

2025 ACF Regionals

Packet M by Cambridge A, Illinois A, Johns Hopkins, Michigan B, Northwestern A, Notre Dame B, Toronto B
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Tossups

1. Nanostructures of this material were identified as having high current switch ratio and ideal subthreshold slope by Cui and Lieber in 2001. Nanowire whiskers of this material are synthesized in the vapor–liquid–solid method, which employs gold nanoparticles that serve as seed nuclei. A crystalline form of this material has an indirect bandgap of 1.12 electronvolts. The process of etching this material in hydrofluoric acid and then reacting it with unsaturated hydrocarbons on its surface is called passivation. The Czochralski (“cho-KRAHL-skee”) process is used to achieve a high refinement purity of “nine-9s” (“nine nines”) for this material. Diffusion of diborane gas is used as a *p*-type dopant for this material. For 10 points, what most common semiconductor is used for wafers in solar cells?

ANSWER: **silicon** [or **Si**; accept monocrystalline **silicon**]

<Northwestern A, Chemistry>

2. This author called growing older “the great unsexing” in an essay also reflecting on John Berger and Balthasar Denner’s painting *Alte Frau*. A term originally applied to this author was modified to apply to the overly emotional criticism of Jia Tolentino in Lauren Oyler’s essay “Ha ha! Ha ha!” This author critiqued Justin Bieber, the films *Anomalisa* and *Get Out*, and Dana Schutz’s *Open Casket* in the 2018 essay collection *Feel Free*. This author wrote about the housekeeper of William Harrison Ainsworth observing the Tichborne case in her 2023 novel *The Fraud*. James Wood coined the term “hysterical realism” to describe a 2000 novel by this author featuring the Londoners Samad Iqbal and Archie Jones. For 10 points, name this contemporary British author of *White Teeth*.

ANSWER: Zadie **Smith** (Oyler used the term “hysterical criticism” to describe the work of Tolentino, borrowing Wood’s term “hysterical realism.”)

<TH, British Literature>

3. A photograph taken in this country depicts a woman wearing heels who kneels on a beach while aiming a pistol. In 2010, nearly 4000 smuggled photographs taken in this country were discovered in three cardboard boxes in a closet in Mexico City. Those photographs were taken in this country by the Polish photojournalist David “Chim” Seymour and a pair of Jewish refugee lovers who covered a war in this country using the pseudonym of a fictitious American journalist. The female German photojournalist Gerda Taro died during a battle in this country. The best-known image of a war in this country depicts a rifle slipping out of a man’s hand as he seems to recoil from being shot in the head. For 10 points, Robert Capa may have staged his photograph *The Falling Soldier* during what country’s 1930s civil war?

ANSWER: **Spain** [or **España**; accept **Spanish** Civil War or guerra civil **española** or guerra de **España**; prompt on **Catalonia**] (The photograph of the woman wearing heels is *Woman training for a Republican militia* by Gerda Taro.)

<Michigan B, Other Fine Arts>

4. These structures' epithelium is the origin of the canine-derived MDCK cell line. Two portions of these non-intestine structures can be distinguished by the presence of brush border cells. Necrosis in these structures produces "muddy brown casts." These structures are regulated by an apparatus composed of lacin ("LAY-siss") cells, JG cells, and the macula densa. Filtration slits connect these structures to capillaries in foot processes controlled by podocytes. The MDRD and Cockcroft–Gault equations measure creatinine ("cree-AT-uh-noon") clearance through these structures. The cortical and juxtamedullary types of these structures are distinguished based on the length of the loop of Henle, and use countercurrent multiplication to concentrate urine. For 10 points, name these functional units of the kidney.

ANSWER: **nephrons** [accept renal **tubule** or proximal **tubule** or **glomerulus** or **Bowman's** capsule; accept ascending **loop of Henle** or descending **loop of Henle** until read; prompt on **kidney** until read]

<MS, Biology>

5. The "five pledges" are made during this religion's ceremonies, whose "major" and "minor" types are distinguished by the presence of a rear altar and the use of a "Drum of Thunder." A text of this religion's "New Canonical Codes" establishes its hierarchy of a pope presiding over officials divided into three branches that wear either red, yellow, or blue robes. This religion has 72 bishops and believes that there are 72 planets ordered by their proximity to heaven. This religion believes that its various inspirations, like Daoism and Confucianism, will be united during a period called the "Third Amnesty." This religion venerates three major saints, including Sun Yat-sen and Victor Hugo. For 10 points, name this syncretic religion that developed in Vietnam.

