

2023 ACF Regionals

Packet F by Chicago B, Georgia Tech A, Georgia Tech D, OSU A, Warwick A

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Tossups

1. A man with this occupation who was apocryphally blinded for being a Qarmatian is honored at a Samanid mausoleum in Panjakent. This occupation was held by a companion of Muhammad who witnessed the Ghadr Khumm and was named Ḥassān ibn Thābit. The “Warning Verse” appears in a sūrah named for this occupation, which the imam al-Būṣīrī practiced to celebrate Mawlid with the *Qaṣidā al-Burda*. In this occupation, the convert Labīd created one of the seven Mu‘allaqāt said to hang in the Ka‘bah. Pilgrims visit the Shīrāzī tomb of a man with this occupation who was nicknamed for memorizing the Qur’ān. A man from Balkh with this worldly occupation honored his teacher Shams Tabrizi with a dīwān and inspired the Mevlevi order of “whirling dervishes.” For 10 points, name this occupation of the creator of the *Masnavi*, Rūmī.

ANSWER: **poets** [accept **singers**, **bards**, **narrators**, **storytellers**, **minstrels**, authors of **poems**, writer of **verse**, or equivalents; or **shā‘ir**; accept Surah Ash-**shu‘arā** or “The **Poets**”; accept Hanging **Poems** or Suspended **Odes**; accept Suspended **Qasidās** until “Qasidā” is read; prompt on **authors** or **writers** or **folklorists** or equivalents; prompt on **musicians** or **entertainers** or **performers**] (Rūdakī is interred in the tomb in Panjakent and Ḥāfeẓ in the one in Shiraz.)

<Religion>

2. This composer’s early works include several “national overtures,” including one on Czech themes that became his *In Bohemia*. Due to a lengthy nervous breakdown, this composer took over 30 years to complete his patriotic C major First Symphony, whose first movement unusually contains no formal recapitulation. This composer’s virtuosic piano transcription *The Lark* was taken from the “Romance” of Glinka’s *Farewell to St. Petersburg*. A symphonic poem by this composer is based on Mikhail Lermontov’s ballad about a historical Georgian queen, *Tamara*. Maurice Ravel wrote *Gaspard de la Nuit* (“gas-PAR duh lah nwee”) in an attempt to write a piano piece more difficult than this composer’s “oriental fantasy” *Islamey*. For 10 points, name this leader of the “Mighty Five” Russian composers, who participated alongside Cui (“kyoo-ee”), Mussorgsky, Rimsky-Korsakov, and Borodin.

ANSWER: Mily **Balakirev** [or Mily Alexeyevich **Balakirev**]

<Classical Music>

3. These people spearheaded the DEU-led protests against the Machado administration after police killed their leader Rafael Trejo González. The idea of co-governance was promoted by these people in the Liminar Declaration during the Córdoba Reform Movement of 1918. These people organized the Silence March through the National Strike Council. These people led the 2006 “March of the Penguins” to protest the LOCE acts implemented under Pinochet. Ten of these people were abducted during the Night of the Pencils. Elena Poniatowska interviewed many of these people who survived the Tlatelolco Massacre of demonstrators protesting the Mexico City Olympics. For 10 points, what people led a wave of 1968 protests from the IPN and UNAM campuses?

ANSWER: **students** [accept college **students**, university **students**, high school **students**, or secondary school **students**; accept **scholars** or **pupils**; prompt on **children** or **youths**; prompt on **activists**, **radicals**, **Communists**, **Marxists**, or specific nationalities like **Mexicans** or **Argentines** by asking “of what vocation?”] (The first line is about Cuba’s One Hundred Days Government in 1933. The Córdoba Reform Movement and Night of the Pencils occurred in Argentina.)

<World History>

4. These sequences are mapped in NSCR and SNS hybridization. Regulation of these sequences determines if control of a larger structure is “stringent” or “relaxed.” SV40 large T antigen contains a “binding domain” for these sequences, whose “firing” is tracked by BrdU (“B-R-D-U”) labeling. An inhibitor binds one of these sequences after its 11 GATC sites are hemimethylated by Dam. Negative supercoiling is required for the activity of the single one of these sequences in prokaryotes, designated “C,” during a theta-type process. These AT-rich sequences are “licensed” by a complex called the preRC after they are “recognized” by the ORC (“ork”) in G1. A nick at one of these sites displaces the strand that forms a “rolling circle.” For 10 points, during S phase, two forks elongate from what sequences after a helicase unwinds their duplex to initiate DNA replication?

ANSWER: **origin**s of replication [or replication **origins**; accept **ori** or **oriC**; accept double-stranded **origin** or **dso**; accept **origin** recognition complex; accept **origin**-binding domain; prompt on **plasmids**; prompt on **primers** or **chimeric** sequences by asking “at what sites in the genome?”; prompt on **ORC** or **OBD** by asking “what does that stand for?”; reject “transcription start sites”] (NSCR is “nascent strand capture and release” and SNS is “short nascent strand.”)

<Biology>

5. The “sexuality” of this concept is the focus of Eric Santner’s 2022 book *Untying Things Together*. This concept’s popularity is defended against opponents like Walter Jackson Bate in an essay that claims that the “turn” to this concept in pedagogy coincides with the title “Return to Philology.” This concept’s main interest is “the impossibility of its definition” according to an essay by that author, Paul de Man, titled for a “Resistance” to it. “Wars” named for this concept in the 1970s and ’80s concerned the role of Continental thought in humanities academia. The Frankfurt School spearheaded a methodology known as this concept’s “critical” form. For 10 points, like criticism, what concept’s “literary” form includes schools such as formalism and structuralism and is defined as the study of methods for literary analysis?

