

## 2022 ACF Regionals

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Packet J by Purdue A, Indiana A, Georgia Tech A, Georgia Tech B

### TOSSUPS

1. Recordings of this activity in the Stanford archive's Charles Barber collection include films of Ferenc Fricsay and Hans Zender. The first known practitioner of this activity is generally said to be the ancient Greek Pherekydes of Patrae. The "mesmeric" style of Arthur Nikisch's performances of this activity is cited by those who emphasize the importance of eye contact during it. Louis Spohr self-promoted the legend that he made an innovation in this activity when he ceased to use rolled-up paper to do it. Arrows and numbered points are used to indicate the positions of the hands during this activity in beat diagrams. A tool central to this activity was famously not used by Leopold Stokowski. For 10 points, name this activity that could involve using hand gestures or a baton to direct a musical performance.

ANSWER: **conducting** music [accept **conducting** an orchestra, choir, ensemble, or opera; accept **keeping time** or **marking time**]

<Classical Music>

2. In a poem in this language, the narrator describes a castle suspended by four chains and turns from a woman into a "complete, natural man" after her husband dies. In a story most notably told in this language, a woman gets a knight to steal a man's clothes from a bush. A work written in this language opens with a woman reading Maltheolus's *Lamentations*. In a poem in this language, a woman's nose is bitten off by her werewolf husband. A work in this language was written as a response to the misogyny in *Romance of the Rose*; in that work in this language, Ladies Reason, Rectitude, and Justice describe historical women to build the title place. For 10 points, name this language that was used to write *The Book of the City of Ladies* by Christine de Pizan and was also used for *The Song of Roland*.

ANSWER: **French** [or **français**; accept Old **French** or **françois**; accept **Francien**; prompt on Anglo-Norman or Breton with "what language was the most famous version of that tale originally written in?"] (The first clue is from Christine de Pizan's *The Book of Fortune's Transformation*, written after the death of her husband.)

<European Literature>

3. A type of this good was traditionally produced within 30 miles of Wells Cathedral before production was modernized by Joseph Harding. Jean-Baptiste Colbert commissioned the knockoff Mimolette type of this good to have a bright color to distinguish it from its Dutch counterpart. To protect them from the Great Fire of London, Samuel Pepys recorded burying balsamic vinegar, wine, and this good in his diary. Menocchio ("men-OKE-ee-oh") rejected the divine's role in cosmogony with an analogy of worms born from this good; that analogy titles a microhistory by Carlo Ginzburg. To have official status, a type of this good must originate from the Reggio Emilia province. For 10 points, French troops during World War I received daily rations of wine and a type of which good from Camembert ("KAH-mem-bear")?

ANSWER: **cheese** [or **fromage**; accept specific cheeses, such as **cheddar** or **Edam** or **Camembert** or **Parmesan** or **Parmigiano** Reggiano; accept *The Cheese and the Worms* or *Il formaggio e i vermi*] (Joseph Harding modernized the production of cheddar cheese. Samuel Pepys buried his Parmesan.)

<European History>

*Note to moderator: Read the answerline carefully.*

4. Rita Colwell found that monthly sea surface temperature was correlated with this process in Bangladesh. This process is less prevalent in diverse environments in Richard S. Ostfeld's dilution effect hypothesis. The equation "beta times the sum of  $I$  ("ai") at time  $t$ , all over  $N$ " gives the "force" of this process in models of its "dynamics." The "multiplicity" of this process depends on the number of PFUs. Fomites ("FO-mites") cause this process, which may be nosocomial in indoor areas. In compartmental SIR ("S-I-R") models, the average occurrence of this process per person gives the basic reproduction number, or R-naught. This process, which may be "opportunistic," is caused by zoonotic spillover and tracked by contact tracing. For 10 points, asymptomatic carriers may expose susceptible individuals to what process that is spread by vectors?

ANSWER: **infection** [or word forms like **infectivity**; accept disease **transmission** or **contagion** or **disease spread** or word forms; accept **epidemic** disease or **pandemics**; accept **infectious** disease or opportunistic **infections** or multiplicity of **infection** or force of **infection**; accept **parasitism**; accept specific infections like **cholera**; prompt on **disease** or **illness** or **sickness** or similar; prompt on **invasion** or **pathogenesis**]

<Biology>

5. This thinker is the younger of two men whose walks together were discussed in the title essay of a 2018 collection by Jim Holt. He's not David Hilbert, but this mathematical Platonist criticized Brouwer's mathematical intuitionism as "utterly destructive" in a discussion of the axioms of set theory. This thinker's thesis showed that semantic implications of first-order statements are syntactically provable in first-order logic. In a 1931 paper, this thinker assigned natural numbers to symbols within a formal system, allowing him to show that any formal system contains formally undecidable sentences. "Strange loops" are the focus of a Douglas Hofstadter book titled for this thinker, M. C. Escher, and J. S. Bach. For 10 points, name this Austrian logician who names two incompleteness theorems.

ANSWER: Kurt **Gödel** ("GUR-tle") [or Kurt Friedrich **Gödel**; accept **Gödel**'s incompleteness theorem] (The book in the first line is *When Einstein Walked with Gödel*.)

<Philosophy>

6. Saint Rose of Lima used a silver re-creation of this object as part of her famously extreme acts of penance. John Calvin argued that widespread rumors that this object regenerated from pieces of itself diminished the chance of it existing at all. This object's feast day is the Friday after Ash Wednesday. In a vision of Saint Bridget of Sweden, this object forces a figure to look at Saint John. Baldwin II gave this object as debt collateral to Saint Louis, who built the Sainte-Chapelle ("SAHN-shuh-PEL") church to house it. Father Jean-Marc Fournier ("foorn-YAY") saved this relic from the April 2019 Notre Dame fire. Matthew described how, upon a figure being given a reed and this object, soldiers ironically bowed and cried, "Hail, King of the Jews!" For 10 points, name this relic, a painful headpiece worn by Jesus on the cross.