ANSWER: **Cao Đài** ("cow dye") [or **Caodaiism**; or Đạo **Cao Đài**; accept **Great Faith for the Third Amnesty** or **Đài Đạo Tam Kỳ Phổ Độ** until "Third Amnesty" is read]

<AK, Religion>

6. This country inspired a dark piano work with an opening triplet motif of [read slowly] D, C-sharp, F-sharp, then long E-sharp. Paris's *Revue musicale* popularized a composer from this country by publishing her salon piece "A Maiden's Prayer." A wind chorale consisting of three four-chord gestures opens the Piano Concerto No. 2 in E major by a composer born in this country who wrote the popular encore piece *Étincelles* ("ay-tan-SEL"). This country's pianist Julian Fontana shared rooms with a composer who dedicated a piece to him written in one of this country's five national dance forms. An F-sharp minor Opus 44 "Tragic" piece in that form by a composer from this country is often grouped with the "Military" and a piece nicknamed by George Sand, the "Heroic." For 10 points, the mazurka is a dance from what home country of Frédéric Chopin?

ANSWER: **Poland** [or Republic of **Poland**; or Rzeczpospolita **Polska**] (Tekla Bądarzewska-Baranowska composed "A Maiden's Prayer." Moritz Moszkowski composed the Piano Concerto No. 2 in E major, Op. 59.)

<Johns Hopkins, Classical Music>

7. This culture is compared to the contemporaneous Western Stemmed tradition in a study by Charlotte Beck and George T. Jones that discusses the "Meeting of Two Technologies." The Lehner site contained fire-hearths from this culture, which allowed for its radiocarbon dating. An individual with Y-chromosome haplogroup Q-L54 was buried with stone and antler tools, covered in red ocher, at this culture's Anzick site. The older site of Monte Verde II serves as evidence against the "[this culture]-first" model, according to which they entered their continent by a land bridge. The Folsom culture succeeded this culture, which produced namesake fluted, lanceolate ("LAN-see-oh-lit") projectile points. For 10 points, name this prehistoric culture of North America, whose type-site is Blackwater Draw in New Mexico.

ANSWER: **Clovis** culture [accept **Clovis**-first model; accept **Clovis** points; prompt on **Paleo-Indians**] (The Q-L54 haplogroup is one of two "major founding Y-chromosome lineages of the Americas.")

<AT, Other History>

8. A thinker from this country placed consciousness in a “transcendental predicate plane” and synthesized “acting” and “seeing” as “active intuition.” The essay “What Is Religion?” opens a book from this country that analyzes Meister Eckhart’s negative theology as a form of nihilism. A thinker from this country wrote “The Logic of Place and the Religious Worldview” and theorized a fundamental “pure experience.” A Heidegger-influenced school from this country included a thinker who theorized “absolute nothingness” in *An Inquiry into the Good*. Ideas from this country involving impermanence include one that translates to “pathos of things” and a rhyming aesthetic principle that praises flaws like a chipped cup. For 10 points, name this country whose “way of the warrior” is called *bushidō*.
ANSWER: **Japan** [or **Nippon**; or **Nihon**] (The philosophers clued are Keiji Nishitani and Kitaro Nishida, from the Kyoto School. The principles in the penultimate sentence are *mono no aware* and *wabi-sabi*.)
<Michigan B, Philosophy>

9. The steamboat *Liberal* transported this resource for a company that imprisoned Walter Hardenburg, who criticized that company’s production of this resource as a “devil’s paradise.” Attempts to improve the efficiency of transporting this resource led to the discovery of the Fitzcarrald isthmus. This resource was transported via the “Devil’s Railroad,” whose construction began after the Treaty of Petrópolis granted a country a territory rich in this resource, Acre (“AH-kree”). Julio César Arana used “boys of trust” to torture workers producing this resource, resulting in the Putumayo genocide. The “Island of Innocence” was built for an artificial city established to secure this resource, Fordlândia. For 10 points, the growth of Manaus resulted from its export of what resource extracted from trees in the Amazon?
ANSWER: **rubber** [or **caucho**; accept India **rubber**; accept **latex**; accept Amazonian **rubber**]
<AK, World History>

10. A woman in this play refuses a plea for mercy by saying, “There are people who can never go back... I am one of those people.” Another woman in this play reveals that her frequent headaches are a cover for her bouts of binge drinking. While starring in this play on Broadway, Tallulah Bankhead unsuccessfully fought to donate proceeds to the Finnish Relief Fund. In this play’s final line, a girl asks, “are you afraid, Mama?” after accusing her of being “people who ate the earth.” *Another Part of the Forest* is a prequel to this play, whose protagonist sends her daughter Alexandra to Baltimore to retrieve her sickly husband Horace Giddens. For 10 points, Oscar and Ben Hubbard are forced to give a 75-percent share of their cotton mill to their cunning sister Regina in what play by Lillian Hellman?
ANSWER: *The **Little Foxes***
<Johns Hopkins, American Literature>

