

## ACF Regionals 2019

Packet by Yale A, Gettysburg A, and Iowa

### Tossups

1. A set of trade restrictions passed by this city was reinterpreted as a purely religious sanction in a 1972 book by British historian G. E. M. de Ste. Croix (“duh saint croy”), who also wrote a 1954 article about the “character” of this city based on a lecture about its “alleged unpopularity.” This city broke with precedent by establishing plantation-like, extraction-oriented colonies called cleruchies (“CLAIR-uh-keez”). The “fall” of this city’s empire titles the fourth volume of a history by Donald Kagan. This city’s citizens were credited with the line “The strong do what they can and the weak suffer what they must” in a fictionalized dialogue with the city of Melos. This city, whose trade was conducted by foreigners called *metics*, moved the treasury of the Delian League to this city in 454 BC. For 10 points, name this home city of Thucydides, which fought the Peloponnesian War with Sparta.

ANSWER: **Athens** [or the **Athenian** Empire; accept *The Character of the Athenian Empire*; accept *The Fall of the Athenian Empire*]

<Ancient History>

2. This quantity minus  $RT$  all over molar volume all to the one-half power gives the Hildebrand solubility parameter. When analyzing evapotranspiration, this quantity is unusually written as  $\lambda$ . The ratio of two examples of this quantity is equal to a ratio of one minus reduced temperatures all to the power of 0.38 in the Watson correlation. This quantity is assumed to be equal for all feed components in a binary distillation in the McCabe–Thiele (“TEEL-uh”) method. This quantity divided by the ideal gas constant, multiplied by one-over- $T_2$  minus one-over- $T_1$ , appears on one side of the Clausius–Clapeyron equation. This quantity, which is zero past the critical point, explains why adding energy to water at the boiling point doesn’t increase its temperature. For 10 points, name this quantity, the additional energy needed to turn a liquid into a gas.

ANSWER: **enthalpy of vaporization** [or latent **heat of vaporization**; prompt on **heat**, **enthalpy**, or **latent heat**; prompt on **delta- $H$ -vap**]

<Chemistry>

3. This leader required that nongovernmental organizations receiving 25,000 dollars or more in donations were required to label themselves as “foreign-funded.” This man rose to party leadership after protesting the unmarked burial of Pál Maléter (“pal mah-LAY-ter”) and three others in the Municipal Cemetery. Billboards reading “The people have decided. The country has to be protected” were erected after this leader approved a border wall against Serbia and Croatia. This leader made the creation of an “illiberal state” a founding principle of his Fidesz (“FEE-dess”) party. Shortly after the US Holocaust Museum denounced him for praising Miklós Horthy (“MEEK-lohsh HOR-tee”), his government printed propaganda posters depicting a grinning George Soros. For 10 points, name this authoritarian Prime Minister of Hungary.

ANSWER: Viktor **Orbán** [or Viktor Mihály **Orbán**]

<Current Events>

4. A poem named after this thing thanks the Lord for creating “Brother Fire” and “Sister Water.” The speaker of another poem is driven back “to where [this thing] is silent” by the appearance of a wolf. According to the “rule of the mountain” explained by Sordello, this thing determines when it is possible for souls to climb upward. One of the very first works of literature in Italian is a “canticle” about this thing by St. Francis of Assisi. Dante and Beatrice meet the souls of wise men in the form of revolving bright lights inside this object in the *Paradiso*. The description of the position of this object in the *Purgatorio* demonstrates medieval knowledge of the spherical shape of the Earth. For 10 points, the *Divine Comedy* ends by describing “the Love that moves” what celestial object “and the other stars”?

ANSWER: the Sun [or *il sole*; accept sunset or sunlight]  
<European Literature>

5. A standard rhythm originally from this style is traditionally counted [read slowly] “one two THREE four five SIX seven EIGHT nine TEN eleven TWELVE,” with the strongest accent on twelve. For performing in this style, a certain instrument is often outfitted with a “tap plate.” Music in this tradition frequently uses the Phrygian mode, but often adds a melodic raised third or seventh. An instrumentalist in this style had a hit in the ’70s with a song whose name translates as “between two waters.” Performers in this tradition use both open and cupped hands to make loud and soft handclaps, or “palms.” This tradition’s “deep song” was revived in the 1920s with a festival by Manuel de Falla (“deh FAH-yah”) and Federico García Lorca. Extremely fast guitars and castanets typically accompany, for 10 points, what traditional music and dance style of Andalusian gypsies?

ANSWER: flamenco (This question translates the Spanish *golpeador*, Paco de Lucía’s “Entre dos aguas,” *palmas*, and *cante jondo*.)

