

2021 ARCADIA 🐉

Edited by Vincent Du, Jacob Egol, Henry Goff, Hasna Karim, Grant Peet, Ryan Rosenberg (head), Payton Schubel, Kevin Thomas, and Annabelle Yang

Written by Michael Bucknall, Daniel Cronin, Jim Fan, Eric Gunter, Kevin Jiang, Caroline Mao, Erik Novak, Jonathan Shauf, Ashish Subramanian, Raymond Wang, Brandon Weiss, Justin Zhang, and the editors

Packet 5: It might be better to disguise that with another pronoun like “this region.”

Tossups

1. Theodore Levin studied “sound mimesis” in one form of this music. An extinct Ainu form of this music called *rekuhkara* resembles another form of it that originated as a game while men were on hunting trips. The two-stringed *igil* and three-stringed *doshpuluur* accompany a form of this music that a non-British band called the Hu blends with heavy metal. A playful form of this music features a pair of women rhythmically trying to outlast each other and is performed solo by (*) Tanya Tagaq. Another form of this music is based on a pentatonic scale because its practitioners avoid certain harmonics. The Alash Ensemble performs in that style of this music which employs a mid-to-low-range fundamental, *khöömei* (“HO-may”). For 10 points, name this music in which multiple pitches are sung simultaneously, practiced in Mongolia and Tuva with a namesake body part.

ANSWER: throat singing [or overtone singing or throat chanting or throat harmony or hooliin choir; accept khoomer until read; accept katajjaq or kargyraa; prompt on singing until “sung” is read]

<AY, Auditory Arts>

2. After telling a member of this family about her desire to burn down her house, a “wretch” purposefully slams the door on her own finger. Kolya shouts “Hurrah for [this family]” after a member of this family inspires the schoolboys after their friend’s death. After his arrest, a member of this family admits to taking his father’s brass pestle. One member of this family is distressed by the (*) stinking corpse of Father Zosima. Katerina’s letter causes one member of this family to be convicted of his father’s murder. A member of this family claims that, without God, everything is legal, and he denounces Jesus in the Parable of the Grand Inquisitor. For 10 points, name this family including Alyosha, Dmitri, and Ivan, who title a novel by Fyodor Dostoevsky.

ANSWER: Karamazov [accept Alyosha Karamazov or Dmitri Karamazov or Ivan Karamazov; accept *The Brothers Karamazov* or *Brat’ya Karamazovy*]

<JF, European Literature>

3. The pteropod *L. helicina* is highly susceptible to this phenomenon and is thus used as an indicator species for it. An instance of this phenomenon caused by volcanic activity from the Central Atlantic Magmatic Province was likely a major factor in the Triassic-Jurassic mass extinction event. Resistance to this phenomenon is measured with the Revelle factor. This phenomenon causes the saturation horizon of aragonite to move closer to the surface, reducing (*) calcification in some organisms. This phenomenon prevents corals from absorbing calcium carbonate into their skeletons, worsening the thermal effects that lead to bleaching. For 10 points, name this process in which extra hydrogen ions from dissolved atmospheric CO₂ decrease the pH of Earth’s waters.

ANSWER: ocean acidification [or OA; prompt on answers that indicate increased CO₂ levels; prompt on climate change; prompt on acidification]

<EG, Other Science: Earth Science>

4. Eleanor Leacock repopularized a book based on notes taken by *this* thinker and drew on it to argue that the Naskapi patriarchy emerged after the introduction of the fur trade. According to Eric Wolf, “kin-ordered” and “tributary” modes preceded a historical process described by this thinker. This thinker’s notes on Morgan’s *Ancient Society* informed a *collaborator’s* work on the (*) economic origins of the family. This thinker argued that markets treat goods as the mediators of social relationships, a concept that he termed

“commodity fetishism,” and which is part of his broader theory of individuals' alienation from society and their work. For 10 points, name this thinker who used historical materialism to trace the rise of capitalism, the author of *Das Kapital*.

ANSWER: Karl **Marx** [or Karl Heinrich **Marx**]

<VD, Social Science: Anthropology>

5. *Note to players: exact phrase required. As early as 1781, the use of this phrase in the Massachusetts Constitution was held to apply to the plaintiffs in the case *Brom and Bett v. Ashley*. Howard Zinn noted that Thomas Jefferson justified using a certain word in this phrase by saying that an excluded group would be “too wise to wrinkle their foreheads with politics.” A document that famously amended this phrase was only adopted with the support of (*) Frederick Douglass. This is the first in a list of phrases that are analogized to a promissory note in a speech that calls this phrase “the true meaning of our creed.” This phrase was modified to include another group in the Declaration of Sentiments. This phrase is followed by a reference to its subjects being “endowed by their Creator.” For 10 points, what phrase from the Declaration of Independence is the first of a list of truths that are held to be “self-evident?”*