11. *Description acceptable.* Over 100 implementations of a strategy for this task are surveyed in a 2024 paper by Gao et al. that categorizes them as Naive, Advanced, or Modular. Novel embeddings of query-specific documents are indexed and used in the “retrieval-augmented” form of this task. This task is performed by applying Brownian noise to points in a latent space and then decoding in diffusion models. A game-theoretic agent improves at this task while competing against a discriminator in a type of “adversarial” neural network. This task names a framework consisting of unsupervised “pre-training” followed by supervised “fine-tuning.” Nonsensical outputs during this task are called “hallucinations.” For 10 points, what task names a form of AI commonly used to produce text and images that is the “G” in GPT?
ANSWER: **generation** [or word forms such as **generate**; accept text **generation** or image **generation**; accept **generative** artificial intelligence or **generative** AI or **generative** pre-trained transformer or **generative** adversarial network or retrieval-augmented **generation**; accept descriptions such as **computer-produced text** or equivalents]
<Johns Hopkins, Other Science>

12. According to Pseudo-Eratosthenes, a planet named after this deity was also called Phaethon. Roman soldiers sacrificed their enemies' weapons to a wife of this deity named Lua. A son of this deity was betrothed to Canens causing Circe to turn him into a woodpecker out of jealousy. This deity was the first ruler of Latium, who then passed it on to his son Picus. A holiday dedicated to this deity was the only occasion for wearing colorful dinner clothes called *synthesis* in public. That festival honoring this deity featured widespread gambling and enslaved people switching places with their masters. The best-known wife of this deity was Ops. For 10 points, what Roman deity who ate his son Jupiter was syncretized with the Greek Kronos?

ANSWER: **Saturn** [or **Saturnus**; accept **Saturnalia**; prompt on **Kronos** or **Cronus** until read by asking "who was his Roman counterpart?"]

<AR, Mythology>

13. A war named for this city ended with a decisive Austrian victory at Tolentino that forced out a king who was styled the "First Horseman in Europe." This city was briefly ruled by Henry II, Duke of Guise after a revolt over exorbitant taxes levied by the Duke of Arcos during the Thirty Years' War. Kings of this city built a massive Baroque palace whose extensive gardens feature a "Grand Cascade" by the fountain of Diana and Actaeon in the town of Caserta. This city was briefly governed by the fisherman Masaniello during a 1647 revolt. Spanish rule over a kingdom named for this city began with its conquest by the Aragonese king Alfonso V and continued under the Bourbon dynasty. For 10 points, what city in Campania was the primary capital of the Kingdom of the Two Sicilies?

ANSWER: **Naples** [or **Napoli**] (The king in the first line is Joachim Murat.)

<Northwestern A, European History>

14. As part of an "epistemology" named for this process, Northwestern psychologist Donald T. Campbell conducted studies of false knowledge. Robert Boyd and Peter Richerson's work on the cultural form of this process emphasizes the existence of "oblique" and "horizontal" transmission. The choice between conciliation and conflict is highlighted in a model from a field named for this process, the "hawk-dove." A strategy that is impermeable in a population is said to be "stable" with respect to this process. John Maynard Smith is largely credited with founding a discipline of game theory named for this process based on the theories of geneticist George Price. For 10 points, what process was first applied to human societies by Herbert Spencer, who coined the phrase "survival of the fittest?"

ANSWER: **evolution** [or **natural selection**; accept **evolutionary** epistemology; accept cultural **evolution**; accept **evolutionarily** stable strategy; accept **evolutionary** game theory; prompt on **game** theory until read]

<Northwestern A, Social Science>

15. This artist painted a moonlit urban landscape in *The Petrified City*, made during a trip to Angkor Wat after the end of his *ménage à trois* with Gala and Paul Éluard. Lewd children's rhymes inspired the title of a painting by this artist whose main figure is modeled on a Konkomba corn bin. This husband of Dorothea Tanning cut up Victorian pulp fiction for *A Week of Kindness* and other collage novels. An open gate and a knob protrude from a painting by this artist in which a girl holds a knife up to a bird. This artist, whose alter ego was named Loplop, scratched paint and rubbed pencil onto uneven surfaces in his methods of grattage and frottage. For 10 points, what German-born surrealist painted *Ubu Emperor*, *The Elephant Celebes*, and *Two Children Are Threatened by a Nightingale*?

ANSWER: Max **Ernst** [or Maximilian Maria **Ernst**]

<Toronto B, Painting and Sculpture>

16. In a film in this genre, white text like “Onions,” “Grits,” and “Dustballs” are projected onto a red background on a screen. Sam Wrench directed a 2023 film in this genre distributed directly to AMC after the star negotiated with its CEO. That film in this genre was aired for free on Austrian TV in August 2024 after a failed terrorist plot. A man holds a replica of a brain in the opening of a Spike Lee film in this genre, *American Utopia*. In 2023, A24 released a 4K restoration of a Jonathan Demme film in this genre whose opening close-up depicts the white shoes of a man carrying a boombox; in that film, David Byrne dons a ridiculously oversized suit. A film in this genre was shot at SoFi Stadium and includes the sections *Evermore*, *Reputation*, and *1989*. For 10 points, name this genre of *Stop Making Sense* and *The Eras Tour*.