<Other Arts>

6. One of these molecules, which was discovered in the extrachromosomal genome of *Didymium iridis*, creates an internal processing site; that one of these molecules is GIR1. The P4-P6 domain of another of these molecules contains a tetraloop-receptor motif. One of these molecules has conserved G5, G8, and G12 residues. Sidney Altman and Thomas Cech (“check”) won a 1989 Nobel Prize for their discovery of these molecules, which include one from the hepatitis delta virus and another that has a hammerhead shape. The peptidyl transferase activity of the 23S ribosome and the self-splicing group I intron are examples of these molecules. The fact that some of these molecules can catalyze their own cleavage and replication lends support to the RNA world hypothesis. For 10 points, name these RNA molecules that can catalyze reactions.

ANSWER: ribozyme [prompt on RNA]  
<Biology>

7. This figure is deemed a watchman for the people of Israel who will be held responsible if a wicked person dies for their sins. A conflict described by this man includes the destruction of a chief prince of Meshech and Tubal. A building described by this man includes a river flowing from its south side and carvings of cherubim on the walls. This Biblical figure cuts his hair into three parts, burning one part and scattering another to the wind. He also envisions the war of Gog and Magog against the people of God. This figure hears the words “I will attach tendons to you and make flesh come upon you” while wandering in the valley of dry bones. Merkabah mysticism was inspired by this man’s account of four animals accompanied by “wheels within wheels.” For 10 points, name this major prophet whose namesake book begins with a vision of the chariot of God.

ANSWER: Ezekiel [or Yehezkel]  
<Religion>

8. According to legend, a female rebel leader on this island could catch bullets in her buttocks and fart them out again. Enslaved Akan people on this island were known as Coromantees. Hundreds of slaves made a last stand at this island’s Fort Haldane during Tacky’s Rebellion, one of the largest slave revolts before the Haitian Revolution. This island was seized from the Spanish in a 1655 invasion led by Robert Venables (“VEN-uh-bulls”) and William Penn. Cudjoe and Nanny led escaped slaves on this island in fighting Europeans. In 1692, a city on this island known as the “wickedest city on earth” was completely wiped out by an earthquake and tsunami. Henry Morgan used this island’s city of Port Royal as a base of operations. For 10 points, name this island whose current capital is Kingston.

ANSWER: Jamaica  
<World History>

9. This story's opening paragraph, which describes bushes bowing down "as if they had been visited by archangels," begins by noting "And after all the weather was ideal." Some characters from this story had previously appeared in its author's story "Her First Ball." In this story, a girl named Jose tests a piano by playing the song "This Life Is Weary." In this story, Godber's man arrives to deliver cream puffs. A character in this story cannot finish her question beginning "Isn't life—" before her brother replies "Isn't it, darling?" The protagonist of this story directs the placement of a marquee at its beginning, before learning of the death of Mr. Scott and canceling this story's title event. For 10 points, name this short story in which Laura Sheridan prepares for a celebration, written by Katherine Mansfield.

ANSWER: "The Garden Party"

<World Literature>

10. In Mapuche mythology, one of these events resulted in the creation of the sumpall ("soom-paul") and was caused by a battle between two giant snakes. The "magical soil" *xirang* ("shee-rong") was used in a failed attempt to stop one of these events, after which Gun ("gwun") was banished to Feather Mountain. The "Four Mountains" served as advisors to emperors Gao and Shun during one of these events, another of which was caused by Odin's killing of Ymir. One of these events is eventually stopped by Gun's son, Yu the Great, after which he founded the Xia ("sh'YAH") Dynasty. In Mesopotamian mythology, Enki helps Utnapishtim survive one of these events by instructing him to build *The Preserver of Life*. Hapi personifies a yearly example of one of these events, which is caused by Isis's tears. For 10 points, name these mythological disasters frequently caused by overrunning rivers.

ANSWER: floods [accept reasonable equivalents]

<Mythology>

11. A 1941 editorial that coined a name for one of these things asks "whose Dong Dang, whose Democracy?" and calls for a turn to pro-American internationalism. A speech sometimes titled "The Price of Free World Victory" pairs Franklin Roosevelt's Four Freedoms with "four duties" needed to achieve a "people's" one of these things. Helen Hunt Jackson criticized forced removals of Native Americans in a book titled for one of these things "of Dishonor." In a 1942 speech, Henry Wallace countered Henry Luce's vision of an "American" example of these time periods by calling for one "of the common man." The French phrase "fin de siècle" ("fan duh s'YECK-luh") typically denotes the transition from the 19th to the 20th one of these in the Common Era. For 10 points, name these time periods of 100 years.