ANSWER: “**all men are created equal**” [accept anything containing those words in order]

<RR, American History>

6. Robert Rosenblum linked J.M.W. Turner and this artist to the “vision and feeling” of Mark Rothko’s *Light Earth Over Blue*. While viewing one of this artist’s paintings, Samuel Beckett told a friend that it “was the source of *Waiting for Godot*, you know.” Defying the hierarchy of genres, this artist depicted “evergreen fir trees, and evergreen ivy [twining] about the base of a cross” in a landscape meant to serve as an altarpiece. Uprooted tree roots appear beside a path as two men (*) contemplate the moon in another scene this artist revisited several times. This painter popularized the Rückenfigur (“ROOK-in-fee-GOOR”), or a figure viewing majestic landscapes seen from the back. That motif is used for a man with a cane on a rocky outcrop in, for 10 points, what German Romantic artist’s *Wanderer Above the Sea of Fog*?

ANSWER: Caspar David **Friedrich** (See Rosenblum’s “The Abstract Sublime” or *Modern Painting and the Northern Romantic Tradition: Friedrich to Rothko*; the Beckett clue refers to *Two Men Contemplating the Moon*.)

<DC, Visual Arts>

7. This book declares, “imagine [one woman] to be a man,” in its reading of her as the hero of the story of Tobit. A key paradox in this book is described in its “Preamble from the Heart.” This book uses Faust’s silence to explain what a true doubter is as part of its analysis of concealment and revelation. This book distinguishes the individual that isolates themselves above the universal from figures like Agamemnon, who exemplifies the tragic (*) hero. This book describes a figure who recovers everything by virtue of the absurd and has moved beyond infinite resignation. The first of this book’s three *problemata* asks whether there exists a “teleological suspension of the ethical” and describes the “knight of faith.” For 10 points, name this book about Abraham’s willingness to sacrifice Isaac, by Søren Kierkegaard.

ANSWER: ***Fear and Trembling*** [or ***Frygt og Bæven***]

<MB, Philosophy>

8. Polyethylene glycol is a common component of “screens” involved in preparing analytes for this technique, a step which can also be complicated by twinning. This technique’s R-factor describes the quality of the models generated from its data and is calculated as the normalized difference between structure factors. Data obtained after soaking analytes in a heavy atom-containing solution can be used to generate a Patterson difference map to solve this technique’s (*) phase problem. Patterns generated by this technique are related to electron density by Fourier transforms. An image showing a periodically broken X-shape, Photo 51, was taken using this technique whose results are interpreted using Bragg’s law. For 10 points, name this technique used to solve protein and nucleic acid structures.

ANSWER: X-ray crystallography [or X-ray diffraction or XRC or XRD; prompt on partial answers]
<HK, Chemistry>

9. At the end of a story by this author, a girl translates a Latin passage about “what fate has in store” while thinking about a baby named Omar. In that story by this author, Johanna ships furniture to her future husband, then cures him of his bronchitis, after being tricked by two girls writing fake love letters. The narrator of another story by this author worries that a leukemia scare altered her love for her daughter (*) Nichola. A retired professor loses his Alzheimer’s-stricken wife Fiona to another man in this author’s story “The Bear Came Over the Mountain.” This author wrote a story in which Janet quizzes her ailing father on the title objects after visiting a planetarium. For 10 points, name this Nobel-winning Canadian author of “The Moons of Jupiter.”

ANSWER: Alice Munro [or Alice Ann Munro; accept Alice Ann Laidlaw] (The first story is “Hateship, Friendship, Courtship, Loveship, Marriage.”)
<HG, British Literature>

10. While awaiting grain ships during a siege on this island, a commander pacified starving mercenaries by offering them drinking cups. On this island, the death of Leptines caused the rout of one force at the Battle of Cronium. A commander self-immolated on a sacrificial pyre after he saw his troops flee a battle on this island that allegedly occurred on the same day as the Battle of Salamis. The tyrants Theron and Gelon won the Battle of (*) Himera on this island. The Mamertines seized this island’s city of Messana. On this island, Hamilcar Barca waged a guerrilla war against Rome during the First Punic War. A scientist is alleged to have used a “heat-ray” to destroy enemy ships during a siege on this island. For 10 points, Archimedes died during a Roman siege of what island’s city of Syracuse?