ANSWER: **crown** of **thorns** [prompt on **crown**]

<Religion>

7. Survivors of the Chunky Creek train wreck in this state were saved by a regiment whose members included Jack Amos. A regiment from this state used the camel Old Douglas. Newton Knight led a breakaway government in this state based in its Jones County. Benjamin Grierson led a raid to divert forces away from an engagement in this state, which involved fighting at Champion Hill and the Big Black River Bridge. In this state, the Confederates organized the 1st Choctaw Battalion. This state's "Rifles" were led by Jefferson Davis, who represented this state in the Senate prior to secession. The July 4 surrender of John Pemberton's forces at a fort in this state led to Union control of a key river, splitting the Confederacy. For 10 points, name this state, the site of the siege of Vicksburg.

ANSWER: **Mississippi** [or **MS**; accept the **Mississippi** Rifles]

<American History>

8. A character in this novel has a vision in which his father's hand, while resting on his shoulder, becomes skeletal by moonlight; that father in this novel covers his son's eyes to stop him seeing his mother's infidelity inside a mosquito net. This novel's protagonist is bribed with cigarette cartons to trample an American soldier's girlfriend. In this novel, the story of Nansen killing a kitten is told by the Superior. After hearing about Tsurukawa's death, this novel's protagonist wastes tuition money, hoping that Father Dosen will expel him. This novel's protagonist borrows money from his clubfooted friend Kashiwagi and later chants, "If you meet the Buddha, kill the Buddha," while watching a building in flames. For 10 points, Mizoguchi burns down the title structure in which novel by Yukio Mishima?

ANSWER: *The **Temple of the Golden Pavilion*** [or ***Kinkaku-ji***]

<World Literature>

9. An alternating sequence of oracle and diffuser operators act on a "uniform" example of this type of state in an amplitude amplification trick to search an unstructured set. One way of obtaining this type of state from the states "ket zero" and "ket one" is to rotate them on the Bloch sphere using a Hadamard gate. Since the Schrödinger equation is a linear differential equation, it allows this type of state as a solution. A general qubit ("Q-bit") state is an example of this type of state because it is a linear combination of its two computational basis states. The paradoxical nature of this type of state is illustrated by Schrödinger's cat. For 10 points, combining multiple quantum states creates what type of state named for a principle allowing wave displacements to be summed?

ANSWER: **superposition** state [accept **superposition** principle; prompt on descriptions like **combinations of states**, **sum of states**, or **sum of solutions**; prompt on **qubit** before "qubit"; prompt on **quantum** state before "quantum"]

<Physics>

10. In this country, fossils of the one-ton *Titanoboa* snake were discovered in the Cerrejón Formation. This country's "River of Five Colors" is a rainbow-colored waterfall in its Serranía de la Macarena National Park. Natives of a region shared by this country and its (emphasize) *eastern* neighbor wear a Nehru-style suit called a liqui liqui ("lee-kee lee-kee") and play the fandango-inspired genre of joropo. This country produces the majority of the world's emeralds in regions like Cundinamarca. The owner of the Hacienda Nápoles in this country imported "cocaine hippos" who have invaded its Magdalena River. For 10 points, name this South American country that shares the savanna region of Los Llanos ("YAH-noce") with its eastern neighbor Venezuela.

ANSWER: **Colombia** [or Republic of **Colombia** or República de **Colombia**]

<Geography>

11. The concentration of this molecule can be found by integrating the Streeter-Phelps differential equation and forms a "sag curve." This molecule dynamically quenches luminescence from dyes such as pyrene in "rugged" detectors that use emission phase shift to measure its concentration. This molecule is reduced at a platinum surface in a Clark electrode, which is used to measure its concentration. Potassium dichromate can be used to measure the total "demand" for this molecule, quantifying water pollution. The concentration of this molecule is measured by titrating iodine with thiosulfate in the Winkler test. The concentration of this molecule in water can be increased by aeration. Photosynthetic organisms like algae increase the concentration of, for 10 points, what dissolved gas?

ANSWER: **oxygen** [or diatomic **oxygen**; or **O<sub>2</sub>** ("oh-two"); accept dissolved **oxygen**; accept rugged dissolved **oxygen** sensor; prompt on **DO**]

<Chemistry>

12. David Maister's 1984 paper on the psychology of this behavior humorously cites "Erma Bombeck's law" and proposes the equation "satisfaction equals perception minus expectation." Tversky and Shafir argued that this behavior results from high-conflict choices. Janet Metcalfe used this behavior as a paradigm of the "cool system" and outlined strategies for it, like obscuring a "hot" stimulus. In 1968 to 1974 studies, children who (emphasize) *failed* to engage in this behavior before eating rang a bell to alert the experimenter before his scheduled return. The self-control that 4-year-old preschoolers used to engage in this behavior to earn an extra sweet was correlated with later achievement in Walter Mischel's ("VALL-tuh MISH-ull's") Stanford marshmallow test. For 10 points, many gun control laws mandate a "period" of what behavior that patients perform in doctor's office rooms?

ANSWER: **waiting** [accept **delayed** gratification or **impulse control**; accept **patience** or being **patient**; accept **queueing** or standing in **line** or similar; accept **waiting** periods or **waiting** rooms; prompt on self-control before read; prompt on **willpower**; prompt on doing **nothing** or **not eating** a marshmallow or similar] (Erma Bombeck's law is "the other line always moves faster.")