ANSWER: **theory** [accept literary **theory**; accept critical **theory**; accept **Theory** Wars; accept “The Resistance to **Theory**”]

<Philosophy>

6. In a 1993 paper, Robert Wald showed that the integral of a quantity given by this result, over the horizon vector Killing field, is related to the entropy of a black hole. An analog of this result, which equates correlation functions following gauge transformation in quantum field theory, is the Ward–Takahashi identity. This result can be proved by considering when the action integral is invariant and applying the Euler–Lagrange equations. Applying this theorem to a time-invariant Lagrangian implies that the time derivative of the Hamiltonian equals zero. This theorem guarantees the existence of a conservation law for each differential symmetry of a system; for example, translational invariance results in conservation of momentum. For 10 points, identify this theorem of theoretical physics named for a prolific female German mathematician.

ANSWER: **Noether**’s theorem [or **Noether**’s first theorem; accept **Noether** charge]

<Physics>

7. A poem with this title was called “a real ‘trifle’” and “very bad... perhaps like Ernest Hemingway!” in a letter to a mentor who suggested revising a line about “breathing in.” A poem with this title describes a cliffside as a “defiant edifice” with “all the physical features of / ac- / cident” and “All / external / marks of abuse.” The speaker of a poem with this title admires a “five-haired beard of wisdom” and “brown skin hung in strips / like ancient wallpaper.” One poem with this title describes its subjects “[wading] / through black jade,” while another ends as oil spreads around a “little rented boat... filled up” with victory “until everything / was rainbow, rainbow, rainbow!” For 10 points, Marianne Moore and Elizabeth Bishop both wrote poems with what title about an aquatic creature?

ANSWER: “The **Fish**” (The first line describes a letter from Elizabeth Bishop to Marianne Moore.)

<American Literature>

8. Raphael's *Sistine Madonna* inspired an artist from this modern-day country to sketch out an allegorical series meant to be exhibited in a Gothic cathedral with music titled *Times of the Day*. A group of artists from this country who revived fresco painting to reestablish medieval spirit were named for their long hair and biblical clothing. An artist from this country who devised a color sphere model after reading *Theory of Colours* was an early advocate of the "total work of art." A gilded frame carved with the Eye of God surrounds a landscape altarpiece from this country of a *Cross in the Mountains*. This country's motif of "back figures" was used for paintings of a *Monk by the Sea* and a man with a cane on a rocky cliff above "a sea of fog." For 10 points, name this home country of Caspar David Friedrich.

ANSWER: **Germany** [or **Deutschland**; or Federal Republic of **Germany** or Bundesrepublik **Deutschland**] (The first line is about Philipp Otto Runge. The second line describes the Nazarenes.)

<Painting/Sculpture>

9. At this site, John Garstang excavated a "hyksos palace" built over a tomb containing an Egyptian "administrator" titled for this site's possible name of "Ruha." James B. Pritchard erroneously called a "Winter Palace" rebuilt near this site the "Gymnasium." At this site in the 1950s, the Wheeler stratigraphical digging method was refined to discern a multitude of layers, including evidence that this site was settled by Natufian foragers. At this site, Kathleen Kenyon excavated naviform flint cores and a set of likely-painted plastered human skulls. A conical stone tower at this site provided evidence of communal structures during the Pre-Pottery Neolithic B period. A seven-day siege of this city was supposedly completed by blowing trumpets. For 10 points, what oldest known walled city is destroyed in the biblical Book of Joshua?

ANSWER: **Jericho** [or Tel **Jericho** or **Tell el-Sultan** or **Yerīhō**; accept Herodian **Jericho**] (The tomb contained hieroglyphs inscribed "Adjmer Rwha.")

<Other History>

10. While being nursed back to health, this character is distressed to find that his caretaker calls him "sir" with greater frequency as he recovers. In a novel's final chapter, this character sees himself in a little boy of the same name sitting on his childhood stool. Because this character's name sounds like a "moral boy out of the spelling-book," his friend nicknames him "Handel" in reference to the "Harmonious Blacksmith." In a novel's opening sentence, this character explains that his nickname arose because, as an infant, he could pronounce neither his father's family name nor his Christian name. This character is called "Mr." by his lawyer Jiggers and his friend Herbert Pocket after his anonymous patronage by Abel Magwitch. For 10 points, name this protagonist of *Great Expectations*.

ANSWER: **Pip** [or **Philip** Pirrip or Philip **Pirrip**; accept Mr. **Pip**]

<British Literature>

11. A ruler with this name employed the humanist scholar Justo Baldino to tutor his son, who later complained that his inheritance consisted of only the king's highways. A ruler of this name commissioned the *Saint Vincent Panels* to commemorate an African crusade for which he earned his epithet. Laws codified during the regency for a ruler with this name were superseded in the 16th century by the Manueline Ordinances. A ruler with this name launched an ill-fated invasion ended by the Treaty of Alcáçovas ("all-KAH-soo-vuss") after he married his niece, Joanna la Beltraneja ("zhoh-ah-nah lah bel-trah-NAY-zhah"). An admiral with this name led the 1511 capture of Malacca one year after he conquered Goa. In 1147, a ruler with this name and the epithet "Henriques" captured Moorish Lisbon. For 10 points, give this name of a Portuguese admiral with the surname "de Albuquerque."

ANSWER: **Afonso** [accept **Afonso** de Albuquerque; accept **Afonso** V or **Afonso** the African; accept **Alfonsine** Ordinances or Ordenações **Afonsinas**; accept **Alfonso** or **Alonso** or **Alphonso** in place of "Afonso"] (João II complained about inheriting little more than the king's highways from Afonso V due to nobles' regional autonomy.)