ANSWER: Sicily [or Sicilia; accept the Sicilian Wars; accept Thrinacia or Trinacria] (Himilco offered drinking-cups during the Siege of Acragas.)
<KT, Ancient History / Archaeology>

11. In a novel named for one of these animals, Fleece requests the beasts eating this animal be civilized while giving a sermon. A Guernsey man attributes the stinking corpse of one of these animals to a plague on the *Bouton de Rose*. A man in a cassock made from this animal cuts this animal’s hide as thin as “bible leaves.” A cannibal is hired to hunt these animals after spearing a distant tar speck representing an eye. These animals are classified as (*) Folio, Octavo, or Duodecimo by a man who records a sermon about these animals from Father Mapple. One of these animals is first spotted in “The Chase.” A man clings to a coffin after his captain’s obsession with one of these animals destroys the *Pequod*. For 10 points, name these animals featured in Herman Melville’s *Moby Dick*.

ANSWER: sperm whales [accept white whales]
<PS, American Literature>

12. This polity practiced a conflict resolution method of “celestial judgment” in which two parties sat in stone towers in front of a palace until one fell ill. Recent research on the slow decline of this polity supports Bernard-Philippe Groslier’s claim that the decline resulted from overdevelopment of a “hydraulic city.” The first capital of this polity, named for the deity Harihara, houses early examples of “temple mountains.” To store (*) water as part of an extensive irrigation system, this polity constructed *barays* in major cities. Zhōu Dáguān described a temple complex in this polity at Bayon, built on the orders of Jayavarman VII. For 10 points, name this empire, whose ruler Suryavarman II commissioned a temple complex at Angkor Wat, in modern Cambodia.

ANSWER: Khmer Empire [or Chakraphop Khmer]
<DC, World History>

13. **Henry K. Beecher published a 1966 article calling for regulation of this practice; that article cited the case of the Willowbrook State School. The 1964 Declaration of Helsinki set worldwide guidelines for this practice, which are set in the United States by the Common Rule. The CITI Program offers courses in this practice's SBE and Biomed subtypes. The (*) Belmont Report establishes three guidelines for this practice, including justice and beneficence. Convenience has led to this practice being dominated by a group described by the acronym WEIRD. This practice may require the approval of institutional review boards, which were established in response to ethical violations like the Tuskegee syphilis study. For 10 points, name this heavily safeguarded practice whose participants have to give informed consent.**

ANSWER: **human subjects research** [accept **human research** or **human experiments** or **human clinical trials** or **human studies**; accept answers that mention specific types of humans like **child research**; prompt on medical **research** or medical **experiments** or **clinical trial** or **studies** by asking, "On what subjects?"]

<RR, Social Science: Misc.>

14. **Josef Hoffmann decorated the interior of the Cabaret Fledermaus with this medium. Pacman ghosts and other video-game-inspired works in this medium are created by the French street artist Invader. M.C. Escher became fascinated with designs in this medium on a visit to the Alhambra. A frieze in this medium filled with spiraling golden branches representing the Tree of Life was designed for the (*) Palais Stoclet by Gustave Klimt. The *trencadis* technique incorporates chinaware into this medium. A winding bench designed by Josep Maria Jujol is decorated with patterns in this medium, as is a colorful salamander placed at the entrance to Park Güell by Antoni Gaudí. Smaller pieces called tesserae are assembled to form these artworks. For 10 points, images and patterns are formed by colored glass and stone in what artworks?**

ANSWER: **mosaics** [accept **tilework**; prompt on **tessellations**]

<DC, Other Arts: Fashion/Decorative/Misc.>

15. **Fibrillarin catalyzes this modification on U6 snRNAs in Cajal bodies. One class of iron-sulfur proteins generates a 5-prime-deoxyadenosyl radical in one unusual mechanism to catalyze this reaction at unreactive carbon centers. The cofactor used by those enzymes more commonly yields S-adenosyl homocysteine after being used to perform this reaction. In *E. coli*, MutH selectively cleaves strands *not* subject to this modification by (*) Dam in a form of mismatch repair. Sodium bisulfite converts cytosine to uracil in a PCR variant that amplifies sequences with this modification. This modification's effect on histones may be contrasted with acetylation, though it can be either deactivating or activating, and it frequently occurs at CpG islands in DNA. For 10 points, name this modification, the addition of a CH₃ ("C-H-three") group.**

ANSWER: **methylation** [accept adding a **methy** group; accept adding a **CH₃** group until read; accept DNA **methylation** or histone **methylation**] (The class of iron-sulfur proteins in the second clue is the radical SAM enzyme class.)