ANSWER: **concert** films [accept **rockumentaries**; prompt on **documentaries**; prompt on films involving **music** or **performances** by asking “what sort of event was captured?”; reject “music video” or “musical”]

<Notre Dame B, Pop Culture>

17. In this US state, white residents destroyed Black-owned saloons in the Hard Scrabble and Snow Town riots. This state was primarily where John and James DeWolf operated their slave trade operations. This state’s 1st Regiment was nicknamed the “Black Regiment” for being the first to enlist enslaved people. In this state, a short-lived governor succeeded by Samuel Ward King revoked his support for voting rights for Black residents, which was central to Dorr’s Rebellion. This state’s Slater Mill, named for Samuel Slater, relied on slave labor to fund the Pawtucket economy. This state’s major triangular trade ports included a city home to the Free African Union Society, Newport. For 10 points, name this state home to the slave-trading Brown family, who name a university in Providence.

ANSWER: **Rhode Island** [or **RI**]

<NS, American History>

18. The town idiot Temugedege (“teh-MOO-geh-DAY-gay”) is too stupid to realize why he was selected to be this sort of person in John Pepper Clark’s adaptation of the Ijaw (“EE-jaw”) *Ozidi Saga*. Odewale becomes one of these people in Ola Rotimi’s *The Gods are Not to Blame*, which is based on an earlier play titled for a man with this role. One of these people who “did not hang” titles the best-known play by Duro Ladipo. Hearing of the approaching burial of a man who had this role reminds another man that he had paid for Olunde to go to medical school in England. Before the action of a play, the death of a man with this role prompts Elesin to begin a ritual suicide before he is imprisoned by the colonial administrator Simon Pilkings. For 10 points, a Wole Soyinka play is titled for Death and what sort of leader’s “horseman?”

ANSWER: **kings** [or **oba**; accept *The **King** Did Not Hang*; accept *Oedipus **Rex*** or *Oedipus the **King***; accept ***Oba** kò so*; reject “king’s horseman” or “horseman”]

<TH, World Literature>

19. A type of these particles has an X charge of negative five or a “B minus L” of negative one in the SO(10) (“S-O-ten”) grand unification theory. A mechanism that predicts unobserved “heavy” instances of these particles diagonalizes a matrix such that the off-diagonal components are the Dirac mass and are much smaller than the second diagonal entry. A mechanism involving these particles was the subject of a 1990s experiment at Los Alamos that used a liquid scintillator tube. Unobserved instances of these particles that have right-handed chirality are termed “sterile.” Detectors like Super-Kamiokande attempt to observe mass oscillations of these particles. For 10 points, name these extremely light leptons that only interact through the weak force and gravity.

ANSWER: **neutrinos** [accept anti**neutrinos**; accept sterile **neutrinos**; accept **neutrino** oscillation]

<MY, Physics>

20. A poem titled for this condition notes, “It began with a certain disgust and ended... in a panicked rout of perfumes,” and ends with the prediction, “now is the time of the assassins.” In a prose poem titled for this condition, the addressee is told not to be “the martyred slave of time” and to reach this state via “poetry or virtue.” A poem titled for this state notes, “I miss Europe with its ancient parapets!” and was heavily inspired by *Twenty Thousand Leagues Under the Sea*. A poem from the collection *Paris Spleen* is titled for a command to “Be” in this state. The speaker recalls, “I no longer felt myself guided by haulers” in a poem titled for this condition that a 16-year-old poet sent to Paul Verlaine. For 10 points, a poem by Arthur Rimbaud is titled for a “boat” in what condition?

ANSWER: **drunkenness** [or ***ivre*** or ***ivresse***; or **intoxication** or **inebriation**; accept “Morning of **Drunkenness**” or “*Matinee d’**Ivresse***”; accept “Be **Drunk**” or “Get **Drunk**” or “Be **Inebriated**” or “***Enivrez-vous***”; accept “The **Drunken Boat**” or “*Le Bateau **Ivre***”] (The poem in the first sentence is “Morning of Drunkenness” by Rimbaud. “Be Drunk” is by Charles Baudelaire.)

<Johns Hopkins, European Literature>

Bonuses

1. One of these two characters growls, “La pagherai! Brigante!” in anger after the other rebuffs him from helping a woman dismount a cart. For 10 points each:

[10m] Name either of these two characters who may sing the closing line “la commedia è finita!” after the stabbing of Nedda. These two characters appear in an opera often performed as a double bill with *Cavalleria Rusticana*.

ANSWER: **Canio** OR **Tonio** [prompt on **Pagliaccio** or **Taddeo**; reject “clown”]

[10h] Tonio, in character as Taddeo, sings these two Italian words twice to the audience’s “ladies” and “gentlemen” to kick off the prologue of *Pagliacci* (“pall-YAH-chee”). These two words precede “morir” four times in the final stanza of “Una furtiva lagrima.”

ANSWER: “**si può**” (“see pwoh”) [or “**Si può?**”; or “**Si può morir**”]

[10e] Enrico Caruso and Luciano Pavarotti are among the most celebrated singers with this voice type to have played Canio.