<European History>

12. Differences in this trait causally (“CAUSE-al-lee”) resulted in diverging literacy rates per a 2009 paper by Becker and Woessmann that used a pioneering instrumental variable based on distance to a single city. This trait is the first title word of a 2021 intellectual history by Benjamin M. Friedman that discusses how the views of “Latitude men” drove acceptance of the “invisible hand” argument and the subsequent “rise of capitalism,” a title it shares with a 1926 classic by R. H. Tawney. People with a type of this trait adhered to “pessimistic individualism” and engaged in a “Beruf” (“buh-ROOF”), leading them to work harder, according to a 1905 book that was translated by Talcott Parsons. For 10 points, a Max Weber book links an “ethic” derived from a type of what trait to “the spirit of capitalism”?

ANSWER: **religion** [accept **religious** beliefs or **religiosity**; accept **Christian** denomination; accept **Protestantism** or **Catholicism**; accept **faith**; prompt on **belief**] (The single city is Wittenberg. Friedman’s book is *Religion and the Rise of Capitalism*.)

<Social Science>

13. An organization dedicated to this movement built its namesake “temple” building in Chicago from trust bonds sold by Matilda Carse. To raise awareness of this movement among youth, a “legion” named for Lincoln and Lee was founded by Howard Hyde Russell. Henry Cogswell’s statues inspired Simon Benson to support this movement by designing Portland, Oregon’s “bubblers.” The “Napoleon” of this movement, Neal Dow, spearheaded its Maine Law. A supporter of this movement earned the nickname “pussyfoot” while following the “pressure politics” of an organization led by Wayne Wheeler. This movement was preached by Carrie Nation’s newspaper *The Hatchet*. For 10 points, the passage of the Twenty-first Amendment was fought for by what movement led by the Anti-Saloon League?

ANSWER: **temperance** movement [accept **prohibition** movement; accept descriptions such as **banning** the sale of **alcohol** or **opposition** to **alcohol** consumption; accept **dry** movement; accept Women’s Christian **Temperance** Union; accept **Anti-Saloon** League until read; prompt on **WCTU** or **ASL** by asking “what does that stand for?”] (Russell founded the Anti-Saloon League.)

<American History>

14. The presence of these specific bonds in amino acid residues such as lysine and threonine is a biomarker for oxidative stress and can be detected by derivatization with DNPH. Molecules containing these bonds display peaks on carbon-13 NMR above 150 ppm due to strong deshielding. In aromatic molecules containing these bonds, out-of-plane p-orbital electron density overlaps with them, effectively reducing their spring constant and shifting a resulting spectroscopic peak by about 30 inverse-centimeters. These bonds result in a strong, distinctive IR peak between 1600 and 1900 inverse-centimeters because one participating atom carries a partial negative charge, giving their stretching mode a change in dipole moment. For 10 points, name these bonds found in molecules with carbonyl groups.

ANSWER: **CO double** bonds [or **carbon–oxygen double** bonds; accept **C double** bond **O**; accept **carbonyl** until read; accept **ketone**s or **aldehyde**s; prompt on **double** bonds; prompt on **carbon–oxygen** bonds; prompt on **polar** bonds]

<Chemistry>

15. A poet used this language to write *Marginal Notes on the Book of Defeat*. The author of *Leg Over Leg* wrote in this language during a transnational 19th-century movement named for a word meaning “Renaissance.” A poem in this language repeats “the hour announces the time” while addressing Walt Whitman; that poem is “A Grave for New York.” Another poem in this language states that “my house is like a watchman’s hut / Made of branches and cane” before asking “Are you satisfied with my status?” An author used this language to write the prose poem *Memory for Forgetfulness* and a poem that repeats the phrase “Write down!” For 10 points, the poem “Identity Card” was written in what language used by Nizār Qabbānī, Adunis, and Mahmoud Darwish?

ANSWER: **Arabic** [or al-‘**arabiyah**] (Aḥmad Fāris al-Shidyāq wrote *Leg Over Leg*. The transnational movement was the Nahḍa.)

<World Literature>

16. This character protects Eriboea’s chastity before diving under the sea in Bacchylides’s seventeenth poem. In a play, this character is persuaded to help Adrastus and debates the merits of democracy in an *agon* with a Theban herald. This character is the only person who knows the location of Oedipus’s tomb, having previously protected Oedipus from Creon in *Oedipus at Colonus*. The title Argive women beg for this king’s help in Euripides’s *Suppliant Women*. In another play, this son of Aethra curses his own son Hippolytus, believing that he raped this character’s wife Phaedra. This character forgets to change his sails to white cloth, which causes the death of his father Aegeus. For 10 points, name this mythical hero who abandons Ariadne and kills the Minotaur.

ANSWER: **Theseus**

<European Literature>

17. An approach to process data from these objects combines regularized maximum-likelihood estimation with the CLEAN (“clean”) algorithm as an alternative to the Bayesian patch priors deconvolution algorithm called CHIRP (“chirp”). The broad-line region surrounding these objects can be measured using reverberation mapping. The first direct observation of one of these objects combined precisely timestamped data from eight separate sites using very-long-baseline interferometry. Accretion by these objects result in relativistic jets found in AGNs. Images of these objects, including M87* (“M87-star”) and Sagittarius A* (“A-star”), have been produced by the Event Horizon Telescope. For 10 points, name these astronomical objects, billions of times more massive than the Sun, which are found at the center of galaxies.

ANSWER: **supermassive black holes** [or **SMBH**; prompt on **black holes**; prompt on **event horizons** until read; prompt on **black holes** in the center of galaxies or similar descriptions] (CHIRP was developed by Katie Bouman.)