<HK, Biology>

16. **This technology nicknames the beach town of El Zonte, where an early rollout of this technology required residents to download the Chivo app. The state-owned company LaGeo harnesses energy from volcanoes to create this technology. Dash was plagiarized by the Venezuelan government to create an example of this technology linked to oil production. That example of this technology, (*) petro, was intended to skirt American sanctions. Nayib Bukele, the so-called "world's coolest dictator," standardized the use of this technology in El Salvador. A global graphics card shortage has been amplified by rigs with large carbon footprints used to "mine" this technology. For 10 points, name this digital media of exchange, examples of which include Bitcoin.**

ANSWER: **cryptocurrency** [anti-prompt (ask "Can you be less specific?") on specific types of cryptocurrencies like **Bitcoin**]

<AS, Current Events>

17. Timothy Garton Ash emphasized the success of mass mobilization during this year in his eyewitness account *We the People*. Hungarian border guards allowed hundreds of refugees to pass into Austria during the Pan-European Picnic in this year, the outset of a European history by Philipp Ther. Opposition negotiators led by Adam Michnik earned the rights to free elections in this year, after which their party won 99 of 100 senate seats. Protesters in (*) Wenceslas Square jingled keys to symbolize the end of a Communist regime in this year, building upon the success of Solidarity at the Round Table Talks in Poland. The Velvet Revolution ended single-party rule in Czechoslovakia during this year. For 10 points, name this year during which protesters toppled the Berlin Wall.

ANSWER: 1989

<GP, European History>

18. During these events, Baznayeh Assyrians poke a priest's shoulders with needles in order to drive out the demons who live there. In Spanish-speaking countries, Catholics bless and exchange thirteen coins called *las arras* during these events. Eastern Orthodox participants in these events perform the "dance of Isaiah" by circling the *analogion* three times after they are (*) crowned by a priest. In Catholicism, obtaining this sacrament prevents one from obtaining holy orders. These events are seen as being "good" by the Catholic Church because Jesus performed his first miracle of turning water into wine while attending one of them at Cana. For 10 points, name these ceremonies in which individuals exchange vows and rings as "two become one."

ANSWER: weddings [or marriages; accept answers like holy matrimony]

<DC, Beliefs>

19. Ensembles of matrices with this property model the fluctuations of chaotic quantum systems by the Bohigas conjecture. The GUE ("G-U-E") and GOE ("G-O-E") are ensembles of matrices with this property, which Eugene Wigner used to model heavy nuclei. In Langevin dynamics, the force is the sum of a potential gradient, a friction term, and a term with this property. The 2D case of a model named for this property is analogized to a drunkard, and predicts an RMS distance of "square root N " after N (*) steps. Thermodynamic properties are estimated by averaging over inputs with this property in the Monte Carlo method. In the continuum limit, an ensemble of "walks" named for this property gives rise to the diffusion equation. For 10 points, Brownian motion is a process with what general property because its direction is unpredictable?

ANSWER: randomness [accept stochasticity; accept random matrix theory or random walk]

<VD, Physics>

20. The narrator of a poem by this author lists "when I saw her limping before the crippled" as one of "seven times I have despised my soul." This author created a character who promises to "build another tower in the sky" and compares death to "stand[ing] naked in the wind and melt[ing] in the sun." A long poem by this author includes the line "half of what I say is meaningless," which appears in the Beatles song "Julia." A book by this author begins with discussions of (*) love, marriage, and children by a man who has awaited a ship for twelve years. This author of "Sand and Foam" wrote a book in which the seeress Almitra prompts the title character to deliver a series of sermon-like speeches to the people of Orphalese. For 10 points, name this Lebanese author of *The Prophet*.

ANSWER: Kahlil Gibran [or Gibran Khalil Gibran]

<HG, World Literature>

Bonuses

1. The Tomlinson Report advocated a “separate freedoms” approach to spur the rehabilitation of these locations. For 10 points each:

[10h] Name these locations, to which a 1970 law universally assigned citizenship based on ancestral lineage. Donald Woods was banned from editing the *Daily Dispatch* following a 1976 uprising in one of these locations.

ANSWER: **bantustans** [or **homelands**; accept **Bantu Areas** or **scheduled areas** or **townships**; prompt on **Soweto**]

[10e] Hendrik Verwoerd forced black South Africans into bantustans as part of this national policy of racial segregation.

ANSWER: **apartheid**

[10m] Police murdered protestors against the implementation of restrictive “pass laws” during this 1960 event. Nelson Mandela later inaugurated an amended South African constitution at the site of this event.

ANSWER: **Sharpeville** Massacre

<GP, British/Commonwealth History>

2. In the *Multani* case, the Canadian Supreme Court ruled a Sikh child could wear a *kirpan* to school. Answer the following about other ways Sikhism is practiced in modern-day Canada, for 10 points each.

[10m] Joginder Dhanjal analyzed how these houses of prayer have adapted to community needs with libraries and basketball courts in addition to traditional rooms like the *darbar sāhib* that houses the Gurū Granth Sāhib.