ANSWER: **tenor** [or **tenore**; accept spinto **tenor**; accept dramatic **tenor**]

<Cambridge A, Other Fine Arts>

2. These objects are placed around villages in order to prevent evil spirits in the practice of *kanjo*. For 10 points each:

[10h] Name these long rice straw ropes often decorated with *shide* (“SHEE-day”) paper streamers that designate a sacred place in Shinto.

ANSWER: **shimenawa** [prompt on **ropes**]

[10e] Due to their spiritual significance, *shimenawa* are often hung from these gates found at the entrance of Shinto shrines.

ANSWER: **torii**

[10m] When these objects are decorated with *shimenawa*, they are known as *kura*, or “storehouses,” for *kami*. Places named for containing these general objects may be “raked” to produce patterns resembling ripples.

ANSWER: **rocks** [or **stones**; or **iwa**; accept **gravel**; accept **rock** gardens]

<AK, Religion>

3. As a result of this war, some Californios formed alliances with tribes subject to the California Genocide, including the Ahwahnechee. For 10 points each:

[10e] Name this 1840s conflict in which Nicholas Trist negotiated the Treaty of Guadalupe Hidalgo.

ANSWER: **Mexican–American** War [or **Mexican** War]

[10h] Despite falling during the Mexican–American War, many Californios moved to this city, which was controlled by Jack Powers. During a revolt, many Chumash (“CHOO-mosh”) captured a “Queen of the Missions” in this city.

ANSWER: **Santa Barbara**

[10m] During this 1846 event, the Californio Mariano Guadalupe Vallejo was arrested by Robert Semple. William Ide headed a short-lived community that lent its name to this event, in which the Sonoma Barracks were occupied.

ANSWER: **Bear Flag** Revolt [accept **Bear Flag** Republic]

<NS, American History>

4. This poet's experiments with opium during a passage through the Suez Canal inspired his gloomy poem "Opiário." For 10 points each:

[10h] Name this literary alter ego with a fictional biography as a polemic Glasgow-educated sailor and devotee of Walt Whitman. Poems credited to this author include "Ode of Triumph" and "The Tobacco Shop."

ANSWER: Álvaro de **Campos** [prompt on Fernando **Pessoa**]

[10e] Álvaro de Campos was one of the "heteronyms" used by Fernando Pessoa, a poet from this country. Pessoa's heteronym Ricardo Reis was fictionalized in a novel by another author from this country, José Saramago.

ANSWER: **Portugal** [or **Portuguese** Republic; or República **Portuguesa**]

[10m] Pessoa published the Álvaro de Campos poem "Opiário" in a modernist journal named for this figure. Another poet wrote 55 poems dedicated to this figure during a "creative storm" at the Château de Muzot ("moo-ZO").

ANSWER: **Orpheus** [accept **Orpheu** or **Orfeu**; accept *Sonnets to Orpheus*] (Rainer Maria Rilke wrote the *Sonnets to Orpheus*.)

<HG, European Literature>

5. Zainab Pasha led a movement of women that closed down markets due to crises over bread and this good. For 10 points each:

[10h] An 1891 protest that preceded the Constitutional Revolution was caused by a concession granting G. F. Talbot control over what good?

ANSWER: **tobacco** [or **tanbaku**; accept Persian **Tobacco** Protest or *nehzat-e tanbāku*]

[10m] The Tobacco Protest attacked the policies of Naser al-Din Shah of this dynasty before his assassination in 1896. This dynasty fell in 1925 and was replaced by the Pahlavi dynasty.

ANSWER: **Qajar** dynasty [accept **Qajar** Iran; accept Naser al-Din Shah **Qajar**]

[10e] The Tobacco Protest largely died out following Mirza Shirazi's issuing of one of these rulings condemning tobacco usage. Ruhollah Khomeini issued one of these rulings calling for the death of Salman Rushdie.

ANSWER: **fatwa** [or **fatawa**]

<Northwestern A, World History>

6. A 2024 paper by Schleussner et al. contrasts a "peak and decline" pathway involving this phenomenon with one involving "enhanced protection" that eventually descends back below a desired limit. For 10 points each:

[10h] Name this phenomenon in which temperatures will exceed the 1.5-degree global warming goal set in the 2015 Paris Agreement.

ANSWER: **overshoot** [or climate **overshoot**]

[10m] Failing to meet a peak and decline pathway will result in "continued long-term warming" due to one of these processes. These general processes include ones named for Jacob Bjerknes ("BYURK-niss").

ANSWER: **feedbacks** [or **feedback** mechanisms; or **feedback** loops; or Earth-system **feedbacks**; or positive **feedback** loops; accept climate change **feedbacks** or ice-albedo **feedback** or Bjerknes **feedback**]

[10e] The paper models climate outcomes in the "long-term state" and a warming phase that is called "pre-" this goal. This goal involves removing one ton of greenhouse gases for every ton emitted.