<Social Science>

13. One of these animals composes a poem with the line "Oh, how my soul is on / Fire when I gaze at thy / Calm and commanding eye." A song written by one of these animals urges the listener to "hearken well, and spread my tidings," and has a melody described as a combination of "La Cucaracha" and "Oh My Darling Clementine." One of these animals starts a ceremony to honor the skull of another of them. A novel ends with a group looking from "[these animals] to man" and finding it "impossible to say which was which." These animals change a list of commandments to say that "some animals are more equal than others." For 10 points, Old Major, Napoleon, and Snowball are what kind of animals, who take over the title place in George Orwell's *Animal Farm*?

ANSWER: **pigs** [or **swine** or **hogs** or **suids**; accept **boars**; prompt on **animals** from *Animal Farm*]

<British Literature>

14. Beatrice F. Manz's book on this leader's "rise and rule" bypasses childhood exploits from the fake memoir *Institutes, Political and Military*. The period "after" this ruler titles John Darwin's book on "the rise and fall of global empires" after the shift away from Mackinder's "world island." This ruler was extolled in Sharaf al-Dīn Alī Yazdī's Garrett *Zafarnama*, which contains miniatures that his dynasty patronized in Herāt. Ahmad ibn Arabshah's biography vilifies this Barlas tribesman for sacking Mamluk Aleppo and Damascus. Before Operation Barbarossa, the Soviet Mikhail Gerasimov was "cursed" to "unleash an invader more terrible than [this emir from Transoxiana]" when he exhumed this 14th-century warlord from the Gūr-e Amīr tomb in Samarkand ("SAH-mar-kand"). For 10 points, name this disabled Turco-Mongol conqueror.

ANSWER: **Timur** [or **Tamerlane** or **Tamburlaine** or **Timur** the Lame or **Timur** Lenk or **Timur-i** Lang; or **Temür** Kūregen or **Timūr** Gürkānī; accept the **Timurid** dynasty or **Gürkāniyān**; accept *After Tamerlane: The Rise and Fall of Global Empires, 1400–2000*; accept *The Rise and Rule of Tamerlane*]

<World History>

15. An artist from this state installed a skyscape courtyard at his alma mater called *Dividing the Light*. This state is the home base of James Turrell and other members of the Light and Space movement. A series of paintings focusing on industrial buildings in this state such as Fat Boy and Trade School is titled *Course of Empire*. Outside a museum in this state, there is a collection of 202 historic street lamps. The first generation of a "Figurative Movement" based in this state included David Park and Richard Diebenkorn. A painting set in this US state features a director's chair and a yellow diving board. The painting *A Bigger Splash* was created in this state by David Hockney. For 10 points, name this state that contains the Hollywood sign.

ANSWER: **California** [or **CA**] (The *Course of Empire* series is by Ed Ruscha.)

<Painting/Sculpture>

16. A character removes her cap and allows her dark hair to fall after throwing this object “among the withered leaves,” “a hand’s breadth” away from a source of water, after she acknowledges her love for another character. In the novel this object appears in, two characters ultimately share a tombstone that bears it. While waiting in a forest, a child tries to construct this object out of eelgrass. On a rainy day, this object is discovered to be hidden in the unoccupied second floor of a building inside a manuscript written by Jonathan Pue. Three characters see the sky resembling this object after a meteor falls while those characters are standing on a town scaffold. For 10 points, name this object worn by Hester Prynne as a symbol of her adultery in a novel by Nathaniel Hawthorne.

ANSWER: the **scarlet letter** [prompt on the letter **A**; prompt on a **letter**]

<American Literature>

17. A ruler of this city is linked to a “junior fisherman” who defeats Gudam. Another ruler of this city chants an incantation invoking a day when there is “no snake . . . neither wolf nor dog” and all languages are united into a single one. After a wise woman defeats a sorcerer in conjuring animals from a river, a ruler of this city triumphs over the Lord of Aratta. A soldier who later becomes king of this city survives an illness in a mountain cave and befriends the Anzu bird. Another king of this city has a prophetic dream of a falling star. Loaves of bread attest to the days that a ruler of this city sleeps while on a quest for immortality after the death of Enkidu. For 10 points, Enmerkar, Lugalbanda, and Gilgamesh were kings of what Mesopotamian city?

ANSWER: **Uruk** [or **Unug** or **Kulaba** or **Unug-Kulaba**] (The first clue refers to Dumuzid the Fisherman.)

<Mythology>

18. The exponential time hypothesis assumes that this problem requires two to the “little  $o$  of  $n$ ” time. Chaff and other modern algorithms for this problem are all based on an algorithm for it that resolves conflicts by backtracking up decision levels until an unexplored level is reached. The DPLL algorithm solves this decision problem that is easily solved with unit propagation if its inputs are in a form named for Alfred Horn. CNF formulas are inputs to this problem that is NP-complete by the Cook–Levin theorem. This problem is parameterized by the number of literals in each input clause. This problem is easily solvable for “ $p$  and  $q$ ” by setting both  $p$  and  $q$  to 1. For 10 points, name this problem of assigning values to binary variables to make a Boolean formula true.

ANSWER: **SAT** (“sat”) [or Boolean **satisfiability**; accept 3-**SAT**; accept  $k$ -**SAT**]

<Other Science>

19. Sonny Sharrock and David Burrell play on a 16-minute track titled for this country that opens the album *Tauhid*. This non-Nigeria country names Fela Kuti’s 1980s-era backing band. A musician named for a type of person from this country repeatedly sang, “The creator has a master plan,” on his spiritual jazz album *Karma*; that American saxophonist whose stage name draws on this country’s history soloed over keyboard arpeggios played by electronic musician Floating Points on the 2021 album *Promises*. An avant-garde bandleader who took his name from the mythology of this country led a namesake “Arkestra” and recorded the albums *Lanquidity* and *Space Is the Place*. For 10 points, the culture of what African country inspired the stage names of jazz musicians Sun Ra and Pharaoh Sanders?