ANSWER: **gurdwārās**

[10e] Abbotsford has the highest rate of this practice in Canada due to a large Sikh community that follows the principle of *dasvandh*, which calls for a “tenth part” of one’s income to be used for this action.

ANSWER: **donating** [accept word forms; accept equivalents such as giving to **charity** or **almsgiving**; accept **tithing**]

[10h] During the COVID-19 pandemic, Sikh kitchens known as *langārs* have provided Canadians with free vegetarian meals that can be consecrated by reciting *this* prayer before the Gurū Granth Sāhib. This three-part Sikh petition to Waheguru closes worship services.

ANSWER: **Ardās**

<AS, Beliefs>

3. In the short story “A Dill Pickle,” a man recalls his companion saying the phrase “Geranium, marigold, and verbena” during an afternoon together in this location. For 10 points each:

[10h] Name this location that titles a Virginia Woolf short story which begins by intercutting Simon and Eleanor’s memories with a snail’s journey through a flowerbed.

ANSWER: **Kew** Gardens [prompt on **gardens**]

[10e] Woolf may have been inspired to write “Kew Gardens” by this friend of hers, a New Zealand short story author who wrote “A Dill Pickle” and “The Garden Party.”

ANSWER: Katherine **Mansfield** [or Kathleen Mansfield **Beauchamp**]

[10m] In Mansfield’s story “Prelude,” Linda realizes that this concept is “laughable, simply laughable” while observing an aloe in her garden. “The Garden Party” ends with Laura twice asking her brother, “Isn’t [this concept]”?

ANSWER: **life** [accept “**Isn’t life**, isn’t life—”]

<CM, British Literature>

4. Sigma-1 receptor complexes sensitive to this ion regulate signaling between the mitochondria and endoplasmic reticulum that is crucial to cell survival. For 10 points each:

[10e] Name this divalent cation with which the ER floods the mitochondria prior to apoptosis. This ion stored in bones binds to troponin during muscle contraction.

ANSWER: **calcium** [or **Ca²⁺**]

[10m] The anti-apoptotic protein Bcl-2 also downregulates this process by reducing the amount of calcium released during ER stress. ULK1 phosphorylates Beclin-1 to induce this process, whose study earned Yoshinori Ohsumi a Nobel Prize.

ANSWER: **autophagy** [or **macroautophagy**; or **autophagocytosis**]

[10h] Calcium-mediated autophagy proceeds via the inhibition of this enzyme that phosphorylates ULK1, rendering it inactivated. This protein is inhibited by a macrolide drug used to prevent organ transplant rejection.

ANSWER: **mTOR** [or **mechanistic target of rapamycin**; or **mammalian target of rapamycin**; or **FRAP1**; or **FK506-binding protein 12-rapamycin-associated protein 1**; prompt on **TOR** or **target of rapamycin**]

<AY/HK, Biology>

5. This thinker introduced the concept of the “epistemological break” in the philosophy of science. For 10 points each:

[10h] Name this French philosopher. Later in life, he became deeply interested in psychoanalysis and surrealism and wrote an intensely lyrical exploration of homes and dream-spaces called *The Poetics of Space*.

ANSWER: Gaston **Bachelard**

[10e] Bachelard taught Georges Canguilhem, the doctoral advisor of this philosopher. They are both cited in the introduction to *The Archaeology of Knowledge*, in which this philosopher outlines the historical method that he used in studies like *Discipline and Punish*.

ANSWER: Michel **Foucault** [or Paul-Michel **Foucault**]

[10m] The concept of the "epistemological break" anticipated some aspects of the "paradigm shifts" described in *this* landmark book by Thomas Kuhn about how science progresses.

ANSWER: *The **Structure of Scientific Revolutions***

<VD, Philosophy>

6. In an ode, this woman was lionized as a “man” who “avenged the humans” while men are “vile eunuchs, a cowardly herd without a soul.” For 10 points each:

[10m] Name this woman who reportedly declared, “I have killed one man to save a hundred thousand,” before wearing a red blouse saved for traitors during her execution.

ANSWER: Charlotte **Corday** [or Marie-Anne Charlotte de **Corday** d’Armont]

[10e] Rather than disrupting the radical revolutionaries, Corday’s assassination of Jean-Paul Marat caused the Montagnards, led by this lawyer, to seize power and propagate the Reign of Terror.

ANSWER: Maximilien de **Robespierre** [or Maximilien François Marie Isidore de **Robespierre**]

[10h] In a crackdown on emerging feminist thought, Robespierre ordered the execution of this pamphleteer, who argued for gender equality in a work whose title plays on a 1789 document drafted by the Marquis de Lafayette and Thomas Jefferson.