<Other Science>

18. In this director’s first film, an old woman who comes to dry vegetables prevents an unemployed professor from dropping his neighbor’s Shih Tzu off a roof. Another film by this director ends as a former detective looks down a farm drainpipe and then stares directly at the camera as if trying to find a killer among the audience. This director of *Barking Dogs Never Bite* depicted the search for his country’s first serial killer in *Memories of Murder*. In another film by this director, two siblings practice a short song about Jessica, an only child from Chicago, before they ring a doorbell. In that film by this director, members of a poor family pose as an English tutor, an art therapist, and other jobs to infiltrate the rich Park household. For 10 points, name this South Korean director of *Parasite*.

ANSWER: **Bong** Joon-ho

<Other Fine Arts>

19. This god, who wore the double feathers and Ra's wrt-crown ("weh-reh-ret crown") during the Middle Kingdom, is identified with the rising sun in the Coffin Texts. Votive offerings to this god may explain the ten thousand mummies at Tebtunis. The final ruler of the Twelfth Dynasty was a female pharaoh named for the "beauty" of this god, who developed his cult center at Shedet. This "raging" patron god of Egypt's army formed a triad with Hathor and Khonsu at a double temple also dedicated to Horus the Elder at Kom Ombo. The sweat of this apotropaic "great fish" was likened to the Nile flood at his cult center near Lake Moeris ("MEE-riss") in the Faiyum Oasis, where his temple maintained a sacred lake inhabited by his bejeweled carnivorous avatar, the Petsuchos. For 10 points, what son of Neith was worshiped at Crocodilopolis?

ANSWER: **Sobek** [or **Sbk**, **Sobeq**, **Sebek**-Ra, **Sobki**, or **Soknopais**; accept **Souk** or **Suchos** or **Petsuchos** until "Petsuchos" is read; accept **Sobek** Shedety; accept **Sobek**neferu or Neferu**sobek** or **Sbk**-nfrw]
<Mythology>

20. Lee researches a gold pin from this family while working at a Vietnamese restaurant in a novel by Bich Minh Nguyen ("bit min n'win"). Linda Sue Park created a Chinese-American reimagining of this family, which was the subject of a 2017 biography by Caroline Fraser. An author from this family mentored Roger MacBride and wrote the 1943 libertarian text *The Discovery of Freedom*. This family's patriarch, a fiddler, recalls his father being chased by a black panther in a book set in Pepin, Wisconsin. A book about this family inspired the title of a sitcom about a Saskatchewan mosque. Museums in De Smet, South Dakota memorialize this family's life there in the book *By the Shores of Silver Lake*. For 10 points, what family's frontier homesteading is recounted in an autofictional series that includes *Little House on the Prairie*?

ANSWER: **Ingalls** Wilder family [or Ingalls **Wilder** family; accept Laura **Ingalls** Wilder or Laura Elizabeth **Ingalls** Wilder; accept Rose **Wilder** Lane; accept Charles **Ingalls** or "Pa" **Ingalls**; prompt on **Lane** by asking "what was her birth family?"] (The first line refers to *Pioneer Girl*. The second line refers to *Prairie Lotus and Prairie Fires*.)
<Other Academic>

21. In 1996, a "cosmic watergate" in this country inspired a UFO-shaped water tower. The French architect Alfred Agache planned several cities in this country, including one whose "master plan" decongested traffic with a trinary road system. The "Group of Five" organized this country's 1922 Modern Art Week. In 1940, this country's "Modern Ensemble" – located around an artificial lake designed by Burle ("burr-lee") Marx – was spearheaded by a mayor nicknamed "JK," who, as president of this country, promised "fifty years of progress in five" to finish a project around the Monumental Axis. This country, whose flag displays the Comtean ("COM-tee-in") motto "order and progress," contains a hyperboloid-shaped cathedral in a modernist capital city planned in the shape of an airplane. For 10 points, what country's state capitals include Curitiba ("coo-ree-CHEE-bah"), Belo Horizonte ("BELL-oo or ee-ZON-chee"), and Recife ("heh-SEE-fee")?

ANSWER: **Brazil** [or **Brasil**; or Federative Republic of **Brazil** or República Federativa do **Brasil**] (The first line is about the Nave Espacial de Varginha. The garden city project was the Pampulha Modern Ensemble in Belo Horizonte; "JK" was Juscelino Kubitschek. Brazil's capital is Brasília.)
<Geography>

Bonuses

1. The 2/4 syncopated rhythms of this style of music are derived from West African kaiso music. For 10 points each:
[10e] Name this highly rhythmic music genre that originated in Trinidad and Tobago. This style of music spread in the United States after Harry Belafonte covered the Jamaican “Banana Boat Song” in his single “Day-O.”

ANSWER: **calypso** music

[10m] Drums made out of this material keep rhythm in calypso music. Pans or “bands” made out of this material name a type of soca music pioneered by Lord Kitchener.

ANSWER: **steel** [accept **steel**pans, **steel** drums, **steel** bands, or **steel** orchestras; prompt on **metal**; reject “iron”]

[10h] This fusion genre named for a foodstuff was inspired by Caribbean calypso as well as Bhojpuri (“bohj-POO-ree”) folk music. Early pioneers of this genre include the singers Sundar Popo (“soon-der po-po”) and Dropati (“DROH-puh-tee”).

ANSWER: **chutney** music

<Other Fine Arts>

2. Siobhán McHugh collected oral histories of workers on this project, describing them as “the people behind the power.” For 10 points each:

[10h] Name this public works project that employed Eastern European migrants like the “Beautiful Balts” to build dams and power plants. Ben Chifley began this project to divert water to the Murray River from a nearby mountain range.