ANSWER: century [or centuries; accept American Century or "century of the common man" or *A Century of Dishonor*]

<American History>

12. The main theme of the second movement of a symphony by this composer may have come from a song from *Faust* set by Carl Friedrich Zelter. A symphony by this composer opens with the violas playing a slow, transposed version of the four-note first theme of the finale of the *Jupiter* Symphony. Due to its resemblance to a Berlioz piece, the slow movement of this composer's fourth symphony is sometimes called a "Pilgrim's March." The introduction of this composer's Fifth Symphony quotes a rising motif known as the "Dresden Amen." This composer's Third Symphony features a short-long rhythm called the "Lombard" or "snap" rhythm. This composer wrote his Fifth Symphony for the tricentennial of the Augsburg Confession, and his Fourth Symphony was inspired by dances like the *tarantella* and *saltarello*. For 10 points, name this composer of the *Reformation*, *Scottish*, and *Italian* symphonies.

ANSWER: Felix Mendelssohn [or Felix Mendelssohn Bartholdy]

<Music>

13. This English-language author sued the Malian writer Yambo Ouologuem ("wo-lo-GHEM") for plagiarizing passages from one of his books in the novel *Bound to Violence*. At the end of the novel in which he appears, a

character created by this author laments that he has become *engagé* (“on-gah-ZHAY”), rather than remaining neutral. In this author’s first novel, Francis Andrews agrees to take the blame for a murder after betraying a group of smugglers via court testimony. Bombs are hidden in bicycle pumps in another novel by this author of *The Man Within*; in that novel, Phuong is forced to choose between journalist Thomas Fowler and CIA agent Alden Pyle. In a novel by this author of *The Quiet American*, a socialist lieutenant chases a “whiskey priest” across Mexico. For 10 points, name this author of *The Power and the Glory*.

ANSWER: Graham **Greene** [or Henry Graham **Greene**]

<British Literature>

14. This kind of state was contrasted with a similarly-named, automatic counterpart in a pair of 2008 papers by Tamar Gendler. The so-called “recruitment” of these states in order to carry information is analyzed in Fred Dretske’s (“DRET-skee’s”) *Explaining Behavior*. To attain one status, these states must be linked to their objects by “causal chains,” according to a 1967 paper by Alvin Goldman. Robert Nozick (“NO-zick”) assessed the reliability of these states in his “truth-tracking” theory. In a 1963 paper, one of these propositional attitudes fails to take into account the ten coins in Smith’s pocket, and is thus both true and justified, but not knowledge, according to Edmund Gettier (“GETTY-er”). For 10 points, name these attitudes in which something is regarded as true.

ANSWER: **beliefs** [prompt on reasons] (Gendler distinguished beliefs from “aliefs.”)

<Philosophy>

15. In a formalism named for this process, the Peierls (“PIE-erls”) substitution couples an external vector potential to the hopping parameters of the Hamiltonian. Features named for this process correspond to poles of the Green’s function in the Bethe–Salpeter (“BAY-tuh sall-PEE-ter”) formalism and differ from resonances in that they have infinite lifetime. States described by this term can be normalized and are contrasted with the continuous spectrum of scattering states. Systems such as neutral atoms where interacting particles have lower energy than their total separated energy are in this kind of “state.” Another quantity described by this term equals the mass defect times *c*-squared. Nickel-62 and iron-56 have some of the largest values of the “nuclear” type of, for 10 points, what energy of formation?

ANSWER: **binding** [or **bound**; accept tight-**binding** model; accept **bound** state; accept nuclear **binding** energy]

<Physics>

16. This state’s lands east of the Oglio (“OHL-yo”) River were ceded to one party to the Preliminaries of Leoben (“lay-OH-bin”), though that boundary was later moved east to the Adige (“AH-dee-jay”). Supporters of this state revolted against French occupiers in an uprising named on analogy with the Sicilian Vespers, which was suppressed two weeks before the abdication of the final traditional leader of this state, Ludovico Manin (“mah-NEEN”). This city-state’s hinterland, the “Domini di Terraferma,” was partitioned between Austria and the Cisalpine Republic by the provisions of the 1797 Treaty of Campo Formio. Napoleon removed restrictions on Jews living in this city, who had been confined to its foundry district, which was the origin of the term “ghetto.” For 10 points, name this “most serene republic” ruled by doges (“DOH-jizz”) that dominated the Adriatic Sea from its canal-rich capital.