ANSWER: **net-zero** [or **net-zero** carbon emissions; accept climate **neutrality**]

<Johns Hopkins, Other Science>

7. *Two answers required.* A set of meetings called “controversial discussions” pitted followers of one of these psychologists against the other in debates surrounding the ethics of child psychology. For 10 points each:

[10h] Name these two psychologists. One pioneered child analysis and wrote the book *Envy and Gratitude*, while the other analyzed “signal anxiety” in *The Ego and the Mechanisms of Defense*.

ANSWER: Melanie **Klein** AND Anna **Freud** [accept Melanie **Reizes** in place of “Melanie Klein”; prompt on **Freud** in place of “Anna Freud”]

[10e] Kleinians and Anna Freudians clashed over their interpretations of this therapeutic practice. Dreams are often studied in the original form of this practice developed by Sigmund Freud.

ANSWER: psycho**analysis**

[10m] The British Independent Group, a buffer zone between the Kleinians and Anna Freudians, believed in a “relations theory” of ego development named for these things, which was pioneered by Donald Winnicott.

ANSWER: **objects** [or **object** relations theory]

<NS, Social Science>

8. Answer the following about Henry Newbolt’s cricket poem “Vitai Lampada,” for 10 points each.

[10m] In “Vitai Lampada,” young Britons are told to “play up! and play the game!” both when playing cricket and serving in this war. Rudyard Kipling wrote “If—” as a tribute to the leader of an event that caused this war.

ANSWER: **Boer** War [accept Second **Boer** War or Second Anglo-**Boer** War; accept **Transvaal** War; prompt on **Jameson Raid** by asking “what war did that event result in?”; reject “First Boer War” or “First Anglo-Boer War”]

[10e] As a Victorian poem written to honor the bravery of fallen Britons in battle, “Vitai Lampada” resembles this Alfred, Lord Tennyson poem about the Battle of Balaclava.

ANSWER: “The **Charge of the Light Brigade**”

[10h] This poet credits memorizing “Vitai Lampada” in school for igniting his passion for poetry. This spoken word “punk poet” from Salford used the adjective “bloody” 80 times in his angry, profane poem “Evidently Chickentown.”

ANSWER: John Cooper **Clarke**

<AP, British Literature>

9. The contracted Bianchi identity states that the sum of three applications of this operation to the Riemann tensor yields zero. For 10 points each:

[10h] Name this operation denoted in index notation by a semicolon. The Levi–Civita (“LAY-vee CHEE-vee-ta”) connection is chosen so that this operation is zero when applied to the metric.

ANSWER: **covariant derivative** [prompt on **derivative**; reject “directional derivative”]

[10e] The contracted Bianchi identities state that the covariant derivative of a tensor named for this physicist is zero. This physicist’s namesake “field equations” are central to general relativity.

ANSWER: Albert **Einstein** [accept **Einstein** field equations or **Einstein** tensor]

[10m] The Einstein tensor is defined as this tensor minus one-half the scalar curvature times the metric tensor. Contracting the first and third indices of the Riemann tensor produces this tensor.

ANSWER: **Ricci** tensor [or **Ricci** curvature tensor]

<JC, Physics>

10. The eastern half of the Loess Plateau is located in these two provinces, which are on either side of the southern flowing section of the Ordos Loop. For 10 points each:

[10m] Name these two provinces whose names in Mandarin are only differentiated by tone. Taiyuan and Xi'an ("shee-ahn") are the capitals of these two provinces, which are both centers of coal mining.

ANSWER: **Shanxi** ("shahn-shee") AND **Shaanxi** ("shahn-shee") [or **Shānxī** AND **Shǎnxī**]

[10e] The border between Shanxi and Shaanxi is marked by this river. This river's name comes from the distinctive sediment it carries from the Loess Plateau.

ANSWER: **Yellow** River [or **Huáng Hé**]

[10h] The Yellow River turns to flow east at Tong Pass, where it meets this tributary. The city of Xi'an and other capitals of ancient China were located along this river, which begins in Gansu.

ANSWER: **Wei** River [or **Wèi Hé**]

<EC, Geography>

11. Some traditions identify this god as the eleventh of the *rudras*, a set of avatars of Shiva. For 10 points each:

[10e] Name this god also considered to be a spiritual child of the wind god Vāyu. This *vānara* god, who is considered the highest devotee of Rāma, is usually depicted as a monkey.

ANSWER: **Hanuman** [or **Hanumān**; or **Māruti**; or **Anjaneya**; or **Hanumanth**; or **Bajrangbali**]

[10m] Some tales state Shiva took the form of the eight-legged Sharabha to fight this avatar of Vishnu. This half-man, half-animal avatar of Vishnu disemboweled the asura Hiranyakashipu ("hee-run-yuh-KUH-shee-poo"), the father of his devotee Prahlada ("pruh-LAH-duh").

ANSWER: **Narasimha** ("nuh-ruh-SIM-huh") [or **Nrusimha**; or **Narsingh**]

[10h] In the *Mahabharata*, Shiva gives Arjuna the *Pashupatastra* ("PAH-shoo-puh-TAH-struh") after duelling him in the guise of a performer of this activity. In another episode, Jara ("JUH-ruh") performs this activity using a piece of metal he found inside a fish.