ANSWER: Olympe **de Gouges** [accept Marie **Gouze**] (The unnamed pamphlet is “Declaration of the Rights of Woman and of the Female Citizen,” which plays on “Declaration of the Rights of Man and of the Citizen.”)

<DC, European History>

7. This woman portrayed Mao Zedong’s wife Jiang Qing in a propaganda film, then lost her job at the film studio after Jiang’s arrest. For 10 points each:

[10h] Name this author of *Red Azalea*, a memoir that recounts her time working on a collective farm in Maoist China before she emigrated to the United States. This author also wrote the novel *Becoming Madame Mao*.

ANSWER: Anchee **Min** [or **Min** Ānqí]

[10e] In *Red Azalea*, Min translates her own name as “[this object] of Peace.” Min’s mother later introduces her to *Dream of the Red Chamber*, whose protagonist is born with a piece of this precious stone in his mouth.

ANSWER: **jade** [accept **yù**]

[10m] Min’s memoir recalls her grandmother recommending that a chicken be cooked with this substance. A Mo Yan novel follows three generations of a Shandong family who produce this substance.

ANSWER: **sorghum wine** [accept **gāoliang jiǔ**; prompt on wine or alcohol; prompt on sorghum or *Red Sorghum* by asking, “What substance is being produced from the sorghum?”]
<JF/HG, World Literature>

8. Maurizio Ferrera developed the Southern model to characterize these institutions in Europe, supplementing three existing “worlds” presented in Gøsta Esping-Andersen’s seminal monograph. For 10 points each:

[10m] Name these institutions. The Beveridge Report recommended the creation of one of these institutions in the United Kingdom.

ANSWER: **welfare states** [prompt on NHS or National Health Service or national health insurance by asking, “The NHS was created as part of a larger effort to create what sort of institution?”]

[10e] Governments in Southern model welfare states generally provide less robust old age pensions due to large examples of these units. In the “extended” type of these units, younger wage earners support retired parents or grandparents.

ANSWER: **families** [or **family**]

[10h] Ferrera characterizes the Southern welfare state as operating in this system, in which patronage networks distribute social benefits. Putnam contrasted “programmatically” life in North Italy with this system in the Mezzogiorno.

ANSWER: **clientelism** [accept word forms like clientelistic; do not accept or prompt on “clientism”]

<GP, Social Science: Political Science>

9. Kivelson, Khurana, and others’ measurements of this quantity from the *Galileo* probe provided the clearest evidence for Europa’s subsurface ocean. For 10 points each:

[10m] Give this quantity measured by SQUIDS. Space probes typically use “fluxgate” devices to measure this quantity, which is proportional to the measured voltage in a Hall effect sensor.

ANSWER: **magnetic field**

[10e] Europa must be conductive to produce its own magnetic field, suggesting that it has a salty subsurface ocean. The current inside Europa is created by Jupiter’s changing magnetic field via *this* process, which is described by Faraday’s Law.

ANSWER: electromagnetic **induction**

[10h] On Earth, the magnetotelluric method measures currents induced by lightning and ionospheric activity to determine the subsurface profile of *this* quantity. At a fixed low frequency, this quantity determines the skin depth.

ANSWER: **conductivity** [accept resistivity]

<VD, Physics>

10. A 2019 Budapest production of one opera reconstructed Alessandro Striggio the Younger’s original ending for it as a substitute for this plot device. For 10 points each:

[10m] Name this plot device that creates a *lieto fine* for that opera. As an alternative to having the Bacchae murder its protagonist, that opera’s finale was rewritten with an example of this plot device in which its protagonist leaves the stage on a cloud.

ANSWER: **deus ex machina** [accept “**god from the machine**”] (Apollo comes down on the cloud to invite the protagonist to Heaven.)

[10h] In another operatic use of the *deus ex machina*, a jealous Empress Ottavia enlists Ottone to kill this character, but because this mistress asked Cupid for a blessing, Cupid thwarts Ottone during the aria “Eccomi trasformato.”

ANSWER: **Poppea**

[10e] This Italian composer integrated the *deus ex machina* into *The Coronation of Poppea* as well as the oldest regularly performed opera, *L’Orfeo*.

ANSWER: Claudio **Monteverdi** [or Claudio Giovanni Antonio **Monteverdi**]

<JE, Other Arts: Opera and Musical Theater>

11. Microfabricated “labs” described by these three words are promising portable point-of-care diagnostic devices. For 10 points each:

[10h] Give these three words that are hyphenated in the names of devices that use microfluidic channels to transport analytes between reservoirs, where they can be automatically separated, assayed, and detected.

ANSWER: “**on-a-chip**” [accept lab-**on-a-chip**]

[10m] Lab-on-a-chip readout can be done with smartphones equipped with fluorescence analyzers or potentiostats for electrochemical detection. The latter is frequently used to “continuously monitor” *this* molecule in the blood, whose FAD-coupled oxidase drives a current at an electrode.