ANSWER: **Venice** [or Republic of **Venice**; or **Venetian** Republic]

<European History>

17. An artist from this country painted himself speaking to a couple as the cross-dressing “Sophie Yoteko” in one work. That artist from this country depicted his sister Mitche (“MIT-cha”) alone at a table holding an oyster in a painting that was rejected from two art shows in this country. An artist from this country metaphorically depicted two of its art critics as two skeletons biting into different ends of a pickled herring. A red banner reading “Vive la Sociale” appears atop a large painting of an artist from this country that depicts Christ’s entry into this country’s capital “in 1889.” That artist, James Ensor, was a member of the late-19th-century art group Les XX (“lay VAN”) in

this country. For 10 points, name this country home to an artist who showed a train emerging from a fireplace in his painting *Time Transfixed*, René Magritte.

ANSWER: **Belgium** [or Kingdom of **Belgium**; or **België**]

<Painting>

18. The y-axis of a graph that was developed by Alan Krueger and named after a novel measures the “stickiness” of this quantity. A 1974 paper by Richard Easterlin argued that there exists no time-series relationship between happiness and this quantity. A paper co-authored by Emmanuel Saez (“sah-EZZ”) used American data on this quantity between 1913 and 1998 to advance an argument that builds on Simon Kuznets’s “U-Curve” hypothesis. “Superior goods” have a value of more than one for the elasticity of demand associated with this quantity.

According to Thomas Piketty (“toh-MAH pee-keh-TEE”), the fact that the type of this quantity derived from capital is less equally distributed than the type derived from labor is a key reason why its namesake inequality has risen since the 1970s. For 10 points, name this quantity, the amount of money earned over a set period of time.

ANSWER: **income** [accept national or personal **income**, **income** inequality, capital **income**, or labor **income**; prompt on **wealth**] (The graph in the first sentence is the Great Gatsby curve.)

<Social Science>

19. A poet from this state told of “something unsaid, a phone off the hook” in the last stanza of a poem which declares that “suicides have a special language.” A poet from this state wrote that “Beauty is its own excuse for being” in a poem which muses that “the self-same Power that brought me here brought you.” That poem is subtitled “On Being Asked, Whence Is the Flower?” and is called “The Rhodora.” A poem set in this state begins by describing “a Sahara of snow” where an aquarium stands. A monument in this state “sticks like a fishbone in the city’s throat” in Robert Lowell’s “For the Union Dead.” In another poem set in this state, “Hardly a man is now alive who remembers the famous day and year” of the title event, which included the direction “one if by land, two if by sea.” For 10 points, name this home state of Ralph Waldo Emerson, the setting of “Paul Revere’s Ride.”

ANSWER: **Massachusetts** (The poem in the first sentence is Anne Sexton’s “Wanting to Die.”)

<American Literature>

20. Yoshua Bengio (“YOSH-oo-ah BEN-jee-oh”) et al. argued that a prevalence of points with this property surrounded by high error plateaus present the main challenge to high-dimensional optimization, and these points are a specific case of points where functions can be reparameterized using Morse’s lemma. Deforming a contour integral toward one of these points is an approximation method called the method of steepest descent, which is alternately named for these points. The Hessian matrix has both positive and negative eigenvalues at these points that can be identified by the second derivative test. These points are critical points but not local extrema. For 10 points, name these points where a multivariable function curves up and down in different directions, named for resembling a piece of riding equipment.

ANSWER: **saddle** points [accept **minimax** point; prompt on **stationary** points or (non-degenerate) **critical** points; do not accept or prompt on “minimum” or “maximum” or “extremum”]

<Other Science (Math)>

21. The “anti-bureaucratic revolution” overthrew governments of two autonomous regions in this leader’s country and replaced them with his allies. This leader was overthrown in a revolt whose most iconic moment was when a bulldozer operator charged into this leader’s main propaganda building. This leader was dubbed “Little Lazar” after he gave a nationalist speech commemorating the 600th anniversary of the Battle of the Field of Blackbirds. This man’s death of a heart attack at the Hague officially ended his five-year-long trial for war crimes, which included approving the massacre of 8,000 Muslim men and boys at Srebrenica (“s’reh-bren-IT-sah”). Along with Alija Izetbegović (“ah-LEE-ah ee-zet-BEG-oh-vitch”) and Franjo Tudjman (“FRAHN-yo TOOJ-mahn”), this man signed

the Dayton Peace Accords, ending the Bosnian War. For 10 points, name this former Yugoslav leader and first president of Serbia.

ANSWER: Slobodan **Milošević**

<European History>

## Bonuses

1. In cryptography, the output of these functions is known as the message digest. For 10 points each:

[10] Name these functions that map arbitrary inputs to numbers, and allow for constant-time lookup in their namesake “tables.”