ANSWER: **Snowy** Mountains Scheme [or **Snowy** Scheme; accept **Snowy**: *The People behind the Power*]

[10m] Chifley’s Immigration Minister Arthur Calwell welcomed the Eastern European “men of the Snowy” to maintain this policy, which warned that the country must “populate or perish” from waves of Asian immigration.

ANSWER: **White Australia** policy [prompt on descriptions like **restrictions** on non-white **immigration**]

[10e] Calwell controversially deported former U.S. Army soldier Lorenzo Gamboa back to this country. After the White Australia policy was abandoned, thousands emigrated from this country to escape the Marcos regime.

ANSWER: **Philippines** [or Republic of the **Philippines** or Republika ng **Pilipinas**; accept **Filipino**-Australians]

<Other History>

3. A preface by C. S. Lewis pushes back against Percy Shelley and William Blake’s assertion that this character is the hero of the work in which he appears. For 10 points each:

[10m] Name this character who inspired the Bent Oyarsa in Lewis’s *Space Trilogy*. In *The Screwtape Letters*, Screwtape and his nephew are bureaucrats who work for this character.

ANSWER: **Satan** [accept **Lucifer**; accept the **Devil**; prompt on **Our Father** Below] (The first sentence refers to Lewis’s *A Preface to Paradise Lost*.)

[10e] In Lewis’s novel *The Great Divorce*, the dead narrator is told that “the choice of every lost soul” can be expressed in Satan’s claim from *Paradise Lost* that it is “better to reign in Hell” than to do this action “in Heaven.”

ANSWER: **serve** [or word forms such as **serving**]

[10h] Lewis’s *Preface* is a primary target of this critic’s book *Milton’s God*, which argues that Milton portrayed Satan favorably. This critic helped introduce New Criticism in a book that analyzes how poets use “verbal nuance” to produce “alternative reactions” to the same language.

ANSWER: William **Empson** (The latter book is *The Seven Types of Ambiguity*.)

<British Literature>

4. *Description acceptable.* Nicole King's group found that a bacterial sulfonolipid acts as a "rosette-inducing factor" to trigger the "clonal" type of this property in choanoflagellates. For 10 points each:

[10e] Identify this property shared by animals, plants, and most fungi, but [emphasize] *not* yeast, bacteria, archaea, or most microscopic eukaryotic "protists," like amoebae or ciliates.

ANSWER: **multicellularity** [or descriptions of **multiple cells** or **more than one cell** or equivalents; accept cellular **specialization**, cell **differentiation**, **different** types of **cells**, different **tissues**, or equivalents; accept **metazoan**; accept multicellular **colonies** or **colonial** development; accept clonal **multicellularity** or aggregative **multicellularity**; prompt on **complexity** or embryonic **development** or **embryogenesis**; prompt on **division of labor**]

[10h] Ratcliff et al. experimentally evolved multicellularity in this flagellated model organism, whose eyespot mediates phototaxis. Channelrhodopsins were isolated in this chlorophyte, which, like *Volvox* and *Euglena*, is a model of basal body activity.

ANSWER: ***Chlamydomonas reinhardtii*** [or ***C. reinhardtii***; accept ***C. eugametos*** or ***C. moewusii***; prompt on green algae or **Prasinophyta** or **Chlorophyceae**] (The paper is "Experimental evolution of an alternating uni- and multicellular life cycle in *Chlamydomonas reinhardtii*.")

[10m] A repeat protein causes this enzyme to accumulate in the pyrenoid microcompartments of *Chlamydomonas*. At high temperatures, this inefficient enzyme has a low quantum yield due to photorespiration in the C₃ ("C-three") mechanism.

ANSWER: **RuBisCO** [or **ribulose biphosphate carboxylase**, **ribulose-1,5-biphosphate carboxylase**-oxygenase, **RuBPCase**, or **RuBPco**; prompt on **carboxylase**]

<Biology>

5. Answer the following about extreme forms of self-mortification practiced by Buddhist ascetics, for 10 points each.

[10e] A book by James Benn analyzes Chinese Buddhism's tradition of this suicide method, which was captured by a viral photograph of the monk Thích Quảng Đức ("tick kwang duck") during South Vietnam's Buddhist crisis.

ANSWER: self-**immolation** [or **burning** oneself, setting oneself on **fire**, auto-**cremation**, or word forms or equivalents; accept ***Burning for the Buddha***; prompt on "**abandoning** the body"]

[10m] The 13 ascetic dhutaṅga outlined in the *Visuddhimagga* include making these objects out of refuse from cemeteries and only owning three of them. These objects are usually the same color for sāmaṇera and bhikkhunī.

ANSWER: **robes** [or **kāṣāya**; accept saffron **robes**; accept **uttarāsaṅga** or **samghāti** or **antaravāsaka**; prompt on **clothing** or **clothes** or **textiles** or equivalents]

[10h] These Japanese ascetics became "Buddhas in their very bodies" by eating a diet of needles and sap before they were entombed in order to cause self-mummification.

ANSWER: **sokushinbutsu** ("soak-sheen-boots") [or **miira**]

<Religion>

6. Stars like Didier Awadi, Mory Kanté, and Salif Keita sang a song asking Africa to “stop” this disease, whose 1976 outbreaks in South Sudan and the DRC inspired a satire by Amīr Tāj al-Sirr. For 10 points each:

[10e] Name this hemorrhagic fever whose ECOWAS (“echo-woss”) response was led by Togo’s Faure Gnassingbé (“for nah-sing-BAY”), even though it never hit Togo during its major 2014 West African epidemic.

