWER: **Moody** chart [or **Moody** diagram]

<Physics>

18. Local Lafkenche (“laf-KEN-chay”) natives sacrificed a five-year-old boy to calm the earth and ocean after the most powerful earthquake ever recorded struck this city. For 10 points each:

[10] Name this South American city. Its extensive forts at Corral Bay and the Cruces (“KROO-sess”) River were built after the Destruction of the Seven Cities.

ANSWER: **Valdivia**

[10] The city’s namesake, Pedro de Valdivia, died fighting these indigenous people led by Lautaro in the Arauco (“ah-RAO-ko”) War.

ANSWER: **Mapuche** (“ma-POO-chay”)

[10] Valdivia is located in this country, which ended Mapuche independence with the Occupation of Araucanía (“ah-rao-kah-NEE-uh”) in the mid-1800s. The Mapuche conflict has resurfaced in this country since the fall of Augusto Pinochet’s (“pee-no-SHAY’s”) regime.

ANSWER: **Chile**

<World History>

19. The United States economy is supposedly built on free-market principles, but not when it comes to sports. For 10 points each:

[10] The NCAA (“N-C-double-A”) has been accused of being one of these groups, since it helps universities collude to fix wages. OPEC (“OH-peck”) is one of these groups, which often set production quotas or fix prices to increase profits for members.

ANSWER: **cartels**

[10] While major sports league mergers have drastically increased competition according to measures like the HHI, they may have scored better on this standard championed by Robert Bork. Its use in antitrust policy has been criticized for allowing too many anticompetitive mergers.

ANSWER: the **consumer welfare** standard [prompt on partial answer]

[10] Before a 1975 arbitration case, professional baseball players could only contract with the team that owned their contract, creating this kind of situation in which a single employer acts as a “wage maker.”

ANSWER: **monopsony** [do not accept or prompt on “monopoly”]

<Social Science (Economics)>

20. In one novel, James Burbank’s daughter Dy is kidnapped and taken to an island in this state. For 10 points each:

[10] Identify this state that provides the setting of *Texar's Revenge, or North Against South*. The Baltimore Gun club selects the fictional "Stone's Hill" in this state as the location of the Columbiad cannon in another novel by the same author.

ANSWER: **Florida**

[10] Although he had never been to the American South, this French author set his novels *Texar's Revenge* and *From the Earth to the Moon* in Florida. He also wrote *Journey to the Center of the Earth*.

ANSWER: Jules **Verne**

[10] Verne also showed off his sketchy knowledge of the American Civil War in this novel, in which the protagonists somehow wind up at the title South Pacific locale after escaping a POW camp in a hot air balloon.

ANSWER: *The **Mysterious Island*** [or *L'**Île mystérieuse***]

<European Literature>

21. Ammonium molybdate ("mo-LIB-date") causes phosphate to undergo this process in the presence of nitric acid. For 10 points each:

[10] Name this process that, like centrifugation, leaves behind a supernatant ("super-NAY-tant"). Proteins can be purified by using ammonium sulfate to cause this process to occur in a method called "salting out."

ANSWER: **precipitation** [or word forms like forming a **precipitate**; prompt on forming a solid or coming out of solution; prompt on recrystallization by asking "what more general process can form crystals from a solution?"]

[10] Precipitates can then be distinguished by this property, which differs among many metal carbonates. Metals like barium and strontium differ with respect to this property in a flame test, which is the basis for diverse fireworks.

ANSWER: **color** [accept answers of specific colors like **green** or **red**]

[10] This anion's namesake "indole motility" growth medium forms a black precipitate in its presence, which causes lead(II) ("led-two") acetate to change color. Polyphenylene thermoplastics are often cross-linked by this anion.

ANSWER: **sulfide** [or **S 2-minus**; accept hydrogen **sulfide** or **H2S** or polyphenylene **sulfides**; do not accept or prompt on "sulfur" or other sulfur anions like "sulfite" or "sulfate"]

<Chemistry>