ANSWER: hash functions [or cryptographic hash functions]

[10] In 2017, CWI Amsterdam and Google published an attack on the hash function based SHA-1 (“shah-one”) algorithm that works by producing these events. That attack was five orders of magnitude faster than a simple “birthday” attack where the probability of creating one of these events is similar to the birthday problem.

ANSWER: collisions [or hash collisions; accept collisional attack]

[10] SHA-1 is also vulnerable to an attack based on “extending” this property. Most hash functions modify this property through a process known as padding to ensure that this property is uniform.

ANSWER: input length [accept equivalents, such as size of the input, or length of the plaintext; prompt on length or length extension attack; prompt on input; do not accept or prompt on answers involving “output” or “encrypted text” or “ciphertext”]

<Other Science (Computer Science)>

2. This political leader played guitar for the band Tout-à-Coup (“too-tah-COO”) Jazz. For 10 points each:

[10] Name this Marxist revolutionary who overthrew Jean-Baptiste Ouédraogo (“way-drah-oh-goh”) in 1983 and gave his country a new name that means “Land of Upright Man.”

ANSWER: Thomas Sankara

[10] Sankara was the fifth president of this African country. It was called Upper Volta when it was a French colony.

ANSWER: Burkina Faso

[10] Sankara is often called Africa’s version of this man. This Marxist revolutionary, born Ernesto Lynch, helped Fidel Castro overthrow the Batista government and is the subject of the iconic black-and-white photograph *Guerrillero Heroico* (“gair-ee-YAIR-oh air-OH-ee-koh”).

ANSWER: Che Guevara [accept either underlined portion]

<World History>

3. In an early novel by this author, the protagonist repeatedly goes to a café to imagine the backstory of a murder she saw during her child’s piano lesson. For 10 points each:

[10] Name this author of 1958’s *Moderato Cantabile* (“kahn-TAH-bee-lay”).

ANSWER: Marguerite Duras (“dew-ROSS”) [or Marguerite Donnadieu]

[10] The Child, Husband, and Boss from Duras’s *Moderato Cantabile* are all unnamed, much like the Arab who Meursault (“mur-SOH”) kills in this author’s *The Stranger*.

ANSWER: Albert Camus (“all-BAIR ka-MOO”)

[10] This other author went one further than Duras and Camus by narrating a 1953 novel from the perspective of an “unnamable” protagonist. His other French-language novels include *Malone Dies*.

ANSWER: Samuel Beckett [or Samuel Barclay Beckett]

<European Literature>

4. The second piece from this set includes a melody based on the 16th-century song “La Mantovana,” which was later adapted into the Israeli national anthem *Hatikvah*. For 10 points each:

[10] Name this set of six symphonic poems that includes depictions of the city of Tábor and the river Vltava (“vull-TAH-vah”). They are among the best-known compositions of Bedřich Smetana (“BED-rikh SMEH-tah-nah”).

ANSWER: Má vlast [or My Homeland; or My Fatherland]

[10] *Má vlast* was inspired by landmarks and legends from this country, Smetana’s homeland. Another musician from this country is the composer of the *Glagolitic Mass*, Leoš Janáček (“LEH-ohsh yah-NAH-check”).

ANSWER: **Czech** Republic [accept **Czechoslovakia**, **Czechia**, **Česká republika**, or **Česko**]

[10] Another of Smetana's cycles, the so-called "Swedish" symphonic poems, includes this piece based on a play by Danish author Adam Oehlenschläger ("AY-dum UH-len-SHLAY-ur"). It tells the story of a 10th-century pagan king of Norway.

ANSWER: **Hakon Jarl**

<Music>

5. Alexander Bickel described this practice as a "deviant institution in the American democracy" in a book about the problem of the "counter-majoritarian difficulty." For 10 points each:

[10] Name this two-word practice. Jeremy Waldron, a prominent critic of it, argued that the "core of the case against" it is that it disenfranchises citizens and distracts them through "side-issues about precedent, texts, and interpretation."

ANSWER: **judicial review** [accept "The Core of the Case Against **Judicial Review**"]

[10] Waldron argues that judicial review is unable to settle disagreements about these things. In a book titled for "taking [these things] seriously," Ronald Dworkin argued that "individual" examples of them serve as "trumps."

ANSWER: **rights** [accept *Taking **Rights** Seriously* and a **right** to/of equal concern and respect]

[10] Waldron notes that judicial review's failure to establish decision procedures that "settle, not reignite" the controversies that made them necessary echoes a problem described in this English thinker's treatise *Leviathan*.