ANSWER: **Ebola** [or **Ebola** hemorrhagic fever, **EHF**, **Ebola** virus disease, or **EVD**; accept “Africa Stop **Ebola**”; accept **Ebola** ’76]

[10m] Sara de Great pioneered the “Ebola comedy” genre in this country, whose renowned surf club is named for the Temne leader Bai Bureh. A Krio phrase titles *Fambul Tok*, a documentary about this country’s 1991-to-2002 civil war.

ANSWER: **Sierra Leone** [or Republic of **Sierra Leone**; or **Salone**; accept **Sierra Leone** Civil War or **Sierra Leonean** Civil War] (Bai Bureh led an 1898 rebellion against a British hut tax.)

[10h] Sailors of this ethnicity from Sierra Leone and Liberia, who created palm-wine music, name a “New Town” in Monrovia. This people’s name is a [emphasize] *homophone* of groups like the Mistick that create New Orleans Mardi Gras floats.

ANSWER: **Kru** people [or variants like **Kuru** or **Krou**; accept **krewe**s or Mistick **Krewe** of Comus; accept New **Kru** Town]

<Geography>

7. The Sobolev space H^k (“H-K”) consists of all functions with at least k square-integrable derivatives described by this adjective. For 10 points each:

[10h] Give this adjective that describes solutions to a PDE in the variational formulation. A sequence in a Hilbert space has a type of convergence described by this adjective if its inner products with any other element converge.

ANSWER: **weak** [accept **weak** convergence; accept **weak** solution; accept **weak** derivative]

[10m] This mathematician names an inequality that bounds the norm of a Sobolev function via the norm of its weak derivative. A result named for this mathematician about simply connected, closed 3-manifolds was proven using Ricci flow.

ANSWER: Henri **Poincaré** [accept **Poincaré** conjecture; accept **Poincaré** inequality]

[10e] The definition of a weak derivative is that it satisfies this technique when multiplied with any bump function. This calculus technique states that [read slowly] “the integral of $u dv$ equals uv minus the integral of $v du$.”

ANSWER: integration **by parts**

<Other Science>

8. In this play’s prologue, a director invites an actress to sing a song about summer, then forgets which play he intended to perform. For 10 points each:

[10m] Name this play in which Durvāsa’s curse can only be undone by showing King Dushyanta a signet ring. That ring in this play is lost in the sea before a fisherman finds it in the belly of a fish.

ANSWER: **Shakuntala** [or *The Recognition of **Shakuntala*** or *The Sign of **Shakuntala*** or *Abhijñānaśākuntalam*]

[10h] The second act of *Shakuntala* begins with a clown complaining about Dushyanta performing this activity. Dushyanta also performs this activity at the very start of the play.

ANSWER: **hunting** [or **chasing** a deer or equivalents; prompt on **riding** or **chariot**-riding or **charioteering** or **horse**-riding by asking “for what purpose?”]

[10e] In this poem’s version of the story, Shakuntala is only reunited with the king after he meets their son. This epic poem contains the *Bhagavad Gītā* and depicts the conflict between the Pāṇḍavas and the Kauravas.

ANSWER: **Mahābhārata**m

<World Literature>

9. This author identified the Dioscuri with the Alci, whom he claimed that a priest of the Nahanarvali worshiped while dressed as a woman. For 10 points each:

[10m] Name this author who claimed that peoples like the Suebi sacrificed animals to Mars and Hercules in his ethnographic text *Germania*, which traces their descent from the divine Tuisto.

ANSWER: **Tacitus** [or Publius Cornelius **Tacitus**]

[10h] Following Tacitus, this Latin noun precedes “romana” or “graeca” (“GRY-kah”) to describe the identification of foreign gods with putative Greco-Roman equivalents. This noun precedes “germanica” in a converse translation of weekday names.

ANSWER: **interpretatio** [or **interpretatione**; accept **interpretatio romana** or **interpretatione romana**; accept **interpretatio graeca** or **interpretatione graeca**; accept **interpretatio germanica** or **interpretatione germanica**]

[10e] This historian recorded belief in *interpretatio christiana*, the inculturation of pagan practices by missionaries. This “Venerable” English historian explained Easter customs with the Germanic goddess Ēostre.

ANSWER: **Bede** [or the Venerable **Bede**, **Bede** the Venerable, Saint **Bede**, **Bæda**, **Bēda**, or **Beda** Venerabilis]

<Mythology>

10. The Morgan Line created a “Free Territory” around this city after World War II and demarcated “Zone A” under the sovereignty of Allied occupational forces. For 10 points each:

[10m] Name this city that, with Stettin, was said to bound a metaphorical construct in the “Sinews of Peace” speech given in Fulton, Missouri.

ANSWER: **Trieste** [or **Trst** or **Triest**] (The “Sinews of Peace” speech was given by Winston Churchill.)

[10e] Winston Churchill described how this construct “descended across the continent” from “Stettin in the Baltic to Trieste in the Adriatic,” alluding to the new geopolitical challenges posed by the Soviet-influenced Eastern Bloc.

ANSWER: **Iron Curtain**

[10h] The potential of Trieste as a powder keg during the Cold War was abated by an ideological split between Stalin and a leader responsible for the use of the Goli Otok prison during this political period.

ANSWER: **Informbiro** period (The leader was Josip Broz Tito of Yugoslavia.)

<European History>

11. When these substances are dissolved in a theta solvent, the Mark–Houwink exponent is equal to one-half. For 10 points each:

[10e] Name these substances that consist of long molecular chains of base monomers.