ANSWER: **glucose** [accept **C6H12O6**]

[10e] Smartphones are also used to read First Response Early Result tests, which are these point-of-care devices. These lateral flow assays display two lines if hCG is detected in their users’ urine and one line otherwise.

ANSWER: home **pregnancy tests**

<VD, Chemistry>

12. In *A Small Place*, Jamaica Kincaid criticizes these people’s creation of a neocolonial structure in the economy of Antigua and Barbuda. For 10 points each:

[10e] Name this group of people. The Palauan government mandates the stamping of an environmental pledge onto the passports of these people, who often visit the country on vacation or to sightsee.

ANSWER: **tourists** [or **travelers** or **visitors**; prompt on answers like **foreigners**]

[10m] In *The Tourist Gaze*, John Urry discusses how, in an industry described by this term, locals adapt their culture in a “commodification of history” to tourists seeking authentic experiences. The adverse effects of tourism threaten Venice’s situation on a list of sites described by this term.

ANSWER: **heritage** [accept **heritage** industry; accept World **Heritage** Sites]

[10h] In *The Orient Strikes Back*, Joy Hendry explores the reversal of heritage commodification between Europe and Japan via the proliferation of types of these places called *gaijokku mura*. The ideal small-town America is commodified as a “World Bazaar” in an early design for these places in Tokyo.

ANSWER: **theme parks** [or **amusement parks**; accept **Disneylands**; accept Tokyo **Disneyland**]

<AS, Geography>

13. This piece’s first song, “When My Sweetheart is Married,” reflects the possibly unrequited love that its composer had for soprano Johanna Richter. For 10 points each:

[10h] Name this piece whose third song likens that love’s pain to a knife in one’s heart. This song cycle’s composer delayed publishing it likely because he used its themes, like the melody “D, low A, D, E, F-sharp, G, long A,” in his first symphony.

ANSWER: ***Songs of a Wayfarer*** [or ***Lieder eines fahrenden Gesellen***; accept ***Songs of a Wanderer*** or ***Songs of a Traveling Journeyman*** or ***Gesellenlieder***]

[10e] Mahler first used that tune in “This Morning I Went over the Field,” the only song in *Songs of a Wayfarer* with this quality. This term often contrasted with “minor” describes a scale that has no sharps or flats when its tonic is C.

ANSWER: **major** [accept descriptions such as “it’s written in a **major** key”]

[10m] The cycle ends as the singer finds peace under a linden tree, whose branches are “rustled” by E-major triplets in a song in this other piece. In this song cycle, a wanderer recalls that tree offering him rest in the title time of year.

ANSWER: ***Winterreise*** (“VIN-ter-RYE-suh”) [or ***Winter Journey***] (by Franz Schubert)

<JE, Auditory Arts>

14. At this man’s trial, divine intervention protects a champion of justice from a blow on the cheek and helps him kill a loyal knight from the castle Sorence. For 10 points each:

[10h] Name this man. This man argues that his actions were motivated by revenge and not treason before he is executed along with thirty of his relatives.

ANSWER: **Ganelon**

[10e] After exacting revenge on his stepson, Ganelon is executed in this epic poem about a Frankish battle against Muslim forces. That stepson dies in this poem from blowing his oliphant.

ANSWER: **Song of Roland** [or *La Chanson de Roland*]

[10m] Before he dies Roland tries to destroy this type of item, but throws it in a poisoned stream once it proves to be unbreakable. One item of this type, Joyeuse, was described as changing color thirty times a day.

ANSWER: **sword** [accept descriptors like magic **sword** or angelic **sword**]

<DC, European Literature>

15. Charlie Chaplin designed the stage for this woman's Angelus Temple, and told her, "like it or not, you're an actress now." For 10 points each:

[10h] Name this founder of the Church of the Foursquare Gospel. She claimed to have walked barefoot across the Texas desert from Agua Prieta during an alleged kidnapping in 1926.

ANSWER: Aimee Semple **McPherson**

[10e] McPherson, along with Billy Sunday, repopularized this practice in the US between the world wars. Pat Robertson and Billy Graham were prominent faces in this practice on television in the 60s and 70s.

ANSWER: **evangelism** [accept word forms; accept **televangelism**; prompt on **preaching** or practicing **religion** or attending **church**]

[10m] McPherson set a record by selling \$300,000 worth of these things in two days in 1944. Norman Rockwell's Four Freedoms series toured to sell these things.