ANSWER: Thomas **Hobbes**

<Philosophy>

6. An enormous work by this man incorporates stories from the *Eddas* as well as genealogies of the Anglo-Saxons. For 10 points each:

[10] Name this author of *Teutonic Mythology*, the first comprehensive analysis of the myths of the Germanic peoples.

ANSWER: **Jacob Grimm** [or **Jacob Ludwig Karl Grimm**; prompt on **Grimm**]

[10] Jacob Grimm is better known for compiling a collection of these works with his brother Wilhelm. That compilation includes such stories as "The Robber Bridegroom" and "Cinderella."

ANSWER: **fairy tales** [prompt on any answer indicating **tales** for **children**]

[10] Jacob Grimm coined the popular term for this event, which is prominent in tales across Europe. Germans often identify its leader as either Wotan or Dietrich von Bern.

ANSWER: the **wild hunt** [or **wilde Jagd**; prompt on **hunt** or **Jagd**]

<Mythology>

7. Roger Dymok published a point-by-point refutation of this document on behalf of Richard II. For 10 points each:

[10] Name this manifesto that was nailed to the doors of Westminster Abbey and St. Paul's Cathedral in 1395. It criticized the church's temporal power and its practice of clerical celibacy.

ANSWER: **Twelve Conclusions**

[10] The Twelve Conclusions were written by members of this religious movement, who followed the teachings of John Wycliffe. Their name comes from a derogatory term meaning "mumblers."

ANSWER: **Lollards**

[10] Lollard leader John Oldcastle led a revolt against this ruler and was burned at the stake in 1417. This king led English forces to victory at the Battle of Agincourt.

ANSWER: **Henry V** [prompt on **Henry**]

<British History>

8. The British travel writer George Borrow often wrote about these people, including in his novel *Lavengro*. For 10 points each:



[10] Name these people. In an episode from *The Mill on the Floss*, Maggie runs away after pushing Lucy Deane in the mud, and is taken home by one of these people.

ANSWER: **Romani** people [accept **gypsies**]

[10] The narrator of this Henry Fielding novel digressively praises the institution of monarchy at the end of a chapter in which the title foundling and his traveling companion Partridge encounter a Roma wedding.

ANSWER: *The History of **Tom Jones**, a Foundling*

[10] The Romani are referred to as “Bohemians” in this author’s novel *Quentin Durward*, and they also make an appearance in his *Guy Mannering*.

ANSWER: Sir Walter **Scott**

<British Literature>

9. MRI tractography and brainbow labeling are two methods used to create these constructs, whose name was popularized by a TED talk given by Sebastian Seung. For 10 points each:

[10] Name this construct, a comprehensive map of all neurons and their connections in the brain.

ANSWER: **connectome**

[10] Bendlin’s lab studies the connectome of people with this form of dementia, which is partly caused by the buildup of beta-amyloid plaques in neurons.

ANSWER: **Alzheimer**’s disease [or **AD** or **Alzheimer**’s dementia]

[10] Another pathological finding in Alzheimer’s disease is neurofibrillary tangles, which contain a hyperphosphorylated form of this microtubule-associated protein.

ANSWER: **tau**

<Biology>

10. This concept’s theorizer presented eight successful examples of its execution in her book *The Dreamkeepers*. For 10 points each:

[10] Name this three-word concept developed by Gloria Ladson-Billings to describe pedagogical practices that enable students to relate academic material to their personal backgrounds.

ANSWER: **culturally relevant teaching** [accept **culturally relevant pedagogy**; do not accept “critical pedagogy”]

[10] Ladson-Billings’s culturally relevant teaching draws on this thinker’s notion of “teaching as mining,” which he advocated as a replacement for what he termed the “banking model” of education in his *Pedagogy of the Oppressed*.

ANSWER: Paulo **Freire** (“FRAY-reh”)

[10] Culturally relevant teaching is informed by the constructivist theories of knowledge proposed by this Swiss developmental psychologist, who argued that children use “assimilation” and “accommodation” to develop interpretive “schemas.”

ANSWER: Jean **Piaget**

<Social Science>

11. Name some things about Revolutionary War-era people with a common last name, for 10 points each.

[10] This British general served as supreme commander of British forces in America from 1778 to 1781, replacing William Howe. He led the army that forced Benjamin Lincoln to surrender Charleston.

ANSWER: Sir Henry **Clinton**

[10] James Clinton helped lead this 1779 punitive expedition into Iroquois territory in upstate New York. This scorched-earth campaign devastated the power of the Iroquois Confederacy.