ANSWER: **hunting** [accept **hunters**; prompt on **archery** by asking "for what purpose?"] (Jara fatally wounded Krishna in the foot when hunting, mistaking his foot for a deer.)

<AR, Mythology>

12. Beethoven's WoO ("W-O-O") 78 is a set of seven piano variations on this melody that is paired with a set of five variations on "Rule Britannia." For 10 points each:

[10e] Name this melody that is the basis of "My Country, 'Tis of Thee" and the de facto national anthem of England.

ANSWER: "**God Save the King**" [or "**God Save the Queen**"]

[10m] This composer used "God Save the King" as the basis for his challenging Opus 9 set of variations. A theme beginning "long A, A A C B A, up to E" opens the 24th and last of a set of works for solo violin by this composer.

ANSWER: Niccolò **Paganini**

[10h] This American composer wrote a set of variations on "God Save the King" while visiting Geneva. This composer of the symphony *A Night in the Tropics* employed double variation form in *Souvenir de Porto Rico*.

ANSWER: Louis Moreau **Gottschalk**

<MY, Classical Music>

13. Likely the earliest literary discussion of suicidal ideation is “The Debate Between a Man and his Soul,” which is a text in this language’s didactic *sebayt* literature. For 10 points each:

[10e] Name this ancient language used to write “Instructions of Amenemhat” and a “Book of the Dead” that discusses the *ba* of the soul.

ANSWER: Ancient **Egyptian** [or Middle **Egyptian**]

[10m] A work of didactic Egyptian literature, in which the scribe Kheti explains each profession’s faults before concluding that the scribe is best, is usually known in English as “[this genre] of the Trades.” Menippus of Gadara names a Greek style of this genre.

ANSWER: **satires** [accept “**Satire** of the Trades” or Menippean **satire**]

[10h] In another Egyptian story, a giant serpent offers advice to a man who has just undergone one of these events. The title characters are separated from their companions by one of these events near Pelusium in the ancient romance *Leucippe and Clitophon*.

ANSWER: **shipwrecks** [or being **marooned**; accept descriptive answers indicating a **disaster** at **sea** or in the **ocean**; prompt on **thunderstorm**]

<Cambridge A, World Literature>

14. To begin one process, one of these proteins is phosphorylated by GCN2, HRI, and protein kinase R. For 10 points each:

[10h] What proteins include the only protein that has the nonstandard amino acid hypusine, and another labelled “4A” that is the original DEAD-box helicase? PERK phosphorylates the alpha subunit of one of these proteins to halt the cell cycle and activate the unfolded protein response.

ANSWER: eukaryotic **initiation factors** [or **eIFs**; accept **eIF2** or **eIF4A** or **eIF5A** or **eukaryotic initiation factor 2** or **eukaryotic initiation factor 5A** or **eukaryotic initiation factor 4A**]

[10e] eIF2 is part of a complex that binds to the 40S subunit to begin translation in these structures, which synthesize proteins from mRNA transcripts.

ANSWER: **ribosomes**

[10m] The initiator tRNA and eIF2 form a tertiary complex with this molecule at the start of translation. Hydrolysis of this molecule at the head of tubulin heterodimers leads to a “catastrophe” that causes dynamic instability.

ANSWER: **GTP** [or **guanosine triphosphate**]

<Cambridge A, Biology>

15. A work of this type makes the narrator wish that “Gabriel Prosser and Nat Turner had killed all whitefolks in their beds” before her shame is assuaged by the song “Lift Ev’ry Voice and Sing.” For 10 points each:

[10h] A chapter of *I Know Why the Caged Bird Sings* contrasts a demeaning work of what type by the white man Edward Donleavy with a joyous one by the teenager Henry Reed?

ANSWER: **commencement** addresses [or **commencement** speeches; accept **graduation** speeches; accept **valedictory** addresses or **valedictorian** speeches; prompt on **speeches** or **addresses** or **orations**]

[10e] The protagonist delivers a demeaning speech at his commencement before being forced to participate in a “Battle Royale” in this author’s novel *Invisible Man*.

ANSWER: Ralph **Ellison**

[10m] This memoir’s narrator defiantly reads his own valedictory address rather than a sanitized one by his white principal. Part II of this memoir, “The Horror and the Glory,” depicts the author’s time in Chicago’s Communist Party.

ANSWER: **Black Boy** (by Richard Wright)

<TM, American Literature>

16. The participants in a conference concerning this process were later honored with a plaque stating “Providence being their guide, they builded better than they knew.” For 10 points each:

[10m] Name this process whose anniversary was commemorated in a tourist-heavy 1939 celebration. The 1864 Charlottetown Conference kickstarted this process.