ANSWER: **Egypt** [or Arab Republic of **Egypt**; or **Misr**; accept Ancient **Egypt**; accept “Upper and Lower **Egypt**”]

<Other Fine Art>

20. Nderit ware is found with evidence of this practice at sites like Hyrax Hill from the Elmenteitan and Savanna phases of its namesake period of the Neolithic in the Great Rift Valley. The (emphasize) *most recent* rock art at Twyfelfontein depicts a men's game with this practice, which was abandoned by the Strandlopers, estranging them from other Khoekhoe ("koy-koy"). Acacia was used to build bomas for this practice similar to the kraals on Nguni homesteads, which held anga that supplied material for oval shields. Trypanosomiasis and rinderpest limited the spread of this practice, which led to disputes that divided the Dinka and Nuer ("noo-air"). Selective pressure from this practice caused the Fulani and Maasai to evolve lactase persistence. For 10 points, what practice of nomadic African peoples involved raising fatty-humped zebu for hides, meat, and milk?

ANSWER: **herding** [accept raising **cattle** or **oxen** or **cows** or **bulls**; accept herding **sheep** or **goats** or **caprines**; accept **pastoralism** or **transhumance**; accept drinking **milk** or eating **dairy** before "milk"; accept raising **livestock** or animal **husbandry**; prompt on **nomadism**; prompt on **farming** or **agriculture** or **subsistence**; prompt on raising **animals**]

<Other History>

Tiebreaker. This country's Defense Food Research Laboratory aided quartermasters who used 198 distinct ration scales. Thousands of sailors from this country's navy mutinied during 1946 trials of collaborationists called "Jiffs." POWs from this country at the siege of Tobruk ("tuh-BROOK") formed a "Free" Waffen-SS legion, whose creator supported a provisional government based in Japanese-occupied Singapore with this country's Forward Bloc-aligned "National Army." Japan's offensive into this country, Operation U-Gō, was halted at the Battles of Kohima and Imphal. This country supported secessionist guerrillas in the 1971 "Liberation War" after a neighboring state's Operation Searchlight. Rice requisitions from this country led to a 1943 famine described in *Churchill's Secret War*. For 10 points, what country was split by a 1947 partition?

ANSWER: **India** [or Republic of **India** or **Bhārat** Gaṇarājya; accept British **Rāj**; accept **Bangladesh** or People's Republic of **Bangladesh** or Gônoprojatotrī **Bangladesh**; accept (British) **Indian** Army; accept **Indian** National Army or Āzād **Hind** Fauj; accept **Indian** Legion or **Indische** Legion or Free **India** Legion or Legion Freies **Indien** or **Indische** Freiwilligen Legion; accept Royal **Indian** Navy; prompt on **British Empire**]

<World History>

## BONUSES

1. To reach parturition, the fetus must first survive potential threats within the mother's body. For 10 points each:  
[10h] To stymie natural killer cells, this invasive part of the placenta expresses nonclassical MHC. The retroviral protein syncytin ("sin-SIT-in") directs the fusion of this structure, which proliferates alongside mesoderm to form chorionic villi ("kor-ee-ON-ick VILL-ee").

ANSWER: **trophoblast** [accept syncytiotrophoblast; accept cytotrophoblast; accept invasive extravillous trophoblasts or IETs]

[10e] Fetal alpha-fetoprotein binds these maternal hormones to stop them from counterintuitively "masculinizing" the rodent brain. Soy isoflavones are "phyto-" mimics of these sex hormones, but do not really affect male androgen levels.

ANSWER: **estrogens** [accept **estradiol** ("ess-truh-DAI-ol") or **estriol** or **estrone** or other answers that include those words; accept phytoestrogens; prompt on **steroid** hormones]

[10m] Drinking, smoking, and vaping all expose the fetus to this teratogen. The accumulation of this metabolic intermediate causes a "flush reaction" in some East Asian people with an alcohol dehydrogenase polymorphism.

ANSWER: **acetaldehyde** ("ass-it-AL-dih-hyde") [or **ethanal** or **acetic aldehyde** or **ethyl aldehyde**; accept **C<sub>2</sub>H<sub>4</sub>O**; prompt on **aldehydes**; reject "ethanol"]

<Biology>

2. The word "BOT" and a word meaning "white wash" can be seen above an ironing tool in a painting from this art movement titled *Linen*. For 10 points each:

[10h] Name this abstract art movement created after its founders left the artistic groups Jack of Diamonds and Donkey's Tail. This art movement was introduced by its founders at the famous Target exhibition.

ANSWER: **Rayonism** [or "**Rayism**"] (*Linen* is by Natalia Goncharova.)

[10e] Mikhail Larionov, one of the founders of Rayonism, wrote a manifesto along with Ilia Zdanevich titled "Why We Paint [this body part]." Makeup art is primarily applied to this body part.

ANSWER: the **face** [accept "Why We Paint Our **Faces**"; prompt on **head**; prompt on specific parts of the face, such as **eyes** or **lips**, by asking "can you be less specific?"]

[10m] Natalia Goncharova, the other founder of Rayonism, created a painting titled for Rayonist examples of these flowers. This flower appears twice in the title of a painting of two young girls holding lanterns in a garden.