ANSWER: **Sullivan** Expedition

[10] DeWitt Clinton, a nephew of the Founding Father George Clinton, served as Governor of New York during the completion of this infrastructure project. This waterway connects its namesake Great Lake to the Hudson River.

ANSWER: **Erie Canal**

<American History>

12. This theory contrasts species with a high charge-to-radius ratio and larger, more polarizable species with a low charge-to-radius ratio. For 10 points each:

[10] Name this theory of acids and bases that predicts that “like binds to like,” and breaks acids and bases into two classes based on factors like the energy of the LUMO (“LOO-mo”) or HOMO (“HO-mo”).

ANSWER: **hard-soft** acid-base theory [or **HSAB** theory; prompt on answers indicating Pearson’s acid base theory/concept]

[10] Hard acids primarily interact with bases through this form of bonding, in contrast with soft acids where the interaction has a significant covalent component. This form of bonding produces crystals primarily held together by electrostatic forces.

ANSWER: **ionic** bonding [accept word forms like **ionic** bonds]

[10] This “rule” based on HSAB theory states that for nucleophiles that attack in more than one place, SN1 reactions will happen at more electronegative atoms and SN2 reactions will happen at less electronegative atoms.

ANSWER: **Kornblum’s** rule

<Chemistry>

13. Either 10 or 13 of these writings make up their *mukhya*, or principal subgroup. For 10 points each:

[10] Name these texts that consist of small sections of the Vedas (“VAY-duhs”). These texts discuss the relationship between the Atman and Brahman and contain the Four Great Sayings.

ANSWER: **Upanishads**

[10] In the Muktika Upanishad, Rama tells Hanuman (“HUH-noo-mon”) that reading this Upanishad alone is sufficient to achieve deliverance from suffering. This shortest Upanishad contains the line “the Atman is Brahman.”

ANSWER: **Mandukya** Upanishad

[10] The Mandukya Upanishad is found in this Veda. This was the last Veda to be accepted as such, and differs from the Rig, Sama, and Yajur Vedas by including formulas for daily religious practice.

ANSWER: **Atharvaveda**

<Religion>

14. Louis Wolheim received critical acclaim for originating the role of this character, whose real name is Bob Smith. For 10 points each:

[10] Name this character whom several men tease with the chant “Drink, don’t think!” He works as the stoker of an ocean liner.

ANSWER: **Yank** [prompt on, but DO NOT REVEAL, *The Hairy Ape*]

[10] Yank is the protagonist of this play, whose other characters include Mildred Douglas. Yank is killed by a gorilla at the end of this play.

ANSWER: *The **Hairy Ape***

[10] *The Hairy Ape* is by this author, who wrote about the Tyrone family in *Long Day’s Journey Into Night*.

ANSWER: Eugene **O’Neill** [or Eugene Gladstone **O’Neill**]

<American Literature>

15. Xú Běihóng (“shew bay-hung”) integrated Western-influenced realism in his paintings of birds and of these other subjects. For 10 points each:

[10] Name this primary artistic subject of Zhào Mèngfǔ (“jao mung-foo”). In an early handscroll, Giuseppe Castiglione (“kah-steel-YO-nay”) painted *One Hundred [of them] in a Landscape*.

ANSWER: **horses**

[10] Xu Beihong’s most famous horse paintings were done with this type of painting, which was traditionally cultivated by Chinese literati. The namesake pigmented liquid of this kind of painting is also used in Chinese calligraphy.

ANSWER: **ink** wash painting [or **shuǐmòhuà**; or **sumi-e**; or **suibokuga**]

[10] Ink wash painting was introduced to Japan by one of these people named Josetsu. A number of these people produced versions of the “ten ox-herding pictures” to illustrate how their tradition could lead to enlightenment.

ANSWER: **Zen** Buddhists [or **Chán**; prompt on **Buddhists**; prompt on **monks** or **priests** by asking “of what sect?”]  
<Painting>

16. Answer the following about sea shanties, for 10 points each.

[10] A shanty titled “Leave Her,” this name, “Leave Her” was often sung to air grievances near the end of a voyage. An American Civil War song states that “we’ll all feel gay when” a man of this name “comes marching home.”

ANSWER: **Johnny**

[10] The encouragement “heave away, you rolling king” appears in the chorus of a shanty that says “we’re bound for” this state that contains the Bunda sea cliffs. Its capital is Adelaide.

ANSWER: **South Australia**

[10] The crew of a whaling ship operating in the Kamchatka Sea expresses its hope to return to port in a shanty titled “Rolling Down to Old [this island],” home to the former capital city of Lahaina. The Olowalu Massacre took place on this island after its natives stole a small boat from American trader Simon Metcalf.