ANSWER: **polymers**

[10m] A polymer dissolved in a theta solvent acts like an ideal chain, meaning its orientation can be accurately modeled as an example of these mathematical processes. The probability of returning to the origin is near unity for one of these processes in 2D, but only around one-third in 3D.

ANSWER: **random walk** [prompt on **random** processes or **walks**; prompt on **Markov** process]

[10h] For a given solvent polymer system, the effect of intermolecular interactions will cancel this effect at the theta point, allowing the polymer configuration to be modeled as random walk without self-avoidance.

ANSWER: **excluded volume** effect [accept macromolecular **crowding**]

<Chemistry>

12. Answer the following about Daniel Dennett's habit of coining humorous verbs named after analytic philosophers, for 10 points each.

[10m] Dennett used this philosopher's name as a verb meaning "to deny the existence of something real" in the title of a paper that employs "intuition pumps" to "flush out" the idea that qualia exist.

ANSWER: Willard Van Orman **Quine** [or W. V. O. **Quine**; accept "**Quining** Qualia"]

[10e] The philosopher J. J. C. Smart inspired Dennett's verb "to outsmart," meaning to embrace conclusions of this sort. An argument that derives a ridiculous conclusion from a premise is named for a "reductio" to this state.

ANSWER: **absurdity** [or **absurdum**; accept *reductio ad absurdum* or *argumentum ad absurdum*; accept translations such as reducing to **absurdity** or argument to **absurdity**]

[10h] Among Dennett's more popular neologisms is a verb named after this philosopher meaning "to make repeated alterations in a definition." This Brown epistemologist wrote "The Problem of the Criterion" and *Person and Object*.

ANSWER: Roderick **Chisholm** [accept **chisholming**]

<Philosophy>

13. Kofi Busia called investing in a project on this river "[mortgaging] our entire economic future" after it was funded by the Cocoa Marketing Board. For 10 points each:

[10m] Name this river on which the Italian firm Impregilo ("im-preh-JEE-loh") built the Kpong Dam. The earlier construction of this river's Akosombo Dam was financed through VALCO by the American-owned Kaiser Corporation.

ANSWER: **Volta** River [accept Black **Volta**, White **Volta** Lower **Volta**, or Upper **Volta**; accept Lake **Volta** or **Volta** Reservoir; accept **Mouhoun** or **Nakambé**]

[10e] Kwame Nkrumah aimed to boost Ghana's production of this metal with electricity supplied by the Volta's Akosombo Dam. Kaiser's plants by the port city of Tema cast thin sheets of this metal smelted from bauxite.

ANSWER: **aluminum** [or **aluminium**; or **Al**; accept **alumina**]

[10h] Like Busia, this politician from the United Gold Coast Convention opposed foreign investment in the Volta's Akosombo Dam. This Akan historian, who proposed the modern name of Ghana, died while imprisoned in Nsawam.

ANSWER: J. B. **Danquah** [or Joseph Kwame Kyeretwie Boakye **Danquah**] (He took the name from the medieval Ghâna Empire.)

<World History>

14. The title of the novel *The Broom of the System* refers to a riddle that Gramma Lenore learned from this person about whether a broom's handle or bristles are more useful. For 10 points each:

[10h] Name this man who titles a novel held as an exemplar of "INTERPRET-ME fiction" in the essay "The Empty Plenum." That novel titled for this man is about the painter Kate, who may be the last woman on Earth.

ANSWER: Ludwig **Wittgenstein** [or Ludwig Josef Johann **Wittgenstein**] (The novel is *Wittgenstein's Mistress* by David Markson.)

[10e] This author of *The Broom of the System* incorporated Wittgenstein's reading of solipsism into his footnote-laden novel *Infinite Jest*.

ANSWER: David Foster **Wallace**

[10m] In "The Empty Plenum," Wallace links *Wittgenstein's Mistress* to this author's love of paranoia. In a novel by this author, a song referencing the *Tractatus's* Thesis 1.7 is sung to Benny Profane and the Whole Sick Crew.

ANSWER: Thomas **Pynchon** [or Thomas Ruggles **Pynchon** Jr.] (The novel is *V.*)

<American Literature>

15. Catherine Keener played Susette, the plaintiff in this Supreme Court case, in the 2018 film adaptation of Jeff Benedict's book *Little Pink House*. For 10 points each:

[10h] Name this 2005 case in which the Court ruled 5–4 that the acquisition of Susette's private house by a Connecticut town was constitutional under the Takings Clause for the purpose of "further economic development."

ANSWER: ***Kelo*** v. *City of New London* [or *Kelo* v. *City of **New London***]

[10e] The *Kelo* decision strengthened this legal power that allows the government to expropriate private property for public use, provided "just compensation" is offered.

ANSWER: **eminent domain** [accept **appropriation**; accept **condemnation**]

[10m] This justice denounced the *Kelo* decision for effectively "delet[ing] the words 'for public use' from the Takings Clause." This swing justice co-wrote the *Planned Parenthood v. Casey* decision with Kennedy and Souter.

ANSWER: Sandra Day **O'Connor**

<American History>

16. Answer the following about violin showpieces, for 10 points each.

[10e] Among the best-known violin showpieces are the 24 pieces of this type written by Niccolò Paganini, the last of which has formed the basis of numerous sets of variations.

ANSWER: **caprices** [or **capriccio**; accept 24 **Caprices for Solo Violin**]

[10h] This Moravian Jewish composer incorporated complicated polyphony into his *Grand Caprice* based on Schubert's "Erlkönig" and his study on "The Last Rose of Summer." He impressed Paganini by perfectly learning his yet-to-be-published *Nel cor più non mi sento* by ear.