ANSWER: **lilies** [accept *Carnation*, **Lily**, *Lily*, *Rose*; accept *Rayonist Lilies*] (*Carnation*, *Lily*, *Lily*, *Rose* is by John Singer Sargent.)

<Painting/Sculpture>

3. Cuddles, a lapdog who enjoys biting characters in this novel, is based on a real dog named Cuddles belonging to a friend of the author. For 10 points each:

[10m] Name this novel that ends with Haresh marrying Lata in a wedding that Kabir decides not to attend.

ANSWER: ***A Suitable Boy***

[10e] This Indian novelist wrote the 1,400-page novel *A Suitable Boy*. This author later returned his advance payment to Penguin after missing several deadlines for the sequel, *A Suitable Girl*.

ANSWER: Vikram **Seth** ("sayt", but accept phonetic pronunciations)

[10h] Seth partly blamed the delay of *A Suitable Girl* on his breakup with Philippe Honoré ("oh-no-RAY"), who has this profession. A Seth novel dedicated to Honoré depicts Michael Holme, who has this profession and is in love with Julia McNicholl.

ANSWER: **violinist** [or **violin** player; prompt on **musician**] (The novel is *An Equal Music*.)

<World Literature>

4. In *Red China's Green Revolution*, Joshua Eisenman argues that, after the failures of the Great Leap Forward, rural people's communes adopted productive agricultural innovations in the 1970s. For 10 points each:

[10e] Huà Guófēng's ("hwah gwo-fung's") 1978 ten-year plan directed communes to grow profitable cotton, which was introduced to Gānsù by this Qīng ("cheeng") governor who campaigned against the Huí ("hway").

Péng Zhǎngguì ("pung jahng-gway") may have invented this man's namesake chicken dish.

ANSWER: General **Tso** [or **Zuǒ** Zōngtáng or **Tso** Tsung-t'ang; accept **Zuǒ** Luózi; accept General **Tso**'s chicken or **Zuǒ** Zōngtáng jī; prompt on **Wénxiāng**; prompt on First Class Count **Kèjìng** or Yīdèng **Kèjìng** Bó]

[10m] Chinese and Filipino researchers grew semi-dwarf rice to increase this quantity, which was boosted by Yuán Lóngpíng's hybrid rice. India adopted Norman Borlaug's rust-resistant Mexican wheat varieties named for this quantity.

ANSWER: **yield** [or crop **yield**; accept high-**yield** rice or high-**yielding** varieties; accept **seed ratio**; prompt on **productivity** or **production**]

[10h] The "spirit" of Chén Yǒngguì's ("chun yoang-gway's") Dàzhài ("dah-jai") model commune in this province inspired a workpoint system to enforce productivity. Merchants from this coal-producing plateau province ran piàohào banks like Rìshēngchāng ("juh-shung-chahng") in Píngyáo.

ANSWER: **Shānxī** [or **Shansi**; accept **Shānxī** banks or **Shansi** banks; reject "Shaanxi" or "Shensi" if the player explicitly gives either of those spellings]

<World History>

5. A volume edited by Barbara Creed and Jeanette Hoorn examines how this behavior and tattooing were eroticized by colonial European encounters with the people of Tonga, Fiji, and Nuku Hiva. For 10 points each:

[10m] Name this behavior suggested by the remains in Gough's Cave in Cheddar Gorge. Marvin Harris argued that a kingdom's elites practiced this behavior to supplement chinampas due to the extinction of Pleistocene ("PLICE-tuh-seen") megafauna.

ANSWER: **cannibalism** [or **anthropophagy**; or descriptions like **eating human** flesh; accept *Cannibals and Kings*; prompt on eating **meat** or **carnivory** or **omnivory** or similar; prompt on **eating** or **feasting**; prompt on human **sacrifice**] (The kingdom was the Aztec Empire. The first line refers to *Body Trade*.)

[10h] Karina Croucher argued that Domuztepe's Neolithic Death Pit reflects this local, internal, "compassionate" type of cannibalism rather than warfare. Beth Conklin recorded this practice among Brazil's Wari' people.

ANSWER: **mortuary** cannibalism [or **funerary** cannibalism; accept **endocannibalism**; accept **funeral** cannibalism; accept consuming human **relics**; prompt on **ritual** cannibalism; prompt on eating dead **ancestors** or **kin** or **relatives** or similar] (Croucher wrote *Death and Dying in the Neolithic Near East*. Conklin's book is *Consuming Grief*.)

[10e] Memories of mortuary cannibalism may be preserved by the oral tradition in folktales like "The Country Where Death Is Not" told by the Shilluk people, whose "divine kingship" was analyzed in this book by James George Frazer.

ANSWER: *The **Golden Bough*** [or *The **Golden Bough**: A Study in Magic and Religion*; or *The **Golden Bough**: A Study in Comparative Religion*]

<Social Science>



6. This thinker was imprisoned for collaborating with Talleyrand (“tah-LAY-ron”) in a plot to strip the Notre-Dame Cathedral’s roof and sell it as scrap metal during the Reign of Terror. For 10 points each:

[10h] Name this French utopian thinker who advocated a religion called “New Christianity” to promote raising conditions of the working poor.

ANSWER: Henri de **Saint-Simon** [or Claude Henri de **Rouvroy**, comte de Saint-Simon]

[10e] One of Saint-Simon’s followers, Prosper Enfantin, sent the offensive “Companions of the Woman” to preach “New Christianity” while studying the viability of this project, which, when completed, drastically shortened shipping routes from Europe to the Indian Ocean.