ANSWER: **Maui**

<Other Academic>

17. This man and Lance Barnard formed a mini-ministry known as the “Duumvirate,” and his administration created the world’s first no-fault divorce procedures. For 10 points each:

[10] Name this leader who was removed from power by Governor-General John Kerr in an incident known as “the Dismissal.”

ANSWER: Gough **Whitlam** [or Edward Gough **Whitlam**]

[10] Kerr dismissed Whitlam as Prime Minister of Australia under the authority of this queen, who technically remains the monarch of Australia today.

ANSWER: **Elizabeth II** [prompt on **Elizabeth**]

[10] Elizabeth II had a much better relationship with this longest-serving Australian Prime Minister, who served from 1939 to 1941 and from 1949 to 1966. This giver of the “Forgotten People” speech created the ANZUS alliance with New Zealand and the United States and committed Australian troops to the Vietnam War.

ANSWER: Sir Robert **Menzies** (“mingus”)

<World History>

18. The Royal Institute of British Architects awards a yearly prize named for this man, who designed the “industrial”-themed Engineering Building at the University of Leicester (“lester”). For 10 points each:

[10] Name this British architect who used an undulating green frame for the façade of Stuttgart’s Neue Staatsgalerie (“NOY-uh SHTAHTS-gah-leh-ree”), an example of his later-career postmodernism.

ANSWER: James **Stirling** [or James Frazer **Stirling**]

[10] Stirling’s earliest works, like the Langham House Close, exemplify this Le Corbusier-influenced modernist architectural style, which is characterized by the use of massive forms and raw concrete.

ANSWER: **Brutalism** [accept word forms like **Brutalist**]

[10] In the ’80s, Stirling created pioneering designs for this American university’s brick Sackler Building.

H. H. Richardson’s masterpieces include this university’s Sever (“SEE-vur”) Hall, which is located in its namesake “Yard.”

ANSWER: **Harvard** University

<Other Arts>

19. This process produces an Airy disk pattern when light impinges on a circular aperture. For 10 points each:

[10] Name this process in which waves create a pattern of high and low intensity when passing over an edge or through a narrow aperture.

ANSWER: **diffraction**

[10] Diffraction in the near field, or in other words close to the aperture, is described by this name. This approximation was developed by a scientist who championed a wave theory of light in an 1818 contest at the French Academy of Science.

ANSWER: **Fresnel** (“fruh-NELL”) diffraction

[10] Simeon Poisson (“pwah-SAWN”) entered a competing corpuscular theory of light. To strengthen his case, he used the wave theory to derive this seemingly paradoxical result: a bright spot caused by diffraction in line with a circular obstacle. Poisson was thwarted when this phenomenon’s namesake observed the predicted bright spot.

ANSWER: **Arago** spot [prompt on Poisson bright spot]

<Physics>

20. The servant Lucrécia (“loo-kreh-see-ah”) is threatened with the title object of this author’s story “The Case of the Stick” when a joke told by the protagonist distracts her from work. For 10 points each:

[10] Name this author of the short story “Midnight Mass.” In a novella by this author, Bacamarte opens an asylum called the Green House.

ANSWER: Joaquim Maria **Machado** de Assis (“muh-SHAH-doo jee uh-SEES”)

[10] In this other Brazilian author’s “The Fifth Story,” the narrator gives different accounts of killings of cockroaches. The title character of this woman’s novel *The Passion According to G.H.* kills and eats a cockroach.

ANSWER: Clarice **Lispector**

[10] In a Lispector story named for *The Imitation of Christ*, a woman agonizes over whether to give away some of these flowers. A Robert Burns song says that “my love is like” one of these flowers “that’s newly sprung in June.”

ANSWER: **roses**

<World Literature>

21. The Covox Speech Thing produced audio from a computer input using an example of these devices called an *R–2R* resistor ladder. For 10 points each:

[10] Name these devices that may also produce a filtered PWM signal. These devices produce a continuous output voltage from a binary input.

ANSWER: **digital-to-analog converter** [or **DAC**; accept **D-to-A converter**]

[10] Due to the Nyquist–Shannon theorem, the bandwidth of signals that a DAC can reproduce is limited by the sampling value for this quantity, measured in hertz.

ANSWER: **frequency**

[10] The performance of high-speed DACs is limited by the settling time. In this part of the settling time, which starts after the dead time, the DAC output voltage changes as fast as it can. This term also describes how quickly an amplifier can respond to an abrupt change in input.

ANSWER: **slew** time [or **slewing** time; accept **slew** rate]

<Other Science (Engineering)>