ANSWER: **war bonds** [accept **World War II bonds**; prompt on **bonds**]

<RR, American History>

16. *Description acceptable.* The hyena may have inspired Greek accounts of the Ethiopian leucrocotta, which used this ability to lure its prey into ambushes. For 10 points each:

[10h] Name this ability. In the *Odyssey*, Helen nearly foiled the Sack of Troy by walking around the Trojan Horse and exercising this ability.

ANSWER: **imitation** of **voices** [accept word forms and answers like **mimicry** of the human **voice**; accept **mimicking** or **imitating** the **voices** of the wives of the Greek heroes; accept **impersonation**; prompt on answers like **mimicry** or **imitation** by asking, "Of what?"]

[10e] A vengeful Hera cursed this nymph by taking away her voice, so that she could only repeat the words of others. This nymph later wasted away in her inability to express her love for Narcissus.

ANSWER: **Echo**

[10m] Callistratus claimed a statue of this man spoke, and was answered by Echo. The Greeks linked two statues of Amenhotep III to the Colossi of this son of Eos, who led the Ethiopians to support Troy during the Trojan War.

ANSWER: **Memnon**

<KT, Beliefs>

17. The modern implementation of this algorithm uses three nested for loops to define all vertices, pick them as source, and pick them as destination. For 10 points each:

[10h] Name this algorithm that can be used to find the shortest path in directed weighted graphs.

ANSWER: **Floyd-Warshall** algorithm

[10e] The shortest path problem for *undirected* graphs can be solved using this polynomial-time greedy algorithm named for a Dutch scientist.

ANSWER: **Dijkstra**'s algorithm

[10m] Shortest paths do not have to connect to every node of a graph, unlike this other construct. This construct has the lowest edge cost of any subgraph that contains all nodes.

ANSWER: **minimum spanning trees** [or **MST**]

<KJ, Other Science: Math and Computer Science>

18. These settlements were heralded by Voltaire as “the triumph of humanity” after Antonio Ruiz de Montoya popularized them in Europe in *The Spiritual Conquest of Paraguay*. For 10 points each:

[10h] Give this name for South American Jesuit missions that protected over one hundred thousand native Guaraní from Portuguese *bandeirantes*, but forced them to give up most tribal traditions.

ANSWER: Jesuit **reductions** [or **reducciones** or **redução** or **reduções**]

[10e] Jesuit *reducciones* suppressed Guaraní traditions while introducing them to this technology used by Montoya to publish a Guaraní-Spanish dictionary. Johannes Gutenberg developed the moveable type of this technology in Europe.

ANSWER: **printing** press

[10m] *Two answers required.* Charles III halted the spread of *reducciones* with the 1767 expulsion of the Jesuits from the Spanish Empire as part of the Bourbon Reforms, which solidified the superior status of this class of Spaniards born in Spain over this class born in the colonies. Name both.

ANSWER: **peninsulares** AND **criollos**

<AS, World History>

19. In a one-woman show by this author, Redbird Monahwee’s mother gives her a sock full of coins to help Redbird escape her abusive father. For 10 points each:

[10h] Name this author of *Wings of Night Sky*, *Wings of Morning Light*. This author asserts we are “truly blessed” because “we / Were born, and die soon within a / True circle of motion” in the poem “Eagle Poem.”

ANSWER: Joy **Harjo** [or Joy **Harjo-Sapulpa**; accept Joy **Foster**]

[10e] Harjo is a member of the Muscogee Nation in this state. Lynn Rig’s play *Green Grow the Lilacs* inspired a musical titled for this state about Laurey’s romance with the cowboy Curly McLain.

ANSWER: **Oklahoma**

[10m] In this play, the Cheyenne housekeeper Johnna Monevata was inspired by the Muscogee father of its author. In this play, the cancer-stricken Violet Weston is abandoned by her daughters after Beverly Weston’s suicide.

ANSWER: **August: Osage County** (by Tracy Letts)

<PS, American Literature>

20. Sculptors like Zlan of Belewale carved heads or legs to adorn the handles of these objects, which were owned by women to honor their status and generosity. For 10 points each:

[10h] Name these objects. Inspired by these ceremonial objects produced by the Dan people of the Côte d’Ivoire and Liberia, Giacometti sculpted one evoking the female womb.

ANSWER: **spoons** [or **ladles**; accept **wake mia** or **wunkirmian**; accept **Spoon Woman**]

[10e] Dan spoons can function comparably to these spiritual objects worn by men, such as slit-eyed, oval *Deangle*. These objects inspired the faces of two figures in Picasso’s *Les Demoiselles d’Avignon*.

ANSWER: **masks**

[10m] The Lega people of the DRC used ceremonial spoons made of this material and bone. West African nations exported “Afro-Portuguese” objects of this material, which was used for a mask honoring Idia, Queen Mother of Benin.

ANSWER: elephant **ivory**

<AY, Visual Arts>