ANSWER: **Suez Canal** [or **Qanātu as-Suways**]

[10m] Enfantin was imprisoned by this government for his Saint-Simonian views, which included wearing clothing inspired by contemporary feminine dress. Charles Philipon instigated the banning of political caricatures by repeatedly likening the head of this government to a pear.

ANSWER: **July Monarchy** [or **Monarchie de Juillet**; accept the reign of **Louis Philippe I**]

<European History>

7. A novel set in this country is composed of 60 vignettes of the title village, each named after “the time of” one of its archetypal characters, who are watched over by four archangels. For 10 points each:

[10h] Name this country whose fictional village of Primeval is located at the center of the universe in that novel. In another novel, a woman living in this country finds her neighbor Big Foot dead after he choked on a deer bone.

ANSWER: **Poland** [or Republic of **Poland** or Rzeczpospolita **Polska**]

[10m] *Primeval and Other Times* is a novel by this contemporary Polish author of *Drive Your Plow over the Bones of the Dead*, who wrote about the historical messiah claimant Jacob Frank (“YA-kub FRAHNK”) in *The Books of Jacob*.

ANSWER: Olga (Nawoja) **Tokarczuk** (“toh-KAR-chook”)

[10e] Tokarczuk’s (“toh-KAR-chook’s”) Nobel Prize lecture was titled after a “tender” one of these figures. In it, Tokarczuk theorizes about the existence of a “fourth-person” type of this figure, in contrast to the more common first-, second-, and third-person types.

ANSWER: **narrators** [accept first-person **narrator** or third-person **narrator** or second-person **narrator**; accept “The Tender **Narrator**”]

<European Literature>

8. The density of particles in this construct is constant per Liouville’s (“loo-vill’s”) theorem. For 10 points each:

[10m] Identify this construct in which a point is a pair of generalized coordinates and conjugate momenta.

ANSWER: **phase space**

[10h] Analytic functions on phase space form one of these mathematical objects under the Poisson (“PWAH-son”) bracket. These mathematical objects are a vector space with a map that is linear, is antisymmetric, and obeys the Jacobi identity.

ANSWER: **Lie** (“lee”) **algebras** [prompt on **algebras**; reject “Lie groups”]

[10e] Equations of motion named for this scientist describe the motion of a particle in phase space. Total energy can be represented by a function named for this scientist that is the Legendre (“luh-ZAHN-druh”) transform of the Lagrangian.

ANSWER: William Rowan **Hamilton** [accept **Hamiltonian**]

<Physics>

9. Apocryphally, upon hearing the phrase “without Chrysippus (“cry-SIP-us”), there would be no Stoa,” a member of this school responded, “And without Chrysippus, there would be no me.” For 10 points each:

[10e] Name this ancient school of thought, one branch of which was founded by Pyrrho. Members of this school, like Sextus Empiricus, questioned the possibility of knowledge, leading to a modern word referring to those who doubt the truth of something.

ANSWER: ancient **skepticism** [accept **academics**; accept Academic **skepticism** or Pyrrhonian **skepticism**; accept being a **skeptic**]

[10m] Ancient skeptics espoused *epoche* (“eh-po-KAY”), or the suspension of judgment, as the best way to achieve this Greek-language mental state usually translated as “freedom from disturbance.” This state was also considered the highest good in Epicureanism.

ANSWER: **ataraxia** (“at-uh-RACK-see-uh”) [accept **ataraxy**]

[10h] This skeptic scholar of the Academy argued that although there are no cognitive impressions, knowledge is still possible through probabilistic reasoning. This rival of Chrysippus (“cry-SIP-us”) names a “plank” in a thought experiment used to discuss self-defense killings.

ANSWER: **Carneades** (“car-NAY-uh-deez”) of Cyrene [accept Plank of **Carneades**]

<Philosophy>

10. A lullaby section is interrupted by the motif representing this character, which is first introduced by the flutes. For 10 points each:

[10h] Name this character represented by a repeated motif of three F-sharps, sometimes followed by an F-sharp, E, D, E, F-sharp pattern. Near the end of that symphonic poem, this title character throws a dead baby against a door.

ANSWER: the **Water Goblin** [or **Vodník**; or the **Water-Fay**; prompt on **goblin**]

[10e] This composer, who was inspired by Czech folk melodies to write his *Slavonic Dances*, composed *The Water Goblin*. This composer also wrote the *New World* Symphony.

ANSWER: Antonín **Dvořák** (“dih-vor-JAHK”) [or Antonín Leopold **Dvořák**]

[10m] A golden one of these objects reveals the murder of Dornička (“dor-NEECH-kuh”) in a different Dvořák (“dih-vor-JAHK”) symphonic poem. The motion of one of these objects is mimicked by constant rising and falling sixteenth notes played by the piano in a Franz Schubert Lied (“LEED”).

ANSWER: **spinning wheel** [accept *The Golden **Spinning Wheel***; accept “Gretchen am **Spinnrade**” or “Gretchen at the **Spinning Wheel**”]; prompt on **wheel**]

<Classical Music>

11. Clint Smith wrote a poem about being in the New Orleans Superdome in the aftermath of Hurricane Katrina for this project. For 10 points each:

[10e] Name this project headed by Nikole Hannah-Jones, which attempts to reframe American history around African American slavery. It is named for the year when the first slave ship landed on American soil in Virginia.

ANSWER: **1619** Project

[10m] This author wrote a short piece of fiction on the 1808 Act Prohibiting Importation of Slaves for the 1619 Project. This author edited a collection of essays on race titled *The Fire This Time* and set her novels *Salvage the Bones* and *Sing, Unburied Sing* in her native Mississippi.