ANSWER: **Confederation** of Canada [or Canadian **Confederation**; or **Confédération** canadienne; accept formation of the **Dominion** of Canada; prompt on **union** or **federation** of Canada or equivalents]

[10e] The districts of Franklin, Keewautin, and Mackenzie made up this territory before its confederation in 1999, making this Inuit-majority territory the newest subdivision in Canada.

ANSWER: **Nunavut**

[10h] In a campaign leading up to 1949, this politician and F. Gordon Bradley advocated for Newfoundland’s entry into the Confederation. This politician subsequently served as Newfoundland’s first premier until 1972.

ANSWER: Joey **Smallwood** [or Joseph Roberts **Smallwood**]

<Cambridge A, Other History>

17. Nancy Cartwright, who originated the “dappled world” view of science, is one of many members of the “Stanford School” who support an “entity” form of this position. For 10 points each:

[10m] Mathematical Platonism is a form of what position? Adherents of this view in the philosophy of science believe that our scientific theories are approximately true and describe a universe that actually exists.

ANSWER: scientific **realism** [or word forms like **realist**; accept mathematical **realism** or entity **realism**]

[10h] These things follow the word “no” in the realist argument that our theories would likely be far worse if they were not roughly true. Richard Swinburne’s book on “The Concept of” these things argues in favor of them.

ANSWER: **miracles** [accept no **miracles** argument]

[10e] The anti-realist “pessimistic induction,” which notes that past theories have been supplanted and so we should expect the same of our own, is often discussed using this philosopher’s book *The Structure of Scientific Revolutions*.

ANSWER: Thomas **Kuhn** [or Thomas Samuel **Kuhn**]

<Johns Hopkins, Philosophy>

18. The molecular weight of a polymer is related to this quantity and its theoretical maximum according to the Flory–Fox equation. For 10 points each:

[10m] Name this quantity that is indicated by a change in the rate of thermal expansion in dilatometry. This temperature is indicated by a point on a graph’s *x*-axis where a steep slope in heat capacity begins.

ANSWER: **glass-transition** temperature [prompt on **T**-sub-g]

[10h] A paradox named for this scientist states that extrapolating the heat capacity of supercooled liquids below the glass-transition temperature results in a crystal–liquid entropy difference of zero. This scientist also discovered the hydrophobic effect.

ANSWER: Walter **Kauzmann** [or Walter J. **Kauzmann**; accept **Kauzmann**’s paradox]

[10e] Kauzmann’s solution to his own paradox is that liquids undergo this action before the Kauzmann temperature. This process is usually induced by adding a nucleation seed and results in materials with long-range order.

ANSWER: **crystallization** [accept **recrystallization**]

<Toronto B, Chemistry>

19. The Danish artist Caius Gabriel Cibber sculpted two grotesque humanlike figures for display in this place, where James Tilly Matthews made illustrations of a machine called the “Air Loom.” For 10 points each:

[10h] Name this place where Richard Dadd painted *The Fairy Feller’s Master-Stroke* and Louis Wain made many cat paintings after leaving Springfield. In another artwork, Sarah Young consoles a man in a loincloth in this place.

ANSWER: **Bedlam** [or **Bethlem** Royal Hospital; or St Mary **Bethlehem**; or **Bethlehem** Hospital; prompt on mental hospital or psychiatric hospital or mental asylum or madhouse]

[10e] Tom Rakewell ends up at the Bethlem Royal Hospital in the last entry in *A Rake’s Progress*, a series by this British artist of *Marriage A-la-Mode*.

ANSWER: William **Hogarth**

[10m] The Bethlem Museum of the Mind houses works by former patients in this genre, defined as art by self-taught people not in the art world. Roger Cardinal coined the term for this genre as an analog of Jean Dubuffet’s *art brut*.

ANSWER: **outsider** art [reject “naïve art” or “raw art”]

<Michigan B, Painting and Sculpture>

20. One of these objects found in Cawood is a key example of the thirteenth type in a 13-type classification system created by Ewart Oakeshott, which built upon Jan Petersen’s 12 types. For 10 points each:

[10h] Name these objects that may have ladder, rose, or wave patterns in a style developed in India. That style of these objects puzzled later European scientists and was called *muhammad* in the Middle East.

ANSWER: medieval **swords** [or **blade**s; accept individual type of swords like **longsword**s; prompt on weapons; prompt on steel by asking “what was the most common type of weapon that used that metal?”]

[10m] Oakeshott Type XV is commonly called a “hand and a half sword” or a sword named for this sort of person. Early in his life, people derisively nicknamed a descendant of Rollo and half-brother of Odo for being one of these people.

ANSWER: **bastards** [or **bâtards**; or **bastard** swords] (William the Conqueror was born out of wedlock.)

[10e] According to Lambert of Hersfeld, Hungary’s Árpád kings claimed the “Sword of Mars,” which the historian Priscus alleged originally belonged to this king. This king of the Huns was often called the “Scourge of God.”

ANSWER: **Attila** [or **Attila** the Hun; or **Atli**; or **Etzel**]

<Illinois A, European History>