ANSWER: Heinrich Wilhelm **Ernst**

[10m] This composer and violin virtuoso wrote the Hungarian-inspired *Zigeunerweisen* ("tsih-GOY-nurr-VYE-zen") and four books of *Spanish Dances* inspired by his homeland. He was the dedicatee of showpieces like Saint-Saëns's *Introduction and Rondo Capriccioso*.

ANSWER: Pablo de **Sarasate** [or Pablo Martín Melitón de **Sarasate** y Navascués; prompt on **Navascués**]

<Classical Music>

17. Answer the following about phasors in electric circuits, for 10 points each.

[10e] This complex-valued quantity is the opposition to alternating current and can be written as a phasor. This quantity is measured in ohms, the same unit as its real part, resistance.

ANSWER: **impedance** [prompt on **Z**]

[10m] This quantity is the imaginary part of the impedance phasor. This quantity scales with frequency for an inductor, while it scales inversely with frequency for a capacitor.

ANSWER: electrical **reactance**

[10h] The energy loss in a circuit element is related to this function of the impedance phasor angle measured from the negative reactance axis.

ANSWER: **tangent** [accept loss **tangent**]

<Physics>

18. After an event in this neighborhood, Noah Purifoy scoured its streets for refuse that became the basis of his art exhibition *99 Signs of Neon*. For 10 points each:

[10m] Name this California neighborhood where Italian immigrant Simon Rodia spent over 30 years constructing towers with steel and concrete covered in found materials such as fragments of bottles, mosaics, and seashells.

ANSWER: **Watts** [accept **Watts** Uprising or **Watts** Riots; accept **Watts** Towers; prompt on Los Angeles or LA]

[10h] This artist's time observing Rodia work during her upbringing in LA inspired her use of assemblage. A clenched black fist covers a mammy figure flanked by a rifle and grenade in her piece *The Liberation of Aunt Jemima*.

ANSWER: Betye **Saar** [or Betye Irene **Saar**]

[10e] Many works at Purifoy's Desert Art Museum near Joshua Tree incorporate these objects. Marcel Duchamp's *Fountain* consists of one of these objects signed "R. Mutt."

ANSWER: **toilets** [or **urinals**]

<Painting/Sculpture>

19. 61 boxes containing these things are left unopened after Percival Bartlebooth dies clutching a piece of one of them. For 10 points each:

[10h] Name these things that are made by craftsman Gaspard Winckler. The novel *Life: A User's Manual* begins with a preamble on how to make these things.

ANSWER: **jigsaw** puzzles [or **jigsaws** or **jigsaw** pieces; prompt on puzzles by asking "of what type?"]

[10m] This author mysteriously used characters named Gaspard Winckler in several novels, including *W* and *Life: A User's Manual*. This French author also wrote the novel *A Void*, which was written entirely without the letter *e*.

ANSWER: Georges **Perec**

[10e] Perec was associated with the experimental literary collective Oulipo, like this Italian author of *Cosmicomics* and *If on a winter's night a traveler*.

ANSWER: Italo **Calvino** [or Italo Giovanni **Calvino** Mamei; prompt on Mamei]

<European Literature>

20. In a prominent example of this phenomenon, pastoral communities like the Ahir and Gopa claim descent from the mythical king Yadu in order to improve their status. For 10 points each:

[10h] Name this sociological phenomenon in the Indian subcontinent postulated by M. N. Srinivas. In this phenomenon, members of lower castes emulate those of higher, and frequently twice-born, castes.

ANSWER: **Sanskritization** [or **Sanskritisation**; prompt on Brahmanization or Brahmanisation]

[10m] A frequent example of Sanskritization is the adoption of this twice-born caste practice, which is more common in India than any other country. This practice may be promoted by adopting a "sattvic" lifestyle.

ANSWER: **vegetarianism** [or descriptions like **not eating meat** or a **meat-free diet**; prompt on ahimsā or nonviolence; prompt on dietary laws; reject "veganism"]

[10e] B. R. Ambedkar anticipated the idea of Sanskritization by pointing out how this practice is increasingly performed only between members of the same caste, emulating the endogamy practiced by Brahmins.

ANSWER: **marriage** [or getting **married**; accept **weddings** or **matrimony** or **nuptial** or equivalents]

<Social Science>

21. The Hànyáng Arsenal mass-produced the Type 88 rifle during this event, whose central city fell after the Battle of Yángxià (“yahng-sh’yah”). For 10 points each:

[10m] Name this 1911 event that originated from protests by the Railway Protection Movement in the Wǔchāng (“oo-chahng”) District. Emperor Pǔyí (“poo-ee”) abdicated after this event, leaving Yuán Shìkǎi (“y’wen shur-kai”) in control of the Běiyáng (“bay-yahng”) government.

ANSWER: **Xīnhài** Revolution [or **Xīnhài** Géming; or **Hsinhai** Revolution; prompt on 1911 Revolution, Revolution of 1911, Chinese Revolution, or anti-Qīng rebellions]

[10e] This triple city on the Yangtze River was the epicenter of the Xīnhài Revolution. In 2020, researchers sampled the Huánán (“hwah-non”) wet market in this capital of Húběi (“hoo-bay”) Province, where SARS-CoV-2 was identified.

ANSWER: **Wuhan** [or **Wǔhàn**; prompt on Hànkǒu]

[10h] This man succeeded Eugene Chen as head of a Wǔhàn-based Nationalist government that rivaled Chiang Kai-shek’s Nánjīng. His collaboration with the Japanese during World War II earned him the universal title “arch-traitor.”

ANSWER: **Wāng** Jīngwèi [or Wāng **Jīngwèi**; or **Wāng** Zhàomíng]

<World History>