ANSWER: Jesmyn **Ward**

[10h] This author wrote about Jesse Jackson’s “Rainbow Coalition” speech for the 1619 Project and wrote an essay about Outkast for Ward’s *The Fire This Time*. This author wrote the memoirs *Heavy* and *How to Slowly Kill Yourself and Others in America*.

ANSWER: Kiese **Laymon**

<American Literature>

12. After being interviewed the night before by televangelist James Dobson, a man used one of these devices in 1989 in front of a crowd wearing Ronald Reagan masks and banging frying pans. For 10 points each:

[10h] Name these devices that included one used by William Kemmler. Studies conducted by George Fell helped the dentist Alfred P. Southwick create these devices.

ANSWER: **electric chairs** (The first clue refers to Ted Bundy.)

[10m] A commission led by a member of this family concluded that the electric chair was the “most humane” execution method. Another member of this family was mocked in a cartoon that depicted Essex County as a dragon.

ANSWER: **Gerry** family [accept Elbridge **Gerry**; accept Elbridge Thomas **Gerry**]

[10e] Bruno Hauptmann was executed in the New Jersey State Prison’s electric chair Old Smokey after he was convicted for the 1932 kidnapping and murder of this aviator’s baby son in the “crime of the century.”

ANSWER: Charles **Lindbergh** [or Charles Augustus **Lindbergh**]

<American History>

13. A 1998 Springer text written by Martin Aigner and Günter M. Ziegler made this concept real. For 10 points each:

[10h] Name this concept conceived of by a mathematician who called children “epsilons” and compared giving oral exams to torturing his students. God maintains the perfect proofs of theorems within this concept.

ANSWER: “The **Book**” (of Paul Erdős) [accept *Proofs from THE **BOOK***; reject answers that specify “book” but attribute it to someone other than Paul Erdős]

[10m] Paul Erdős (“er-dush”) and Alfréd Rényi’s (“REE-nee’s”) probabilistic method for this type of proof closes Aigner and Ziegler’s *Proofs from THE BOOK*. This type of proof, which can be constructive or nonconstructive, demonstrates the correctness of a logical statement written with a backwards E quantifier.

ANSWER: **existence** [accept **existential** proof]

[10e] *Proofs from THE BOOK* includes Roger Heath-Brown’s proof that every prime of the form “ $4m + 1$ ” can be written as the sum of two of these numbers. The product of an integer with itself is one of these numbers.

ANSWER: perfect **square** numbers

<Other Science>

14. Ōshētar, Ōshētarmāh, and Saoshyant became posthumous sons of this man after his preserved seed impregnated a maiden swimming in a lake. For 10 points each:

[10m] Name this prophet who, in emic tradition, composed hymns that emphasized *asha*, or truth-telling. This man foretold of a cleansing event called Frashokereti (“FRAH-shoh-kuh-REH-tee”).

ANSWER: **Zoroaster** [or **Zarathushtra** Spitama; or Ashu **Zarathushtra**; or **Zōroastrēs**]

[10e] In Zoroastrian tradition, Frashokereti is this sort of event, which is central to eschatology (“ess-kuh-TAH-luh-jee”). In the Bible, this event coincides with the Second Coming of Christ and the Last Judgment, as foretold in the Book of Revelation.

ANSWER: **end** of the world [accept the **apocalypse**; accept the **end** times; accept **armageddon**]

[10h] *Two answers required.* During Frashokereti, Aryaman and Atar will create a river of one of these liquids that will destroy the wicked who pass through it. However, the righteous who pass through the river will experience it as if it were this other liquid. Name both liquids.

ANSWER: molten **metal** [or molten **gold**] AND warm **milk**

<Religion>

15. In this effect, strong sigma-donor and pi-acceptor compounds like carbon monoxide and ethylene influence the position of an incoming ligand. For 10 points each:

[10h] Name this effect in inorganic substitution reactions of square planar compounds in which certain ligands influence the substitution rate at a particular relative position.

ANSWER: **trans** effect [or kinetic **trans** effect; accept thermodynamic **trans** effect]

[10m] The synthesis of this chemotherapy drug is a classic example of the trans effect. Two ammonia ligands substitute trans to the two chloride ligands coordinated to the central platinum atom of this square planar complex.

ANSWER: **cisplatin** [or **Platinol** or **cisplatinum** or **platamin** or **neoplatin** or **cismaplat** or **cis-diamminedichloroplatinum(II)**]

[10e] In contrast to the trans effect, the cis effect is most commonly observed in complexes with this geometry. In this geometry, six ligands are symmetrically bound to the central atom, corresponding to the six vertices of an eight-faced figure.

ANSWER: **octahedral** geometry

<Chemistry>

16. This politician removed Marcus Octavius from office for repeatedly vetoing the passage of the redistributive *Lex Sempronia Agraria* opposed by wealthy landowners in the Senate. For 10 points each:

[10m] Name this Roman tribune who was beaten to death with wooden chairs during a Senate brawl incited by his cousin Scipio Nasica.

ANSWER: **Tiberius Gracchus** [or **Tiberius Sempronius Gracchus**; prompt on **Gracchus**]

[10h] After the murder of Tiberius Gracchus, Scipio Nasica was exiled to this city to evade retribution. Gracchus attempted to fund the *Lex Sempronia Agraria* using wealth from this city, which Attalus III willed to the Roman people upon his death.

ANSWER: **Pergamon** [or **Pergamum**; or **Pergamos**; accept Kingdom of **Pergamon**]

[10e] A Mary Beard book titled for this abbreviation suggests that Scipio Nasica supposedly drew “his toga over his head” like Roman priests “to make the murder look like a religious act.” This four-letter Latin abbreviation refers to the “Roman Senate and people.”

ANSWER: **SPQR** [or **Senatus Populusque Romanus**]

<Other History>

17. Cornmeal is dumped on these animals as part of a Hopi dance that symbolizes the return of kachinas to the mountains. For 10 points each:

[10e] Name these animals. Performers using an instrument called a pungi don’t actually hypnotize these animals, which come out of baskets to perform tricks like a “hood kiss” in a street performance popular in South Asia.

ANSWER: **snakes** [or **serpents**; accept specific types of snake, such as **cobras** or **asps** or **vipers**; accept **snake** charming; accept the **Snake** Dance]

[10h] This cabaret dancer performed waving moves in hundreds of yards of silk cloth as part of her “serpentine dance.” Henri de Toulouse-Lautrec frequently painted this dancer performing with poles attached to her arms.

ANSWER: Loie **Fuller** [or Louie **Fuller**; or Loie **Fuller**]

[10m] Ropes resembling snakes appear in this choreographer’s ballet *Horizons*. This choreographer of *Deaths and Entrances* developed contraction-and-release breathing, preferred to dance barefoot, and placed four bonnet-wearing women clapping on a bench in front of a white wall in another ballet.

ANSWER: Martha **Graham** [accept the **Graham** technique] (The unnamed ballet is *Appalachian Spring*.)

<Other Fine Arts>

18. A protagonist claims that a character who worked at Loughborough (“LUFF-bor-oh”) House embodies this quality. For 10 points each:

[10h] Name this quality that the protagonist illustrates with the story of a man discovering a tiger under a dining table. In the village of Moscombe (“MOSS-coom”), Harry Smith argues that this quality is “not just something for gentlemen.”

ANSWER: **dignity** [or being **dignified**; specific answer required, but prompt on any description equivalent to “being a **good butler**”]

[10e] The butler Stevens frequently reflects on the meaning of “dignity” in this author’s novel *The Remains of the Day*. This author also wrote *Never Let Me Go*.

ANSWER: Kazuo **Ishiguro**

[10m] At the end of the novel, Stevens asks, “What dignity is there in that?” after realizing that he trusted every choice made by this employer. Before working for Mr. Farraday, Stevens works for this Nazi-sympathizing lord at the hall that shares his name.

ANSWER: Lord **Darlington** [accept **Darlington** Hall]

<British Literature>

19. In a heavily criticized attempt to help save Christmas, the Home Office made 5,000 three-month visas available in this occupation and 5,500 three-month visas available for poultry workers. For 10 points each:

[10m] Identify this occupation that, in the US, must maintain a log of work and rest periods during a 14-hour workday. XPO, J. B. Hunt, and Knight-Swift are some of the largest employers of this occupation in the US.

ANSWER: **truck drivers** [or **truckers**; or **lorry drivers**; accept **teamsters**; accept **heavy goods vehicle** or **HGV drivers**; accept **large goods vehicle** or **LGV drivers**; prompt on **drivers**; prompt on **shippers**]

[10e] The shortage of lorry drivers in the UK contributed to the shortage of this good. The average price of this good soared to 3 dollars and 42 cents per gallon in the US in October 2021.

ANSWER: **oil** [or **petroleum**; accept **petrol** or **gasoline** or **fuel**; reject “natural gas”]

[10h] The EU also faces a truck driver shortage, with many companies concerned about coming regulations requiring drivers engaged in this type of transport to receive the minimum wage of the country where they are working. This type of transport is the domestic movement of freight by foreign-registered vehicles.

ANSWER: **cabotage** (The regulations are part of the EU’s Mobility Package, which was approved in 2020.)

<Current Events>

20. In the *Iliad*, Helen is first encountered performing this activity to make a depiction of the Trojan War, in an episode some scholars have interpreted as metapoetic. For 10 points each:

[10e] Name this activity. Arachne (“ah-RACK-nee”) is transformed into a spider after not only failing to defeat Athena but also mocking the gods in a contest of this activity.

ANSWER: **weaving** [or word forms like **weavers**; or **making a tapestry**; prompt on answers indicating **textile production** or **crafting**]

[10h] Weaving often highlights female agency in Greco-Roman myth, such as when Penelope delays the suitors by constantly weaving and unweaving a funeral shroud for this person.

ANSWER: **Laertes** [prompt on “**Odysseus’s father**” or “**Penelope’s father-in-law**”]

[10m] One of these sisters weaves a tapestry to communicate with the other after Tereus (“TARE-ee-us”) rapes her and cuts off her tongue. After carrying out their revenge, one of these sisters transforms into a nightingale, while the other turns into a swallow. Name either.

ANSWER: **Philomela** (“fil-oh-MEE-luh”) OR **Procne**

<Mythology>

Extra. This Nebraska-born composer used Sibelius-esque (“sih-BAY-lee-us esk”) harmony and borrowed the “heliotropic” melody technique from his contemporary Roy Harris in his “Romantic” Second Symphony. For 10 points each:

[10h] Name this composer who shaped the American neoromantic movement as the head of the Eastman School of Music for four decades. He composed the opera *Merry Mount*.

ANSWER: Howard **Hanson** [or Howard Harold **Hanson**]

[10e] Hanson’s protégé William Schuman further shaped the direction of American music as the head of this New York City conservatory, considered the most prestigious in the United States.

ANSWER: **Juilliard** (“JOO-lee-ard”) School of Music

[10m] Hanson’s Fourth Symphony, which is dedicated to his father, is titled for this type of work. Alessandro Manzoni was the dedicatee of a rare non-opera piece of this type by Giuseppe Verdi.

ANSWER: **requiem** mass [accept *Messa da **Requiem***; prompt on mass for the dead or missa]

<Classical Music>